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Managing Beyond the Boundaries

A qualitative case study on how management control systems can be used to reduce Scope 3 GHG emissions in the upstream supply chain

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Abstract: This thesis explores how environmental sustainability can be integrated into management control systems (MCSs) to reduce Scope 3 GHG emissions in the upstream supply chain. Using Hopwood's (1974) framework of control, the study investigates how the interaction between administrative, social and self controls unfolds in practice. The case company is a multinational firm in the health and hygiene industry with a long-standing sustainability focus. Drawing on 10 semi-structured interviews, the thesis suggests that effective sustainability integration depends on the interplay of all controls rather than their isolated use. The findings show that, when embedded in a strong sustainability culture, social controls such as bottom-up approaches facilitate employees' internalization of environmental objectives. Simultaneously, administrative re-centralization is required to maintain long-term strategic coherence. Additionally, the study finds that the suppliers' interpretive capacity influences the effectiveness of sustainability controls in inter-firm settings, and that this capacity can be cultivated through social controls. The study further identifies two structural constraints that hinder full integration due to the conflicting paradigms of profitability and sustainability: A growth versus absolute targets paradox and a market readiness gap.

Keywords: Environmental sustainability, Management control systems, Scope 3, Supply chain

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1. Introduction

1.1 Problem Background

"Humanity is just one small blip on the radar. But like the meteor that wiped out the dinosaurs, we're having an outsized impact. In the case of the climate, we are not the dinosaurs. We are the meteor. We are not only in danger. We are the danger. But we are also the solution" – António Guterres, UN Secretary-General (Guterres, 2024).

As the urgency of the climate crisis increases, the world is placing greater emphasis on the scale of individual and collective responsibility (Publications Office of the European Union, 2025). For companies in the health and hygiene industry that contribute to greenhouse gas (GHG) emissions through single-use products, this urgency is especially evident. Traditionally, the focus of performance management has been on the financial results of the company. However, sustainability is becoming increasingly crucial for businesses to incorporate into their strategies (Beusch et al., 2022; Crutzen et al., 2017; Durden, 2008; Ghosh et al., 2019; Gond et al., 2012; Laguir et al., 2019; Narayanan & Boyce, 2019; Perkiss et al., 2025; Spence & Rinaldi, 2014). This stems from, for example, shifts in public interest and new binding frameworks such as the United Nations Sustainable Development Goals and the Paris Agreement (Science Based Targets Initiative, n.d.; UN Global Compact, n.d.). From the perspective of environmental sustainability, it is becoming more important to consider not only the direct GHG emissions stemming from a company's own operations, but also indirect GHG emissions – Scope 2 and Scope 3.

When handling GHG emissions data, firms must navigate the tensions of certainty, accuracy and consistency (Bowen & Wittneben, 2011). This is especially true for indirect GHG emissions, since these data are sourced from external parties who may have different interpretations and measurement systems. To address this uncertainty, companies must consider how they design their management control systems (MCSs). Strong and reliable MCSs can help companies manage the integration of sustainability by providing guidelines and supporting sensemaking of sustainability information. As Scope 3 GHG emissions reductions gain importance, it is particularly relevant to explore what methods firms use to manage them, since these GHG emissions extend beyond the organization's direct control. Therefore, our empirical analysis is limited to the examination of environmental sustainability

in terms of upstream Scope 3 GHG emissions rather than sustainability as a broader concept. Accordingly, any mentions of "sustainability" in the context of our case company refer specifically to environmental sustainability.

Given the urgency of environmental accountability, a growing body of research explores how firms can integrate sustainability into their MCSs and the related risks and opportunities (Beusch et al., 2022; Crutzen et al., 2017; Durden, 2008; Ghosh et al., 2019; Gond et al., 2012; Kalla & Seiter, 2025; Laguir et al., 2019; Narayanan & Boyce, 2019; Perkiss et al., 2025; Spence & Rinaldi, 2014). Meanwhile, supply chain research has traditionally been oriented toward efficiency or governance of supplier selection, but with recent additions of sustainability attributes (Dekker, 2003; Laguir et al., 2019; Perkiss et al., 2025; Reusen & Stouthuysen, 2017; Spence & Rinaldi, 2014). However, extant literature remains limited in both how the interplay of controls unfolds in practice when sustainability is integrated into MCSs, and how these dynamics extend beyond intra-firm boundaries. Consequently, how sustainability integration into MCSs extends from an internal setting into inter-firm contexts represents an interesting line of research.

To analyze how firms manage sustainability integration, this study defines MCSs according to Hopwood's theory of control: A combination of administrative, social and self controls aiming to align the behavior of employees with organizational objectives. In this sense, the impact of control systems *"must always be seen as an uncertain outcome of a dynamic interplay between the administrative, social and personal pressures which are simultaneously competing for influence and control."* (Hopwood, 1974, p. 22). Hopwood's framework is appropriate as it provides a holistic view of the interplay of controls, aligning with our assumption that sustainability control systems (SCSs) do not operate as separate tools, but are rather integrated into the broader concept of MCSs.

1.2 Purpose

The purpose of our study is to explore the ways in which organizational actors use management control systems for sustainability integration in the upstream supply chain to reduce Scope 3 GHG emissions. The research question thus becomes:

How do different actors within an organization enact and adapt management control systems (MCSs) to incorporate environmental sustainability and reduce Scope 3 GHG emissions in the upstream supply chain?

1.3 Contribution

By conducting a case study of a company in the health and hygiene industry, our research contributes to the identified gaps by showing, in practice, how the interplay of controls impacts MCS effectiveness in a mature sustainability setting. Using Hopwood's theory of control as a theoretical lens, we gain a new perspective on how the interplay between administrative, social and self controls influences the effectiveness of sustainability initiatives aimed at reducing Scope 3 GHG emissions in the upstream supply chain (Hopwood, 1974). Firstly, our findings reveal that although strengthening social controls through a bottom-up approach can ease the process of employees' internalizing sustainability, it is insufficient on its own. Instead, it is the organization's long-standing sustainability culture that enables sustainability to be internalized through the bottom-up approach, while an administrative re-centralization is needed to maintain strategic coherence. Secondly, when extending sustainability controls into inter-firm settings, we find that the interpretive capacity of suppliers influences how effectively the controls work, and that the use of social controls can help build suppliers' capabilities in terms of sustainability. Thirdly, we find that full internal alignment of administrative, social and self controls in terms of sustainability is currently hindered by a market readiness gap and a growth versus absolute targets paradox, both stemming from institutional pressures.

2. Literature Review

Our research question concerns internal practices and how these can lead to effective organizational change in the context of sustainability. To deepen our understanding of the research question, it is crucial that we comprehend how supply chain MCSs have historically been enacted and what priorities have guided these practices. It is equally important to understand how the evolving field of sustainability has reshaped the pressures placed on managers in their day-to-day activities. Thus, we have drawn upon the relevant domain of *supply chain sustainability controls*, which has allowed us to identify gaps in the existing literature.

2.1 Supply Chain Sustainability Controls

Supply chain management has traditionally been considered in terms of improving supplier relationships and negotiating favorable financial terms. These studies, primarily informed by transaction cost economics, emphasize alignment between control mechanisms and transaction characteristics (Dekker, 2003; Reusen & Stouthuysen, 2017; van der Meer-Kooistra & Vosselman, 2000). Hence, it is important to consider the context-specific factors of the supply chain since these influence whether controls will be effective. In our case study, this is especially interesting since the regulations and expectations that govern the relationship between a company and its suppliers are increasingly framed by sustainability. Thus, understanding how MCSs can be adapted to meet the evolving demands of environmental sustainability is crucial.

A major characteristic of supply chain relationships, however, is uncertainty (Dekker, 2003; van der Meer-Kooistra & Vosselman, 2000). In the context of inter-firm partnerships, Dekker conducted a case analysis on how a major UK retailer applied value chain analysis to manage its supply chain relationships. He found that there was a fine balance between competition and cooperation in inter-firm settings that created uncertainty. This stemmed from companies having to rely on each other to reach mutual goals while simultaneously protecting intra-firm interests (Dekker, 2003). This uncertainty is amplified in the context of environmental sustainability, due to the lack of universally used standards to control for GHG emissions created beyond firm boundaries. As noted by Bowen and Wittneben, carbon accounting remains a challenge due to the difficulty of validating GHG emissions data, and the lack of consistency in carbon accounting systems between firms (Bowen & Wittneben, 2011). Thus, managers are confronted with the challenge of incorporating sustainability actions into their MCSs in a way that can address this uncertainty.

Laguir et al. examined the use of MCSs in integrating CSR activities when researching 10 large publicly listed companies. Using Simon's levers of control as a theoretical foundation, they found that both restrictive formal controls and supportive informal controls were crucial. These controls were important both when communicating CSR to salient stakeholders, including customers and society, and when integrating CSR in intra- and inter-firm settings. Internally, formal belief systems were implemented to strengthen the culture of CSR. By being exposed to CSR activities such as internal communication and training, employees

became more involved and educated which further strengthened the culture, thus forming a "self-reinforcing loop". Boundary systems such as codes of conduct and ethics guidelines were also set in place to provide clear guidelines on accepted CSR behavior, which ensured compliance with regulations and management of internal risks (Laguir et al., 2019). Integration of sustainability was further applied to the context of supply chains in Perkiss et al.'s research paper. The authors conducted a longitudinal study through interviews with 56 researchers, NGOs and industry operators with a primary focus on the Chocolate Scorecard, a sustainability control tool in the chocolate industry. Their study highlighted the efficiency of formal controls in tackling "wicked problems", such as sustainability. However, they also pointed to the fact that formal controls must be used alongside informal controls, such as dialogues, to ensure meaningful implementation of change (Perkiss et al., 2025). These contributions are important since they highlight that formal controls alone cannot produce efficient organizational change in the context of sustainability. Instead, it is the surrounding informal controls that mobilize the formal controls. This insight is especially relevant for our study as it implies that integration of sustainability into MCSs is influenced by managers' cognitive ability to reinterpret and adapt controls for new purposes.

The importance of combining the two dimensions of formal and informal controls is also shown in Durden's study on the use of MCSs in promoting managers' actions to reflect social responsibility. Durden emphasized that *"the two dimensions should be mutually reinforcing. Either dimension of itself is unlikely to be sufficient and could limit or compromise the MCS in relation to the achievement of social responsibility goals."* (Durden, 2008, p. 688). He stated that formal controls, when applied in isolation, were unable to shape the organizational culture toward other mindsets than strictly financial, thus undermining non-financial objectives. Similarly, he mentioned that heavy reliance on informal controls could create confusion about the significance of non-financial goals if they were not formalized (Durden, 2008). Furthermore, Kalla and Seiter studied how social sustainability goals materialized into MCSs through their qualitative study of 11 family businesses. The authors stated that while various controls were used to integrate social sustainability goals into MCSs, informal controls were a large contributor to the overall effectiveness. They found that social sustainability goals were reinforced mainly through informal controls such as the organizational culture. The authors further argued that informal and formal controls were interrelated and reinforced each other. Thus, a balanced combination of softer and harder controls was essential to effectively integrate sustainability goals. This supports the idea that

"MCSs should not be considered separately but holistically." (Kalla & Seiter, 2025, p. 451), consistent with the findings of Durden (Durden, 2008). These insights raise questions of whether these findings also hold for environmental sustainability integration, and which controls are the key drivers of effective implementation in this setting.

Research by Gond et al. showed why firms may fail to achieve full sustainability integration. They argued that the internal management of sustainability often remained decoupled from traditional MCSs. One reason for this separation was that the existing MCSs remained dominant in affecting employee behavior. This caused the SCS to stay external to the decision-making processes, instead of being fully embedded into the larger context of strategy and operational control. The lack of integration reduced the potential for sustainability initiatives to generate meaningful or lasting impact within the organization (Gond et al., 2012). This underscored both the opportunities and the barriers that firms faced when aiming to create lasting results, something we seek to explore further. Threats to effective integration between MCSs and SCSs included the lack of technical connections, lack of common practices and poor cognitive integration. Gond et al. therefore proposed that *"a more effective approach for managers willing to enhance the level of sustainable organizational development is to integrate and interactively control for sustainability within the dominating MCSs",* meaning that diagnostic use of SCSs would not lead to an efficient integration (Gond et al., 2012, p. 221). In the context of our research question, aligning the conflicting logics of profitability and sustainability in MCSs thus requires a learning-oriented approach rather than a strictly regulating one. This makes it interesting to study how managers can facilitate learning by making the technical systems more accommodating to environmental data, and how they can enable employees to understand how sustainability topics can be translated into their daily activities.

However, through their case study on a multinational company, Narayanan and Boyce argued that the traditional economic roots of MCSs implied that they were inherently tools to guide organizational activities and behaviors toward financial company objectives. As a result, employees were unlikely to leave this rational profit-seeking paradigm behind when pursuing sustainability objectives through MCSs. They stated that: *"The totality of these changes did not drive the organization away from the status quo business case paradigm towards a genuine transformation agenda."* (Narayanan & Boyce, 2019, p. 1230). Consequently, prioritization of sustainability was only enacted in practice once sustainability was framed as

a commercial opportunity, rather than as a genuine commitment to transforming the way business was conducted. In this sense, their findings indicated how the *"elements of the MCS that were ostensibly related to sustainability actually supported a move towards further commercialisation."* (Narayanan & Boyce, 2019, p. 1232). This tension is also touched upon by Durden, who found that many firms faced problems in regard to balancing the long-term perspectives of sustainability strategies with shorter-term financial incentives (Durden, 2008). He noted that a key cause of this was the *"uncertainty concerning how social responsibility should be measured, reported and monitored within the MCS."* (Durden, 2008, p. 680). Crutzen et al. stated a similar finding in their study of how 17 French companies enact formal and informal controls to integrate sustainability. They found that: *"Management control to link economic performance to social or environmental performance was rarely observed"* (Crutzen et al., 2017, p. 1296). This is further echoed by the findings of Laguir et al., who emphasized that the difficulty of monetizing CSR factors caused tensions in organizational decision-making, and that *"these tensions might be harmful to CSR implementation"* (Laguir et al., 2019, p. 549). They explained that this was due to the difficulty of directly comparing financial data with CSR indicators, which disincentivized managers from incorporating it when making business decisions (Laguir et al., 2019). The tension of integrating the conflicting logics of profitability and sustainability in the context of Scope 3 GHG emissions is something we aim to explore further.

Furthermore, Gond et al. argued that achieving full integration was not always a "cure-all" approach – when trying to integrate, companies could face the dilemma of whether full integration meant sustainability objectives got watered down by financial structures or became overly mechanical and rigid. However, they argued that the lack of integration could sometimes be productive, since the friction between MCSs and SCSs could encourage creativity in managers when dealing with the trade-offs between environmental and financial objectives (Gond et al., 2012).

Beusch et al. conducted a case study investigating the integration of SCSs into MCSs in a Swedish multinational company. They extended Gond et al.'s framework by adding how belief systems and boundary systems affected the integration of MCSs and SCSs. Specifically, by delegating the responsibilities for sustainability from only specialists to all employees across all functional areas, the organization attained a stronger shared vision of sustainability. They enacted these changes through "go and see" practices, meaning the senior

management engaged in open dialogues with local managers, listened to their perspectives and closed the perceived hierarchical gaps (Beusch et al., 2022). This idea implies that bridging cognitive barriers through an encouraging and collaborative approach rather than a directive one can positively impact the effects of sustainability initiatives. This further reinforces the idea that formal controls have to be complemented with informal controls to become effective as mentioned by Perkiss et al. (Perkiss et al., 2025).

Beusch et al. further argued that internal dialogic methods were especially crucial in firms where managerial priorities differed, specifically where *"top management has adopted a longer-term holistic perspective towards sustainability and other managers are more concerned about the linkage between sustainability and short-term profitability."* (Beusch et al., 2022, p. 2). This caused managers at different hierarchical levels to have different cognitive frames, which hindered full integration. In these situations, engaging in dialogues and interactive control practices could support alignment of conflicting perspectives by shaping and enabling sensemaking of belief systems, which ultimately created a shared purpose and direction for the organization (Beusch et al., 2022). The importance of dialogues and shared purposes as methods to reduce misalignment in controls was also touched upon by Knowles, who stated that: *"Tensions are alleviated not merely through discussion but through shared values and a commitment to mission."* (Knowles, 2025, p. 897). Thus, it is interesting to explore whether the reinforcement of a bottom-up, collaborative approach is also relevant in the context of an inter-firm setting, and how building relationships can impact the effectiveness of MCSs.

Another interesting aspect of supply chain sustainability controls is that of power dynamics. Spence and Rinaldi conducted a case study of a UK supermarket, with focus on its lamb supply chain. They interviewed both employees and suppliers, and analyzed these data through the perspective of governmentality. A main finding was the importance of the economic rationale in implementing a supply chain sustainability reform. Managers associated the word "sustainability" with additional costs, yet simultaneously had the strategic mission and self-perception of being leaders in the field of sustainability. They noted that this rationale enabled non-financial factors to be assigned economic value, making it easier to justify from a business perspective, since: *"[Sustainability] could be dealt with through market-orientated regimes of practice"* (Spence & Rinaldi, 2014, p. 442). Consequently, they saw that senior managers tended to consider social and environmental aspects in the context

of their economic effects in the decision-making process (Spence & Rinaldi, 2014). This had implications for the case company as it was revealed that sustainability was particularly important since it brought competitive meaning, consistent with the contributions of Narayanan and Boyce (Narayanan & Boyce, 2019). This finding makes it interesting to further study how managers portray and enact sustainability initiatives through leveraging business norms, by translating environmental sustainability results into monetary terms.

Spence and Rinaldi also highlighted several softer governing technologies aimed at supplier sustainability education. The authors argued that these governing technologies led to suppliers echoing the sustainability priorities of the supermarket. Given that the supermarket held the dominant power in the supply chain in terms of integrating sustainability, they could rank the agenda of sustainability based on their own priorities (Spence & Rinaldi, 2014). This raises questions of how the control design in inter-firm partnerships can create chain reactions in spreading adoption, thus leading to higher standards for sustainability management.

In terms of suppliers, Laguir et al. found that mobilizing belief systems to guarantee suppliers' alignment with the companies' demands of responsible practices created stronger awareness among suppliers, building trust and fostering collaboration. However, they also found that boundary systems were used to frame suppliers' own interpretation of CSR to manage risks in procurement. This insight shows that sustainability initiatives beyond the company boundaries involve both restrictive formal controls and supportive informal controls. Additionally, throughout the paper, it became clear that companies' use of MCSs for CSR purposes was highly influenced by stakeholder pressures. In this sense, integrating sustainability into MCSs could be used as a means of meeting stakeholder expectations, thus reinforcing sustainability efforts made (Laguir et al., 2019). Consequently, as stakeholder pressures are increasing, and sustainability beyond company boundaries is becoming even more important, it is interesting to study how the fine balance between collaboration and strict controls is expressed in other organizational settings.

2.2 Research Gap

Based on the literature reviewed above, two main gaps can be identified to which we aim to contribute with our thesis. Firstly, while extant research has emphasized the importance of having a balanced mixture of formal and informal controls (Beusch et al., 2022; Crutzen et

al., 2017; Durden, 2008; Ghosh et al., 2019; Gond et al., 2012; Kalla & Seiter, 2025; Laguir et al., 2019; Perkiss et al., 2025), not as much research has been conducted on how the interplay of controls unfolds in practice. Secondly, since the existing body of literature mainly explores integrating sustainability within intra-organizational settings (Crutzen et al., 2017; Durden, 2008; Ghosh et al., 2019; Gond et al., 2012; Narayanan & Boyce, 2019), there is still limited research on how the design and adaptation of internal controls can influence inter-firm relationships and thereby affect a company's climate impact beyond its own operational boundaries.

Thus, by conducting a case study of a company in the health and hygiene industry, we aim to contribute to existing literature by showing the practical application of MCSs when integrating sustainability within the upstream supply chain. Despite previous literature offering various established definitions of MCSs (Malmi & Brown, 2008; Simons, 1995), we have chosen to use the definition proposed by Hopwood – analyzing the interaction between administrative, social and self controls (Hopwood, 1974). This choice was made as the identified research gap requires a framework that captures the holistic perspective on the interplay of controls, which is important since we treat sustainability controls as an integrated part of the broader MCS concept in our findings.

3. Theoretical Framework

As our research aims to explore how controls interact in an organizational setting, we deem Hopwood's theory of control to be an appropriate theoretical lens. Hopwood claimed that managers and accountants often focus excessively on the technical aspects of accounting procedures, thus neglecting the importance of its underlying behavioral nature. Indeed, Hopwood argued that *"rules and patterns of organisational relationships are necessary means to a wider end, but even their intended impact depends upon how they activate the social pressures and personal desires for control which exists within the managers and employees."* (Hopwood, 1974, p. 21). To provide guidance, Hopwood introduced a theory explaining how control is structured in an organization and how different controls interact. He proposed three interrelated types of control: Administrative controls, social controls and self controls (Hopwood, 1974). This framework will allow us to explore the importance of control interplay in the context of sustainability integration. In the subsequent sections, we will

describe how the theory is constructed, the assumptions that have guided our application, and the inherent limitations of the theory.

3.1 Administrative Controls

Hopwood defined administrative controls as the formal controls used to direct employees' behavior to align with organizational objectives. Examples include budgets, codes of conduct and standard procedures. These form an objective foundation for evaluating the performance of employees and projects. They shape the decision-making process by reducing uncertainty through means such as guidelines, which are coherent with the organizational strategy. However, managers also use less obtrusive forms of administrative controls, including recruitment policies, training programs and communication channels. By hiring competent employees or providing them with the appropriate education and skills, managers use these controls to target the overall environment around the decision-making process, rather than the decision-making process itself (Hopwood, 1974).

3.2 Social Controls

According to Hopwood, *"social controls emerge from the shared values and the mutual commitments of members of a group to one another"* (Hopwood, 1974, p. 30). These are socially constructed expectations, relationships and motivations that create alignment of employee behavior with group norms. Social controls arise through the interaction of individual forces. They are unique for each context and situation, and Hopwood stated that they can vary even within different groups of the organization. This is because each employee has their own experience and personal motivation that is influenced by factors such as the market environment and the organization's administrative controls. These aspects construct employees' perception of the organization and its objectives (Hopwood, 1974).

3.3 Self Controls

Self controls work on an individual level by shaping employees' motivation to perform in relation to the expectations of the organization. They relate to the standards and ambitions imposed by individuals on themselves, which guide their behavior. Self controls can form a bridge that reinforces administrative and social controls through internalization. This means that the organizational beliefs are aligned with those of individuals, encouraging a personal

motivation to act in alignment with the organization's objectives. However, Hopwood highlighted that all individuals differ significantly, and thus no single control will have the same impact on all individuals. Hence, self controls consist of the internalization of administrative and social controls (Hopwood, 1974).

3.4 Interaction Between Controls

Hopwood claimed that all controls coexist in every situation. Therefore, all of them must be considered equally and no single control can exist or work in isolation (see Figure 1) (Hopwood, 1974). Hence, it is important to consider administrative, social and self controls as interconnected rather than functioning independently. The effectiveness of control systems revolves around the degree to which they interact in the same direction. If there is not alignment between all three controls, the strength of each control is diminished, potentially reducing their combined effect. However, when all three controls operate in the same direction, their impact becomes more powerful (Hopwood, 1974).

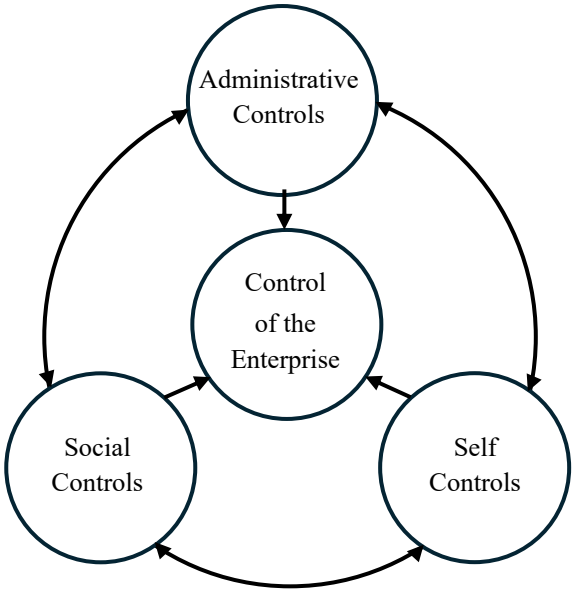

Figure 1: Hopwood's Theory of Control of the Enterprise

3.5 Application

In our study, we have chosen to interpret administrative controls as formal controls, and the social and self controls as informal controls. Dividing informal controls into both social and self controls allows us to gain deeper understanding of how the individual perspective affects

the broader social context. Given that sustainability integration demands bridging the paradigms between profitability and sustainability, the internalization of controls is a cornerstone in effective implementation and change. Thus, Hopwood's distinction provides insight into what drives the integration of these paradigms. Hopwood claimed that controls are socially embedded, and thus their efficiency depends on interpretation and internalization. Since our study is conducted in a mature sustainability setting, the focus lies in how these controls work together and reinforce each other. By seeing controls as interconnected parts of a larger system, we can study how formalized rules (administrative controls) relate to the organizational culture around sustainability (social controls), and how such cultural norms support employees in internalizing sustainability goals (self controls). Therefore, Hopwood's theory will allow us to identify which controls exist, how they are used, when they are used, and more importantly, the implications of their interaction (Hopwood, 1974).

In this thesis, the three types of controls take on specific meanings in the context of sustainability and Scope 3 GHG emissions reduction. Administrative controls refer to the formal tools and procedures, such as supplier requirements, reporting tools, formalized targets, and recruitment policies, that structure expected behavior. Social controls create norms and shared understandings that shape how sustainability is collectively interpreted on both the inter- and intra-firm levels. Self controls refer to the extent to which employees and suppliers internalize sustainability goals, and how they adjust their behavior accordingly by integrating sustainability considerations into decision-making. Hopwood's theory enables us to study how these three types of control shape each other. We aim to explore how the internalization of sustainability goals may be facilitated or hindered by administrative tools, and whether such tools are reinforced or weakened by social controls. Because the sustainability landscape is highly ambiguous and constantly evolving, understanding the relative influence of each control type within this interplay is especially interesting. Furthermore, since Scope 3 GHG emissions reductions are dependent on supplier transparency and cooperation, it is not enough to consider only the intra-firm controls, but also how these are extended across organizational boundaries.

3.6 Limitations and Assumptions

Hopwood's theory presents some inherent limitations regarding our research setting, which are important to consider. In the following section, we address these limitations through a

number of assumptions. Firstly, the theory was not explicitly developed for settings other than the structure of intra-firm control systems. This means that the theory does not consider, for example, clashes in institutional logics between buyers and suppliers (Hopwood, 1974). However, we assume that Hopwood's theory can be extended beyond organizational boundaries to encompass controls used to guide suppliers as well. This inter-firm application has been demonstrated in previous research (Kraus, 2007). Hence, while Hopwood did not contemplate relationships between firms, we assume that these relations are governed by similar control mechanisms to the relations within a firm.

Secondly, while Hopwood did state that accounting is affected by a wider social and economic environment, his theory predates contemporary sustainability demands (Hopwood, 1974). It was therefore not developed for sustainability settings, where the logics of profitability and sustainability conflict with each other. However, the fundamental goal of MCSs remains: To direct employee behavior to align with organizational objectives. In today's landscape, external demands and regulations require firms to include sustainability goals in their corporate objectives. This inherently means that accounting procedures such as the design of MCSs must evolve in accordance with changes in the external environment. We therefore argue that Hopwood's theory is applicable also in sustainability contexts. Thus, we assume that Hopwood's notion that all three controls coexist and reinforce each other through alignment still holds in ambiguous settings where conflicting paradigms and dynamic change are ongoing (Hopwood, 1974).

4. Method

4.1 Research Design

As the research question addressed in this study asks *how* MCSs can support sustainability initiatives, the purpose is to uncover underlying processes, practices and meanings, rather than test a predetermined causal relationship. Given this exploratory nature, a qualitative research design was deemed most appropriate. A qualitative approach allows us to go beyond a narrow and functionalist view of management accounting and enables an understanding of the layers and dimensions of accounting research from a more holistic perspective. This approach will yield a more comprehensive understanding of how sustainability is integrated and managed through internal control processes.

We aim to understand managers' interpretations of sustainability and how these interpretations translate into the control systems applied in the organization. This requires detailed and context-specific data that can only be meaningfully analyzed through a qualitative approach. Moreover, sustainability initiatives are highly context-dependent, as companies enact and implement them in different ways. Such practices vary not only across industries, but also between individual firms. This makes each case unique and unsuitable to be reduced to mere quantitative indicators (Ahrens & Chapman, 2006). Given this diversity and our identified research gaps, a qualitative study is particularly appropriate. It enables an in-depth exploration of how sustainability is embedded in MCSs, in this sense we can contribute to building thicker theoretical foundations for future studies (Lukka & Modell, 2010). Furthermore, much of the extant literature within the field of supply chain sustainability controls is qualitative in its research design, reflecting its suitability for studying these organizational phenomena (Beusch et al., 2022; Crutzen et al., 2017; Durden, 2008; Ghosh et al., 2019; Gond et al., 2012; Laguir et al., 2019; Narayanan & Boyce, 2019; Perkiss et al., 2025; Spence & Rinaldi, 2014). Power and Gendron also emphasize that qualitative research is *"particularly effective at generating […] grounded understandings of practice"*, making it well suited for exploring how sustainability is enacted within organizational settings (Power & Gendron, 2015, p. 148). Hence, this study aligns with both methodological tradition and recent calls for continued qualitative inquiry into management control and sustainability (Durden, 2008; Ghosh et al., 2019; Kalla & Seiter, 2025).

4.2 Case Study

More specifically, this study adopts a single case study design. There are several reasons for this methodological choice. Firstly, considering the limited time and resources available, focusing on one company allows us to gain a deeper and more nuanced understanding of the studied topic. As noted by Yin, a single case study enables the researcher to conduct an in-depth investigation of complex social processes within their real-life context (Yin, 2018). Therefore, this approach allows us to explore the contextual interpretations and processes within our case company with greater depth. Furthermore, given the complexity of our research question, an in-depth case study allows us to analyze the interdependent processes through which sustainability practices develop within their real-life context (Dubois & Gadde, 2002). A single case enables an in-depth and context-sensitive study of firm-specific practices

and the meanings that organizational actors attach to them, thereby avoiding oversimplifications (Ahrens & Dent, 1998; Dubois & Gadde, 2002; Yin, 2018). The choice of conducting a single case study is also reinforced by Ahrens and Chapman, who emphasized that *"the specificity of theorising in qualitative field studies is one of their key characteristics and strengths."* (Ahrens & Chapman, 2006, p. 836). Consequently, this method provides a strong foundation for developing a holistic understanding of how sustainability is managed and controlled within an organizational context (Ahrens & Dent, 1998; Lukka & Modell, 2010). However, we recognize that the choice of a single case study limits the findings to the perspective of the case company, thereby not incorporating other relevant views such as that of the suppliers.

4.3 Level of Analysis

Given our methodological approach and theoretical framework, the level of analysis in this study is set at the organizational level. This choice is appropriate because sustainability and supply chain management are organization-wide topics that intersect across multiple departments and hierarchical levels. An organizational level of analysis allows for a comprehensive understanding of the structures, processes and practices that shape sustainability-oriented decision-making, as it offers a holistic view that extends beyond the level of individual behaviors (Lukka & Modell, 2010; Scapens, 1990). As argued by Merchant and Otley, management control research is complex (Merchant & Otley, 2006). Hence, we conclude that it may benefit from organizational-level analysis since controls are embedded in formal systems, cultural contexts and interdepartmental relationships. Therefore, studying sustainability control from an organizational perspective enables both depth and breadth in understanding how internal processes align with broader sustainability objectives.

4.4 Data Collection

Primary data for this study has been collected through 10 semi-structured interviews with employees from different hierarchical levels and departments. Semi-structured interviews were selected due to the interpretive nature of the research question, as they allow for both consistency across interviews and flexibility to explore themes that emerge during conversations (Rowley, 2012). This method provides depth and nuance, enabling interviewees to express their experiences and interpretations in their own terms, which is essential for understanding organizational practices. An interview guide was developed to ensure coverage

of the main themes, while allowing for adaptation and follow-up questions based on each interviewee's expertise and direction of discussion (see Appendix 9.2). The guide has also been refined as new insights arose throughout the research process (see Appendix 9.3). In our case company, sustainability is an organization-wide responsibility and thus all interviewees are involved with it in their daily work. However, they work with it in different ways, and therefore, the questions were revised to be less specific so as to encourage the interviewee to share their own interpretations of how sustainability affects their work based on their areas of expertise. When selecting participants, we initially contacted the Director of Sustainable Procurement, who later provided us with names of employees whom she thought would be relevant for our study. Her recommendations were based on a list we provided, in which we aimed to include diversity across organizational roles and departments involved in sustainability-related control practices, such as Procurement, Sustainability, Product Development and Reporting (see Appendix 9.1). This heterogeneity enabled us to capture a wide range of perspectives and mitigate potential bias, ensuring a more comprehensive understanding of how sustainability is managed and communicated within the organization (Eisenhardt & Graebner, 2007).

The interviews have been conducted online and transcribed in Microsoft Word in accordance with GDPR. All interviewees provided informed consent to prior to the interviews. This ensured confidentiality in how we handled their personal data, which encouraged openness in responses. All interviews were conducted in English regardless of the first language of the interviewee. This was done to mitigate the risk of incorrect translations and to reduce our own bias affecting the interpretation of answers. To strengthen validity, we complemented the interviews with internal company documents related to sustainability controls. The combination of multiple data sources enabled methodological triangulation, which is widely used to enhance the validity and credibility of findings in management accounting research (Modell, 2009).

4.5 Data Analysis

Our data analysis process followed the phases of thematic analysis outlined by Brown and Clarke, who highlight that thematic analysis provides a flexible yet structured approach for identifying patterns in qualitative data (Braun & Clarke, 2006). We began by familiarizing ourselves with the data through a rigorous transcription process. After each interview, we read

through the transcriptions and simultaneously listened to the audio recordings provided by the transcription program. This was considered necessary as Microsoft Word's automated transcription sometimes misinterpreted words. To ensure consistency, the interviews were divided between us: Researcher A transcribed five of them and Researcher B the other five. Once a transcript was completed, the other researcher reviewed it to ensure accuracy. This cross-checking allowed us to correct errors and maintain uniformity across transcripts, while also making us more familiar with the data.

Data analysis was performed continuously throughout the research process. Between interviews, insights gained were reviewed and discussed, allowing us to refine our interview guide to reflect topics or themes that participants introduced and that we had not initially anticipated. This balance between data collection and preliminary analysis enabled us to capture nuances and ensure that we explored relevant areas in the following interviews. As a result, the transcription stage can therefore be seen as our first phase of coding, consistent with Braun and Clarke's first analytical steps of generating initial codes and searching for themes. Once all interviews were fully transcribed and reviewed, we revisited our initial codes and narrowed them down to a set of six overarching themes: *Administrative controls, social controls, self controls, profitability versus sustainability, growth versus absolute targets* and *future outlook.* These six themes structured our empirical analysis and guided our interpretation of the findings. The first three themes directly aligned with Hopwood's (1974) theory, which enabled us to apply his theoretical lens throughout the analysis. The remaining themes captured the key tensions and paradoxes that emerged from the data, which helped us formulate novel contributions.

5. Empirical Findings

In the subsequent sections, we present our case company and the empirical findings relevant for our research question through the lens of Hopwood's theory of control (Hopwood, 1974).

5.1 HealthCo's Operations and Landscape

HealthCo is a producer and distributor of various products related to health and hygiene. They operate globally with a large international supplier base, making supply chain management an important aspect of their operations. They work actively with sustainability and have done so for a long time, as quoted by an interviewee: *"As a company, we've been working with these*

questions […] since the early 90s." (Sustainability Manager, 2025). A majority of their product portfolio consists of disposable single-use products, which negatively impact the environment through GHG emissions stemming from, for example, production and waste. Consequently, they recognize sustainability as a top priority: *"When you are producing one-use products you have to even be more sustainable in what you are doing […] you need to see that you are dealing with the society and the environment in a very positive way."* (Global Procurement Director, 2025).

HealthCo is positioned in an environment where external expectations of environmental accountability are intensifying. Consequently, they must reshape their priorities in response to evolving customer demands, investor pressures and regulatory requirements. One interviewee stated that: *"We have to be profitable, we have to compete [...] we have to be able to serve our customers [...] it's a combination of these different elements that we have to consider."* (Global Procurement Director, 2025). How sustainability is interpreted and prioritized within HealthCo is therefore influenced by a combination of these evolving pressures. HealthCo has an ongoing process of creating a long-term sustainability strategy, with the ambition to *"be in front of compliance."* (Director Sustainable Procurement, 2025).

5.2 Empirical Themes

In the subsequent sections, we present the empirical themes found in the interviews, analyzed through the lens of Hopwood's theory of control (Hopwood, 1974). For an overview of all identified controls within HealthCo, see Appendix 9.4. The identified themes are as follows: Administrative controls, social controls, self controls and the conflicting paradigms of sustainability and profitability.

5.2.1 Administrative Controls

HealthCo has adopted numerous administrative controls related to sustainability. This section describes the administrative controls that we identified, divided into intra-firm and inter-firm controls, as well as a discussion of the limitations of administrative controls when considered in isolation.

5.2.1.1 Intra-Firm Administrative Controls

As the social and economic environment changes, Hopwood stated that MCSs should be developed and adapted in order to respond to the external pressures (Hopwood, 1974). HealthCo have set an overarching target of reaching net zero GHG emissions by [year] and are working actively with the reduction of GHG emissions across Scope 1, 2 and 3. Notably, the largest part of their total GHG emissions stem from Scope 3, where a significant contributor is supplier operations. One way in which HealthCo work towards achieving this target is by committing to the Science Based Target initiative (SBTi):

"We have very clear public targets [...] validated by the Science Based Targets initiative for [GHG emissions] reductions to [year] and net zero by [year]." (Sustainable Procurement Manager, 2025).
"The science-based targets [...] is really the key environmental target." (Corporate Sustainability Reporting Manager, 2025).

Having clear targets such as the SBTi acting as a guiding star for HealthCo's sustainability journey has been valuable for employees' understanding of the complex landscape, as mentioned by an interviewee: *"When you've got a science-based target [...] something measurable, it can sometimes help [...] focus people."* (Sustainable Procurement Manager, 2025). The science-based targets work as administrative controls by providing an overall direction for HealthCo's sustainability agenda. These targets communicate an ambition to advance in sustainability, both to internal and external stakeholders, as they signal a commitment to GHG emissions reductions. HealthCo's science-based targets are stated in absolute terms rather than relative ones. This was a decision taken by the company to show their commitment to the long-term net-zero goal*: "You can choose an intensity target or an absolute target […] we've chosen an absolute target as a business. […] Having an intensity target […] means that actually you can grow your emissions overall […] and that's kind of not morally what you should be trying to do because it doesn't get you to net zero."* (Corporate Sustainability Reporting Manager, 2025). Through Hopwood's (1974) lens, the absolute targets represent a strong administrative control as they narrow the scope of acceptable behavior by clarifying the terms against which performance is evaluated. This emphasizes the high degree of seriousness that HealthCo assigns to sustainability. Furthermore, that employees see relative targets as "morally wrong" shows how the administrative controls are reinforced through the social controls of HealthCo's culture. This

internal commitment illustrates how social controls ultimately permeate and shape the administrative controls.

Through HealthCo's commitment to the science-based targets, they have focused on further integrating environmental sustainability into their existing MCSs. Interviewees have mentioned various administrative controls, such as certifications and policies being implemented to direct employee behavior and reduce GHG emissions. One interviewee indicated how these controls are extended to procurement: *"We have policies dictating [...] [that] we have to buy from responsible suppliers [...] and there are certain certifications [...] and they're a stamp of approval."* (Global Procurement Manager 2, 2025). For example, procurement primarily sources materials from suppliers who have obtained internationally recognized certifications which prove their responsible and sustainable practices. Additionally, HealthCo perform Life Cycle Assessments (LCAs) to map their products' environmental footprint from raw material to disposal. By having access to specific product footprints, HealthCo can see where the climate impact is higher and thus make informed decisions about the most effective ways to reduce their GHG emissions. These administrative controls help clarify what is expected of employees and guide their behavior to align with the overarching organizational objectives. Thus, formalized controls can reduce the risk of misunderstandings and goal incongruence.

However, solely relying on administrative controls is ineffective (Hopwood, 1974). This was evident in the supplier selection process, where a challenge presented itself when trying to incorporate sustainability dimensions into the decision-making process. The challenge stemmed from environmental aspects not being directly comparable to efficiency factors such as price and security of supply in terms of consistent volumes. This introduced a tension in aligning administrative controls with self controls as internalization of environmental objectives proved difficult. Quantification became a central tool to reduce this ambiguity. Quantification puts a cost on suppliers' GHG emissions using internally developed carbon pricing estimates, making sustainable and non-sustainable suppliers more comparable in monetary terms. This has been possible through improved access to supplier data. Ultimately, it puts a cost on being unsustainable, allowing the company to *"show the impact of [supplier selection] decisions also from a sustainability perspective."* (Supply Chain Finance Director, 2025). Thus, translating broad, high-level sustainability goals into smaller, quantifiable actions that employees can integrate into their everyday activities has been a key part of

HealthCo's work to integrate sustainability, as stated by an interviewee: *"What gets measured gets done because then you get the focus and commitment from the organization."* (Director Sustainable Procurement, 2025). Viewed in isolation, quantification is an administrative control, as it eases and guides the decision-making process. However, its effects extend beyond solely those of an administrative control in its application and development. Hopwood stated that the impact of administrative controls is found primarily in their ability to frame employee behavior and understanding, rather than their formalized structure (Hopwood, 1974). Quantification can translate sustainability topics into terms that are meaningful for the employees, thus enabling the internalization of administrative controls into self controls. This internalization is supported by framing environmental impacts as financial numbers. In this sense, quantification works as a bridge between administrative and self controls to facilitate the integration of sustainability in intra-firm settings.

5.2.1.2 Inter-Firm Administrative Controls

Because of indirect GHG emissions, achieving the firm's net-zero target requires sustainability controls to encompass the entire supply chain. From a procurement perspective, this means sourcing materials from sustainable suppliers, which is not always a straightforward process as suppliers vary in size, resources and knowledge of sustainability initiatives: *"Sustainability focus doesn't always come with size, but sometimes there is a correlation, [...] smaller [...] suppliers may be super engaged, but they maybe don't have the financial muscle to do it."* (Director Sustainable Procurement, 2025). Hopwood stated that control is a reciprocal relationship (Hopwood, 1974), which means that if suppliers are unable to act on the controls which they are subjected to, whether due to lack of resources or willingness, the controls will not be effective. HealthCo have recognized this need to align suppliers' sustainability agendas with their own, and through administrative controls, this manifests in HealthCo employing strict codes of conduct and supplier standards. This is emphasized by an interviewee: *"Our suppliers, they're forced to sign [the code of conduct] and live by it. And if they can't sign it, then we don't work with them."* (Material Development Manager, 2025).

The supplier code of conduct sets out the legal requirements and standards related to, among other things, waste management, handling and disposal of material, and energy use, which suppliers are obliged to follow upon signing. Furthermore, suppliers are rated quarterly on the

basis of, among other things, pricing, quality, innovation, and sustainability performance. This reflects an action to direct supplier behavior through strict administrative controls. However, HealthCo also employ administrative controls to encourage suppliers to go beyond minimal sustainability requirements, for example through *Green Performance Agreements* (a pseudonym is used for anonymity purposes). These are contracts issued by HealthCo, consisting of sustainability commitments that suppliers are encouraged to sign. This initiative captures Hopwood's notion that administrative controls can be used in an enabling manner as well (Hopwood, 1974). There are different levels of contracts depending on how large a commitment suppliers want to make to improve their climate impact. This variety encourages suppliers of various sizes to participate, which increases the inclusivity of participation.

5.2.1.3 Limits of Administrative Controls and the Need for Social Interpretation

As mentioned, Hopwood stated that the effectiveness of controls hinges on the extent to which they are adapted to the changing environment of the firm (Hopwood, 1974). As access to supplier data is improving, HealthCo face the challenge of processing large amounts of inconsistent GHG emissions data. Since suppliers use different systems or measurement methods to process GHG emissions data, Scope 3 reporting becomes complicated. These gaps in information highlight how it is difficult to solely use administrative controls to navigate uncertain situations. Additionally, as mentioned above, not all suppliers are consistent in the amount of GHG emissions data they can provide. One interviewee stated that: *"One of the challenges is [...] that for some bits of inventory we might have really good data [...] but at the other extreme I might be spend based."* (Corporate Sustainability Reporting Manager, 2025). HealthCo have actively worked to find ways of simplifying this data process: *"We're building new things that will be able to deal with more data, more granularity, more quickly. And that's what we're [...] improving at the moment."* (Corporate Sustainability Reporting Manager, 2025). Further complications arise in responding to the changes in standards around GHG emissions reporting, which introduces new expectations and complexities to the process: *"Not only are we trying to improve what we've got [...] but the goal posts are moving. And the expectations are moving."* (Corporate Sustainability Reporting Manager, 2025). Another interviewee agreed on this note: *"It's been a lot of work to try to accommodate the standard."* (Corporate Sustainability Reporting Director, 2025). Hence, the varying availability of supplier GHG emissions data, combined with the evolving demands of reporting indirect GHG emissions, pose a challenge for HealthCo. This highlights the

insufficiency of relying on fixed administrative controls alone when navigating an uncertain environment. Indeed, it emphasizes the importance of interplay between social interpretation and administrative controls as a key driver of control effectiveness when faced with uncertain situations.

5.2.2 Social Controls

A prominent attribute of HealthCo's organizational identity is their strong culture around sustainability. Their sustainability mindset has evolved over several decades and has gradually become more important. Today, it is an integrated part of HealthCo's vision and strategy, as one interviewee mentioned: *"I mean the sustainability, it's really in our DNA."* (Global Procurement Director, 2025). The organizational culture, mainly shaped by social controls, actively frames employees' self controls in terms of actions and interpretations. Hence, it forms the foundation for understanding how employees internalize HealthCo's sustainability objectives and, in turn, how aligned their behaviors are with the organization's ambitions. This section describes the social controls that we identified, divided into intra-firm and inter-firm social controls.

5.2.2.1 Intra-firm Social Controls

Due to the complex and ambiguous nature of the topic, HealthCo have historically experienced some difficulties in effectively communicating sustainability internally. This stems from not all employees having the relevant sustainability background or knowledge required to interpret it. One interviewee mentioned that *"at times we've struggled to find an easy platform to talk about it. People tend to find sustainability quite a scary thing to talk about."* (Corporate Sustainability Reporting Manager, 2025). As Hopwood argued, building shared understanding through social controls is crucial for the effectiveness of control systems (Hopwood, 1974). HealthCo thus took on the challenge of leveraging social controls to mitigate the ambiguity of sustainability integration.

An important contributor in addressing this challenge was shifting from a top-down approach to a bottom-up approach of implementing sustainability initiatives. One interviewee described the previous structure as: *"It was the sustainability team that said 'do this' or top of the company that said 'do this', but without regard to financial cost."* (Supply Chain Finance Director, 2025). This control structure created tensions between the existing MCSs and the

sustainability expectations, supporting Hopwood's notion that misalignment of controls leads to ineffective MCSs (Hopwood, 1974). To address this discrepancy, HealthCo encouraged the different business functions to become more involved in creating and adapting sustainability initiatives: *"I think the evolution of the discussion […] is to bring these conversations together [...] not just do like a top-down mandate from somebody with a green thumb […] but [so that] the people who are responsible also for the top-line and the bottom-line […] ultimately decide."* (Supply Chain Finance Director, 2025). The bottom-up shift thus facilitated distributed ownership of sustainability initiatives by helping employees attach personal meaning to environmental concepts. Another interviewee agreed, adding that: *"I mean we're still a person responsible in the executive management team, but the actual execution was much more pushed out in the organization […]. And I think that it was smart of us to cascade responsibility and action."* (Director Sustainable Procurement, 2025). This bottom-up shift shows how an adjustment to the relative weight of social and administrative controls can increase the positive impact of the control system through facilitating common understanding and individual meaning.

However, one interviewee emphasized that the decentralized structure of working with sustainability might bring a new challenge. As sustainability actions become distributed across functions, there is a risk that the organization loses the overall "helicopter view". As stated by an interviewee: *"What we saw actually, [it] was fantastic to cascade and […] getting it more bottom-up, but we saw that we started to lose a bit of this helicopter view, that someone is still keeping everything together."* (Director Sustainable Procurement, 2025). Therefore, although cascading responsibility proved to strengthen ownership and engagement around sustainability at HealthCo, the interviews testified that it also created a need for a coordinating role to maintain a coherent agenda at the organizational level: *"[You must] still have someone with a lead flag, a lead strategy, so [that] we're walking in the same direction."* (Director Sustainable Procurement, 2025). These examples illustrate Hopwood's emphasis on the interplay between different controls (Hopwood, 1974). The shift towards stronger social controls through a bottom-up approach was effective in embedding sustainability in day-to-day operations and in the mindset of employees. However, increasing the degree of social controls was insufficient to maintain strategic coherence in the longer term. To address this, HealthCo made a change to the structure of sustainability management in the executive management team (EMT). Previously, the ownership of sustainability was assigned to the president of a group unit, meaning that sustainability was essentially

competing with other business areas. The re-centralizing shift implied the introduction of a Chief Sustainability Officer in the EMT, whose responsibilities include both the sustainability strategy and the overarching strategy of the organization, and the links between the two. This central coordinating role, acting as an administrative control, allows HealthCo to hold the broader direction together and ensure that bottom-up sustainability efforts remain aligned with long-term goals.

5.2.2.2 Inter-Firm Social Controls

While HealthCo have a number of administrative controls for their suppliers, they also incorporate social controls, including collaborative efforts and encouragement, to help suppliers meet these formal expectations: *"Most suppliers [...] are very good with us [...] but some [suppliers] [...] are just not large enough to have the knowledge or the resources to do these types of calculations […] and that's where companies like us have to support."* (Sustainable Procurement Manager, 2025).

The social controls of collaboration and collective learning have proven to be core pillars in establishing effective control systems on a supplier level, as emphasized by one interviewee: *"We can't continue to just say, 'we will do the calculations, just give us some data.' That's not helping our suppliers. That is literally [...] fishing for them and not teaching them to fish."* (Sustainable Procurement Manager, 2025). To address this, HealthCo host webinars and workshops with suppliers on ways to innovate and decarbonize operations to ensure future-proof supply chains and shared responsibility. They also regularly have one-on-one conversations with suppliers, providing tools and support, to develop more accurate forecasts of their GHG emissions and to build tailored decarbonization roadmaps. A key to their approach lies in their emphasis on recognizing and rewarding supplier progress. Thus, through interactive meetings and ongoing dialogues with suppliers, HealthCo can support suppliers in building capabilities of their own. These social controls can thereby mitigate some of the uncertainty in supplier GHG emissions data, while also aligning suppliers with HealthCo's direction of sustainability: *"Not everybody can do the same thing in the same system everywhere across the globe. But you note what those differences are. So you're aware and […] you're now able to have the right conversations with the right partner."* (Sustainable Procurement Manager, 2025). These examples highlight how the interplay between administrative controls and social controls can guide the relationship between buyer and

supplier in uncertain settings. While strict guidelines detail the required efforts, social engagement creates shared understanding, trust and collective learning, which facilitate suppliers' internalization of HealthCo's sustainability objectives. As stated by one interviewee: *"If you don't have trust and transparency, then you don't have collaboration. And if you don't have collaboration, you're not really going to get the impact that you want."* (Sustainable Procurement Manager, 2025).

5.2.3 Self Controls

A central part of Hopwood's theory is the importance of internalizing administrative controls at a personal level, as this internalization is what constitutes self controls (Hopwood, 1974). The following section presents how HealthCo enables internalization of sustainability both on an intra- and inter-firm level.

5.2.3.1 Intra-firm Self Controls

One way that HealthCo facilitated this internalization within the bottom-up shift was through the development of a scorecard. The scorecard was part of an overarching business strategy from top management and included sustainability topics, but the separate divisions were encouraged to design it based on their specific interpretations and priorities: *"So it's not that the CEO gave us this template and said fill it, it was rather the opposite. We said how do we put something together that is meaningful to us and has us focused on the right things. And then of course, we review it with our senior management […] but it was us figuring out how to look at this."* (Supply Chain Finance Director, 2025). Employees were thus able to internalize HealthCo's sustainability vision through actively interpreting and applying the administrative controls to their own daily activities. This allowed them to attach their own meaning and contribution to the targets, instead of simply seeing them as external impositions. Indeed, this exemplifies Hopwood's argument that administrative controls are internalized through self controls (Hopwood, 1974). The self controls exercised by operational managers in developing the scorecard's meaning and content mobilized top management's administrative control of initiating the scorecard.

Hopwood further argued that managers can use the less obtrusive administrative control of recruiting the right people. This can strengthen social controls by building a culture aligned with the organizational vision (Hopwood, 1974). Therefore, another action taken to increase

employee awareness was the introduction of a new role within procurement, a Sustainable Procurement Manager: *"They needed someone who could speak the climate language and help translate and build those bridges between climate goals and what you do in procurement."* (Sustainable Procurement Manager, 2025). She enabled internalization of climate goals in the procurement organization, by implementing several tools. These included targeted trainings to help procurement understand their own role in decarbonization, and interactive sessions for employees to pose sustainability-related questions in an open forum, emphasizing continuous learning. The interviewees mentioned that this eased the process of integrating climate objectives into operational processes on an individual level: *"A lot of that is because of her. She's […] helped us [...] to understand this and really drive in the right areas."* (Global Procurement Manager 2, 2025). The interviewee further stated that *"[one of the tools that she introduced] is fantastic because that is again getting that level of commitment on this topic that maybe wasn't formalized before."* (Global Procurement Manager 2, 2025). The efforts that HealthCo have made have thus increased awareness and strengthened internalization of sustainability by making it part of employees' day-to-day activities. Several interviewees highlight this:

"I don't think anyone would say that they are not working in sustainability. Even if you talk to people in the executive management team or if you talk to someone […] in a factory." (Director Sustainable Procurement, 2025).
"And within sustainability, everyone down to, you know, our receptionist at HQ should know how they can contribute and make an impact, because that's how you keep everybody engaged, and how you really get things done." (Sustainable Procurement Manager, 2025).

Encouraging individual sensemaking and interpretation of sustainability across the organization can therefore be seen as a key success factor for HealthCo's integration of sustainability. These tools enabled sustainability to be internalized on an individual level, guiding actions and behaviors, and reinforcing the administrative controls while also forming the foundation of an aligned organizational culture.

5.2.3.2 Inter-firm Self Controls

The inter-firm perspective on self controls is more difficult to establish due to the lack of supplier perspectives in the interviews. However, the ongoing social controls in terms of

collaboration and dialogue between HealthCo and their suppliers indicate how they enable administrative controls to be internalized also on a supplier level. Through capability-building and support, suppliers can understand HealthCo's expectations and apply them in their own operations through the development of capabilities and tools. These improvements in terms of interpretive capacity facilitate internalization of sustainability objectives. In turn, HealthCo can utilize fewer monitoring administrative controls towards suppliers. Thus, as supplier capabilities improve, HealthCo's sustainability expectations are cascaded throughout suppliers' own supply chains. This leads to the creation of new norms, forming a self-reinforcing loop through suppliers' internalization. Ultimately, this reflects HealthCo's future-oriented strategy of being ahead of compliance: *"We're trying to drive this topic forward, introduce things that maybe in 10 years will become a norm. […] And it's good to see that [HealthCo] is the first to do things like that."* (Global Procurement Manager 2, 2025). In essence, by increasing the relative weight of social controls in inter-firm relations, HealthCo can enable suppliers to align their self controls through internalizing sustainability objectives. By focusing on building partnerships rather than increasing pressure, HealthCo ensures that inter-firm relations are built on mutual commitment and that suppliers have an internalized motivation to engage in decarbonization.

5.2.4 Partial Conclusion

The changes that HealthCo are implementing into their MCSs relating to sustainability have thus undergone dynamic changes. They are actively expanding sustainability controls beyond intra-firm boundaries through a combination of issuing administrative controls and making sense of them through dialogic social controls. This enables suppliers' internalization of sustainability objectives. Additionally, they are working with their internal control systems by developing tools to help create a shared understanding around environmental concepts. In essence, HealthCo are proactive about the changes to come, as noted by an interviewee: *"The focus particularly around [...] the road map to go [...] to be more proactive, that's definitely an improvement in the business. Now we're saying [...] even if we're not concerned, we should still have better visibility. And that's what we're doing now."* (Global Procurement Manager 2, 2025). This journey emphasizes how the effectiveness of control systems is influenced by how the relative weights of each control type are adapted to the organizational context.

5.2.5 The Conflicting Paradigms of Profitability and Sustainability

Despite HealthCo working actively to integrate sustainability into their MCSs and interviewees having testified great progress, we identified one major persistent challenge hindering full integration – the inherently conflicting paradigms of sustainability and profitability. A manifestation of this is the increased costs when choosing sustainable options, as mentioned by several interviewees:

"It's challenging to […] fully meet the objectives of something that really is a win-win for everyone and [that] also makes a company lots of money and saves the environment. This is not easy to do." (Supply Chain Finance Director, 2025).
"We can never sacrifice our own profit on that high level that we jeopardize the future of the company." (Material Development Manager, 2025).

This dilemma has further implications on other parts of HealthCo's actions related to sustainability. Indeed, these conflicting paradigms resurface in two distinct forms: a growth versus absolute targets paradox, and a market readiness gap.

5.2.5.1 Growth versus Absolute Targets Paradox

HealthCo are a listed company – meaning that they are expected by shareholders to continuously grow their profit. At the same time, stakeholders increasingly demand sustainability efforts from companies, implying that they are required to be a responsible company, and not only prioritize cost savings. Thus, there are institutional pressures stemming from both the product market and the financial market. As mentioned, a way in which HealthCo have responded to these pressures is by committing to the SBTi with absolute targets for GHG emissions reductions. However, these absolute targets create a practical challenge – as the company grows, overall production volumes increase, ultimately increasing total GHG emissions. When environmental performance is evaluated solely on absolute GHG emissions, these figures do not reflect any efficiency gains or relative improvements in decarbonization. Instead, they only show an increase in total GHG emissions, even in cases when the company has become more efficient at managing and reducing their environmental impact. As one of the interviewees put it: *"[The Science Based Target initiative] does penalize you for growth."* (Supply Chain Finance Director, 2025). Here we see that the strict administrative controls imposed by the SBTi creates tensions when

interpreted alongside the goal of profitable growth, making it difficult for employees to align both logics at the same time. Many interviewees portray the trade-off as one of the biggest challenges in terms of sustainability: *"We need to be mindful that we need to grow in order to keep our jobs, in order to keep our shareholders satisfied, in order to face competition […]. Volume plays a role and so the more we grow, the more carbon dioxide we have to take away, […] yeah, it is quite tricky."* (Material Development Manager, 2025). This dilemma of profitable growth while simultaneously working towards sustainability targets has been a key finding in our interviews.

From Hopwood's (1974) perspective, this is a case where the administrative, social and self controls are not yet fully aligned. While HealthCo have adapted their MCSs to work towards the ambition of fully integrating sustainability, the different objectives of the two paradigms hinder full alignment. In this sense, the MCSs still remain decoupled to some degree. Despite employees having internalized sustainability in their day-to-day operations, the institutionalized pressures to achieve profitable growth continue to shape their agendas. As a result, the administrative controls imposed by the SBTi provide a behavioral direction towards sustainability, but the social and self controls remain affected by a profitability mindset. This creates a tension that cannot be fully reconciled by the current configuration of controls.

5.2.5.2 A Market Readiness Gap

The pressure of achieving profits while simultaneously working to reduce GHG emissions is enhanced by the expectations to advance in the development of green product solutions. Institutional pressures urge HealthCo to rapidly intensify sustainability efforts, without fully considering the readiness of the market. Due to the additional costs incurred when moving towards sustainable solutions, HealthCo must impose a price premium on products to cover the increased costs. However, customers are not currently willing to pay this price premium, especially due to the price sensitivity of the health and hygiene market. Hence, there is an apparent market readiness gap in terms of sustainable offerings. This dilemma is emphasized by several interviewees:

"*We are now in a situation where we need to create the bridge with the customers because the consumer will tell us that, 'Yeah, we are very interested to use green solutions, but we cannot afford to pay more'."* (Global Procurement Manager 1, 2025).
"The consumers and customers are not necessarily willing to pay extra for it, so it is hard actually. That is hard because today it comes with [an] extra cost to go for sustainable solutions." (Material Development Manager, 2025).

Thus, HealthCo are willing and ready to launch fully sustainable products, but the market is not prepared to adopt them yet, creating a discrepancy. As one interviewee described it: *"We have far more sustainable solutions developed and tested […] [than] you would find on the shelf […] in case we would have a response to it, […] but you need a trigger from the market."* (Global Procurement Director, 2025). In relation to Hopwood (1974), this is one example of employees internalizing HealthCo's vision to go above and beyond what is currently expected in the market in terms of social controls. By using innovation as a cue to create social expectations of the need to be proactive, they have created a sense of urgency around sustainability from an intra-firm perspective. However, the market factors are not yet aligned. One interviewee highlights the fact that: *"Clearly, the costs [of green materials] need to be reduced."* (Global Procurement Manager 1, 2025), as the current premium prices for green materials are not attainable from a supply chain point of view. Thus, the journey toward offering fully sustainable products is not straightforward, as mentioned by an interviewee*: "It's important to understand that there is not necessarily a magic pill that is a low-hanging fruit that you should go and harvest and then boom, you make your entire assortment green."* (Corporate Sustainability Reporting Director, 2025).

Hence, we see a situation where internal alignment of administrative, social and self controls is hindered despite internal ambitions to advance their sustainability initiatives. The misalignment stems from institutional pressures beyond firm boundaries – specifically, an inability of internal controls to effectively harmonize with external market conditions such as price sensitivities and a lack of market readiness. This results in structural barriers to what HealthCo can accomplish in terms of sustainability. From the perspective of Hopwood (1974), this shows how HealthCo's intra-firm controls are being adapted to respond to the changing social environment. Ultimately, however, the effectiveness of these controls will be influenced by market discrepancies which are beyond the scope of intra-firm controls.

5.2.6 Partial Conclusion

In essence, there are multiple tensions that arise from the paradox of sustainability and profitability, which further complicate the path towards a fully sustainable business model. However, HealthCo remain positive and frame these challenges as catalysts instead of limitations. Several interviewees mentioned that they must see this as an opportunity to keep looking for new ways of approaching cost barriers and reducing GHG emissions, while continuing to grow. This shows that the social controls that make up the culture are the key drivers for effective sustainability integration in HealthCo, as they have been able to frame employees' attitudes of how they will tackle future challenges: *"We are committed. So, we are going to fix it"* (Material Development Manager, 2025). Interviewees amplified that both the market readiness gap and the growth versus absolute targets paradox mirror a larger challenge of pursuing business objectives while simultaneously working toward public sustainability commitments. These trade-offs show the importance of internalizing administrative and social controls to encourage new ways of thinking and acting in paradoxical situations, because: *"There is no ecology without economy."* (Global Procurement Manager 1, 2025). However, it also shows that external dynamics have an impact on the effectiveness of the internal sustainability MCSs.

6. Discussion

By applying Hopwood's (1974) framework of administrative, social and self controls, this study allows new insights into how sustainability is integrated into MCSs in a complex supply chain context. The discussion section is divided into three parts and aims to compare our findings to existing literature. Firstly, we discuss how administrative, social and self controls influence the effectiveness of sustainability integration internally, in a mature sustainability setting. Secondly, we examine how different controls shape inter-firm relations and identify factors influencing their effectiveness. Finally, we look into how institutional pressures can constrain a green transition, and the implications of this on achieving full sustainability integration.

6.1 Mature Sustainability Integration Demands Re-centralization

In accordance with previous literature, our findings showcase that attempts to incorporate sustainability into the existing organizational identity require attention to all three controls –

building shared understanding through social controls, the alignment of values via self controls and formalized administrative controls guiding behavior (see Appendix 9.4). Consequently, our research finds that no control will be effective when considered in isolation, and the degree of harmony between controls influences the effectiveness of MCSs, aligning with claims from previous studies (Beusch et al., 2022; Crutzen et al., 2017; Gond et al., 2012; Knowles, 2025; Laguir et al., 2019; Perkiss et al., 2025). For HealthCo, the effort to align controls in terms of sustainability has largely been enabled by a shift from a top-down to a bottom-up approach to implementing sustainability initiatives. The bottom-up shift enabled employees to internalize sustainability by helping them understand their own role in HealthCo's objectives. As they attached personal meaning to these goals, their self controls aligned with the administrative controls. This supports Beusch et al.'s notion that strengthening social controls, such as interactive dialogues and cascading responsibility down the organization can help align conflicting mindsets (Beusch et al., 2022).

However, our findings also highlight a tension that has not been thoroughly explored in extant literature. We found that once a high degree of integration has been achieved, relying on a bottom-up approach can risk losing the "helicopter view", highlighting the need for a centralized coordinating anchor. Thus, while extant literature suggests that developing social controls such as collaborative bottom-up approaches is inherently beneficial for the integration of sustainability (Gond et al., 2012; Laguir et al., 2019; Perkiss et al., 2025), few studies highlight the necessity of a centralized actor to maintain strategic coherence. Our contribution thus shows that excessive decentralization can lead to fragmentation in terms of sustainability integration. However, our findings also indicate that the success of these changes was largely supported by HealthCo's long-standing sustainability culture. The already existing shared norms around sustainability meant that employees had an initial awareness of its importance, which facilitated internalization to some extent.

6.2 How Control Systems can be Extended Beyond Firm Borders

Extant literature highlights the importance of strengthening social controls in order to build a shared understanding around sustainability (Beusch et al., 2022; Gond et al., 2012; Laguir et al., 2019). Our findings, however, emphasize that this is especially crucial on an inter-firm level. We find that HealthCo's administrative controls did not reach their full capacity when inter-firm dimensions were introduced. This stemmed from the variability of supplier

resources and capabilities. To solve this, HealthCo leveraged their internal social controls to support suppliers in building their own sustainability capabilities, which in turn cascade their ambitions into suppliers' own supply chains. Our findings thus coincide with Laguir et al.'s finding that collaborative approaches create spill-over effects that reinforce sustainability benefits internally (Laguir et al., 2019). However, we also extend Laguir et al.'s findings by demonstrating that this is also true in inter-firm settings. Our findings show that the effectiveness of inter-firm administrative controls depends on the interpretive capacity of suppliers. This reveals an underexplored contingency factor necessary to consider when extending control systems beyond the borders of the firm. Thus, while Spence and Rinaldi find that using governing mechanisms can guide suppliers' behavior to align with the firm's own agenda, we extend these findings by highlighting the role of suppliers' interpretive capacity affecting their *willingness* to align with the firm's agenda (Spence & Rinaldi, 2014). Therefore, an effective approach to extending sustainability initiatives on an inter-firm level implies not solely relying on administrative mechanisms, but instead incorporating capacity-building, collaborative activities (see Appendix 9.4). This allows suppliers to more effectively internalize sustainability practices in their own operations.

6.3 The Structural Boundaries of Integrating Sustainability

Our findings reinforce previous literature's claims that a key barrier to the integration of sustainability is the difficulty to fit sustainability into a business context (Durden, 2008; Laguir et al., 2019; Narayanan & Boyce, 2019; Spence & Rinaldi, 2014). Laguir et al. found that the tensions which arise when trying to monetize CSR factors could be harmful for integration as the complex process discouraged managers from integrating CSR into their decision-making (Laguir et al., 2019). We develop this idea by showing how monetization can be done in practice. To support employees in interpreting sustainability, HealthCo developed the process of quantifying sustainability-related terms (see Appendix 9.4). This included developing carbon pricing estimates, enabled through improved access to supplier data. By making sustainability factors comparable to financial indicators, the quantification process facilitated the integration of a sustainability mindset in supplier selection. It allowed employees to understand the environmental impact of their own operations by showing the cost of being unsustainable. Thus, our findings reveal that employees' own understanding of sustainability is a key factor influencing the degree of meaning they attach to it, and that quantification can be used as a way of guiding interpretation, and thereby decision-making. In

this sense, quantification enabled internalization. This illustrates how companies can reshape traditional control systems without discarding financial logics. Consequently, in line with what Gond et al. coin as the more effective approach to sustainability integration in organizations, we find that sustainability initiatives become actionable when processed through familiar financial and operational controls (Gond et al., 2012b).

Additionally, our research contributes to previous literature discussing the conflicting objectives of profitability and sustainability (Durden, 2008; Laguir et al., 2019; Narayanan & Boyce, 2019; Spence & Rinaldi, 2014). This tension is reflected in HealthCo where sustainability is a top priority, but profitability cannot be compromised. Our findings suggest that these conflicting paradigms manifest in two overarching constraints, which, to the best of our knowledge, are underexplored in previous literature. The first constraint is the institutional product market pressures forming a market readiness gap. Currently, companies are unable to fully commit to a green transition due to the unwillingness of any party to absorb the additional cost of sustainable products. The second constraint lies in the institutional financial market pressures on firms to maintain profitable growth while simultaneously reducing GHG emissions in accordance with new regulations, resulting in a growth versus absolute targets paradox. Hence, within the profitability versus sustainability paradox, we contribute to previous literature by showing that external stakeholder pressures affect the persistence of a profit-seeking logic.

Taken together, these factors currently hinder firms from fully internally integrating sustainability into MCSs. Therefore, we provide a novel contribution in terms of boundaries for sustainability control systems in the context of supply chains: Integration is necessary, but not sufficient if no one is ready to absorb the additional costs of sustainability. Thus, our findings showcase the importance of viewing supply chain sustainability controls in their larger context – the entire value chain must be examined and considered from a sustainability perspective before one party can achieve full integration. But in the current market landscape, it appears to be beyond the firm's own control to achieve full sustainability integration.

7. Conclusion

7.1 Summary

As climate change is intensifying and demands around companies' GHG emissions reductions are constantly evolving, firms must find more effective ways of meeting stakeholder obligations while continuing to flourish as a business. Our study explores how HealthCo, operating in the health and hygiene industry, integrates sustainability into their MCSs in a complex supply chain setting. By drawing on Hopwood's (1974) framework of administrative, social and self controls, we show that sustainability integration is an iterative process that is continuously shaped by the degree of internalization, the contingency factors of inter-firm relations, and institutionalized pressures. Through analysis of 10 semi-structured interviews, we find that effective integration of sustainability is dependent on the interplay of all three controls rather than their isolated use.

Our findings thus contribute to extant literature in three distinct ways. Firstly, by studying integration in a mature sustainability setting, we found insights that are underexplored in prior research. By increasing the relative weight of social controls through the implementation of a bottom-up approach to sustainability initiatives, HealthCo managed to reduce employees' inherent cognitive barriers between financial and sustainable logics. However, we also found that the optimal balance between administrative and social controls was different in a mature sustainability setting. Indeed, a re-centralized administrative approach was needed to reduce fragmentation of the overarching strategy. Most importantly, we found that the long-standing sustainability culture was a key success factor for the effectiveness of social controls, since shared norms reinforced the importance of prioritizing sustainability.

Secondly, we extend the theoretical use of Hopwood's (1974) framework beyond intra-firm boundaries. We found that in complex and heterogeneous supply chain contexts, strict administrative controls were important, but insufficient in isolation. They had to be complemented by learning-oriented social controls, such as interactive meetings and collaboration efforts, to help suppliers internalize and act on administrative controls. This emphasizes the idea that control is a reciprocal relationship, and thus, building suppliers' interpretive capacities is a key factor for ensuring effective integration of sustainability within MCSs across the supply chain. Thirdly, we add a new dimension to the sustainability-versus-profitability paradox. We found two additional issues that persist despite rigorous efforts to integrate sustainability – institutional product market pressures creating a market readiness

gap and institutional financial market pressures on profitable growth. These tensions show that while internal sustainability integration is essential, it is not sufficient if external actors are not aligned as well. Consequently, there is a need for a collective shift across the entire value chain before full integration of sustainability is possible.

In conclusion, these insights show how the integration of sustainability into MCSs is an evolving process that requires flexibility and adaptability that extend beyond intra-firm controls. Full internal alignment of administrative, social and self controls is hindered by the wider market environment where HealthCo are positioned.

7.2 Limitations and Future Research Opportunities

We encourage researchers to keep exploring how integrating sustainability into MCSs can reduce Scope 3 GHG emissions. Most prominently, we urge others to further investigate the implications of extending the sustainability controls beyond intra-firm boundaries. We acknowledge that our study is limited to a one-sided perspective due to the absence of supplier interviews. Incorporating the supplier perspective would bring deeper insights into how MCSs can guide their behavior and influence their capabilities in terms of sustainability. Similarly, examining how downstream customers in price-sensitive markets affect the impact and design of sustainability controls is an intriguing area of research. Furthermore, a complete perspective consisting of the entire value chain would bring valuable insights into how all different parties affect each other when trying to advance sustainability efforts.

Additionally, our finding of the structural boundaries ultimately limiting sustainability progress is interesting to explore further. Specifically, we are intrigued to find ways of bridging the external constraint factors and the internal sustainability-related MCSs to create conditions for full integration in terms of sustainability. We recognize that the findings of our study are not directly transferable to other supply chain contexts. We are thus eager to learn if similar implications can be found in other supply chain settings, especially where the market is less price sensitive or where the regulatory environment differs. Overall, the literature on MCSs as a tool for integration of sustainability is highly relevant for future research, as companies need to meet intensifying environmental targets. Specifically, studying how this integration can extend beyond firm boundaries is crucial for future sustainability advancements.

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9. Appendix

9.1 Appendix 1: Interview Details

Role	Time	Date
Supply Chain Finance Director	14:00–15:00	2025-10-13
Sustainable Procurement Manager	10:00–10:45	2025-10-15
Sustainability Manager	11:00–12:00	2025-10-15
Material Development Manager	13:00–14:00	2025-10-15
Global Procurement Manager 1	11:00–12:00	2025-10-20
Corporate Sustainability Reporting Director	10:00–11:00	2025-10-22
Global Procurement Director	14:30–15:30	2025-10-24
Global Procurement Manager 2	11:00–12:00	2025-10-27
Corporate Sustainability Reporting Manager	15:00–16:00	2025-10-27
Director Sustainable Procurement	11:00–11:45	2025-11-03

9.2 Appendix 2: Interview Guide Version 2

Introductory Questions:

- What is your role at [company name], what does your team look like, and what do you do in your daily work?
- How long have you been working at [company name] and what has led you to pursue your current position at [company name]?

Sustainability-related Questions:

- In your own words, what are the company's visions and targets for sustainability?
- How is sustainability incorporated in your daily tasks?
- Have you experienced a change in how sustainability topics are treated during your time at [company name]?
- Is sustainability promoted in the organizational culture and how is sustainability communicated internally?
- Which sustainability frameworks does your work contribute to specifically?
- How has [company name]'s history of working with sustainability affected the way [company name] approaches sustainability today?

Management Control-related Questions:

- Which management controls do you adopt to control for sustainability in the supply chain?
- What methods are used to track or calculate Scope 3 GHG emissions in the supply chain?
- How is the supplier selection and evaluation process conducted, and in what ways would you say that it has changed during your tenure at [company name]? How do you see it progressing in the future?
- How do you balance the tension between financially profitable and environmentally sustainable options in decision-making?
- What actions are taken if a supplier does not fulfill sustainability targets?
- What challenges do you face in influencing suppliers' GHG emissions performance?
- What is your view on the tension between GHG emissions stemming from growth and the SBTi demand for absolute GHG emissions reductions?

9.3 Appendix 3: Interview Guide Version 1

Introductory Questions:

- What is your role at [company name] and what do you do in your daily work?
- How long have you been working at [company name]?
- What has led you to pursue your current position at [company name]?

Sustainability-related Questions:

- What are the company's visions and targets for sustainability?
- How is sustainability incorporated in your daily tasks?
- Have you experienced a change in how sustainability topics are treated during your tenure at [company name]?
- What methods are used to track or calculate Scope 3 GHG emissions in the supply chain?
- Which global sustainability frameworks are you working with?
- What challenges do you face in influencing suppliers' GHG emissions performance?

Management Control related Questions:

- Which management control systems do you adopt at [company name] to ensure suppliers meet sustainability standards?

- How is the supplier selection and evaluation process conducted, and in what ways would you say that it has changed during your time at [company name]? How do you see it progressing in the future?
- Is sustainability promoted through the organizational culture, and how is it communicated internally?
- How do you evaluate whether your sustainability control systems (e.g., for supplier data) are effective?
- What opportunities or challenges in management control systems do you see in the future regarding reducing Scope 3 GHG emissions?
- How are management control systems adapted specifically to address Scope 3 GHG emissions?
- How do you balance the tension between financially profitable and environmentally sustainable options when choosing your suppliers?

9.4 Appendix 4: Table of Controls

Type of Control	Examples	Implications in HealthCo	Effectiveness
Administrative	***Overarching objectives:*** Net zero target, SBTi	Encompasses the future ambitions and commitment to sustainability, provides a direction for behavior.	By setting minimum standards and providing a roadmap for the future, the administrative controls can direct employee and supplier behavior. However, the controls are not effective in isolation, since employees and suppliers may lack the interpretive capacity to internalize the controls.
	Regulations and guidelines: Supplier code of conduct, supplier certifications, policies	Directs supplier and employee behavior through non-negotiable requirements.	
	Monitoring: Supplier ratings, scorecard, supplier	Evaluates supplier and employee performance in terms	

	comparison, forecasting processes, LCAs, GHG emissions data systems for reporting	of sustainability. Provides better GHG emissions data for forecasting processes. Utilized to evaluate opportunities in reducing Scope 3 GHG emissions.	
	Less obtrusive: Quantification (carbon pricing), Green Performance Agreements, recruitment, re-centralization	Enable employees to better understand how sustainability is translated into their daily work. Encourages supplier efforts related to sustainability. Maintains strategic coherence.	
Social	***Intra-firm:*** Internal sustainability culture, bottom-up approach, shared norms, dialogues, internal communication, training programs	Creates shared mindsets and understanding of sustainability.	The social controls lay the foundation for how the administrative controls will be interpreted. Internally, by fostering a strong sustainability culture and involving departments in creating sustainability initiatives meaningful to them, social controls form the bridge between administrative controls and self controls. With suppliers, social controls
	Inter-firm: Interactive dialogues, regular meetings, supplier capacity-building	Builds trust and transparency in supplier relations. Fosters sustainability engagement by	

	initiatives, webinars, workshops	building capabilities through a collaborative approach	translate the administrative expectations by building interpretive capacity.
Self	Employees' and suppliers' interpretations and personal identification with sustainability work: The internalization of sustainability.	Voluntary advancement in sustainability initiatives, increased motivation to perform in terms of sustainability, innovation.	By internalizing administrative and social controls, employees and suppliers can attach personal meaning to them, ultimately sparking their motivation to work towards sustainability objectives. Strong internalization thus reinforces social and administrative controls.

9.5 Appendix 5: Use of Generative AI

In writing this thesis, we have used one AI-based large language model, OpenAI's ChatGPT 5.1, developed by OpenAI. AI was used continuously throughout the process of writing this thesis. We used it exclusively for improving spelling, grammar and overall readability. This included correcting punctuations, resolving any spelling inconsistencies and grammatical corrections. The tool enabled us to enhance the readability of our thesis as it identified linguistic errors, allowing our text to be more aligned with academic writing conventions. We critically reviewed all suggestions to ensure accuracy and consistency with the aim of our thesis. We also recognize the inherent risks of using AI in academic work, particularly the potential for hallucinated or incorrect content. Therefore, we did not use AI models to gather information or generate empirical or theoretical material.