SCHOOL OF ECONOMICS AND MANAGEMENT

Corporate Sustainability Strategy: From Formulation to Implementation

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A Single-Case Study of the Manufacturing Industry Examining Strategy Implementation Tools And Influences of Contextual Factors

By

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Abstract

Title: Corporate Sustainability Strategy: From Formulation to Implementation – A Single-Case Study of the Manufacturing Industry Examining Strategy Implementation Tools And Influences of Contextual Factors

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Purpose: This thesis aims at analyzing the process from corporate sustainability strategy formulation to implementation in the EU manufacturing industry exemplified by eight companies of different countries of registration, size, legal forms, and industry sectors.

Theoretical framework: While the emphasis in the literature is placed on strategy formulation, implementation has received less attention. Established tools circulate around Balanced Scorecards while emerging methods comprise conceptual models and digital appliances.

Methodology: Qualitative single-case study with an abductive research approach

Empirical foundation: The empirical data was collected thanks to semi-structured interviews with employees and managers of eight manufacturing companies. Interviewees hold positions related to sustainability practices and are involved in sustainability strategy implementation processes. In addition, two interviews with sustainability consultants were conducted.

Findings: While the formulation of sustainability strategies seems mastered by organizations, the lack of knowledge of managers hinder its implementation; particularly in target design and choice of implementation tools. Contextual factors, notably the country of registration, seem to have an impact on the implementation of formulated sustainability strategies.

Contribution: This research contributes to the literature on strategic management and PMS by pointing out the link between sustainability strategy implementation and different contextual factors, namely country of registration, company size, legal form, and industry.

Keywords: Corporate Sustainability Strategy, Strategy Formulation, Strategy Implementation, Contextual Factors

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Lund, May 27th, 2022

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Table of Contents

List of Figures

List of Tables

1. Introduction

The present thesis was written in co-creation by Oriane Rütsche and Jakob Krenn [researchers] in the Master of Science Program in International Strategic Management at Lund University School of Economics and Management, Sweden. Moreover, the study was conducted in collaboration with the German consultancy *MHP Management- und IT-Beratung GmbH* [MHP], which supported the topic selection and data collection by providing overall guidance.

1.1 Topic Background and Relevance

The world finds itself in the age of the Anthropocene, the period of large-scale human effects on planet Earth (Crutzen, 2006). Humanity has been changing essential environmental conditions in a relatively short amount of time, mainly for the worse (Malhi, 2017). Awareness of mitigating this trend has been rising in the last decades and, particularly, in the last couple of years (Baiardi & Morana, 2021). A widely accepted definition of sustainable development resides in the way to "meet the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p.15). Sustainability and its three pillars, *ecological, social, and economic,* have become a major topic for consumers, companies, and governments (Buerke, Straatmann, Lin-Hi & Müller, 2017; Gong, Gao, Koh, Sutcliffe & Cullen, 2019). The focus of this thesis will be put on the role of public and private companies in this matter, without prioritizing their significance over individuals or governmental institutions.

On the ecological side, the amount of greenhouse gas [GHG] emissions produced by companies worldwide is increasing (IEA, 2022). Companies are held more accountable than ever by stakeholders (Cadez, Czerny & Letmathe, 2019) and need to lower their ecological footprint, as decided in the Paris Agreement 2015 (UNFCCC, n.d.). The latest report of the Intergovernmental Panel on Climate Change [IPCC] (2022) emphasizes the sense of urgency by warning that global carbon emissions need to be reduced by 43% until 2030 and that "half measures are no longer an option" (IPCC, 2022, p.2). From a social perspective, growing pressure to serve a broader variety of stakeholders instead of solely focusing on shareholders demands companies to act in a "socially responsible" way by reflecting the interests of society (Chandler, 2019, p.69). Firms are also required to deliver sound economic performance to survive in a system dominated by capitalist mechanisms. In turn, this is positively interrelated with the first two pillars, as progress

in ecological and social sustainability tends to both reduce costs and increase revenue (Hristov & Chirico, 2019).

Although ambitious targets are often publicly stated through a relevant strategy formulation, the implementation, i.e. the translation into concrete actions, is often lacking (Engert & Baumgartner, 2016). Regarding the threefold challenge of sustainability, it is widely observed that there is a tendency for organizations to struggle with problems of organizational inertia (Schön, 1971), lack of clarity (Hristov, Chirico & Ranalli, 2022), and expertise (Adams & McNicholas, 2007) when it comes to strategy implementation. This study focuses on the manufacturing industry, considered one of the main GHG emitters, with 24% of total emissions in the US (EPA, 2020) and 21% in Europe (Roland Berger, 2019). Additionally to emissions of GHG, manufacturing processes significantly contribute to waste generation and pollution of air, land and water while consuming a lot of natural resources like water (Botto, 2019). Moreover, the said industry is, on the one hand, among the main originators of both environmental and social problems and, on the other side, one of the essential levers for change through economic growth (Baldwin, Allen, Winder & Ridgway, 2005). The focus on the European Union has been chosen to examine a predominantly common legislative system, benefit from shorter cultural distances, and due to better availability and proximity to the researchers.

In contrast to external corporate sustainability reporting, which is extensively covered in the literature (Herzig & Schaltegger, 2006), the body of research entails gaps in the following dimension. Internal reporting in the sense of tools and models for sustainability strategy implementation considering different contextual factors has received little attention. Namely, contextual factors considered are country of registration, company size, and legal form. This neglect can be explained by the fact that information about external reporting is more easily accessible and more relevant to external stakeholders. Furthermore, investigating the applied implementation solutions in different companies appears challenging due to the great variety in implementation processes and the non-disclosed nature of internal practices.

1.2 Purpose Statement and Research Questions

The purpose of this thesis is to explore the translation of corporate sustainability strategies from formulation into implementation through a single-case study of the manufacturing industry with eight units of analysis representing manufacturing companies based in the EU. In particular, managers and employees working with sustainability are interviewed to develop an understanding of the respective firms' sustainability strategy implementation. By the latter, the researchers comprehend both the practice of the actual implementation and its monitoring. The joint consideration provides more valuable insights into the realization of formulated strategies than the sole treatment of either element (cf. chapter 2.3.1). In particular, the thesis' scope circulates around internal reporting as an integral constituent of companys' practices. The tools and methods used to facilitate internal reporting will, therefore, be introduced. The firms' motivation for the sustainability strategy formulation, the different steps of the integration process, and the obstacles encountered are essential elements of the study. By including companies of different countries of registration, company sizes, and legal forms, an analysis of decisive contextual factors is deemed valuable. The following research question has been formulated:

(1) How do EU manufacturing companies translate sustainability strategies from formulation into implementation through tools and models?

Moreover, the consecutive sub-question is:

(1a) How does this translation process differ among manufacturing companies regarding contextual factors, namely an organization's country of registration, size, and legal form?

1.3 Contributions of the Thesis

The contributions of this thesis are valuable for both scholars and practitioners. On the one hand, the thesis closes a gap in the literature as it enhances the understanding of sustainability strategy implementation practices and the influences of contextual factors at a more profound level. Furthermore, the results indicate how inclined practitioners are toward frameworks proposed in the literature. On the other hand, practitioners can use the provided examples of strategy

implementation and benefit from the experiences of different organizations. Additionally, influences of contextual factors might suggest the application of suitable tools according to respective circumstances. Due to the outlined globally increasing importance of sustainability as an integral part of corporate strategy, the thesis topic is considered highly relevant for the field of international strategic management.

1.4 Outline of the Thesis

The second chapter summarizes the literature related to the research question. This sector includes different research areas, such as sustainability strategy formulation and its drivers, difficulties of strategy implementation, and implementation tools and models. The review concludes with a preliminary framework derived from the studied literature. In chapter three, the applied methodology in this thesis is delineated and motivated. In particular, the research approach, sample selection, data collection, and data analysis are described and justified. Furthermore, the thesis' quality is assessed with respect to validity and reliability. Moreover, ethical considerations are disclosed. Chapter four entails the results of the empirical research that were derived from the data collection process. The units of analysis are first briefly introduced individually and, then, summarized regarding commonalities and variations along with thematic observations. In chapter five, empirical results are analyzed and discussed in comparison to the literature presented in chapter two. Finally, chapter six concludes with the thesis' contribution to scholars and practitioners, as well as its limitations and suggestions for further research.

2. Literature Review

With respect to Webster and Watson (2002), it is important for any academic research to review the existing literature. Thus, the following literature review aims to provide the reader with an overview of the different fields related to sustainability strategies, their formulation, implementation, and tools to ease the process. The more specific objective of this literature review is to present evidence of the translation problem between corporate sustainability strategy formulation and its implementation and to explain this phenomenon and its implications for companies. While the body of literature has covered the difficulties related to the said translation for more than two decades, there is little knowledge about solutions to overcome this issue. Thus, tools and models will be displayed, as well as the contextual factors that managers should consider regarding the implementation of sustainability strategies in their organization.

2.1 Corporate Sustainability

The terms Corporate Social Responsibility [CSR] and Sustainability are often used interchangeably. Sometimes, however, they are considered separately. The most notable difference resides in the assumption that CSR focuses on social issues, while sustainability aims at environmental concerns (Strand, Freeman & Hockerts, 2014). Nevertheless, the researchers will follow a joint understanding of the two concepts in line with Strand, Freeman, and Hockerts (2014) and use the merged term *Corporate Sustainability,* which has been established in both academic literature and industry journals (Gallo & Christensen, 2011).

According to Salvioni and Gannari (2016), corporate sustainability is defined as a set of practices that favors stakeholder interdependence and links them to a company's management while providing socio-environmental responsibility and financial performance. According to Dyllick and Hockerts (2002), corporate sustainability's objective is to meet the needs of all of the company's direct and indirect current stakeholders without compromising its ability to fulfill the needs of future stakeholders. Corporate sustainability is also defined as a way to "encompass the economic, legal, ethical, and philanthropic expectations placed on organizations by society at a given point in time" (Carroll & Buchholtz, 2000, p.35). During the last decades, sustainability has benefited from increased awareness by the general public (Hennigfeld, Pohl & Tolhurst, 2006). As society faces the magnitude of problems like global climate change and its potential

future consequences, notably thanks to ongoing reporting by the IPCC (2022), the corporate world is held more and more accountable (Adams & Zutshi, 2008).

Sustainability is often referred to as a way to protect the environment, which is the core of sustainable dimensions (Hristov & Chirico, 2019). Environmental sustainability represents the capability to ensure the reproducibility of natural resources while protecting the fundamental functions of the environment in the future (Hristov & Chirico, 2019). Here, a dominant factor is the reduction of GHG emissions at three different levels of capacity. While scope 1 entails self-made GHG emissions and scope 2 includes the energy used for operations, the largest part of a company's emissions often resides in scope 3, where the entire supply chain and product usage are incorporated (Deloitte, n.d.). Nowadays, GHG emissions are measured and reported as being higher than ever before (IEA, 2022).

Although GHG emissions and other environmental aspects are fundamental, they are not the only pillar included in the concept of sustainability. The *triple bottom line [TBL]* is omnipresent in the existing literature, referring to an accounting framework that measures the sustainability impact of corporate entities (Amos, Uniamikogbo & Atu, 2016). It proposes to extend sustainability by two other pillars: social and economic dimensions. Social sustainability can be defined as the ability of a firm to provide for citizens' welfare with an equal distribution among different classes. Meanwhile, economic sustainability refers to the capacity of firms to generate durable growth, as well as revenue and employment, and to employ resources efficiently (Hristov & Chirico, 2019).

2.2 Corporate Sustainability Strategy Formulation

2.2.1 Definition

Strategy formulation is defined as the way a strategy is formed and, together with strategy content, it comprises the two facets of strategic management (Andrews, Boyne, Law & Walker, 2009). Cohen and Cyert (1973) propose seven steps in the strategy formulation process ranging from formulation of goals, analysis of the environment, assigning quantitative values to the goals, the micro-process of strategy formulation, the gap analysis, strategic search to selecting

the portfolio of strategic alternatives. In this thesis, the focus is placed on sustainability strategies as separate or integrated undertakings regarding the overall corporate strategy.

2.2.2 The Role of the Context

Concerning the motivation for corporate sustainability strategies, some explanation can be found in contingency theory, which states that firms' best organizational structure and actions are dependent on eventuality factors (Tosi & Slocum, 1984). Instead of a single best way to organize a firm, contingencies of internal, e.g. production technologies and external nature, shape the optimal approach for organizations (Woodward, 1980). Climate change and the surge in awareness regarding firms' harmful contribution to the environment and society can be considered transitioning contingency factors. Since a fit between firm characteristics and contingencies is linked with high performance, corporations are impelled to alter strategies and structures accordingly (Donaldson, 2001). Furthermore, sustainability practices, in turn, are found to be dependent on contingency factors, like uncertainty and competitiveness (Maletič, Maletič & Gomišček, 2018). Particularly for this study, the researchers expand on this notion regarding factors of the country of registration, company size, and legal form to analyze which impact these contextual factors have on corporate sustainability strategy implementation.

In order to increase the said fit between organization and contingencies, corporations are impelled to design corresponding strategies for the enhancement of sustainability performance. Corporate sustainability strategies are found to be universally relevant accounting for a significant part of the Agenda 2030 for Sustainable Development, a treaty signed by all United Nations member states to improve sustainability practices (SDGS, n.d). Thus, it is a current topic in today's society (Rodrigues & Franco, 2019). Bonn and Fisher (2011) find it crucial to consider sustainability issues in a company's strategic decisions, as corporate sustainability represents the missing ingredient of corporate strategy. However, it can be complex for a company to establish a sustainability strategy, as there is no pertinent formula to be applied. The strategy must be aligned with different contextual factors of the organization, such as the industry it is assigned to, the type of products, the expectations of stakeholders, legal requirements as well as policies, market changes, and internal processes and structures (Engert, Rauter & Baumgartner, 2016).

Furthermore, it is crucial to align the chosen strategy with the organizational structure and processes (Engert, Rauter & Baumgartner, 2016).

2.2.3 Drivers of Sustainability Strategy Formulation

The formulation of sustainability strategies happens for different reasons (Fig.1). According to James, Ghobadian, Viney, and Liu (1999), legal requirements are the first reason for companies of every industry to formulate sustainability strategies, which demonstrates its preeminent importance. According to Clune and Zehnder (2018), legal frameworks entail a crucial role in formulating sustainability strategies and are pillars of its integration. Legal regulations involving sustainability are consistently evolving, notably concerning external reporting. Nowadays, only corporations with more than 500 employees are coerced to publish external sustainability reports. In the future, this guideline will potentially concern almost all organizations listed on regulated markets (European Commission, n.d).

However, compliance with legal frameworks is not the only argument for companies to report externally, as this practice also enables transparency and accountability in the eyes of external stakeholders (Boiral & Heras-Saizarbitoria, 2019). The importance of different stakeholder groups differs among industries. In the manufacturing industry, investors are considered the second most important stakeholder, after customers and before employees and suppliers (Kocmanová & Dočekalová, 2013), which gives even more importance to external reporting practices. Companies that do not publish abundant information regarding their sustainability practices are considered riskier by financial investors. Thus, they are less inclined to invest in these organizations (Kocmanová & Dočekalová, 2013). According to Salvioni and Gennari (2017), the implementation of corporate sustainability leads to a diminution of corporate risk and value creation in the medium and long term. Therefore, formulating and implementing sustainability strategies is a relevant way to attain shareholder wealth maximization (O'Dwyer, 2003). Moreover, it can contribute to the improvement of conditions for various groups of stakeholders, including the company's surrounding communities (Hristov, Chirico & Ranalli, 2021). These findings do not depend on the ownership structure of organizations and the characteristics of risk capital markets (Salvioni & Gennari, 2017). While investors seem an important driver of sustainability strategy formulation, the opposite view has also been expressed

in literature, as shareholders tend to favor short-termism (Roe, 2013). However, sustainability is a long-term investment for a firm, as financial results have been proved to take up to two to three years to be visible (Hristov, Chirico & Appolloni, 2019).

In addition to satisfying external stakeholders, it is also crucial for companies to satisfy internal stakeholders, notably employees, which constitutes a further driver of sustainability strategy formulation. According to Casey and Sieber (2016), integrating sustainability in a company and involving employees in the respective actions makes the workforce perceive their jobs as more meaningful. Increased engagement is expected, which, in turn, boosts the profitability of the organization (Casey & Sieber, 2016). Similar conclusions have been drawn by Groen, Wouters, and Wilderom (2012), who highlighted the importance of employee involvement in developing performance management systems [PMS]. For instance, employee involvement is highlighted in the elaboration of targets, which have a fundamental impact on an employee's attitude, social pressure, and ability to take initiatives (Groen, Wouters & Wilderom, 2012). In turn, joint development of PMS can lead to higher employee performance which, in turn, hones firm profitability (Groen, Wouters & Wilderom, 2017). In conclusion, formulating sustainability initiatives can bring a sense of purpose to the workers, and involving them in the implementation process will provide employees with higher motivation which is beneficial for the firm.

Besides, satisfying both external and internal stakeholders can lead to an improved reputation of the firm, which leads to new opportunities regarding collaborations, market segments, customer loyalty, and social initiatives; this again can lead to an improved brand value (Hristov, Chirico & Ranalli, 2021). With respect to Gomez-Trujillo, Velez-Ocampo, and Gonzalez-Perez (2020), sustainability can be seen as a forerunner of corporate reputation and a tool to improve stakeholders' acceptance and perception of firm activities. Moreover, it has a positive impact on a company's organizational culture and allows reinforcement of its overall strategy (Hristov, Chirico & Ranalli, 2021).

An additional common factor in sustainability strategy formulation resides in the quest for competitive advantage (Hennigfeld, Pohl & Tolhurst, 2006). According to Nidumolu, Prahalad & Rangaswami (2009), viewing compliance as an opportunity and complying with the most

stringent rules before legal enforcement can provide organizations with a first-mover advantage [FMA]. The authors argue that such practices can provide more time to experiment with new materials, technologies, and processes (Nidumolu, Prahalad & Rangaswami, 2009). Secondly, considering compliance as an opportunity allows the company to gain an economic advantage of being allowed to sell its products in different regions, as it complies with the strictest regulations. Companies also have the opportunity to attain economies of scale, as well as supply chain optimization (Nidumolu, Prahalad & Rangaswami, 2009).

Moreover, sustainability strategies can benefit a firm financially. It is crucial that companies realize that what is beneficial for society does not necessarily impact their organization negatively. In turn, what benefits the firm does not have to be a financial burden to society (Hillman & Keim, 2001). It has been proven that implementing sustainability strategies leads to positive effects on a firm's financial performance due to an increase in productivity and efficiency and a reduction in costs. This can be caused by different aspects such as the diminution of resources and energy consumption (Hristov, Chirico & Appolloni, 2019). However, this positive impact is not consistently understood by corporate entities, who still regularly perceive sustainability as a cost. However, firms must be patient, as financial returns have been observed to arise after an average of two to three years. This period is necessary to align business units and initiatives (Hristov, Chirico & Appolloni, 2019).

Further reasons for the integration of sustainability strategies also include philanthropic and ethical considerations. Hennigfeld, Pohl, and Tolhurst (2006) base their research on Carroll's (1991) Four Parts Model of CSR and consider the concept a multi-layered topic including four interrelated dimensions: economic, legal, ethical, and philanthropic. Wang, Choi, and Li (2008) find that corporate philanthropy improves a firm's financial performance, but in larger magnitudes also generates different kinds of countering costs.

Furthermore, there is a strong correlation between innovation and sustainability, and the desire of companies to innovate is a further driver of sustainability strategy formulation (Clune and Zehnder, 2018). In addition to legal frameworks and economic advantage, innovation represents one of the three main pillars of sustainability strategy formulation according to Clune and

Zehnder (2018). However, the relationship between innovation and sustainability is interrelated, as sustainability has also been described as a rationale for innovation (Nidumolu, Prahalad & Rangaswami, 2009; Seebode, Jeanrenaud & Bessant, 2012).

To conclude, it is crucial for any company to develop a sustainability strategy. This will not only bring positive changes to society and the environment but also allow innovation advancements. Moreover, an organization largely benefits thanks to an improved reputation, a positive impact on its organizational culture, competitive and economic advantages, and the satisfaction of external and internal stakeholders

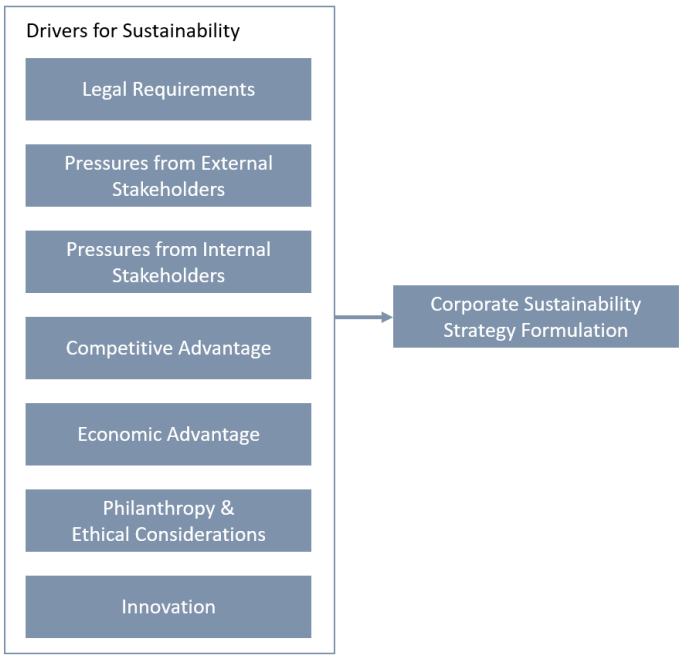

Figure 1: Drivers of Sustainability Strategy Formulation *(Developed by researchers)*

The previously cited drivers for the formulation of sustainability strategies depend on different contextual factors (Fig.2). According to James et al. (1999), the difference in the industry is the most preeminent factor for the distinct reasons to create sustainability strategies. The studied sample of five industries appeared to score differently in prioritizing possible reasons for action.

	Manufacturing	Service	Financial	Petro-Chemical	Utilities
Demands of customers	4	2=	6	4	3=
Actions of competitors	7	4	7	7	7
Legal requirements	1	1	1	1	1=
Possibility of prosecution	2	2=	2	2=	1=
Sector/industry standards	3	5	4	2=	5
Social pressure	5	6	3	5	3=
Financial markets	6	7	5	6	6

Figure 2: Factors Influencing Sustainability Strategy Formulation (James et al. 1999, p.342)

In the manufacturing industry, legal requirements and their potential consequences in case of non-compliance appear to be of the biggest influence. It is followed by the industry and sector standards, demands of customers, social pressure, and, lastly, financial markets (James et al. 1999). Nevertheless, those results must be interpreted with caution, as this research was conducted more than twenty years ago and since most organizations have only started to recognize the need to integrate sustainable practices during the last twenty years (Cantele & Zardini, 2018).

2.3 Corporate Sustainability Strategy Implementation

2.3.1 Definition

Cohen and Cyert (1973) recognize strategy implementation as the second part of a threefold spectrum (formulation, implementation, monitoring) in the strategy process. However, the researchers will use a merged understanding of strategy implementation that comprises both the actual implementation and monitoring of indicators. This is motivated by the thesis' scope of exploring different ways of strategy formulation being realized, which entails both implementation and monitoring. While strategy formulation is typically a domain of top and senior management, its implementation rather circulates around middle managers and employees (Noble, 1999; Bower & Gilbert, 2007). In comparison to strategy formulation, Mildred, Smith, and Toombs (2019, p.14) propose to consider "(strategy) implementation expertise and capability as an equally important entity for creating and maintaining a sustainable competitive advantage".

2.3.2 Common Difficulties

Figure 3: Reasons for Difficulties in Strategy Implementation *(Developed by researchers)*

While awareness regarding the role of companies in terms of sustainability and the comprehension of corresponding positive effects have increased tremendously during the last decade, companies still have difficulties in implementing sustainability strategies (Fig.3). In fact, fragmentation is shown between strategy planning, i.e. formulation, and strategy inclusion, i.e. implementation (Rodrigues & Franco, 2019). This misalignment has been problematic for a long time, as it was already mentioned in the literature decades ago. For instance, Zahn (1979) showed the difference in companies' capabilities in formulation and implementation and expressed that strategy formulation abilities were more developed than capabilities to implement these strategies. Moreover, Figge, Hahn, Schaltegger, and Wagner (2002) explained that most companies did not integrate their environmental and social systems into the organization's general management. Thus, this leads to the consequence that the link between economic success and the contribution of social and environmental actions remains misunderstood (Figge et al. 2002). James et al. (1999) explained that the misalignment is created by little awareness of the required abilities necessary to implement a respective sustainability strategy and a mismatch between firms' day-to-day activities and formal policies. More recent studies on the topic suggest that this phenomenon remains problematic nowadays. Notably, Galbreath (2009) mentions that organizations that lack a strategic approach to implementing sustainability are numerous. In turn, Engert, Rauter, and Baumgartner (2016) explain that the integration process of implementing sustainability dimensions in a company's strategy requires an increased focus

on learning structures and fundamental change processes. The misalignment issue appears for several reasons, which are delineated in the following paragraphs.

According to Hristov, Chirico, and Ranalli (2021), the main reason for the disintegration of sustainability strategies is the lack of clarity regarding the advantages of integrating sustainability into the corporate strategy. Other cited reasons by this study include the difficulty of quantifying costs and benefits of the implementation and the fact that sustainability remains viewed as an expense for a large number of companies (Hristov, Chirico & Ranalli, 2021). Thus, there is an essential confusion among practitioners regarding the reasons and the implementation process of sustainability strategies. A further issue explained by Adams and McNicholas (2007) resides in executive managers' lack of knowledge and expertise.

Common obstacles hindering the process of strategy implementation also reside in organizational change, defined by Kotter (1995, p.1) as making "fundamental changes in how business is conducted to help cope with a new, more challenging market environment." The outlined transitioning context for firms regarding sustainability (cf. chapter 2.2.2) is likely to necessitate some form of organizational change. In this regard, Kotter, Akhtar, and Gupta (2021) suggest mitigating the mode of survival (activated by threats and leading to stress) and activating the thrive mode (activated by opportunities and leading to enthusiasm) in a large part of the organization. The former can be achieved by reducing an overload of reports and updates as well as a proactive and brief communication about facts, next steps, and expected outcomes. The latter is reached by informing about opportunities, celebrating successes, and delegating control to benefit from individuals' contributions (Kotter, Akhtar & Gupta, 2021).

Regarding the drivers fertilizing a successful strategy integration, Engert, Rauter, and Baumgartner (2016) mention the importance of employee motivation and qualification to conduct strategy implementation. To increase the workers' intrinsic motivation, Groen, Wouters, and Wilderom (2012) highlight the importance of involving employees in the PMS system development (cf. chapter 2.2.3). Additionally, Adams and McNicholas (2007) insist on the importance of group dynamics. The theory is explained by Lewin (1947), which states that every employee shall be included in the change. Involving only certain individuals in the

implementation would not work due to the absence of group pressure to conform. Engert, Rauter, and Baumgartner (2016) highlight the importance of reward systems and regular meetings to improve internal communication and, thus, foster better employee involvement. However, Chamorro-Premuzic (2013) questions the positive impact of issuing financial rewards, as it can crowd out intrinsic motivation, especially for tasks perceived as pleasing and attractive by an employee or manager.

These findings are also relevant for sustainability and contribute to explaining the struggles related to corporate sustainability strategy implementation. Adams and McNicholas (2007) emphasize the relationship between sustainability and organizational change theories and discuss the importance of Lewin's (1947) 3-step theory of change (Appendix B), which describes the status quo as a balance of opposing forces. The authors suggest that this model should be used to improve sustainability reporting (Adams & McNicholas, 2007), which, in turn, will contribute to driving the implementation of sustainability strategies. Here, the importance of tools favoring internal reporting, such as BSC, is highlighted.

Furthermore, Adams & McNicholas (2007) mention the importance of stakeholder engagement in the unfreezing step of Lewin's model. These findings conclude that integrating sustainability into a company can result in organizational change (Adams & McNicholas, 2007). Many organizations are aware of the importance of integrating sustainability strategies into their core strategy and the benefits that this implementation can provide them. Nevertheless, the tendency of firms to resist change (Larson & Lomi, 2003), makes these changes complex and hinders the process of strategy implementation.

Lastly, a further reason for the misalignment between sustainability strategy formulation and implementation is the issue of greenwashing. This lack of implementation can be caused by the quest for competitive advantage and economic benefits from organizations that seek to benefit from a sustainable reputation without having to invest largely in their operations. According to Gatti, Seele, and Rademacher (2019) voluntary CSR actions can facilitate the implementation of greenwashing practices. Corporate ESG ratings fertilize greenwashing due to low validity and reliability that, e.g., comes with questionable measurement approaches and different assessment

mechanisms by rating providers (Simpson, Rathi & Kishan, 2021). To summarize, there are different reasons why certain companies still struggle with the process of integrating formulated sustainability strategies into their daily operations. Theories of organizational change help to understand these issues and emphasize that the unwillingness or inability to change is not only present in the field of sustainability.

2.3.3 Contextual Factors regarding Strategy Implementation

To overcome issues related to sustainability strategy implementation, companies must adapt their practices to the conditions of their organization, in terms of country of registration, company size, and legal form. Consequently, the next section will outline contextual factors for companies to consider while planning the implementation of their sustainability strategy.

Country of Registration

Any strategy implementation approach must be developed consistently with the cultural values and legal regulations a company has to cope with in the respective country (López‐Arceiz, Del Río & Bellostas, 2020). Hofstede (1994) has developed a methodology to depict differences in national culture in different dimensions (Fig.4). The approach includes six different aspects, ranging from Power Distance [PDI], Individualism [IDV], Masculinity [MAS], Uncertainty Avoidance [UAI] to Long-Term Orientation [LTO] (Hofstede, 1994). The dimension of Indulgence [IVR], meanwhile, was added later (Hofstede, Hofstede & Minkov, 2010). Although it has been argued that national culture is determining organizational culture to only a limited extent (Bhaskaran & Sukumaran, 2007), there is compelling evidence for a stronger influencing linkage between national and organizational culture (Alam, 2017; Nelson & Gopalan, 2003). While the distinct scores in the respective dimensions can produce different qualitative perceptions of corporate behavior (Ringov & Zollo, 2007), national culture also exerts influence on strategy implementation (Cotton, McFarlin & Sweeney, 1993). Regarding sustainability strategy, high PDI between managers and employees, for example, is likely to be associated with a top-down approach regarding the implementation of sustainability. Meanwhile, dimensions MAS, UAI, and LTO do not have a significant influence on the said implementation (Diamastuti, Nastiti & Khoirina, 2020).

Despite similar legal frameworks due to their membership in the European Union, the different countries of registration have distinct approaches and histories regarding sustainability. Scandinavian countries and companies have been employing respective practices for a longer time and are considered among the global sustainability leaders (Strand, Freeman & Hockerts, 2014). The scores between Denmark and Sweden do not differ tremendously due to relatively short cultural distance. Therefore, the two countries are considered one joint region of *Scandinavia* in the further course of the thesis. Comparing the said region to Germany, however, notable divergences are considered in MAS, UAI, LTO, and IVR, while PDI and IDV scores appear quite similar. Thus, the country of registration is regarded as an important contextual factor in analyzing a company's sustainability strategy implementation process.

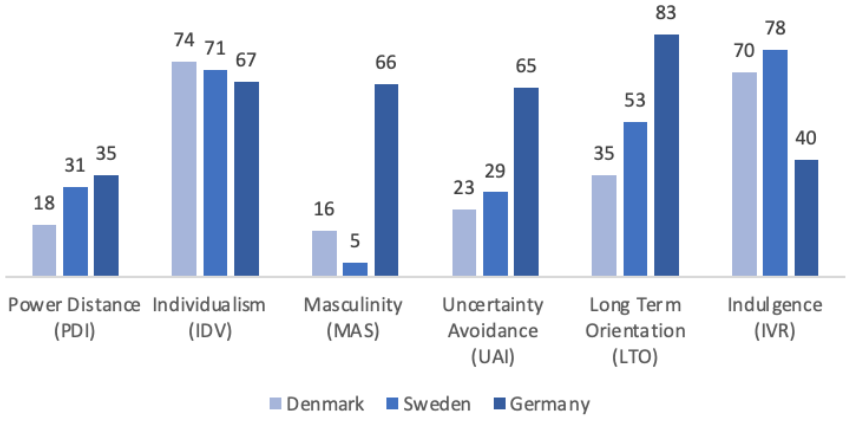

Figure 4: Hofstede's Cultural Dimensions (Hofstede Insights, n.d.)

Company Size

Another preeminent factor to consider when implementing a sustainability strategy is the company size, as different legal policies apply to organizations of different sizes (López-Arceiz, Del Río & Bellostas, 2020). Furthermore, larger companies, especially in lower-impact industries, have integrated more sustainability indicators into their PMS (Zharfpeykan & Akroyd, 2022). The reasons for this larger integration are numerous and include wider availability of financial resources (Gallo & Christensen, 2011) and better access to skilled workers (Zharfpeykan & Akroyd, 2022).

Legal Form

As delineated in chapter 2.2.4, public companies in the manufacturing industry with more than 500 employees are already prompted to publish sustainability reports (European Commission, n.d). Gallo and Christensen (2011) highlighted that public companies practice sustainability reporting more frequently. Therefore, a higher emphasis and a distinct approach to strategy implementation are likely to be a consequence. Sirsly and Sur (2013) found out that family-owned firms rather tend to base sustainability strategy implementation on ideological motivation. In contrast, institutional owners, e.g. mutual funds, consider the integration of sustainability a risk-mitigating undertaking. Moreover, corporate owners, e.g. an enterprise owning shares in another company, are more inclined to capability building in terms of sustainability (Sirsly & Sur, 2013).

2.4 Sustainability Strategy Implementation Tools

According to Mildred, Smith, and Toombs (2019), the failure of many strategy implementation efforts can be explained by the scarcity of conceptual models and implementation tools in strategy execution. Windolph, Harms, and Schaltegger (2014) suggest a strong correlation between awareness and the application of sustainability management tools. Consequently, the following subchapter will focus on potential solutions to resolve the problem of aligning formulation and implementation of sustainability strategies thanks to tools and methods.

2.4.1 Relevance of Implementation Tools

While 80% of companies globally now publish sustainability information regarding their organization (KPMG, 2020), the information is not well integrated into their PMS and remains gathered on an ad hoc basis (Zharfpeykan & Akroyd, 2022). Finding ways of measuring and quantifying sustainability is complex since there is no predefined universal framework nor consensus on specific indicators to measure certain key issues regarding sustainability (Sokya & Bateman, 2012). Discovering tools to improve this quantification is essential because it is the first step in incorporating sustainability dimensions within a company's corporate strategy. This integration leads to a strategic alignment, and, thus, to the creation of competitive advantage and increased sustainability value (Hristov & Chirico, 2019). Furthermore, it is essential to link

business strategy and sustainability reporting with performance management since business sustainability requires stakeholder involvement (Schaltegger & Wagner, 2006).

2.4.2 Key Performance Indicators

KPIs measure the results of actions to favor continuous progress (Fortuin, 1988). As they are a way to quantify progress in real-time, they are a crucial instrument to bridge sustainability initiatives and corporate strategy, thanks to their contribution to the understanding of the company's direction (Hristov, Chirico & Ranalli, 2021). The strategic alignment between the sustainability strategy and the different indicators permits linking strategy and actions, which leads to the effective implementation of the sustainability strategy early in the process, in its formulation stage (Hristov, Chirico & Ranalli, 2021). In sustainability, indicators are often referred to as sustainable performance indicators [SPI] and are used to quantify the organization's sustainability performance (Hristov, Chirico & Ranalli, 2021). Research on sustainability reporting exposes lists of SPI grouped to measure environmental, economic, and social aspects of a company's performance (Hristov & Chirico, 2019; Rahdari & Anvary, 2015). Notably, Hristov and Chirico (2019) (Fig.5) identified twelve indicators aligning with the three dimensions of the TBL. Rahdari and Anvary (2015), in turn, came up with a list based on the ESG dimensions (Appendix C). As guidance for other companies evolving in this sector, Amrina and Yusof (2011) came up with a list based on the TBL which can serve companies in the manufacturing industry as a reference point (Appendix D). While providing an example for companies in the sector, this research also highlights the need for companies to develop a list of indicators aligned with specific needs and characteristics of a firm.

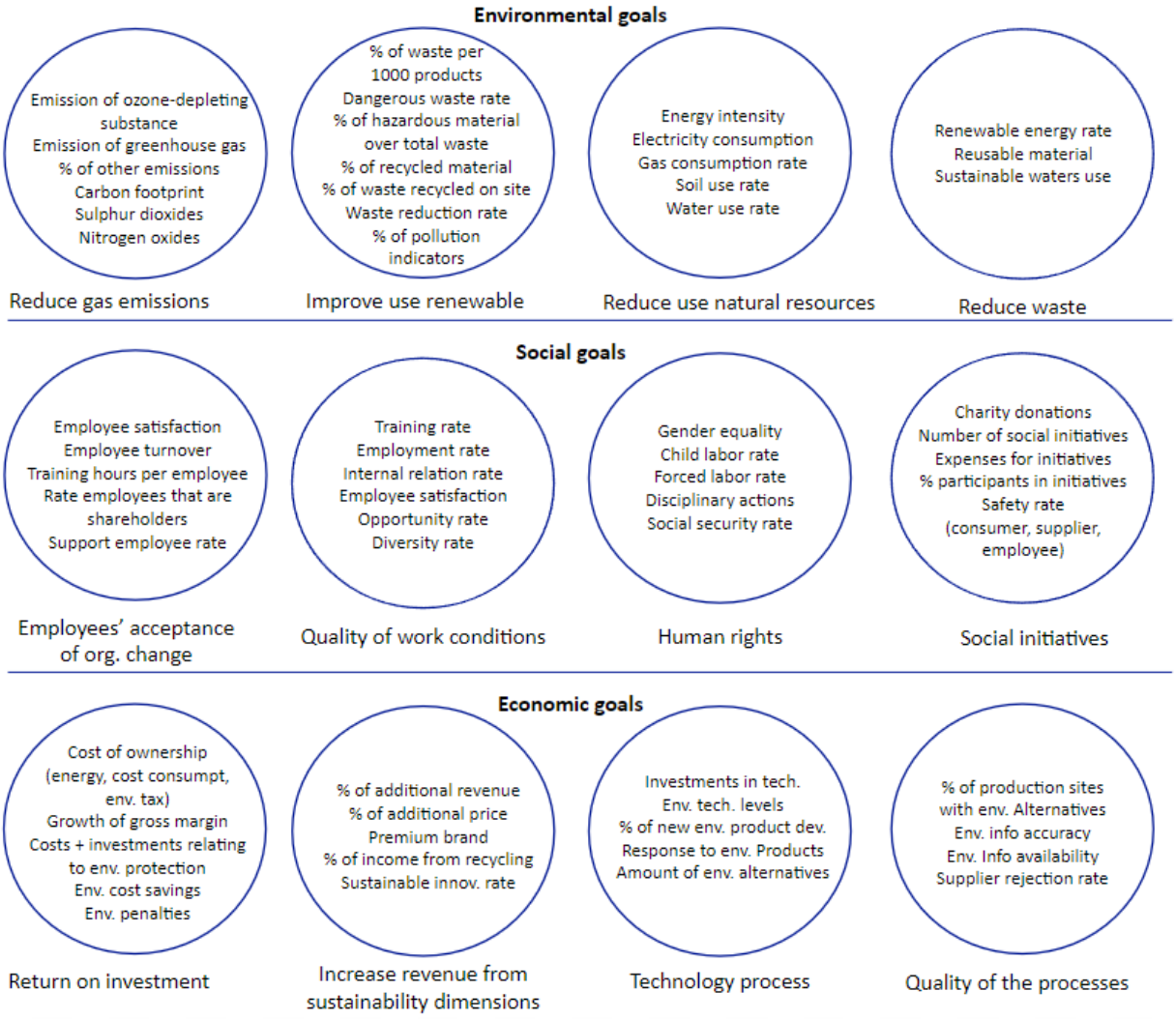

Figure 5: Sustainability Performance Indicators (Hristov & Chirico, 2019, p.8)

Although the different dimensions of those frameworks consider different business units, it is crucial to establish a common list with the indicators of each of the three dimensions. It has been demonstrated that ecological, social, and economic aspects are interrelated and exert a reciprocal influence on strategic targets (Hristov & Chirico, 2019). For instance, the achievement of environmental goals can lead to the reduction of the risks of penalties and the diminution of waste costs. This affects social aspects, such as a diminution of the rate of employee absenteeism, which is caused by the improvement of the work environment. Ultimately, it reduces economic costs (Hristov & Chirico, 2019). This example demonstrates the interrelation

between ecological, social, and economic factors and, thus, emphasizes the need for a regrouped framework to quantify them simultaneously.

Hristov and Chirico (2019) describe a few more factors to consider regarding the accurate selection of indicators. Among them, KPIs must be chosen to condense the organization's current situation and future perspective. This double time frame perspective has been described by Kaplan and Norton (1996). The authors emphasize the importance of both *lagging indicators* to measure the accomplishment of past objectives and *leading indicators*, which are firm-specific and express the firm's competitive advantage. Moreover, the indicators should be region-specific and depend on the type of products and services that must be assessed (Janjua, Sarker & Biswas, 2021). Furthermore, KPIs must be interrelated with organizational strategic objectives and meaningful and effective to represent and describe the value creation process (Hristov & Chirico, 2019). Lastly, they must be "reliable, comprehensive, consistent, and comparable" (Hristov & Chirico, 2019, p.7). According to Helleno (2017), manufacturing firms are more inclined to follow a dispersed approach regarding sustainability assessment. Different metrics of the TBL are measured in distinct departments, such as accounting or human resources, in contrast to being primarily dependent on the firms' core processes.

2.4.3 Established Implementation Models

The following models are an eminent part of the PMS literature and are used in internal reporting practices. They allow companies to ease the implementation of corporate strategies and drill down their targets into actionable objectives while distributing them in different business units. Furthermore, they foster the usage and consideration of non-financial indicators (Zharfpeykan & Akroyd, 2022).

Balanced Scorecard

Balanced Scorecards [BSC] are a performance management tool created in the early 1990s by Kaplan and Norton (1996) to support the implementation of business strategies successfully. Their objective is to understand and account for the influence of intangible and non-financial assets on the long-term financial success of a company. BSC translates the different pillars of an organization's strategy into measures and targets through different perspectives: Financial,

Customer, Internal Processes, and Learning and Growth (Figge et al. 2002). Their objective is not to define a company's strategy but to break it down into objectives shared among different business units, teams, or individuals (Figge et al. 2002). BSC often has been described in the accounting literature as a way to contribute to the integration of sustainability into companies' performance management systems, thanks to the interrelationship between the four different BSC perspectives and the SPI, which leads to an improvement in sustainability performance (Zharfpeykan & Akroyd, 2022).

From a different theoretical angle, a performance management tool like the BSC can be seen as an attempt to solve the principal-agent problem. This dilemma can be explained as the issue of conflicting interests between decision-makers (agents) and owners (principals) of an organization (Fama & Jensen, 1983). When companies first introduced and adopted the tool, several schools of thought, like the efficient market and principal-agent theory, remained, solely considering firms' financial metrics (Kaplan, 2010). The argument is that a BSC does not offer one single value which can be used for a firm or management evaluation and compensation (Jensen, 2001). Furthermore, its partially subjective set-up increases complexity (Ittner, Larcker & Meyer, 1997). However, regardless of management compensation, the control and focus on measurements of intangible resources are seen as an advanced way to tie a long-term strategy to short-term results (Kaplan, 2010). Therefore, the principal-agent issue could be extended to the relationship between employees (agents) and managers (principals) since both are affected by the organization's viability with unequal voting power. This extension is seen as an amendment of the original concept since managers usually do not own large parts of the company they work for. However, a BSC system at corporate, departmental, and team levels can mitigate distrust and enhance transparency between these two parties. Further advantages include broader intensified interactions with employees, a formalization of the organization's beliefs, improved internal communications, and a constant aid in the operationalization of the company's goals concerning sustainability (Zharfpeykan & Akroyd, 2022). Besides, a BSC allows the connection between strategy and operations. It enables the translation of the elaborated strategy into indicators to balance short-term objectives and long-term goals by considering both qualitative and quantitative targets (Hristov, Chirico & Appolloni, 2019). Lastly, the elaboration of a BSC and the implementation of objectives in collaboration with employees is considered beneficial

(Groen, Wouters & Wilderom, 2012; cf. chapter 2.2.1). However, the tool is perceived as expensive due to the complexity of its integration. It is, therefore, more adapted to larger firms, which benefit from more resources (Zharfpeykan & Akroyd, 2022).

Sustainability Balanced Scorecard

BSCs often have been pointed out as an effective solution to account for sustainability objectives in a company's overall corporate strategy and, thus, take environmental and social aspects into consideration of an organization's economic transition. Consequently, the model has been adapted to include sustainable dimensions. Sustainability Balanced Scorecards [SBSC] (Fig.6) have been created as a holistic tool to help organizations measure their performance on the triple bottom line dimensions (Mio, Costantini & Panfilo, 2022). The tool is effective in communicating the importance of the organization's sustainable strategy internally and helps to get the senior managers onboard (Figge et al. 2002). Three different methods can achieve the integration of sustainability dimensions into the BSC. Firstly, social and environmental facets can be implemented into the four perspectives. Secondly, an additional dimension can be added to represent those two new categories. Lastly, they can be integrated separately through a specific environmental and social BSC (Figge et al. 2002).

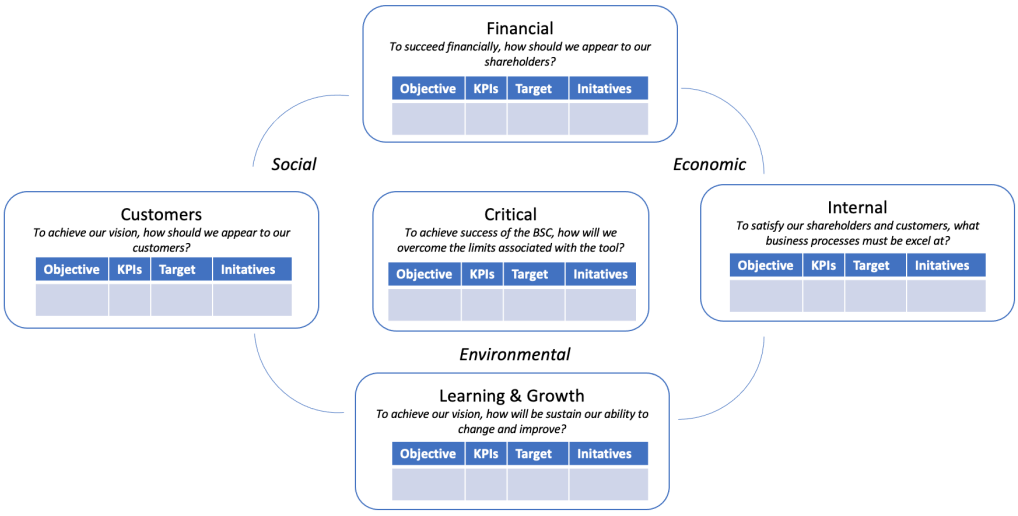

Figure 6: Sustainability Balanced Scorecard (Hristov, Chirico & Appolloni, 2019, p.12)

Adjusted Sustainability Balanced Scorecard

After different criticisms against the SBSC, Hristov, Chirico, and Appolloni (2019) created an updated version of the model, named the Adjusted Sustainability Balanced Scorecard [ASBSC]. The framework is composed of five facets, three of which are the dimensions of the TBL (Fig.8). Additionally, conceptual and structural dimensions are added. Each of the facets is measured by pre-existing SPIs, created to overcome the challenges of the traditional SBSC. Notably, the conceptual dimension aims at integrating different organizations to define targets for SPIs and is measured through the number of monthly meetings on the topic held in the company. The structural facet aims to provide an accurate consideration of the short and long-term perspectives and the need to fix objectives for the different time frames. It is measured thanks to the rate of objective comprehension and perspective of knowledge by each corporate unit (Hristov, Chirico & Appolloni, 2019).

Critical aspect	Objectives	KPI	Measures	Target
Conceptual	To evaluate integration between levels	N. of meetings per month	Report by managers	
	To define performing goals in terms of sustainability	% of contrinution rate of the sustainability goals	Operating profit after tax - (invested capital x WACC)	
	To define daily management's goals	Achieved daily goals ratio	N. of daily goals achieved / n. of total daily goals	
Structural	Clear definition of the sustainability goals in the strategic map	% of comprehension sustainability goals by the staff	Questionnaire	
	To share sustainability goals with the whole organization through all corporate levels	% of knowledge of the strategic sustainability objectives by each corporate unit	Questionnaire	
	To consider both short-term and long-term sustainability goals	% of long-term sustainability objectives of total sustainability objectives	N. long-term objectives / total objectives	
Environmental	To increase the use of qualitative indicators	Qualitative indicator rate of use	Qualitative indicators / total indicators	
	To select most appropriate sustainability indicators	Efficiency % of sustainability qualitative indicators chosen	Indicators with positive correlation to the performance / total indicators chosen	
	Monitoring performance of sustainability qualitative indicators	Growth rate sustainability indicators	Time series	
Social	Monitoring the sharing of management decision making	% of rate of acceptance and sharing of management decision making	Questionnaire	
	To increase stakeholders acceptance of organizational change	% of rate of stakeholders acceptance of organizational change	Questionnaire	
	Monitoring employees' acceptance of organizational change	% of rate of employees' acceptance of organizational change	Questionnaire	
Economic	To evaluate sustainability goals reached	% rate n. of sustainability goals reached in strategic plan	N. of sustainability goals reached / n. of goals in strategic plan	
	Monitoring performance sustainability indicators	Growth rate indicator	Time series	
	Improving the economic performance	% rate cost containment	Cost analysis	

Figure 7: ASBSC Dimensions (Hristov, Chirico & Appolloni, 2019, p.9)

Operational programs

Additionally, operational programs are further ways to support the integration of a company's sustainability strategy. Notably, Lean and Six Sigma are a combination of methods created in 1986 to maximize productivity by minimizing waste in manufacturing operations that can be deemed relevant for the manufacturing industry (Gupta & Jain, 2013). However, as these methods primarily focus on environmental sustainability, they must be used simultaneously with other ways to respond to the threefold challenge of the TBL.

2.4.3 Emerging Approaches

BSCs have been proposed by scholars for decades and remain an essential part of the field of PMS. However, new approaches are currently being considered, and the development of new models has been noticed. Besides, the emergence of digitalization technologies during the last two decades has enabled the introduction of new tools to ease sustainability strategy implementation and support its quantification.

Epstein Corporate Sustainability Model

Epstein and Buhovac (2010) developed a Corporate Sustainability Model to help senior executives to measure and manage the implementation of their sustainability strategies (Fig.8). The model displays an enhancement of the understanding of drivers as well as the causal relationships between the actions implemented. Furthermore, the framework emphasizes the impacts on economic performance and the effects on the different stakeholder groups (Epstein & Buhovac, 2010).

This model is an example of a recently developed framework, which demonstrates that the commonly used models are not the only available tools for managers to ease strategy implementation. As previously mentioned, practitioners must employ tools that correspond to the organization's size and other contextual factors.

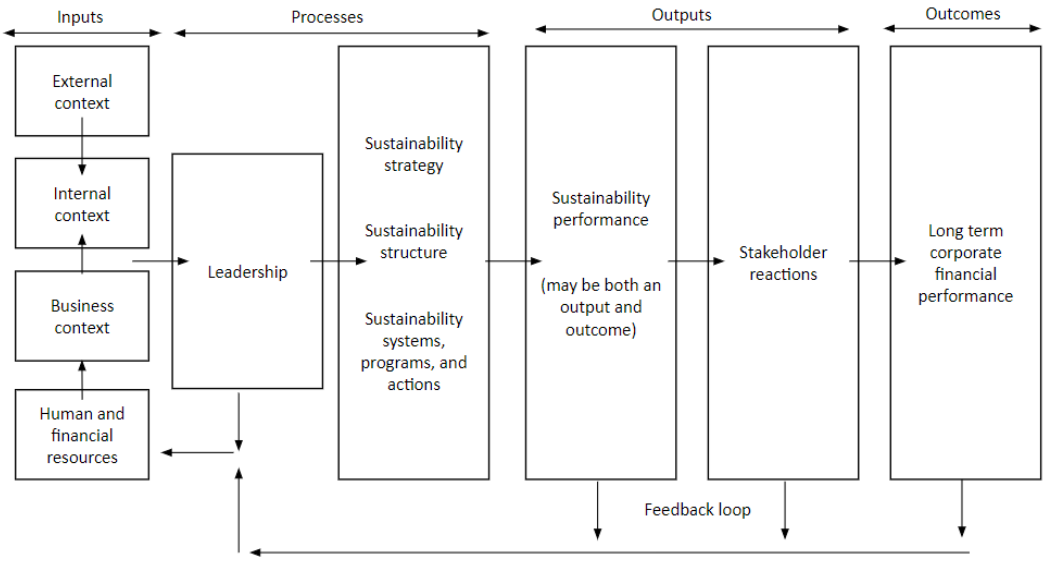

Figure 8: The Epstein Corporate Sustainability Model (Epstein & Buhovac, 2010, p.307)

Objectives and Key Results (OKR)

This management tool combines a straight-forward way to define goals and respective regularly monitored interim results on different levels, e.g. company, team, and individuals (Fig.9) (Niven & Lamorte, 2016). It is considered one of the most distinguished strategy implementation tools in companies nowadays (Doerr, 2018). In line with Hamel (2006) explaining the potential tremendous impact of management innovation, OKRs are predicted to become equally important as the BSC and its eminent status in the last decades (Doerr, 2018). Although the model's origin can be traced back to the 1990s, it gained significant attention not earlier than ten years ago (Niven & Lamorte, 2016). The easily applicable and transparent framework is also deemed appropriate to implement GHG reduction strategies (Doerr, 2021).

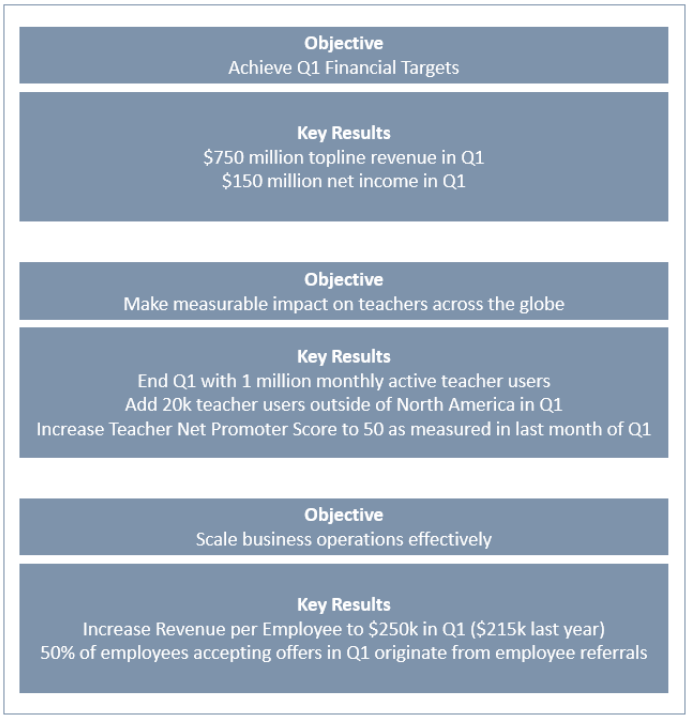

Figure 9: Example of Company-Level OKRs (Niven & Lamorte, 2016)

Digitalization tools

Recent contributions to the literature have mentioned the cross-fertilization effects of digitalization and sustainability, and the importance of the interaction between the two megatrends (Lichtenthaler, 2021). Meanwhile, other research demonstrates the use of

digitalization in the quantification of sustainability and, notably, in measuring carbon footprints. According to Ursacescu, Popescu, State, and Smeureanu (2019, p.1), "there is a need to integrate information technology and sustainability to enable companies to act in a greener manner". To do so, Cucek, Klemes, and Kravanja (2012) point out different tools developed for the assessment of GHG intensity, such as SPIonExcel, RegiOpt, Bottomline[3], and PNS solution. In addition, digital tools for mathematical programming can also be used for sustainability quantification (Cucek, Klemes & Kravanja, 2012). These *green digitalization tools*, as referred to by Isense, Teuteberg, and Griese (2020), are used to improve the environmental performance of corporations. They seek to link digitalization, environmental sustainability, and organizational culture.

Moreover, Enterprise Resource Planning [ERP] Systems are further digitalization tools that can help the sustainability transition of companies. They are designed to incorporate the activities of a firm thanks to a centralized packaged application software and help with the data management in different departments and activities (Ragowsky & Somers, 2014). Moreover, they support the organization in obtaining visibility and control over its activities (Gargeya & Brady, 2005). While the tool was not originally created to fulfill tasks related to sustainability, its power and wide contribution to data management make it relevant to manage sustainability actions (Ursacescu et al. 2019). Among all, the five most recognized ERP system vendors are SAP, Peoplesoft, Oracle, J.D. Edwards, and Baan. The first one has been pinpointed as the market leader (Gargeya & Brady, 2005).

2.5 Concluding Remarks and Preliminary Framework

The literature review emphasizes the prominence of sustainability in today's society and the role of corporations to act on these issues and to integrate sustainability into their strategies. Doing so appears to be favorable for firms for various reasons. For instance, it provides them with competitive and economic advantages. Moreover, it allows them to respond to pressures from internal and external stakeholders, which, in turn, will positively impact their culture and overall reputation. Additionally, the willingness to innovate, the desire to contribute to a sustainable environment, and the pressure of current and emerging legal requirements are further reasons for formulating firms' sustainability strategies. While this formulation seems relatively well

mastered for a vast majority of corporate entities, translating the formulated strategies into implementation still lacks clarity, as companies are dealing with issues of confusion and lack of knowledge. Theories of organizational change also point out the recurrent difficulty of driving transformation in corporate entities, which suffer from organizational inertia. Moreover, the implementation process can not follow a one-size-fits-all approach. Organizations have to account for their characteristics and contextual factors, particularly, the country of registration, company size, and legal form.

Different tools and models have been developed and pointed out in the literature to respond to the struggles caused by the integration process of the formulated strategies. While some frameworks are conventional and have been addressed by researchers, others are emerging thanks to the development of new models and the rapid evolution of digitalization technologies. Nevertheless, it remains complex for executives to find the appropriate tool for their organization and to drive this implementation smoothly. The following preliminary framework (Fig.10) has been developed to illustrate this issue. It will serve as a base for understanding the translation of formulated strategy into its implementation.

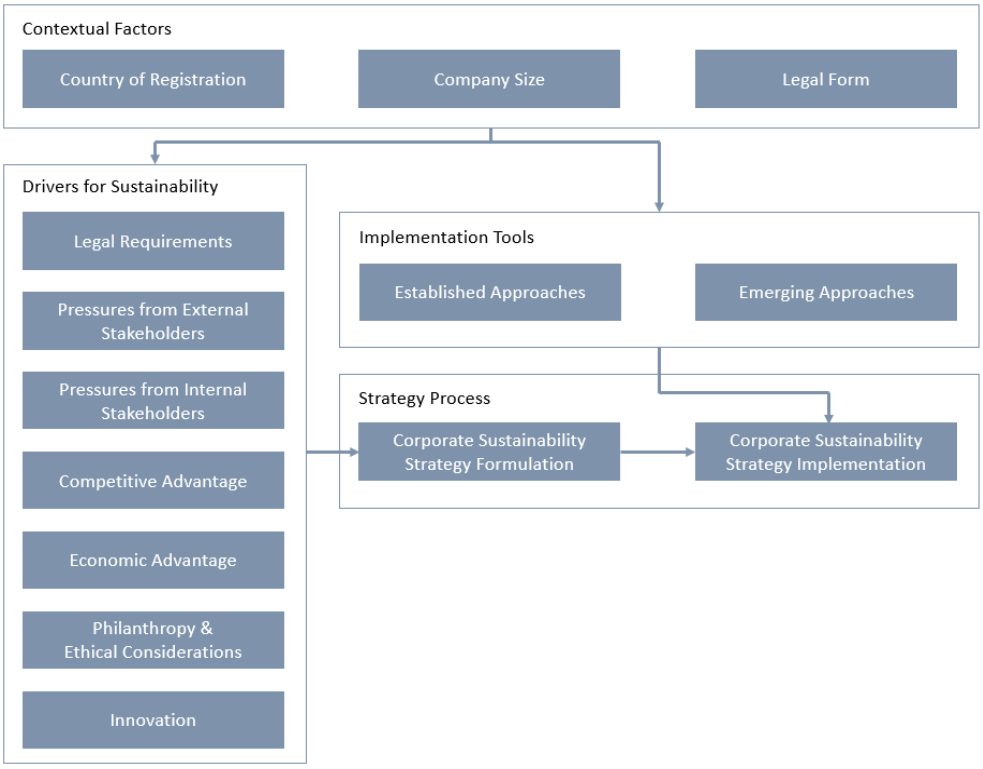

Figure 10: Preliminary Framework (Developed by researchers)

3. Methodology

This chapter has the purpose of explaining the study's applied methodology. First, the research approach and design are justified by the research questions and the nature of the studied phenomenon. Secondly, the theoretical motivation for the sampling units and interviewees is outlined, and the data collection and analysis process is illustrated. Finally, the quality of the study regarding validity and reliability as well as ethical considerations are discussed.

3.1 Research Approach and Research Design

A research approach is defined as a plan spanning steps from assumptions to methods of data collection, analysis, and interpretation (Creswell & Creswell, 2018). The purpose of this thesis is to contribute to the body of research primarily on sustainability strategies with an understanding of distinct contextual factors for an enhanced connection between strategy formulation and implementation. In line with the outlined research questions in chapter 1.2, contemporary practices and decisive influences regarding sustainability strategy implementation need to be explored and understood at a deeper level. As it is within the thesis' scope to search for similarities and differences among firms' practices and relationships between contextual factors, with respect to Creswell and Creswell (2018), a qualitative approach is deemed suitable. Additionally, the researchers' inclined background toward qualitative approaches is suggested to be more valuable in this type of research (cf. Creswell & Creswell, 2018).

Bell, Bryman, and Harley (2019) specify a research design as a framework for generating research evidence according to certain quality criteria. The researchers use a qualitative design for several reasons. Firstly, to answer the research question in a useful way, it is needed to explore and understand the meaning that individuals and groups ascribe to a certain topic (Creswell & Creswell, 2018) with respect to different contextual factors. Secondly, as there is no common and standardized way for firms to address strategy implementation, a qualitative design that fosters an in-depth understanding of specific contexts was considered valuable (Bell, Bryman & Harley, 2019). Thirdly, as different relationships and aspects in determining strategy implementation were not apparent from the start, examining relevant patterns of thoughts and practices with open-ended and exploratory questions is deemed a more beneficial method

(Creswell & Creswell, 2018). A quantitative design would not have been appropriate since large data sets about the internal practices of firms are not available and difficult to gain by interviews or surveys. In particular, it is rather unlikely that firm representatives would have responded in a survey format about how confidential strategy implementation is conducted in the respective firm. Thus, non-numeric data entails higher relevance in answering the research question and favors a qualitative design.

The thesis follows an abductive approach, which is considered a blend of deductive and inductive reasoning. While deductive studies derive hypotheses from existing theory and attempt to verify or falsify them, the inductive logic of inquiry departs from empirical observations and seeks to subsequently determine a theoretical construct (Bell, Bryman & Harley, 2019). With respect to the present study, the researchers encountered limited clarity on which theory to test deductively. Additionally, empirical data which would be sufficient for legitimate inductive theory building is scarce. Therefore, an abductive approach is deemed appropriate as it provides an iterative process between theory and empiricism that simultaneously creates new and amends existing theory by additional data collection (Saunders, Lewis & Thornhill, 2019). Accordingly, a preliminary framework at the end of the literature review was presented (cf. chapter 2.5). It will be enriched by findings from the empirical analysis and its updated version is outlined in chapter 5.7.

In this single-case study, several units are examined to conduct an in-depth analysis of how companies are attempting to tie the formulation of a sustainability strategy to its implementation. When the focus is on a current real-life issue, as the research question indicates, case studies are to be seen as a sound choice among the qualitative design methods (Yin, 2003). Including several units in the thesis was preferred over the examination of one unit due to the larger sample size and the implied stronger foundation for theory building (Yin, 2003). The larger sample size additionally allows for exploring differences along with contextual factors, as well as different ways of strategy implementation (cf. Bell, Bryman & Harley, 2019). However, as case studies are not considered experimental approaches, this method cannot draw scientific generalizations (Yin, 2018) while, at the same time, being quite time-consuming. The latter could be mitigated by two researchers working on the thesis simultaneously and separating the workload.

3.2 Unit Selection

In total, eight public and private firms in a range of sectors in the manufacturing industry represent the thesis' primary units of analysis. These are accompanied by secondary units of two expert interviews, which serve as further sources of valuable insights regarding the manufacturing industry. The reasons for selecting the manufacturing industry are outlined in chapter 1.1. The single-case study includes manufacturers of video technology, health devices, chemical products, technology equipment, consumer discretionaries, vehicles, handheld tools, and event technology. Only firms in Germany (three companies), Sweden (four), and Denmark (one) were considered, for the following reasons. First, the German manufacturing industry has the highest CO2 emissions among all manufacturing industries in the EU (Planetly, n.d.) and German firms are, thus, considered relevant and responsible for enhancing sustainability practices. Second, regarding cultural differences, Sweden and Denmark appear to be quite similar, while Germany can be used as a counterpole for data comparison (cf. Hofstede Insights, n.d.). Nevertheless, on a global scale, cultural distances remain relatively small, which can support the comparability of results (López‐Arceiz, Del Río & Bellostas, 2020). Lastly, applied legal frameworks to the companies of these countries are rather similar thanks to memberships in the European Union, which, again, eases comparability. Moreover, firms of different sizes and legal forms provide a holistic view of the manufacturing industry. Concerning the firms' advancement in sustainability, no specific maturity or performance levels were targeted. This enabled the researchers to explore a variety of implementation processes at different stages in their evolution.

In the following, the categorization of the sample's units is delineated and motivated before a summary is presented in Table 1. Country of registration refers to the national country where the company is officially incorporated and, therefore, obliged to follow corresponding legislation and regulation. Companies of different sizes (measured in the number of employees) were actively sought to create three different groups of small, medium, and large enterprises. According to the Organisation for Economic Co-operation and Development [OECD] (n.d.), determining company size by the number of employees can be considered the most common approach and is, therefore, used in this study. In line with the definition of Eurostat (n.d.), small and medium-sized enterprises are considered companies with less than 250 employees, which

will be called “Small” in this study. In the said definition, all companies above this threshold are viewed as large enterprises, which, in this thesis, will be divided into two more granular sections for data comparison reasons. Therefore, “Medium” sized companies are considered to employ between 250 and 5.000 workers and “Large” firms between 5.000 and 25.000. To detect differences between public, i.e. publicly-traded companies, and private companies, corresponding firms of both types were actively sought. Moreover, private companies were further divided into two subsections to account for diverse ownership structures: “Family Company”, whose majority of shares are held by a family (e.g. the founder(s)’s family), and “Subsidiary of MNE”, if the firm was acquired or founded by a larger majority holding multinational enterprise [MNE]. Respectively, they account for two and four firms. Two sustainability experts from German consultancies are also listed in Table 1, as they form the secondary part of the units of analysis regarding the single-case examination. For these consultancies, however, no information is provided regarding legal form and company size as it is irrelevant due to their additional secondary role.

Table 1: Sample of Units of Analysis *(Developed by researchers)*

Unit	Country of Registration	Company Size	Legal Form	Industry Sector
Company A	Germany	Large	Family Company	Technology Equipment
Company B	Denmark	Large	Public Company	Health Devices
Company C	Sweden	Medium	Subsidiary of MNE	Video Technology
Company D	Germany	Medium	Subsidiary of MNE	Event Technology
Company E	Sweden	Medium	Subsidiary of MNE	Vehicles
Company F	Sweden	Small	Public Company	Chemistry
Company G	Germany	Large	Family Company	Handheld tools
Company H	Sweden	Small	Subsidiary of MNE	Consumer Discretionary
Expert A	Germany	n.a.	n.a.	Consultancy
Expert B	Germany	n.a.	n.a	Consultancy

3.3 Data Collection

According to Creswell and Creswell (2018), case studies allow data gathering from a variety of sources. Thus, the collected data consists, on the one hand, of primary data in the form of one to two digital semi-structured interviews per unit with open-ended questions. The list of interviews and interviewees is introduced in Table 2. On the other hand, secondary data derived from publicly available information, such as firms' sustainability reports, was used to enhance the interviewees' contribution. Additionally, expert interviews with two consultants in the field of sustainability were conducted to gain further insights into current sustainability practices and challenges observed in the manufacturing industry. These conversations with experts are particularly relevant to help understand and analyze the conducted interviews.

Several manufacturing firms were approached and asked to participate in the study. Contact establishment was done thanks to the researchers' personal network and by connecting with suitable candidates directly on the business platform LinkedIn. Filter criteria for interviewees were (1) an employee or management position that is tangent to sustainability practices and (2) employment at the respective firm of at least one year. These criteria appeared necessary to ensure the ability of the interviewee to answer the questions adequately and confidently. The interviews were held in a semi-structured way for two reasons. First, according to Qu and Dumay (2011), this method is beneficial for extracting essential and hidden information about human and organizational behavior. In that regard, Gioia, Corley, and Hamilton (2013) see the semi-structured interview at the heart of multiple data sources as it employs both retrospective and real-time reporting of interviewees on the studied phenomenon. Since the thesis' scope demands access to inherent and non-disclosed practices, semi-structured interviews appeared to be a good fit. As a second reason, this method does not follow a scripted interview guide relentlessly but, instead, allows a natural flow of communication with potential follow-up queries as it is based on the nature of human conversations (Qu & Dumay, 2011). The researchers, therewith, were able to follow different trains of thought and amend the order, connotation, and style of themes and questions organically. The flexibility of semi-structured interviews allows certain adaptations to discover each company's practices. At the same time, the rigor of the method still enables a comparison of the companies on existing contextual factors. Other forms of qualitative research like surveys or field observations were not deemed appropriate since surveys could not fulfill the necessities of exploratory research in an emerging field.

The interviewees were asked verbally to give their consent regarding the voice recording of the interviews for transcription purposes. The duration of every interview was approximately 30 to 60 minutes to grasp the necessary depth of information without the necessity of breaks due to fatigue. The researchers cooperated during the interview process by both asking questions and taking notes. It was stated at the beginning that interviewees and the respective company would have the opportunity to remain entirely anonymous and the majority of firms chose this option. Therefore, companies were coded in alphabetical order, and the interviewees' positions were slightly modified to avoid being recognizable. Only two firms didn't see the need for non-disclosure but, out of consistency and to encourage the sharing of internal information, these

two firms and the interviewees were also made anonymous by the researchers. However, corporate policies were hindering some representatives from fully disclosing certain data that was requested by the researchers, e.g., KPI lists or internal assessment documents.

Besides the collection of primary data, secondary desk research was considered appropriate for two reasons. First, sustainability reports and information about corporate practices regarding sustainability sourced on the company website were founding a base for the interviews. They could then be conducted in a more precise and effective manner without redundant inquiries. Secondly, using this type of data was found to be beneficial for the thesis' validity, as information from both sources confirmed and augmented the other, respectively.

Table 2: List of Interviews and Interviewees *(Developed by researchers)*

Unit	Interviewee	Position	Date	Duration
Company A	Representative A	Specialist Operations Analytics	28.03.2022	50 min
			11.04.2022	36 min
Company B	Representative B	Senior Project Manager	30.03.2022	55 min
			29.04.2022	35 min
Company C	Representative C	PR & Communications Manager	06.04.2022	48 min
			04.05.2022	29 min
Company D	Representative D	Director Corporate Opportunities	12.04.2022	50 min
			13.05.2022	39 min
Company E	Representative E	Senior Sustainability Specialist	12.05.2022	49 min
Company F	Representative F	Chief Operating Officer (COO)	21.04.2022	65 min
			10.05.2022	34 min
Company G	Representative G_1	Director Supplier Assessment	10.05.2022	56 min
	Representative G_2	PR & Communications Specialist		
	Representative G_3	Head of Sustainability		
Company H	Representative H	Sustainability Specialist	13.05.2022	47 min
Expert A	Consultant A	Corporate Leader	11.04.2022	31 min
Expert B	Consultant B	Sustainability Director	11.05.2022	28 min

3.4 Data Analysis

The analysis of the data gathered in the primary and secondary research is considered a crucial part of the thesis process and is decisive for the quality of the outcomes. To source and treat data from a sample, several steps are included to answer the research question (Bell, Bryman & Harley, 2019). To provide a rich data groundwork that is easily extractable, the interviews were first transcribed with the help of suitable software solutions. Subsequently, the coding process was conducted to parse, structure, and group the content accordingly. This process was done in line with Gioia, Corley, and Hamilton (2013), who propose a three-step approach starting with a 1st-order analysis. Here, all terms and expressions used by the interviewees were screened, and respective categories were set up, which naturally were numerous (~100 categories) but could be reduced by assessing similarities among the categories. In the 2nd-order level, specific more abstract themes, still close to the interviewees' descriptions, were created out of the 1st-order concepts. Finally, the researchers derived ten aggregated dimensions as the highest level of abstraction necessary for the thesis' demands. These were, then, compared to the introduced literature to detect similarities and contradictions.

3.5 Validity and Reliability

Limiting constraints are considered decisive for the thesis' validity and reliability. To enhance the validity, several steps were taken. A first round of interviews with four companies was conducted in a pilot format to test the interview guide (Appendix A_1), which led to the elimination, restructuring, and reformulation of some questions. In addition, the research focus slightly changed according to the observations in the data collection process. A more precise and enhanced interview guide with a somewhat distinct focus was then applied in a follow-up interview with the same representative (Appendix A_2). The researchers are aware that interviewing one representative per unit in one to two interviews might limit the validity of the results. However, a compromise between data depth and range was found in slight favor of an enhanced variety as the research questions demand a widely diverse empirical data set. The researchers are also aware of the study's analytical generalizability, which entails the likelihood of detecting similar findings in other situations (Plas & Kvale, 1996). A respective assessment is delineated in chapter 6.1. As suggested by Creswell and Creswell (2018), data triangulation was conducted to confirm primary with secondary data. For instance, the mentioned sustainability

implementation plans in the interviews could be proven by assessing internal documentation provided by the firms. In one instance, several representatives from the same organization (Company G) were interviewed at the same time in a group interview to capture a variety of perspectives on the matter, which enhanced the results' validity. Secondly, literature with contrasting results was actively searched and assessed to mitigate confirmation bias. During the course of the degree project, two seminars with peer students and four sessions with a supervising professor from the university were conducted. The purpose of these meetings was to evaluate the thesis validity and discuss potential improvements in an open format. Moreover, reliability is also ensured by the rigorous recording, transcribing, and analysis process of primary data and the assessment of secondary data. Internally, the researchers documented all meetings with the supervisors from the university and MHP to enable high transparency.

3.6 Ethical Considerations

Inclined to the three ethical principles by Bell, Bryman, and Harley (2019), the researchers took the following steps to assure full ethical integrity. Concerning informed consent, interviewees were briefed verbally regarding the scope of the thesis several days before the interview date. Some examples of questions were also provided beforehand. This process assured both the interviewees and the researchers that the interview would be valuable regarding the match of interests, positions, and capabilities. To prevent any vulnerability of the interviewees due to the provided data, full anonymity was offered and provided to every interviewee and organization. Their identities were also kept undisclosed to the researchers' supervisor and to the company MHP. The final thesis is published in the Lund University database and handed out to all interviewees (company representatives and experts) in its anonymous form.

4. Empirical Results

This chapter will review the interviews conducted with eight manufacturing companies and two sustainability experts about sustainability strategy implementation. First, a brief introduction of each company and expert will be listed in Table 3. Then, the results will be examined in the form of thematic observations. Here, ten dimensions derived from the primary data analysis (cf. chapter 3.4) are used as major distinguishing themes.

4.1 Description of Analyzed Units

Table 3: Description of Analyzed Units *(Developed by researchers)*

Unit	Description
Company A	The large German technology company is family-owned and has recently started its process toward sustainability strategy implementation. This was initiated thanks to the interest of the owning family and various employees, who decided themselves to form a sustainability group and started actions to drive this change.
Company B	This Danish company specializes in health devices. The objectives are ambitious, and different changes have been introduced recently with, notably, the publication of the first sustainability report two years ago and internal measures being currently rolled out.
Company C	The Swedish video technology company has been leading the way toward sustainability for more than a decade. Thanks to constant stakeholder dialogues and cross-functional councils, the organization has managed to keep its industry leader position while benefiting from an increase in revenue. However, its implementation process is still ongoing.
Company D	The German manufacturer focuses on event technology. Being a frontrunner in the industry in terms of sustainability, the company has managed to take advantage of its sustainability implementation quickly. It has implemented remanufacturing programs thanks to circular economy principles.

Company E	The Swedish vehicle manufacturer is putting sustainability at its core and is trying to associate luxury segments with sustainability. The company is approaching diversification of its strategy, trying to simultaneously address environmental responsibility, luxury, and safety issues.
Company F	The small Swedish company focuses on chemistry solutions. The organization realized a complete turnaround a couple of years ago to foster resilience and anticipate the needs of the market. These drastic changes have led to impressive results after a short period, despite obstacles such as the difficulty of involving the employees throughout the process.
Company G	The German manufacturer produces handheld equipment. While currently at the beginning of its sustainability implementation, the organization is determined to drive changes with a methodical approach by linking independent business units thanks to thorough quantitative methods.
Company H	The organization, a small subsidiary of a large Swedish manufacturer of consumer discretionaries, benefits from its parent company establishing sustainability at its core principles for more than a decade. While the firm has already made significant progress, the goal is to be the industry leader in sustainability.
Expert A	The first expert is the head of a sustainability consultancy specializing in GHG reduction and climate neutrality solutions. Their customers mainly are manufacturing companies that aspire to improve environmental sustainability.
Expert B	The second expert is the head of sustainability in a German consultancy specializing in digitalization for the manufacturing industry. The company provides a bundle of innovative digital solutions for companies of different manufacturing sectors combined with sustainability aspects.

4.2 Thematic Observations

With respect to the following themes, a consistent structure is applied respectively per subchapter throughout the review of empirical results. First, overall observations and similarities between the different companies are emphasized. Then, influences of contextual factors of the country of registration, company size, and legal form are depicted.

4.2.1 Drivers for Formulation and Implementation of Sustainability Strategies

While some drivers appeared to be consistent in all conducted interviews, each firm listed a variety of motivations for the realization of a sustainability strategy. Generally, companies are observed to adhere closely to current legal requirements regarding sustainability. Furthermore, they also try to anticipate upcoming regulations, and compliance has been mentioned to be a driver of sustainability strategy formulation by Companies A, B, D, and G. Moreover, half of the organizations (Companies B, D, E, and H) aim at a FMA to gain economic benefits.

Most companies agree that sustainability efforts are deemed to reap the financial benefits after a few years following the implementation. Particularly, this has been mentioned by Company D, which has benefited rapidly from the sustainability actions of the company. Nevertheless, some companies raised the concern of depicting financial returns dependent on sustainability practices, which is stated to be a difficult undertaking (Company G). This is particularly the case when sustainability has always been at the core of the company, such as for Companies C, E, and H. Nearly all companies felt pressure with respect to sustainability originating from external and internal stakeholders. Sometimes, investors were the ones asking for changes, while, for other organizations, the changes emerged from the owning family or even from employees.

Company A is the only one that stated ethical considerations or philanthropy has a cause for action. The interviewee mentioned having been inspired by the climate protection movement *Fridays for Future*. After realizing the role of corporations in climate change, Company A's representative decided to approach a supervisor and initiate change inside the company. As the owning family also had a desire to integrate sustainability, changes occurred. Lastly, most interviewees mentioned being resilient to upcoming changes in society as a key factor in formulating their sustainability strategy.

"Most companies do not understand the changes in society. If you don't fulfill the requirements of the market, you will be moved out of the market."

- *Interviewee Company D*

4.2.2 Time of Sustainability Strategy Implementation

Five out of the eight companies started to implement their sustainability strategies between 2019 and 2020 and, consequently, this process is still ongoing. For instance, Company B attempts to reduce its carbon emissions by 50% during the next three years, as the achievement of FMA is a stated goal. For Company G, notably, the implementation has just started, despite the fact that the organization stated ambitious targets. The interviewees of the three remaining organizations, Companies C, E, and H, explained that sustainability had always been at the core of their companies' operations and that, thus, sustainability had never really been implemented. Nowadays, these three companies can all be considered forerunners of their respective industry sector. Two companies, namely Company D and Company F, started their implementation approximately two years ago and have already achieved positive results, both in terms of environmental and economic sustainability. Unsurprisingly, they believe that sustainability was a driver of success for their organizations. Company D is proud of the results of the organization's efforts and is convinced that there is a direct correlation between sustainability and increased profit.

"If you invest upfront, the returns will be there in a few years. The investment is predictable."

- *Interviewee Company D*

Regarding differences in countries, it is observed that German companies started the implementation later than their Scandinavian counterparts, as the three German organizations only began establishing sustainability practices in 2020. Concerning the size of the organizations, no conclusions could be drawn from the small sample of the study. However, differences in legal form led to the observations that subsidiary companies (Companies C, E, and H) had an earlier implementation of sustainability strategies, with respective implementations being started in 2007, 1996, and 2009. Meanwhile, family-owned and public companies all had a later implementation, beginning between 2019 and 2020.

4.2.3 Organizational Implementation of Sustainability

Currently, firms are experimenting with different implementation methods. The majority of the organizations use simultaneously top-down and bottom-up approaches to different extents. Company A, particularly, benefits from a bottom-up approach, as the formulation of the sustainability strategy has also been initiated by employees. Company G, meanwhile, chooses to only use a rigorous top-down approach. Regarding firm size, it has been observed that smaller companies favor top-down approaches, while medium-sized and bigger companies tend to implement both top-down and bottom-up approaches. However, no conclusion could be drawn concerning the link between the implementation approach and the country of registration and legal forms. In regards to employee integration, bottom-up approaches lead to better integration of employees in the decision-making processes. In two-thirds of the German companies, employees initiated groups independently, working with the sustainability strategies implementation. Overall, the interviews outlined the importance of middle management, especially in terms of target drill down, and of employees of various levels.

"It is fundamental to involve employees in the change for them to have the right mindset regarding sustainability. Then, when the target is defined, they would know where they can have an impact."

- *Interviewee Company B*

"It is all about doing things together."

- *Interviewee Company F*

Most companies interviewed have a cross-functional deciding entity with department heads being responsible for sustainability matters. For instance, Company C works with three different councils concerning the environment, social aspects, and business ethics. In the Environmental Council, several departmental heads and the council's chair, the Director of Environmental Quality, propose sustainability initiatives to the top management. Other companies have established a *Green Product Working Group*, *Corporate Responsibility department*, or a *Sustainability Team*. For instance, Company E concentrates its capabilities around sustainability in the headquarters' *Sustainability Team*, which collaborates with subsidiaries' local

sustainability groups. The only exception is Company A, which, additionally, works with a formal sustainability interest group built and run by approximately 20 employees.

4.2.4 Internal Communication and External Sustainability Reporting

All firms in the existing sample mentioned communicating their sustainability progress internally thanks to reporting practices. However, the tools used to communicate differ between organizations. Most of the time, there are official reports, dashboards, or newsletters shared with the employees. However, it is also common for managers to choose which indicators to communicate and to keep some KPIs non-disclosed. This practice is done either out of confidentiality or because it is determined that publishing too many indicators is not interesting for employees. Therefore, managers often choose to focus on the information that employees would deem relevant. Regarding access to information, the usage of certain software, notably SAP Analytics, has been mentioned by two companies (Companies A and G). However, license fees ranging from $1.357 to $3.213 (Appendix E) per person limit the number of employees having access to this information. Moreover, most interviewees mentioned that their company uses software to communicate information and display dashboards internally. Companies D, E, and F use Microsoft Office, and especially Excel and Powerpoint. The software are used to gather, edit and exhibit data. Then, information is communicated by email newsletters, SharePoint, or during company and production site meetings. Concerning external reporting, only large public companies are mentioned to be obliged to report externally. However, six of out the eight companies interviewed stated to report externally on their sustainability activities. Nevertheless, this reporting is not always done annually and does not thoroughly follow the Global Reporting Initiative [GRI] reporting framework, which only Companies C and D have mentioned throughout this study. However expert A stated that this reporting framework is the most common one for manufacturing companies.

"A lot of them are trying to look at the GRI and see what comes there as a standard and as a proposal for KPIs and, then, take this as a base."

- *Interviewee Expert A*

The two companies that currently do not report externally, namely Companies G and F, plan on starting to do so during the next few years. Besides, they still communicate some selected information to various stakeholders. In general, one reason cited for the reluctance of external reporting resides in the risk of errors and potential legal consequences.

"When you start to communicate CO2 emissions and other numbers externally, you need to make sure that your measurements are correct."

- *Interviewee Company B*

4.2.5 Sustainability Performance Target Design

In general, sustainability targets are adjusted and communicated on a regular basis, e.g. yearly in six out of the eight companies. German companies predominantly follow a traditional top-down target setting approach by higher management, while Scandinavian companies are more inclined to co-creation of targets in cross-functional sustainability teams. Moreover, in German firms, holistic corporate programs for enhancing sustainability are run and monitored by higher management. At the same time, more discretion and responsibility are given to middle management and employees in Scandinavian countries. For instance, Company C stated that within its Environmental Councils, distinct teams elaborate targets which are, then, discussed and adopted by the council. Subsequently, the top management approves programs and respective targets.

4.2.6 Sustainability Strategy Implementation Tools

The different interviewees mentioned a wide variety of implementation tools. Overall, they highlighted the importance of digitalization in sustainability strategies and the growing range of software available for strategy implementation, thanks to the increasing interest of startups in the topic. During the interviews, five different software were mentioned. Information regarding price, features, and application can be found in the appendix (Appendix E). The interviews highlighted the confusion of managers and employees facing a wide range of software and tools and difficulties to make a choice regarding which tool would be suitable for their enterprise. Furthermore, the two expert interviews revealed an underlying issue of finding one centralized software to conduct necessary measurements or display relevant data. Thus, companies use

different digitalization tools and do not have the information centralized, which hinders the efficacy of the implementation process.

While the sustainability department is responsible for environmental issues, social dimensions are often at charge of a human resources department. Consequently, information regarding different dimensions is generally not centralized. To overcome this issue of non-centralized information, some of the companies interviewed use dashboards at the management and employee levels, which seem to be an efficient way to centralize, summarize and publish relevant information. The research also underlined that most companies, in this case, six out of eight, are unaware of the existence of BSC. The remaining two firms, Company A and G, were using the tool to some extent, although it was not always done reflecting exactly all the model's characteristics. However, while most companies did not use BSC, they still integrated non-financial indicators into any kind of PMS.

Regarding contextual factors, it has been noticed that the usage of BSC was predominant in German companies and absent in all Scandinavian organizations. Besides, both the German firms are also similar in size and legal form. Only Company D chose to rely on tools provided by the federal government. Most companies adjust existing frameworks to their own needs. In one case, with Company B, a model has even been developed by the organization itself to manage the implementation of the sustainability strategy. This tailor-made framework allows the company to suit its requirements without depending on contextual factors. The model is called "Maturity Model" and aims at defining the company's sustainability standards while taking learning into account. It can be considered an internal reporting tool with four different maturity levels, which focus on sustainability activities and their impacts.

"So we really have two main things to look at: CO2 emissions and the maturity level of the company and different departments and teams."

- *Interviewee Company B*

4.2.7 Use of Sustainability Indicators

Indicators, KPIs, and a list-like collection of these are used by all interviewed companies, while the selection and set-up of optimal KPIs are still in a premature state. The focus is mainly on

environmental aspects with the dominant KPI of CO2 emissions, while the financial dimension was seldom mentioned.

"The environment is the most concrete area. This is the area where it is easier to define targets."

- *Interviewee Company C*

Social indicators were mentioned but they were mostly measured and managed in the human resources department. Consequently, the interviewees, mostly belonging to a sustainability department, were relatively unaware of the social indicators and respective targets. Nearly no company uses a merged indicator display of all TBL dimensions. Moreover, social indicators, such as the distribution of management positions between men and women, are more often found in Scandinavia. Regarding social indicators, Company C also mentioned the importance of a corporate entity's country in the elaboration of the list of social indicators. For instance, the interviewee pointed out that, while measuring the percentage of workers per ethnicity is illegal in Sweden, it is a requirement for their production sites in the United States of America.

4.2.8 Rewards Systems regarding Sustainability Performance

Most companies apply reward policies of issuing financial boni for corporate performance measured by financial indicators. However, sustainability indicators are seldom used for firm performance evaluation concerning rewards. Nevertheless, a few companies, prominently German, are considering or planning to introduce financial incentives for executives tied to the accomplishment of sustainability targets. Company A mentioned the possibility of making executives' variable part of the compensation tied to SPIs. Meanwhile, Company G considers overall additional employee compensation tied to sustainability goal achievement. However, such a financial bonus would not be linked to individual performance, as the same reward would be given to all employees. With respect to company size and legal form, no significant differences were observed.

4.2.9 Economic and Social Performance Gains due to Sustainability Efforts

Overall, four out of the eight analyzed companies (Companies B, C, D, and F) already behold financial benefits caused by the implementation of sustainability strategies in their operations. In

two additional firms (Companies E and H), a part of the revenue is associated with the sustainability actions undertaken by the firms, but it is harder to correlate it to specific actions, as sustainability has always been at the core of the company. In the two remaining companies (Companies A and G), positive results associated with the implementation of sustainability strategies are not yet apparent, which is consistent with the fact that, in both cases, the implementation is recent and has only been started in 2020.

In the case of Companies B, C, D, and F, increases in revenue have already been noticed, despite the fact that they only started their sustainability strategies implementation journey two to three years ago. However, as the interlocutor of Company C mentioned, it can be hard to draw conclusions and correlate sustainability actions with a change in indicators. The organization has recently benefited from an increase in revenue but from a decrease in some key social sustainability indicators, such as the employee turnover rate. However, the interviewee points out that this decrease is most likely not due to sustainability efforts but to the influence of the global pandemic on the workforce.

The four companies that have already witnessed the economic and social results of their sustainability strategies notice it in various ways. For Company B, the improved performance is caused by a cost reduction due to the redesign of the packaging, while for Company C and F, it is caused by an increase in sales and, thus, in revenue. For Company D, both of these two aspects have been improved.

The largest progress has been achieved by Companies D and F, as the business models have been partially reimagined after the integration of sustainability strategies. Notably, Company D decided to introduce the concept of circular economy into its operations by implementing remanufacturing practices. This created a virtuous circle, as the results were cheaper for the manufacturer while satisfying a wide range of internal and external stakeholders and, thus, increasing their revenue. Particularly, the company, evolving in event technology, mentioned the interest of artists in sustainability event production material.

In the case of Company F, the organization realized the necessity to adapt quickly to be resilient, especially coming from the industry sector of chemistry solutions, which is rarely perceived as sustainable. After this realization, the firm changed a substantial part of its operations in a short

amount of time to satisfy its customers and other stakeholders while aiming at benefiting from a FMA. According to the interviewee, the results started to be noticeable recently, two years after this enormous switch.

Regarding contextual factors, it appears that most of the companies that have already witnessed a positive result following this implementation are Scandinavian. However, this result is not surprising, as their implementation process started earlier than their German counterparts. Concerning the legal form, it is noticeable that the companies struggling to get rewarded for their efforts are family-owned private companies. They have not benefited from apparent results yet. However, this is probably due to the fact that their implementation started later than the other companies in the sample. According to the first expert interviewed, the legal form influences its management and vision of sustainability strategies. Family-owned companies, for example, tend not to view sustainability strategies as a strategic tool or a competitive advantage but as a genuine way to care for the environment and surroundings. Thus, they tend to advertise and market their efforts less, which could also partially explain these slower results.

4.2.10 Challenges and Success Factors

Since most firms are still in the planning or early implementation phase, only a few critical challenges have been encountered. Namely, the challenges mentioned by the interviewees consisted of the following. First, the difficulties of defining the targets and finding ways to break them down were mentioned repeatedly. The lack of time and resources to drive meaningful change in the company was also noted, which mostly impacts bigger firms. Moreover, the difficulties of involving employees of all levels in the changes were also recognized, as well as finding ways to educate them so that all corporate levels understand the change. Notably, having a common definition of the targets and KPIs was mentioned as an obstacle.

A further challenge mentioned, which refers mainly to bigger companies, resides in linking different business units, especially when their objectives differ. Particularly, this was mentioned by the representative of Company E, whose objective is not only sustainability but also safety and luxury. Lastly, the inability to collect the required data has been mentioned by different interviewees, as well as their lack of knowledge on how to elaborate a plan to reach the formulated targets.

"We know where we need to go, but we do not always know how to get there."

- *Interviewee Company D*

Furthermore, according to Expert B, this deficit of knowledge can be a reason for the misalignment between strategy formulation and implementation.

"There is a gap between what they are saying and what they are doing."

- *Interviewee Expert B*

The confusion of executives has also been mentioned by the first expert interviewed, which pointed out that many managers did not realize the amount of time needed to implement sustainable change in their company. Thus, they would set unrealistic targets and would not end up being able to reach them. This could appear as a form of greenwashing, although it was intended by the companies, which legitimately hoped to reach their ambitious targets.

Concerning the influence of legal form, subsidiaries face difficulties of scattered information and target setting throughout the organization, given the more complex structure between the parent company and the subsidiaries. Regarding the impact of cultural dimensions on these challenges, it appears that German companies face rather low but still more resistance by employees than Scandinavian companies regarding the implementation of sustainability strategies. In German firms, more challenges are faced in the technical dimension of KPI design, i.e., missing data, quantification difficulties, and unequal understanding of indicators.

"At the moment, we often work with estimations for missing data. Also, the other companies have the same questions. We can't google it."

- *Interviewee Company A*

4.3 General Influence of Contextual Factors

On a more generic level, some overall influences of firms' contextual factors on strategy formulation and implementation could be observed. Scandinavian countries enjoy an image of

emphasizing sustainability to a greater extent than their German peers, whose country is more connoted with high quality. Swedish and Danish companies stated that this works in their favor.

"Being a Swedish company brings credibility to the brand."

- *Interviewee Company E*

In addition, Scandinavian companies benefit from abundant knowledge, resources, and a rather aligned mindset of the workforce, already aware of the importance of the topic. However, it can also be a disadvantage and work against them, i.e., due to high competitive pressure and strict regulations. On a global scale, it appears that Germany is still perceived as one of the sustainability front-runners. Therefore, companies place their sustainability knowledge centers in Europe and, then, roll out the strategies and programs to their departments, subsidiaries, and partners overseas, particularly in Asia. While it could be assumed that managing a firm across different countries is challenging due to cultural differences, interviewees pointed out that the national culture of a firm was not as relevant as its organizational culture.

"Corporate culture overrules the differences in national culture."

- *Interviewee Company E*

The company size is also seen as a two-fold factor. According to the interviewees, a larger firm can have various advantages, such as more resources, better IT infrastructure, and higher bargaining power. However, it can also be a challenge due to greater complexity and the quest to align scattered corporate entities. In turn, smaller companies can easily create an inspiring team spirit and a euphoric mood for sustainability.

Meanwhile, as mentioned by the interviewees, the corporate legal form impacts the reporting practices, as it determines the extent to which companies are obliged to report. Public companies are constrained to publish sustainability information externally and are also inclined to do short-term wealth maximization, which counters the often long-term sustainability efforts. Instead, private companies, especially when having a family as majority shareholders, enjoy more discretion. These companies are more inclined to invest in sustainability strategies out of

ethical considerations and often lack solid external communication about corporate sustainability progress.

"Often, family-owned businesses are very aware of sustainability, but it's not a strategic topic. They do tremendous great work but they just neither report, nor talk about it."

- *Interviewee Expert A*

If an industry is connoted with low sustainability efforts (e.g. event technology), firms attempt to gain a competitive advantage by conducting sustainability practices. In turn, in sectors with high sustainability efforts (e.g. vehicles), the fear of losing market share by neglecting sustainability works in favor of tangible actions. Interestingly, it was suggested that the attractiveness of an industry, in particular the respective industry players like customers and sub-customers, can shape a company's sustainability efforts, e.g. in the event technology with artists and music bands.

"The market acts as a push. If it was too easy to be in the market, we would not serve the same quality"

- *Interviewee Company F*

5. Analysis and Discussion

The following chapter will analyze the results of the empirical research and compare them to the studied literature. The said discussion is addressed in five thematic chapters. Both similarities and differences have been encountered where, predominantly, the literature and the empirical data emphasize the importance of contextual factors. There is no one-size-fits-all model regarding the applied implementation process and the tools chosen to drive the implementation. In particular, the divergence between countries observed in the empirical interviews emphasized the relevance of cultural values in the implementation process.

5.1 Origin of Sustainability Strategies

Both the literature and the interviews highlighted the significance of external stakeholders and how firms' accountability to this group reinforced the importance of external reporting practices. The interviews demonstrated that pressures from external and internal stakeholders constitute one of the most common drivers of implementation of sustainability strategies, along with legal regulations, competitive advantage, economic advantage, and resilience. These findings are mostly aligned with the study of James et al. (1999), albeit philanthropic and ethical considerations were newly determined drivers. Nevertheless, they remain less critical for most interviewed firms.

The conducted empirical research paired with Hofstede's (Hofstede Insights, n.d.) dimension of long-term orientation demonstrated that there is a correlation between a company's country of registration and its apprehension of sustainability strategy formulation factors. For instance, German companies emphasize the anticipation of altering regulations, laws, prices, and customer demands. Germany scores 83 points in the dimension of LTO, while Scandinavia obtains scores of 53 (Sweden) and 35 (Denmark). Consequently, the practices of Scandinavian companies are more responsively shaped by current or immediate eventualities.

While small firms consider or anticipate sustainability as an imperative for economic survival, large firms highlight the importance of current and potential future legislation. Public companies did not mention pressures from external shareholders to be a crucial factor for action. Sirsly and Sur (2013) state the motivation of risk-mitigation by institutional owners, which are likely to

possess shares in public companies. However, no such conclusions could be confirmed by the empirical data. Nevertheless, public companies state more tangible reasons, such as customer pressure, FMA, and economic motivation, in comparison to subsidiaries and family companies, which are rather inclined to state reasons tied to values of organizational culture. Family-owned companies, notably, perceive sustainability as an integrated part of their culture. This can be related to Soini and Dessein's (2016) sustainability framework, which describes sustainability as being embedded in or even representing the organizational culture. Family companies mentioned that demand for sustainability practices coming from (or due to) a generation change in the owning family was among the major initiating factors for the formulation of a sustainability strategy. Two of the three subsidiaries did not state pressure from the parent company as a key driver, as they consider themselves independent entities and brands since their acquisition. As the third is a more connected and integrated company in the parent company, the overall corporate strategy affects it more directly.

Regarding the implementation time, a difference can be noted between the literature, which has emphasized the need for sustainability strategies for decades, and the empirical data. The findings show that, for the most part, corporate entities started sustainability strategy implementation recently, with a median implementation start occurring between 2019 and 2020. The findings suggest that the earlier a company starts its implementation process, the higher probability it has to be successful and lead its industry. However, the study also outlined that a late implementation does not necessarily make success impossible if suitable practices are applied fast. Furthermore, it can be observed that public companies have a relatively late start compared to firms of other legal forms. These results were unexpected due to the disclosure obligation depending on the public status (European Commission, n.d), which could be assumed to be a driver for sustainability strategy implementation. It can, therefore, be argued that the reporting requirements are not considered sufficient means to drive real change. However, the sample size does not allow general conclusions, and this hypothesis needs further exploration.

5.2 Organizational Integration of Sustainability

Most companies choose to simultaneously use top-down and bottom-up approaches, to different extents, as both have different advantages. Notably, bottom-up approaches favor the integration

of employees. In the PMS literature, this approach is described as beneficial, as it can lead to increased employee attitude, perceived social pressure, and the ability to initiate actions (Groen, Wouters & Wilderom 2012). Moreover, according to Groen, Wouters, and Wilderom (2017), the joint creation of performance management systems between managers and employees is likely to enhance employee performance. While some corporate entities seem to follow this recommendation by discussing ways to enhance sustainability with their employees and by including them in the change of mindset in the organizations, the process of integrating employees in practice remains largely immature. For instance, the involvement of workers does not apply to the design of targets and is, thus, not aligned with Groen, Wouters, and Wilderom (2012). This integration is also shaped by contextual factors, particularly by the firm's country of registration. Scandinavian companies encountered less resistance from employees in transformations regarding sustainability. This is relatable to the findings of Strand, Freeman, and Hockerts (2014), stating that Scandinavian countries and companies have a long history of leading global sustainability practices. Thus, employees are likely to be accustomed to these procedures and large organizational change initiatives are often less consequent.

Due to the difference in Uncertainty Avoidance [UAI] scores (Germany 65, Sweden 29, Denmark 23, cf. Hofstede Insights, n.d.), it was expected to depict a more rigid top-down approach regarding sustainability implementation in German rather than in Scandinavian companies. The empirical data confirmed that, in the domain of target setting, German companies are more inclined to top-down approaches which, again, links back to the difference in UAI. Furthermore, corporate programs and wide-scope projects are more likely to be found in German companies and, in turn, more extensive middle management and employee discretion in Scandinavian companies. This links back to the primarily flat hierarchies applied in the latter region, which refers to the combination of low Power Distance (Sweden 31, Denmark 18) and low Uncertainty Avoidance scores (Sweden 29, Denmark 23).

Regarding the organizational implementation of sustainability, literature and empirical findings are opposed. In contrast to Helleno's (2017) results that responsibility for measuring TBL dimensions is put on different already established departments, the analyzed firms are mostly forming specialized sustainability entities, either in a common format or separated along TBL dimensions. It has only been observed that smaller companies tend to have their sustainability

actions being decided and spread over the organization without a distinct department exclusively dedicated to sustainability. One firm even conducts measurements aligned to production stages, which directly opposes Helleno (2017), stating that manufacturing firms are not monitoring TBL metrics in the production process. A potential explanation might be found in the fact that the pace at which sustainability practices in manufacturing companies have been evolving since 2017 has been higher than the durability of Helleno's results. However, Helleno's (2017) findings are observable in the companies' establishment of lists of SPI. The threefold dimensions appear to be relatively decentralized in their quantification. While the sustainability department generally measures progress thanks to a list of SPI, the indicators selected belong mainly to the environmental dimension. In contrast, the social dimension appears to be more measured in the human resources department, while the accounting and finance divisions are in charge of economic indicators. As mentioned by Figge, Hahn, and Schaltegger (2002), this decentralization blurs the correlation between economic success and sustainability actions. The use of software being able to gather these indicators in a centralized manner would be a possibility to help solve this issue.

Overall, it has been observed that manufacturing companies focus more on environmental than on social indicators. This could be explained by the characteristics of this data, being easier to extract and more measurable. Moreover, it shows a difference with the research of Hristov and Chirico (2019), which emphasizes that these indicators all benefit from an equal relevance, as they exert a reciprocal influence on strategic objectives.

Concerning cultural dimensions, Scandinavian countries include more social indicators in their PMS, such as gender ratios at different managerial levels. This phenomenon is reflected in the literature, as Scandinavia benefits from a lower MAS score (Sweden 5, Denmark 16) in comparison to Germany (66). German companies, in turn, are observed to create and monitor longer and more detailed lists of sustainability indicators than Scandinavian corporations, which can be explained by the higher German UAI score. Consequently, German companies stated more technical difficulties, notably finding common KPI definitions or gathering sufficient data points. This is not surprising since longer and more detailed lists are prone to greater complexity and, thus, a higher probability of encountering obstacles. Also larger companies are more inclined to monitor longer lists of sustainability indicators which is aligned to Zharfpeykan and

Akroyd (2022) stating that these companies, especially in lower-impact industries, integrate more sustainability indicators into their PMS.

5.3 External Reporting

The pressures of external stakeholders and, consequently, the need to report externally have been mentioned by both scholars and practitioners as drivers of sustainability strategy formulation. Moreover, the regulations constraining large public companies to comply are also widely commented on by both sources. However, no empirical evidence has led to assume a potential correlation between external reporting practices and neither company size nor legal form. The large public companies surveyed still tend to have similar external reporting practices than their counterparts. There is even a tendency for public companies to introduce their reports after subsidiary companies but at the same time as family-owned firms. These results are unexpected because it could be assumed that larger companies would benefit more from external reporting, as they have more reasons to publish external reports due to their accountability to shareholders, as mentioned in the literature. However, the opinion of the majority of interviewees is aligned with the literature regarding the importance of publishing external sustainability reports (Kocmanová & Dočekalová, 2013), as most companies currently report externally or plan to do so in the future. This current inclination of companies toward external reporting demonstrates their abilities to anticipate the upcoming requirements and efforts to respond to pressures of external stakeholders.

5.4 Methods of Implementing Sustainability

Concerning the choice of implementation tools, the discipline of performance management proposes predominantly Balanced Scorecards in various forms. They are relevant in sustainability strategy since they connect strategy and operations and allow an integration of non-financial indicators, which contributes to a balance between short and long-term objectives (Hristov, Chirico & Appolloni, 2019). However, during the empirical study, the researchers encountered low familiarity with any kind of BSC. Several hypotheses can explain this phenomenon. Notably, introducing and maintaining a rigorous BSC approach comes with high resource necessity which smaller companies generally can not afford (Zharfpeykan & Akroyd, 2022). Secondly, the decision-making process by practitioners leading to the selection of

implementation tools does not seem to aim at an overarching model like a BSC. Rather, the challenge is to discover suitable solutions on the market to fulfill specific needs and respond to particular challenges.

As the roots of the original BSC model date back more than 30 years, contemporary professionals could see it as an outdated method. A further reason for the neglect of BSC is that, in manufacturing companies, professionals of non-business disciplines, such as engineering, often hold managerial positions. Thus, they are likely to be less aware of the model, since it had arisen in business research (cf. Kaplan & Norton, 1992). Additionally, the more suitable advancements on the BSC, namely SBSC and ASBSC, are rather niche solutions proposed by single scholars and do not enjoy high coverage in the domain of academics and practitioners. Nevertheless, all analyzed companies measure non-financial indicators, which is one of the main attributes of a BSC and represents a quite suitable data basis for further integration into a conceptual model. This shows that practitioners understand the relevance of implementing those indicators to respond to the pressure of internal and external stakeholders. Company B's own model entails elements of the ASBSC concerning the conceptual and structural dimensions (cf. Hristov, Chirico & Appolloni, 2019). The number of meetings regarding sustainability and the staff's knowledge and comprehension of sustainability goals are important indicators in the said framework. Nevertheless, an intentional linkage remains rather unlikely, given the company's generally limited awareness of BSC.

Living in an era characterized by the emergence of modern technologies, digitalization tools appear to be more attractive options to companies in quest of tools to ease their sustainability implementation journey. While they can also be considered as implementation tools. However, their objective differs from the ones of BSC and its derivatives. Predominantly, BSCs aim at drilling down targets and communicating them internally, while the existing digitalization tools' main objective is to measure and display data. Notably, this is the case for the software SAP, the leader of the ERP market mentioned by two companies in this study. Qlikview, meanwhile, has also been mentioned.

While expensive and unspecialized in sustainability, these tools are efficient in data management and allow managers and employees with licenses to gain visibility and control over sustainability actions and measures. (Gargey & Brady, 2005) Other tools, such as Planetly, mentioned by the first expert interview, and Bottomline[3], SPIonExcel, RefiOpt, and PNS solution, covered in the

literature, specialize in sustainability management, notably in the measurement of carbon footprints. (Cucek, Klemes and Kravanja (2012). Lastly, companies also commonly use basic tools, such as the Microsoft Package, particularly Excel and Powerpoint. However, an important rationale from both experts interviewed revealed the absence of a centralized software, which would be largely needed as it would benefit firms with the possibility of centralizing data management and carbon footprint measurement.

The practical aspect of these digitalization tools might be a reason for their poor representation in the literature. Nevertheless, they constitute a valuable opportunity for businesses, despite the scarcity of the tools being able to display the TBL dimensions in a centralized manner. This centralization could be beneficial for companies, especially larger ones, facing difficulties with the coordination of the implementation. Besides, the lack of centralized software, the number of tools available, and the need to account for different contextual factors seem to be important factors for the confusion of the managers in charge of the implementation process.

Another relevant finding resides in the fact that most interviewed companies do not automate data input, storage and presentation. The majority rely on manual data collection procedures. This finding is significant since an inappropriate quantification of data hinders the implementation process. (Hristov & Chirico, 2019) However, as most companies' implementation journey is still an ongoing process, it can be assumed that automatizing data measurement is a possible next step in the course of action.

Considering the analyzed sample, no firm has been employing rewards that are tied to sustainability performance. Nowadays, only German companies are planning or considering the introduction of financial incentives for sustainability targets. This is explainable by cultural differences in the joint contemplation of Germany's high UAI and low IVR score. The former suggests that some rules and mechanisms need to be applied to reduce undesired outcomes. Meanwhile, the latter states that employee self-expression is not considered highly important. Therefore, the quest to align workforce intention with company intention necessitates some supporting instruments. According to Groen, Wouters, and Wilderom (2017), instead of monetary incentives and non-monetary rewards, using these metrics for evaluative discussions

with employees entails positive effects on employee performance. However, there is still no general agreement on the effectiveness of financial incentives. Notably, due to the possible counterintuitive effect of "crowding out" on intrinsic motivation, financial rewards can have rather negative effects on interesting tasks and positive effects on monotonous ones (Chamorro-Premuzic, 2013). As the quest of increasing sustainability performance can be considered a rather pleasing, non-repetitive, and attractive task, the introduction of financial incentives remains questionable.

5.5 Consequences of Sustainability Strategies

A further mutual finding between the studied literature and the conducted interviews is found in the economic gains following the implementation of sustainability strategies. Hristov, Chirico, and Ranalli (2021) mention a period of two to three years between the implementation and the apparition of financial gains. Similar results have been observed following the analysis of the empirical findings. As most companies seem to be at the beginning of this implementation process, these findings are encouraging for practitioners. Moreover, Figge et al. (2002) emphasize that it is complex to correlate economic success with the contribution of sustainability actions. Different interviewees also mentioned the challenge of this task. There is also a visible correlation between company size and sustainability results, as smaller companies tend to have less return than larger ones.

Lastly, the challenge emphasized in the literature review and in the empirical findings appeared similar. While literature highlighted the problem of misalignment between strategy formulation and implementation, this obstacle is highly visible in the studied sample, as the majority of interviewees faced difficulties regarding the selection and establishment of implementation and quantification tools as well as the drill-down of targets into operations and daily activities. Additionally, it is not the only encountered common issue regarding obstacles faced by firms. In fact, while the obstacles mentioned in interviews could be considered relatively hands-on, they can be sorted into the categories highlighted in the literature. The mentioned challenges revealed the confusion and lack of knowledge of practitioners.

5.6 Misalignment between Strategy Formulation and Implementation

For decades, the literature has been reviewing the lack of calibration between sustainability strategy formulation and implementation (Zahn, 1979; Rodrigues & Franco, 2019). This misalignment has also been noticed in the interviews, as the target definition seemed to be well mastered by interviewees, while their measurements and quantification are still in a premature state. The expert interviews also revealed that disintegration was principally caused by confusion and lack of knowledge of executive managers. However, a divergence was found in the field of organizational inertia. While it appeared as a hindering factor for the implementation process in the literature, the conducted interviews portrayed executive managers as being largely open and willing to change, despite, sometimes, facing difficulties to convince employees to adopt a new mindset.

5.7 Updated Framework

The updated framework depicts a blend of findings from literature and empirical study. The influence of contextual factors on both drivers for sustainability and implementation tools was confirmed and reinforced. Furthermore, the drivers for sustainability formulation depicted in the literature were found to be highly similar to the ones mentioned by the interviewees. An exception to this appears to be innovation, despite its outlined close relationship with sustainability practices in the literature; thus, colored in white. Furthermore, low inclination by practitioners toward established approaches like BSC suggests minor relevance regarding sustainability strategy implementation in the manufacturing industry (colored in white). Among emerging approaches (cf. chapter 2.4.3), the application or preference for digitalization tools was emphasized and, therefore, colored in blue. Lastly, the empirical results illustrated the misalignment between sustainability formulation and its implementation. However, as companies are now starting their implementation journey, it can be argued that this premature calibration is going to be enhanced in the following years.

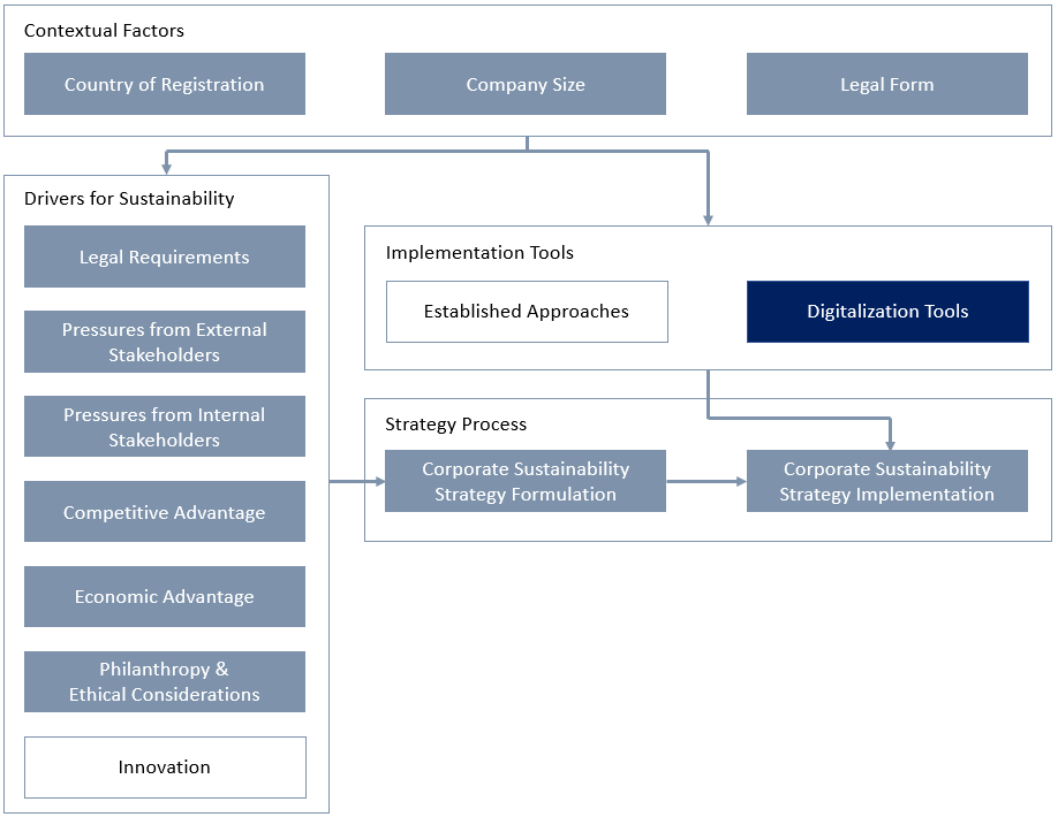

Figure 11: Updated Framework with Empirical Findings *(Developed by researchers)*

6. Conclusion

The purpose of this thesis was to explore the process from formulation to implementation of sustainability strategies in manufacturing companies in the European Union and the contextual factors that influence this integration. To delve into this phenomenon, the following (1) research question and (1a) subquestion were formulated:

(1) How do EU manufacturing companies translate sustainability strategies from formulation into implementation through tools and models?

(1a) How does this translation process differ among manufacturing companies regarding contextual factors, namely the organization's country of registration, size, and legal form?

These questions were addressed thanks to a single-case study on the EU manufacturing industry involving interviews with representatives of eight manufacturing companies of different industry sectors in Scandinavia (Sweden and Denmark) and Germany. The findings suggest that the implementation process differs among organizations, concurrently in approaches, objectives, and tools. While the formulation of sustainability strategies seems to be well mastered in the majority of cases, some amount of confusion and limited knowledge and expertise remains among practitioners responsible for its integration. However, the last two years seem to have been decisive for firms since significant progress in the implementation of formulated sustainability strategies was achieved. Regarding implementation tools, the emergence of software used for the collection and monitoring of sustainability data tends to replace BSC and other established models. While understudied in the literature to date, contextual factors, namely country of registration, company size, and legal form, seem to influence different aspects of the implementation process. Notably, the country where a company is located influences the time and approach related to the implementation, the challenges faced, the indicators chosen, the tools applied, and the integration of employees in the elaboration of targets. The company size mainly impacts the resources available and, thus, the implementation tools chosen to drive the change. The corporate legal form primarily influences the external reporting practices and the general view of sustainability. Moreover, the industry principally influences the motivation for formulating sustainability strategies.

6.1 Theoretical Implications

The principal theoretical implication of this study is aligned with Woodard (1980) regarding the importance of contingencies in the outline of an organization's optimal strategic approach. Contextual factors appear to be crucial in the implementation process of corporate sustainability strategies and remain an under-researched area. Among these factors, the most decisive one seems to be the firm's country of registration, which influences several aspects of the implementation process. Since the sample countries are culturally relatively close, it can be assumed that the significance of this factor may be even greater when considering countries with larger distances in culture and legislation. Moreover, expanding on other contextual factors toward extremes can intensify the results' significance. Secondly, the research confirms the misalignment between corporate sustainability strategy formulation and its implementation. However, as the implementation process seems to have started recently in most organizations, it would be interesting to conduct further research on that matter in the following years to assess the outcomes of this integration. The research also outlined the relevance of PMS and organizational theories about this topic. The analytical generalizability (cf. chapter 3.5) is mitigated by the study's small sample size of eight companies and two experts but supported by the data set being diverse in several dimensions. If a future study entails comparable divergence in contextual factors, comparable outcomes are likely to be expected.

6.2 Practical Implications

While the formulation of sustainability strategies seems to be understood by executives, there is still confusion and a lack of knowledge. This could be mitigated by practitioners making themselves aware of the magnitude of available implementation tools, as there is a strong correlation between the awareness and the application of sustainability management tools. The results also emphasize the importance of theories of other fields in strategic management, such as PMS and organizational theories, and their correlation with corporate sustainability strategies. It is, therefore, crucial that practitioners understand these theories to drive better sustainability strategy implementation. Moreover, the findings highlighted the relevance of employee involvement in elaborating sustainability performance management systems to enhance employee and corporate performance. Thus, it is relevant for managers to integrate their employees in the definition of targets and the quantification and decision-making phase.

Moreover, the research outlined the importance of driving an implementation process coherent with the company's contextual factors, demands, and resources. Thus, it is fundamental that practitioners consider the characteristics of their company, namely its country of registration, size, and legal form, before choosing the necessary tools and deciding on the best way to approach this change. Consequently, international companies with entities in culturally diverse countries are recommended to consider different cultural dimensions when implementing sustainability strategies. The value of external reporting has also been emphasized, as it is a way to anticipate the upcoming regulations and increase transparency towards external stakeholders. For policymakers on a supranational level, e.g. European Union, it can be beneficial to view corporate sustainability integration in a more detailed manner and to account for cultural differences in overarching legislation and regulations.

6.3 Limitations and Future Research

To foster relevance and transparency, it is crucial to mention the study's limitations. Firstly, it is acknowledged that the sample size of one company per sector impedes the projection of the results on the entire sector. Equally, the selection of these sectors is insufficiently covering the entire manufacturing industry. Furthermore, the sample size is too small to draw general conclusions about differences regarding country of registration, company size, and legal form. Instead, it gives first exploratory indications and enables further hypothesis formulation. The small sample size was caused by time constraints of the researchers given the assignment's conditions, as well as the researchers' number of contacts in the EU manufacturing industry. Besides, geographical distances hindered the possibility of conducting on-site interviews, which could have been a way to grasp an enhanced representation of the company and its sustainability strategy implementation process. As sustainability is quite a contemporary, essential, and, therefore, risky topic for many companies, it is probable that interviewees were keen on emphasizing positive information regarding their firm and that negative content may have remained non-disclosed. Thus, the reluctance of interviewees to share certain sensitive information, despite the anonymous status, is a further limitation of this research. This could have potentially been mitigated by the application of formal non-disclosure agreements. Moreover, the fact that many firms were still in the early stages of implementing their sustainability strategy sometimes impeded more in-depth answers. Additionally, it was noted that

the interviewees could not answer all questions raised as their professional position limited them to a certain hierarchical level, e.g. operational instead of a strategic role, or a particular area, e.g. ecological sustainability. In such a case, secondary data was used to fill the gaps that were left open by the interviewees. Lastly, sometimes communication was affected by the fact that the vast majority of interviewees speak English as a second language.

Due to the qualitative approach of this research, one limitation includes the lack of statistical methods to prove the correlation between variables. Hence, further quantitative research could focus on the impact of the applied contextual factors on a larger scale. Also, the causality between the methods of sustainability strategy implementation and the implementation's success remains relatively unexplored. An even more compelling analysis would entail the causality between the manners of strategy implementation and the actual progress in sustainability. Limiting the independent variables (such as the contextual factors) to equal characteristics can prove to be a worthwhile undertaking to detect more valuable insights. Since the units of analysis only contain companies with a maximum of 25.000 employees, the expansion of the research questions (1) and (1a) to larger firms could provide valuable insights, mainly because of the generally higher sustainability impact. Additionally, the rise of digital tools for assessing and monitoring sustainability merits more attention in the body of research. As discussed, the linkage of sustainability performance and financial and non-financial incentives for both employees and managers remains rarely adopted and controversially discussed, which suggests an experimental approach to investigate this relationship. Lastly, the conducted study is proposed to be repeated in some years, as most firms are rolling out their sustainability strategies nowadays. Since the strategies' outcomes are to be encountered in approximately two to three years, new findings are likely to be of increased value.

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Appendix

Appendix A_1: Interview Guide *(pilot)*

Ask for permission for voice recording and state anonymous status

- Please talk about your company's standpoint and objectives in terms of sustainability.
    - What are the regulations that the company has to comply with?
    - Where do the efforts depart from? What and who was the initiator?
    - Which guidelines or frameworks are you inclined to follow?
        - GRI? / SDG? / ESG? / SBTi?

- How are sustainability objectives measured?
    - How do you use SPIs? How has this list been established?
    - Do you use a Balanced Scorecard? Why, Why not?
    - How do measurements differ at different operating levels?
    - How do you involve the different stakeholder groups (employees, clients, shareholders)?
    - How is this measurement done inside your firm in different countries?

- What do you measure in terms of environmental sustainability?

- How do you measure CO2 emissions?
    - What stage is included at what operational level?
    - What are your objectives regarding emissions?
    - With what stakeholder group do you share this information?

- How do the sustainability improvements of your company have led to financial gains/losses?

- What do you measure in terms of social sustainability, and why?

Appendix A_2: Interview Guide *(updated)*

Ask for permission for voice recording and state anonymous status

- What is your company's standpoint and objectives in terms of sustainability at the moment?
- What are the most important success factors for your strategy implementation?
- How are sustainability objectives measured?
- Which difficulties did you face when starting to implement the sustainability program? Which barriers do you still want to overcome at the moment?
- How do you use any incentives for reaching targets?
- How do you communicate progress in sustainability?
- How do you organize any kind of sustainability software?
- What are the impacts of contextual factors like country of registration, company size, legal form, and industry?
- Do you already see positive/negative influences of your sustainability strategy?

Appendix B

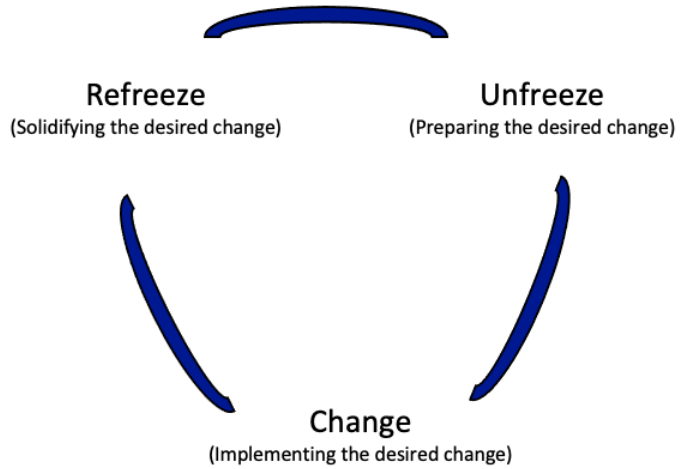

Figure 12: Lewin's 3 Stage Model (Nakigudde, 2019, p.7)

Appendix C

Number	KPI	Number	KPI
1	Investment Risk Management	35	Ownership structure and institutional investors
2	Internal Controls and Monitoring	36	Socially responsible investing
3	Risk Management	37	Social risk management
4	Political risk	38	Social education and training
5	Financial discolsure and timelines	39	Social disclosure
6	Non-financial information	40	Product safety
7	Disclosure on Board and Committees	41	Customers
8	Chairman/ CEO separation	42	Supply chain
9	Board Composition: board size	43	Anti-competitive behavior
10	Board Composition: board expertise	44	Innovation capacity
11	Board Effectiveness: board meeting	45	Employees compensation
12	Board Effectiveness: committee	46	Employee turnover
13	Board Effectiveness: committee meeting	47	Labor practices
14	Board Effectiveness: board attendance	48	Employees work-life balance and family
15	Board diversity: Women	49	Health and safety management
16	Board Composition: Classified/ Staggered boards	50	Employee productivity
17	Board independence: independent directors	51	Sweatshop, child labor, and forced labor
18	Board independence: meetings of outside directors	52	Human rights
19	Audit and Risk Committee	53	Community Development
20	Audit contract, report and audits selection and remuneration	54	Philanthropy
21	Committees independance	55	Stakeholders
22	Nomination and compensation committee	56	Non-discrimation and Equality
23	CG, CSR and ESG committees	57	Women and minorities
24	Sustainability Pay Link	58	Compensation fairness
25	Executive compensation	59	Environmental Risk Assessment
26	Compensation plan	60	Environmental Education
27	Performance evaluation crieria	61	Environmental Reporting
28	UN Global Compact	62	Climate change and carbon
29	Legal compliance	63	Land Use, environmental protection & Biodiversity
30	Litigation	64	Waste
31	Codes	65	Emission and pollution
32	Corrpution and Fraud	66	Environmental Management System
33	Business Ethics	67	Energy Efficiency
34	Shareholder rights	68	Water Use

Figure 13: Sustainability Indicators Aligned to ESG (Rahdari & Anvary, 2015, p.764-766)

Appendix D

Environmental performance	
1. Emissions	1. Air emission
	2. Water emission
	3. Land emission
2. Resource utilization	4. Energy utilization
	5. Water utilization
	6. Fuel consumption
	7. Land used
3. Waste	8. Solid waste
	9. Hazardous waste
	10. Waste water
Economic performance	
4. Quality	11. Product reliability
	12. Product durability
	13. Conformance to specification
	14. Customer complaint
	15. Scrap and rework
	16. Reject rate
5. Cost	17. Material cost
	18. Setup cost
	19. Overhead cost
	20. Inventory cost
	21. Unit cost
	22. Labor cost
6. Delivery	23. On time delivery
	24. Delivery lead time
	25. Delivery speed
	26. Cycle time
	27. Due date adherence
	28. Schedule attainment
7. Flexibility	29. Volume flexibility
	30. Product flexibility
	31. Process flexibility
	32. Technology flexibility
	33. New product development
Social performance	
8. Employee	34. Training and decelopment
	35. Occupational health and safety
	36. Turnover rate
	37. Job satisfaction
	38. Community satisfaction
9. Supplier	39. Supplier certification
	40. Supplier commitment
	41. Supplier initative

Figure 14: Sustainability Performance Indicators TBL (Amrina & Yusof, 2011, p.1095)

Appendix E

Software name	Price	Objective	Pros	Cons	Adapted for	Missing features
SAP	Professional: $3'213. Limited: $1'666. Starter: $1'357	Business processes and data (not just regarding sustainability)	Integrated system. Can be used for different processes (HR, procurement,...)	License cost	Bigger companies	Feature to help carbon neutrality transition
Qlikview	Starts at $1'350. Free version for small startups	Business analytics	Integrated system. Can be used for different processes (HR, procurement,...)	License cost	Bigger companies	Feature to help carbon neutrality transition
Salesforce	$25 per user per month for the essential feature, $75/ month for the more complete option	CRM - Cloud-based software	More affordable, Integrated system with sustainability options such as tool to help carbon neutrality transition, adapted for different industries, needs, and company size	Pay for add-on, complex and time-consuming configuration, cluttered interface, poor customer support	All sizes (depending on the plan chosen)	Ability to be linked with other softwares
Planetly	Not found	Carbon Management	Calculate, reduce, offset emissions, provide certifications. Transparency, comparability, scalability, efficiency.	Only focused on environmental sustainability	Companies struggling with emissions measurements. Suits all sizes and sectors.	Data analytics and linkages with other business departments and sustainability dimensions
Excel	$159.99 one-time	Spreadsheets	Already used by most companies, ideal for KPIs list	Limited functions	All companies	The software is only for spreadsheets. Must be used in addition to other tools.

Figure 15: Selection of Sustainability Software *(Developed by researchers)*