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**Enterprises' sustainability orientation: A natural language processing
approach**

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ABSTRACT

Sustainability in business is widely viewed as a strategic orientation decision. However, comparatively, little is known about assessing sustainability orientation and its drivers and implications for enterprises. This thesis examines sustainability orientation from a diverse perspective and focuses on sustainability orientation using corporate narratives. Specifically, this thesis harnesses the power of natural language processing (NLP) techniques, which is a field of artificial intelligence (AI), as a tool for research in extracting insights from textual communication.

The thesis comprises three studies along with a cohesive synthesis of their implications. First, I begin by drawing on the vast literature on corporate social sustainability (CSR) to explore contextual factors that drive enterprises' behaviour towards sustainability. Specifically, the results illustrate that CSR practices are associated with external constituents' scrutiny levels. It is strongly related to political factors and social visibility and partially to media exposure. In addition, the study provides evidence to illustrate that positive influences on CSR practices may have been short-lived when a longer time horizon is considered.

Second, by exploring small and middle-sized enterprises (SMEs), I elucidated the implications of a communicated sustainability orientation strategy on enterprises' economic performance. I used the communication of social values as a signal of sustainability orientation and explored its impacts, also considering social actions as an additional signal of sustainability orientation. The findings suggest that the effect of communicating social values on economic performance varies between social enterprises and traditional commercial enterprises. Unlike traditional commercial enterprises, social enterprises do not

achieve economic performance advantages by communicating social values. Instead, it is the social actions of social enterprises that positively influence economic performance.

Third, I explore sustainability orientation through the Sustainable Development Goals (SDGs) lenses. The last empirical study explores the effect of a communicated SDG orientation strategy on the economic performance of traditional commercial enterprises and social enterprises. The results demonstrated a positive relationship between the communication of a narrow set of SDGs and enterprises' economic performance. The extent of this effect is similar between social and traditional commercial enterprises. The results take on the meaning that stakeholders might appreciate an enterprise's SDG orientation strategy that concentrates on a narrow set of SDGs within distinct purpose-driven institutional contexts.

This thesis is an effort to increase transparency about critical aspects of enterprises' sustainability orientation: its assessment, influential factors and implications for economic performance. This doctoral thesis provides significant practical and theoretical contributions to understanding the complex dynamics between sustainability orientation and business context. By focusing on the evolutionary nature of social norms, this research provides an aggregated view of how environmental pressures affect an enterprise's practices towards sustainability. This thesis also offers an initial step in examining the relationship between a communicated sustainability orientation strategy and enterprises' economic performance. It highlights that social enterprises and traditional commercial enterprises experience different external pressures and should tailor their sustainability orientation strategies to their specific context. Moreover, this thesis reinforces that innovative NLP approaches can overcome challenges in measuring sustainability orientation.

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Heitor for lovingly sharing and supporting me in this journey. Denise and Rui Carlos for always being a warm place to me hearth. Wally, my grandmother, who already left but whose words keep inspiring me to be better and go beyond. This achievement is dedicated to you.

THESIS RELATED RESEARCH OUTPUTS

Chapter 3 - Published Journal Article

Culpi Mann, E., Gomes, H. M., Williamson, A. J., & Castelo Branco, M. (2023). A decade of biodiversity conservation: insights into corporate social responsibility in an emerging market context. *International Journal of Emerging Markets*, ahead-of-p(ahead-of-print). <https://doi.org/10.1108/IJOEM-05-2022-0744>

Chapter 4 - Unpublished Journal Article - Under Review

Culpi Mann, E., Safari, N., Williamson, A. J., Dillon, S., Oetzel, J., Gomes, H. M., Bifet, A., and Castelo Branco, M. (under review). Should a social enterprise publicly "toot its virtuous horn," or do social actions "speak louder than words"?. *Small Business Economics*

Conference Paper - Earlier version accepted in proceedings

Mann, E., Williamson, A. J., Gomes, H. M., Dillon, S., & Bifet, A. (2022). Should a Social Enterprise Publicly "Toot its Virtuous Horn"? An Artificial Intelligence Approach. *Academy of Management Proceedings*, 2022(1), 15344.

Chapter 5 - Published Journal Article

Mann, E. C., Safari, N., Oetzel, J., Dillon, S., & Williamson, A. J. (2024). Less is more? Communicating SDG orientation and enterprises' economic performance. *Journal of Business Venturing Insights*, 22, e00470.

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Chapter 1. Thesis Overview

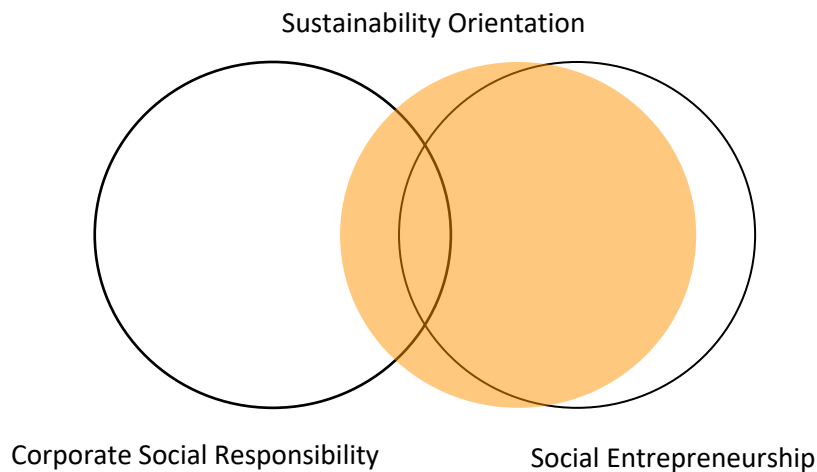
Enterprises' sustainability orientation represents a strategic commitment to integrating environmental and social concerns into business operations. Sustainability orientation involves addressing various internal and external pressures and is believed to impact enterprises' economic performance positively. Yet, challenges remain in the assessment and understanding of the dynamic influences and impacts on sustainability orientation. Sustainability in business is widely viewed as a strategic orientation decision, but its assessment, drivers and implications are not examined as much. This thesis contributes to our understanding of sustainability orientation by building on several fields of business management-related literature. This chapter begins by presenting an overview of key concepts to address this study critically. Second, this chapter outlines the multi-theoretical background to ground sustainability orientation, including organisational identity developed within the institutional theory and three other theories commonly applied to this phenomenon - legitimacy, signalling, and stakeholder theories. Next, the chapter summarises this doctoral research, including its primary purpose and general overview.

1.1 Key Concepts

This doctoral thesis connects to the enterprise's sustainability orientation literature in many fields of business management-related literature, such as social entrepreneurship and corporate social sustainability (CSR). Figure 1.1 represents the shared literature that grounds this doctoral thesis. There are three areas of literature from which this thesis draws: sustainability orientation, corporate social responsibility (CSR) and social entrepreneurship. The figure illustrates that sustainability orientation and social entrepreneurship literature significantly overlap, with the CSR literature having a much smaller overlap. This thesis

mostly draws on previous studies dealing with sustainability orientation and social entrepreneurship, with additional consideration of its connections to corporate social responsibility (CSR) literature.

Figure 1-1 Grounded Literature



Note: Image created by author.

This approach is not without limitations. The concepts related to sustainability are often complex, with various definitions emerging in the organisational context, commonly referred to as corporate sustainability (Linnenluecke & Griffiths, 2010). The field of corporate sustainability, characterised by definitional diversity, ambiguity, controversy, and confusion, suggests that pursuing a universal definition should be abandoned (Rego et al., 2017). My research primarily draws on sustainability orientation, a field often discussed within the broader realm of corporate sustainability. Organisations must cultivate a sustainability-oriented culture as they progress towards corporate sustainability (Crane, 1995). Consequently, the variety of definitions and ambiguities within sustainability orientation reflects the broader complexities of corporate sustainability. Notably,

sustainability orientation overlaps significantly with fields like CSR and social entrepreneurship. While each has distinct characteristics and ambiguities, they are also interconnected.

First, CSR is presented by the literature as the root of sustainability orientation (Bos-Brouwers, 2010). Many CSR principles are embedded within sustainability orientation (Ruiz-Ortega et al., 2021). I chose to draw from the vast CSR literature because it provides valuable insights into the contextual factors that drive corporations toward sustainability, an area less explored within sustainability orientation. CSR offers a comprehensive understanding of these drivers, enriching the exploration of sustainability orientation.

Second, social entrepreneurship provides a purpose-driven perspective that aligns closely with sustainability orientation, particularly in its focus on balancing social and economic purposes (Lehtimäki et al., 2021). By leveraging the social entrepreneurship literature, this research explores the economic impacts of sustainability orientation, especially in businesses pursuing dual social and economic purposes. The "doing well by doing good" paradigm, widely discussed in social entrepreneurship, provides a rich foundation for understanding the implications of sustainability orientation.

In summary, my approach centres on the strategic dimensions of sustainability orientation, CSR, and social entrepreneurship as they evolve within the broader context of corporate sustainability. CSR and social entrepreneurship were selected because they help to address specific gaps in sustainability orientation literature, offer complementary insights into the drivers and impacts of sustainability practices, and provide a richer framework for understanding sustainability in organisations. Focusing solely on the sustainability orientation literature would risk overlooking significant empirical and theoretical advancements in these related fields.

Finally, following Gladwin et al. (1995), I acknowledged that this approach is one of many that might be offered by scholars from the broader concept of sustainability. In this section, I present key concepts from the literature on enterprises' sustainability orientation and its connections to CSR and social enterprises.

1.1.1. Enterprises' Sustainability Orientation

In today's environmental world, people are more conscious about sustainability (Khizar et al., 2021), yet sustainability is an evolving field (Martins et al., 2022). Sustainability has gained prominence in the public consciousness since the 1990s (Pérez-Batres et al., 2012), and consequently, issues related to sustainable development have transformed the corporate landscape (Abhayawansa et al., 2021). Over the years, sustainability issues in business management have been steadily growing, strategically and operationally (Broccardo et al., 2023).

In 1985, The United Nations (UN) presented the concept of sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland et al., 1985, p.10). Sustainability in business becomes a strategic orientation decision as social pressures progressively influence corporate values and behaviours (Khizar et al., 2021). In September 2015, the United Nations (UN) launched one of the most pivotal initiatives for sustainable development: the Sustainable Development Goals (SDGs). The SDGs are an international framework that encompasses the triple bottom line of sustainable development, which includes aspects related to environmental, social and economic dimensions (UN, 2015). They can be defined as a plan of action for prosperity, people and the planet (UN, 2015). The SDGs set ambitious goals to address the 17 most urgent concerns faced by humanity by 2030 (Khizar et al., 2021), including eradicating

poverty (SDG1), biodiversity conservation (SDG14 and SDG15) and combatting climate change (SDG13). As such, there has been a growing number of empirical studies on enterprises' sustainability orientation in the last 10 years in many fields of business management-related literature (Khizar et al., 2021).

In the literature, aligning economic, environmental, and social principles within an enterprise's core strategy is commonly referred to as sustainability orientation (Kuckertz & Wagner, 2010). Sustainability orientation involves preserving nature and supporting life and communities while actively seeking opportunities to innovate future products, processes, and services (Shepherd & Patzelt, 2011). Sustainability orientation is also known as *environmental orientation*, *social orientation*, *social and environment sustainability orientation*, *green orientation and sustainable orientation* (Khizar et al., 2021), *strategic sustainability orientation* (Ahmić, 2022), *sustainable management orientation and sustainable development orientation* (Khizar et al., 2022). Enterprises' sustainability orientation can be defined as an enterprise's long-term commitment to integrating environmental and social concerns into the process of decision-making (Shou et al., 2019). Another definition points out that sustainability orientation “is the overall strategic stance of a firm to integrate social and environmental aspects in firms' actions” (Khizar et al., 2021, p. 1009). As Danso et al. (2019) pointed out, a sustainability orientation emphasises organisational awareness and the adoption of sustainable practices, leading to a socially responsible business model. Therefore, common interpretations of sustainability orientation describe it as the incorporation of sustainability issues into corporate strategy (Vaupel et al., 2023; Claudy et al., 2016; Roxas & Coetzer, 2012).

The sustainability orientation literature presents two main scholars of thought. The first is conceptualised from a firm-level perspective (e.g., Danso et al., 2019), and the second

is conceptualised from an individual-level perspective (e.g., founders and top executives' characteristics: Danso et al., 2022). Within this perspective, three main streams of literature can be highlighted.

The first stream focuses on evaluating enterprises' sustainability orientation (Vaupel et al., 2023). Scholars assess sustainability orientation by examining the textual communication of enterprises (e.g., Mansouri & Momtaz, 2022; Moss et al., 2018; Vismara, 2019) and by exploring enterprises' sustainability performance (e.g., Abdulaziz-al-Humaidan et al., 2022; Cubas-Díaz et al., 2018; Broccardo et al., 2023; De Mendonca & Zhou, 2019; Souto, 2022). Moreover, studies on sustainability orientation lack assessment (Khizar et al., 2022) and when it occurs, the assessment of sustainability orientation is "relatively ad-roc" (Mansouri & Momtaz, 2022, p. 6). Scholars have highlighted concerns regarding assessing sustainability orientation due to the inability to draw consensus on the concepts and measures employed in previous research (Khizar et al., 2021; Khizar et al., 2022). Additionally, quantitative methods show dominance, mostly based on survey techniques, and few studies rely on large-scale secondary data (Khizar et al., 2022).

The second stream is devoted to identifying factors that influence an enterprise's sustainability orientation (Khizar et al., 2021; Khizar et al., 2022). Most of these studies explore firm-level factors (e.g., size and age) affecting sustainability orientation (Khizar et al., 2021). Few studies have explored environmental-level factors (e.g., contextual factors: social and political pressures) as drivers enterprises' sustainability orientation (Khizar et al., 2021). In addition, the current understanding of the drivers for sustainability orientation is notably fragmented (Balasubramanian et al., 2021). The literature lacks an aggregated view of external and internal factors influencing enterprises' sustainability orientation (Balasubramanian et al., 2021; Khizar et al., 2022). Additionally, most studies focusing on

exploring factors that drive sustainability orientation reported a static viewpoint; thus, longitudinal studies on the topic are lacking (Khizar et al., 2021).

The third stream investigates the relationship between sustainability orientation and enterprises' performance (e.g., Broccardo et al., 2023; Danso et al., 2022; Khizar et al., 2021; Mansouri & Momtaz, 2022). In this last group, there is a continuous debate on the *doing well by doing good* paradigm (Khizar et al., 2021). Considering the potential economic and financial benefits of sustainability orientation, it is understandable that scholars' attention has a great focus on identifying the effect of sustainability orientation on enterprise performance (Danso et al., 2022; Khizar et al., 2022). Yet, despite the process made by researchers, "previous studies have failed to examine the underlying mechanism through which sustainability orientation" positively influences enterprise outcomes, particularly business economic success (Danso et al., 2022, p. 3). Scholars have shown mixed results in this regard. (Khizar et al., 2022).

1.1.2. Corporate Social Responsibility (CSR)

While the literature often discussed sustainability orientation and corporate social responsibility (CSR) as distinct concepts in the realm of business ethics and corporate sustainability, these concepts are closely related (e.g., Roxas & Coetzer, 2012; Khizar et al., 2022; Kuckertz & Wagner, 2010). As defined by the European Commission (2011), CSR is a voluntary practice by which enterprises incorporate environmental and social concerns into their interactions with stakeholders and their business operations. The fundamental principle of CSR is enterprises' recognition of their societal impacts (Zatwarnicka-Madura et al., 2019) and incorporating the triple bottom line, which includes environmental, social and economic dimensions voluntarily (Amaladoss & Manohar, 2013). Therefore, CSR covers enterprises'

actions considering stakeholders' expectations and the dimensions of sustainability (Aguinis, 2011). Scholars suggested that CSR served as a source of inspiration for sustainability orientation (Ruiz-Ortega et al., 2021), where sustainability orientation is introduced based on CSR concepts (e.g., Bos-Brouwers, 2010).

The underlying concept is integrating environmental and social aspects into enterprises' strategic decisions over the long term (Bos-Brouwers, 2010; Zatwarnicka-Madura et al., 2019). CSR principles are often implemented as part of corporate overall sustainability strategy, and sustainability orientation, usually referred to as long-term sustainability, involves integrating CSR practices into various aspects of corporate operations (Danso et al., 2022). Therefore, in many ways, sustainability orientation encompasses CSR practices as one aspect of its broader scope, such as adopting renewable energy and green technologies (Danso et al., 2022).

Following previous studies (e.g., Danso et al., 2022; Mansouri & Momtaz, 2022), this doctoral thesis considers CSR as part and parcel of sustainability orientation. This research highlights the CSR literature to illustrate an initial step in examining the complex internal and external factors influencing sustainability orientation from a longitudinal perspective. For this research, internal factors refer to institutional factors (e.g., industry risk) and external factors refer to the environment contextual factors (e.g., social and political pressures).

1.1.3. Social Entrepreneurship

Sustainability orientation developed in the realm of social entrepreneurship (Parente et al., 2021). Social entrepreneurship “combines the passion of a social mission with an image of business-like discipline” (Dees, 1998, p. 1). Social entrepreneurs capture innovative opportunities to address social problems, often resulting in the creation of social enterprises

(Choi et al., 2020). Therefore, within the concept of sustainability orientation emerges the concept of social enterprises. Orientation towards sustainability is generally described as integrating sustainability principles into the core strategy of business (Claudy et al., 2016; Roxas & Coetzer, 2012). Therefore, social enterprises embrace sustainability as a central purpose (Gao & Bansal, 2013; Hahn et al., 2015). In line with this concept, social enterprise is an emerging domain that combines commercial initiatives with social purposes. This business model form is receiving increasing recognition as businesses that address global challenges for a better and more sustainable future.

From over two decades of research on social entrepreneurship and/or social enterprises (Defourny & Nyssens, 2017), have resulted in numerous definitions and classifications of social enterprises (Defourny & Nyssens, 2017; Rostron, 2015; Peattie & Morley, 2008). Due to the absence of a single definition of social enterprise (Young & Lecy, 2014), boundaries delimited by scholars are not always straightforward (Corry, 2010). However, some consensus exists at an abstract level regarding the nature of social enterprises (Young & Lecy, 2014).

The abstract nature of social enterprises denotes that they are legally structured organisations that blend “social purpose and economic profit through business activities” (Choi et al., 2020, p. 494). Social enterprises are businesses based on the “primacy of social aims” and their “primary activity involves trading goods and services” (Peattie & Morley, 2008, p. 95). This means that social enterprises are organisations that “fund their primary goal of addressing social or environmental issues through revenue earning business models, and both social and business aspects are central to their survival” (Bandyopadhyay & Ray, 2019, p. 122).

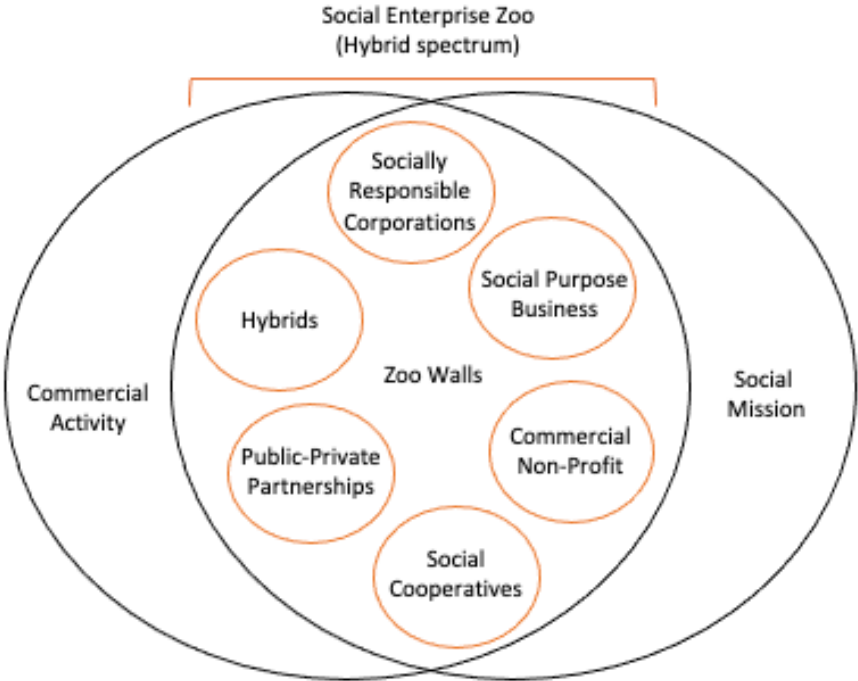
In addition, the abstract nature of social enterprises also relies on organisational forms. Social enterprises are a kind of hybrid organisation that pursues a social mission while engaging in commercial activities to sustain their operations (Battilana & Lee, 2014; Young & Lecy, 2014). The hybrid term in the definition emphasises the concept of organisational forms. Organisational forms rely on the traditional structure templates, represented by commercial businesses, public organisations and private charities, which are associated with private, public, and non-profit sectors, respectively (Battilana & Lee, 2014). The characterisation of the hybrid organisation as a new concept of form lies in the combination of different organisational elements (Battilana & Lee, 2014). Therefore, it can be defined as “the activities, structures, processes and meanings by which organisations make sense of and combine aspects of multiple organisational forms” (Battilana & Lee, 2014, p. 398). These organisational elements represent different aspects of an organisation that co-occur, including elements related to identity, including values and propositions, and forms represented by processes and structure (Battilana & Lee, 2014). Thus, social enterprises are a kind of hybrid organisations that apply private sector methods to reach primary social aims traditionally associated with the non-profit sector (Defourny & Nyssens, 2017; Battilana & Lee, 2014; Peattie & Morley, 2008).

However, the consensus among the authors’ definitions of social enterprise ends when questions like the following arise: “What constitutes a social purpose?” or “What are the relative priorities between social purpose and financial success?” (Young & Lecy, 2014, p. 1309). Young and Lecy (2014) proposed the “social enterprise zoo” metaphor to help understand the continuum between making profit and creating social impact. These scholars describe social enterprises as a “zoo” that accommodates different “animals”, each with its

own dimension of trade-offs. The animals represent the distinct forms of social enterprises, as demonstrated in Figure 1.2.

The “animals” in the “social enterprise zoo” have their own combination of “social and market goals in substantially different ways, and each species have distinct environments and needs” (Young & Lecy, 2014, p. 1307). For instance, this zoo framework proposes that socially responsible corporations are for-profit businesses that adopt corporate social responsibility (CSR) practices. From this framework, it is possible to infer that CSR is part of the strategic management decisions serving the overall purpose of maximising profits. Yet, socially responsible corporations are defined as social enterprises in the zoo metaphor of Yong and Lecy (2014).

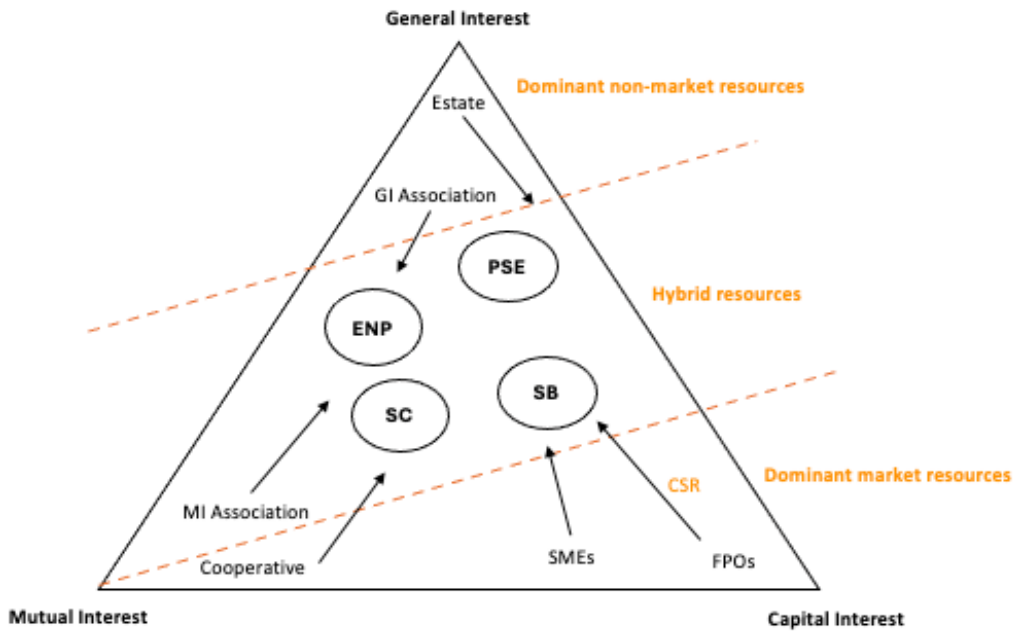
Figure 1-2 Social Enterprise Zoo Framework



Note: Image adapted from Young and Lecy (2014). *Socially responsible corporations* are for-profit organisations that adopt corporate social responsibility practices. *Hybrids* internalise features of other forms of social enterprises by integrating components with social versus commercial purposes (e.g., non-profit business conglomerates). *Public-private partnerships (PPPs)* are organisations that address designated public purposes through contracts among for-profit, non-profit and governmental institutions. *Social cooperatives* are organisations that offer a public benefit and have a purpose that benefits their members. *Commercial non-profit businesses* are organisations explicitly driven by social missions (e.g., charitable non-profit organisations). *Social purpose businesses* are organisations that explicitly seek to balance social impact and commercial success.

Recently, Defourny and Nyssens (2017) proposed a fundamental typology based on principles of interest and resource allocation, which resulted in four primary social enterprise models, as presented in Figure 1.3. Defourny and Nyssen's (2017) typology starts from a “bottom-up approach” built upon the idea that emphasises “the impossibility of a unified definition” for social enterprises (p. 2469). They developed a framework exploring principles of interest and resources to identify institutional trajectories that generates models of social enterprises. Interest considers general interest, capital interest and mutual interest. Resources consider levels of resources originating from market and non-market providers. They highlight four major kinds of social enterprises: Social Business (SB), Public-Sector Social Enterprise (PSE), Entrepreneurial Non-Profit (ENP) and Social Cooperative (SC). According to this typology suggested by Defourny and Nyssen (2017), all kinds of social enterprises have hybrid resources and address a social purpose. Still, they differ according to the strength of the interest (governance mechanism).

Figure 1-3 Social Enterprise by Strength of Interests

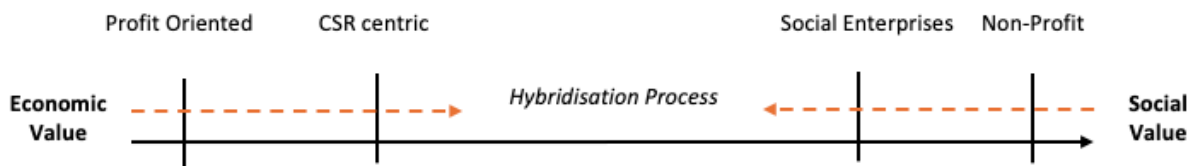


Note: Image adapted from Defourny and Nyssens (2017). ENP = Entrepreneurial Non-Profit organisations result from associations toward forms of earned income to support their social mission. SC = Social Cooperative are organisations that result from associations towards a general interest. SB = Social Business are organisations that develop business activities for a social purpose. PSE = Public-Sector Social Enterprises are organisations that are under public control and provide public service.

In addition, Nigri et al. (2017) presented a "hybridisation process," which represents a spectrum between social and economic-financial values, encompassing both profit and non-profit ends. This concept arises because, nowadays, ventures are increasingly required to be hybrid organisations, leading to the shift of traditional boundaries (McMullen & Warnick, 2016). Scholars tend to agree that organisations "exist as a variant" on a spectrum between the non-profit and profit ends (Kuratko et al., 2017, p. 272). Yet, as discussed by Kuratko et al. (2017), the profit sector is increasingly shifting towards the social value creation by

introducing high levels of CSR commitment, while non-profit organisations are moving towards financial value creation to sustain their operation. Thus, the hybridisation process reflects the current tendency of the market to shift towards more hybrid forms of organisation (Nigri et al., 2017).

Figure 1-4 Hybridisation Process of Sustainability Orientation



Note: Image adapted from Nigri et al. (2017).

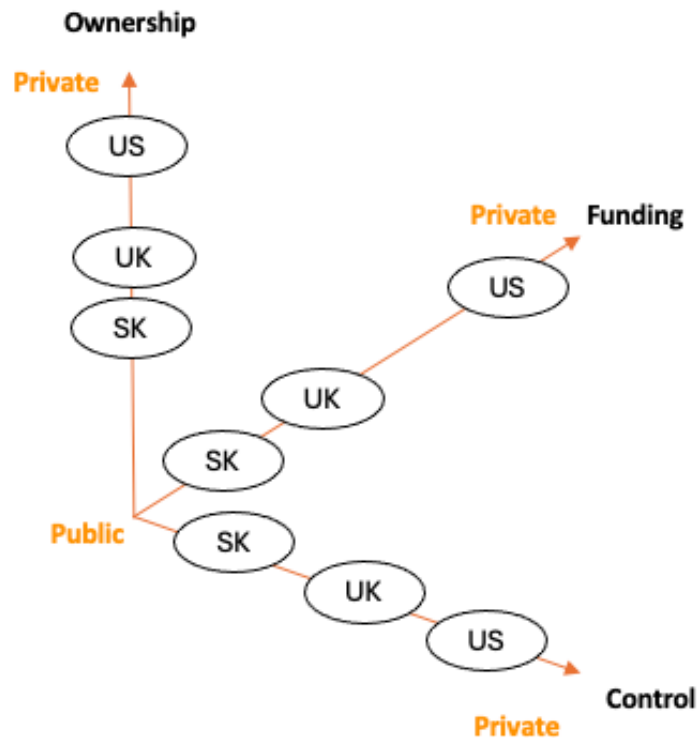
To further illustrate the complexity of boundary definitions of social enterprises into the continuum between making profit and creating social impact, scholars point out how the definitions of social enterprises differ by country (Powell & Berry, 2021; Defourny & Nyssens, 2017; Kerlin, 2010; Nigri et al., 2017). According to Nigri et al. (2017), social enterprises can be arranged as non-profit or for-profit, depending on each country's legal framework.

In the United States, the definition has its roots in non-profit venturing driven by market approaches. Still, it evolved to a wide range of organisations in the profit sector (Powell & Berry, 2021; Kerlin, 2010). The United States embraced a broader scope of social enterprises, which includes “profit-oriented businesses organisations involved in socially beneficial activities, hybrid dual-purpose businesses mediating profit goals with social objectives, and non-profit organisations engaged in mission-supporting commercial activity” (Cracogna & Peter, 2023, p. 10). In this sense, the emphasis is on entrepreneurs launching new ways of responding to social issues which involve innovative practices.

In Europe, the definition of a social enterprise is that of a single organisational form that mixes characteristics from traditional non-profits and cooperatives (Powell & Berry, 2021; Defourny & Nyssens, 2017). This definition emphasises the associative or cooperative nature of social enterprises. Therefore, Europe traditionally views social enterprises as an alternative to traditional charities (Cracogna & Peter, 2023). The United Kingdom mixed both traditions by defining social enterprises as businesses with primarily social purposes where capital surplus is mainly reinvested rather than used for maximising profit (Powell & Berry, 2021). Resembling the United Kingdom, New Zealand identifies social enterprises as organisations with a social mission, significant income derived from trade, and most of their surplus reinvested to fulfil their mission (Grant, 2017).

Furthermore, Choi et al. (2020) represent differences in defining social enterprises by considering the influence of the government in three countries, Korea, the United Kingdom and the United States, as presented in Figure 1.5. The support from the government is partly due to the belief that social enterprises might act to favour some social welfare responsibilities (Choi et al., 2020). They estimate the influence of the government on shaping the continuum from public to private by analysing social enterprise policies and laws per each country in three dimensions: (a) Ownership that represents legal barriers that allow specific legal forms, (b) funding that represents the allocation of government financial support, (c) control represents specific standards to certification or accreditation system for a social enterprise to operate. In this sense, in the United States, social enterprises tend to depend on social entrepreneurship for income generation (Choi et al., 2020). In contrast, the government provides financial support in countries such as the United Kingdom, Korea (Choi et al., 2020), and New Zealand (Grant, 2017).

Figure 1-5 Continuum from Public to Private of Social Enterprises per Country



Note: Image adapted from Choi et al., 2020, p. 501. US = United States, UK = United Kingdom and SK = South Korea.

In sum, broadly speaking, social enterprises can differ in “size, activities, legal structure and ownership, geographic scope, funding, motivations, degree of profit orientation, relationship with communities and culture” (Peattie & Morley, 2008, p. 95). In this doctoral research, I use the term “social enterprise” to refer to businesses that pursue both social and economic objectives (Cracogna & Peter, 2023). Therefore, I adopt a broad definition of social enterprises, focusing on their position along the spectrum as hybrid dual-purpose businesses. Yet, this definition is based on the basic concept of the central role of social purposes (Defourny & Nyssens, 2017). where enterprises pursue social mission(s) while engaging in commercial activities (Cracogna & Peter, 2023). By doing so, I

acknowledge that social enterprise definitions are not always straightforward, but abstract boundaries are relevant to theory developments (Corry, 2010).

1.1.4. Social Enterprises versus Traditional Commercial Enterprises

In practical terms, it has been challenging to adequately provide evidence of the boundaries between social enterprises and traditional commercial enterprises practising corporate social responsibility (CSR) (Cao et al., 2017). In theory, both have distinct ways of doing business, but social enterprise and CSR sometimes overlap (Palakshappa & Grant, 2018).

Social enterprises and CSR are both constructs of societal processes that influence business practices (Palakshappa & Grant, 2018). While social enterprises have social missions as a primary purpose, traditional commercial enterprises might engage in CSR activities to minimise their operational impact on society and the environment. So much is the case that traditional commercial enterprises may use CSR strategies to integrate social and environmental principles into their business practices by serving a profit-maximisation purpose (Palakshappa & Grant, 2018). Thus, CSR can be seen as more of an instrument (Palakshappa & Grant, 2018); it does not change the purpose of the core business itself (Defourny & Nyssens, 2017).

By using the metaphor proposed by Young & Lecy (2014), the intersection walls of profit with social purpose delineates where social enterprise and CSR might overlap (Palakshappa & Grant, 2018). Yet, Palakshappa and Grant (2018) recognised that this overlap is not as evident as they initially had expected. While the consideration of value proposition is common to both concepts, the abstract definition of value and its subsequent discourse and action are not always clear. Despite some conceptual issues, some scholars, less demanding, consider most CSR initiatives undertaken by for-profit firms to be part of the spectrum of

social enterprises (Defourny & Nyssens, 2017). However, the difficulty in determining distinctions should not invalidate the boundaries authors have proposed in terms of social enterprises and traditional commercial enterprises (Corry, 2010). We agree with Defourny and Nyssens (2017), who noted that “CSR strategies may certainly lead to the setting up of social businesses, but the concept of social business would lose much if it were to become diluted in a huge spectrum of socially related initiatives.” (p. 2484). We assume that CSR is part and parcel of social enterprises, but only applying CSR practices is not enough to characterise a business model as a social enterprise. By combining profit and social purposes as their core business, social enterprises face distinctive challenges compared to traditional commercial enterprises practising CSR (Battilana & Lee, 2014). Social mission is explicit for social enterprises, and it is the “centrality of the social mission that distinguishes social enterprises from commercial venturers” (Defourny & Nyssens, 2017, p. 2486). Thus, despite definitions not always being straightforward, certain boundaries should be respected by scholars.

One of the concerns about social entrepreneurship is related to “imprecise sampling approaches” since it has proven challenging to differentiate between traditional commercial enterprises and social enterprises (Cao et al., 2017, p. 29). It is essential for scholars to provide evidence of the boundary conditions that distinguish social enterprises from other kinds of organisations (Dacin et al., 2010). In this matter, the B-Corp certification provides “sufficient resolution to this challenge” of sampling by reinforcing the distinctions between social enterprises and traditional commercial enterprises (Cao et al., 2017, p. 29). B-Corps are certified enterprises that attend to “requirements of carrying a for-profit legal form, pursuing both for-profit and social goals, and having a formal commitment to assessing and reporting social impacts” (Siqueira et al., 2018, p. 226). According to Nigri et al. (2017), the

B-Corp “do not seek to maximise profits, as per the market logic, but profits are the means by which they achieve their social purpose and positive societal ends” (p. 90). The certification is issued by B Lab, a non-profit organisation that, through a rigorous assessment, gives accreditation to enterprises that achieve social and environmental performance standards and balance profit and purpose with public transparency and legal accountability (B Lab, 2021).

I follow a similar approach in this doctoral research and use the B Corp certification as a signal of enterprise-embedded social mission (Cao et al., 2017; Stubbs, 2017). At the same time, I am aware that “distinctions are always problematic because they pick out certain features and ignore others” (Corry, 2010, p. 18). While the concepts of social enterprises and B Corps do not always overlap, they share significant characteristics that help define the boundaries of this research. Both, in their abstract form, blend social and economic purposes through commercial activities. However, while many social enterprises are certified B Corps and use the certification to signal their embedded social mission, others choose not to pursue it. The literature also often discusses the tensions within B Corps regarding the balance between social purpose and profit maximization. I align with the perspective that for B Corps, profitability is a means to an end, necessary to achieve their social and environmental goals (Nigri et al., 2017; Stubbs, 2017). Greg Dess, often referred to as the father of social entrepreneurship education, once remarked on the challenges of labelling social entrepreneurship: “I liked the openness—starting out with what you want to accomplish and then deciding how to best do it—not bothering so much with labels” (Worsham, 2012, p. 444). I share this view. While labels and definitions may not always be clear-cut, the boundaries of this research are aligned with the aim of developing theory grounded in empirical evidence.

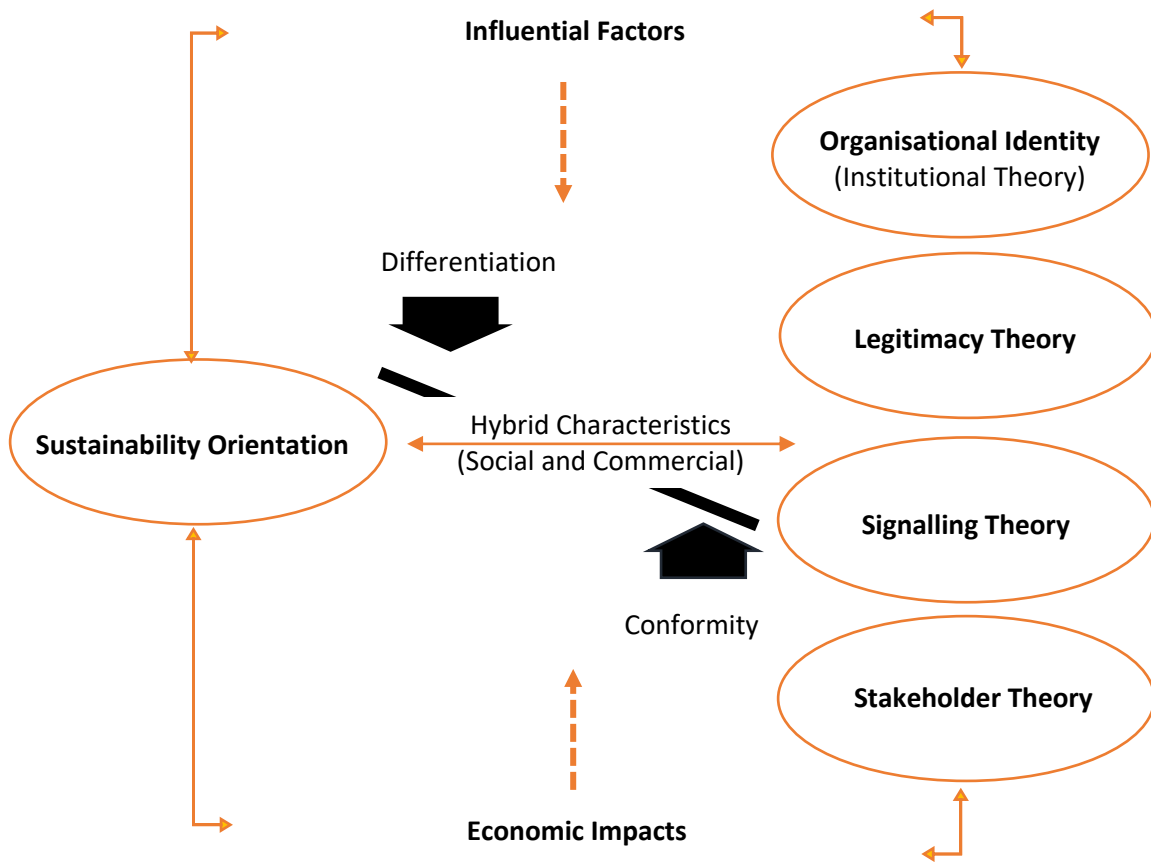
1.2 Theoretical Framework

I adopt a multi-theoretical approach following researchers in social entrepreneurship (e.g., Smith et al., 2013). In this section, I move by describing theories that ground enterprises' sustainability orientation that are particularly relevant for understanding how organisations interact with and respond to their environment, especially focusing on aspects related to its communication. Existing research assesses enterprises' sustainability orientation through analysing corporate textual narratives (Moss et al., 2018). Specific language use in corporate narratives indicates where enterprises focus their attention and communicates their strategic orientation (Noble et al., 2002, as cited in Vaupel et al., 2023).

1.2.1. Multi-theoretical approach

Sustainability orientation is usually associated with environmental pressures that create competing demands to conform and differentiate. The hybrid characteristics of social enterprises in focusing to both social purposes and business ventures simultaneously create further tensions and ethical dilemmas (Smith et al., 2013). I grounded my research on organisational theories that support understanding relationships and interactions between organisations and their broader environment. As presented in Figure 1.6, I draw on organisational identity grounded in institutional theory and legitimacy, signalling, and stakeholder theories, which are particularly relevant theoretical to ground my empirical studies.

Figure 1-6 Multi-theoretical Support – Organisations and their Environmental



Note: Image created by author.

A multi-theoretical approach is beneficial to bring different ideas to the topics explored (Khizar et al., 2022). Therefore, I explore different organisational theories to provide richer insights into influential factors and economic impacts of a communicated sustainability-oriented strategy. Institutional theory and stakeholder theory have been the most widely adopted theoretical frameworks in prior sustainability orientation literature (Khizar et al., 2022). Moreover, scholars in CSR have largely adopted legitimate theory. Legitimacy theory is widely recognised and extensively employed in sustainability reporting and practices (Hsiao et al., 2022; Roberts et al., 2021). In social entrepreneurship, scholars

have largely adopted organisational identity (e.g., Avila & Amorim, 2021; Battilana et al., 2022; Moss et al., 2018; Moss et al., 2011; Navis & Glynn, 2011; Smith et al., 2013) and started applying signalling theory (e.g., Kwong et al., 2023 and Lepkowska-White et al., 2023). These theories can improve our understanding of exploring influential factors and economic implications associated with enterprises' sustainability orientation.

1.2.2. The Shared Conceptual Territory of Institutional Theory

Institutional theory examines the deeper aspects of social structures by exploring how structures develop and become accepted as behavioural guidelines over time and across different settings (Scott, 2005). Over decades, institutional theory has provided a range of concepts through which the process of institutionalisation evolves (Kraatz et al., 2016; Lammers et al., 2014). This theory explains how structures and practices become common among organisations by focusing on the relationship between organisations and their environment (Smith et al., 2013). With the development of the institutional theory over the years, its perspectives and contributions have reached other fields, such as social entrepreneurship (e.g., Howard et al., 2021; Navis & Glynn, 2011).

Social enterprises present an interesting concept to be explored through the lens of institutional theory. Hybrid organisations challenge the conceptualisation of institutions by reproducing a single coherent institutional template (DiMaggio & Powell, 1983). Institutional logic can be defined as practices, values, beliefs, and norms within organisations (Smith et al., 2013). Social enterprises must attend to the demands associated with social logic while addressing demands rooted in commercial logic (Battilana & Dorado, 2010). An entrepreneur's orientation toward a social mission might be incompatible with an orientation toward an economic mission (Muñoz & Kimmitt, 2019). In this sense, the conflicting

commercial and social institutional logics (Battilana & Dorado, 2010) are not always compatible with ensuring legitimacy and, consequently, external support (Greenwood et al., 2011). Therefore, the institutional theory can offer perspectives into the tensions within social enterprises (Smith et al., 2013).

Recent developments in institutional theory focus on the role and importance of strategic intent, as well as organisational identity (Kraatz et al., 2016). Through the lenses of institutional theory in terms of isomorphism and legitimation, the theory suggests that social enterprises tend to become indistinguishable from traditional commercial enterprises over time as they are exposed to market-profit conditions (Nicholls & Cho, 2006). Businesses can gain resources by positioning themselves to conform to wider social beliefs (Zott & Huy, 2007). In this sense, organisations tend to follow dominant market practices in their field (conform) rather than maintaining a distinctive identity (differentiate) from counterparts (DiMaggio & Anheier, 1990). Therefore, from this perspective, social enterprises would maintain an indistinct organisational identity from traditional commercial enterprises. However, at the same time, the legitimacy theory, which developed within institutional theory, suggests a paradox that organisations may face pressure from different stakeholders to adopt practices that are motivated by different values (Sonpar et al., 2010). Social enterprises are under a different mix of pressures for having social and profit values in comparison to traditional commercial enterprises (Battilana & Dorado, 2010). They tend to face additional scrutiny from an audience due to the centrality of social purposes (Muñoz & Kimmitt, 2019). Therefore, from this perspective, social enterprises would maintain a distinct organisational identity from traditional commercial enterprises due to different environmental pressures. I further draw on organisational identity developed within the institutional theory to explore the role of a communicated social organisational identity.

Organisational identity can be pivotal in establishing legitimacy (Navis & Glynn, 2011), but communicating a “hybrid identity” presents particular challenges (Smith et al., 2013, p. 421).

1.2.1. Organisational Identity

Organisational identity is a field of study in organisational theory but has also evolved within institutional theory over time (Kraatz et al., 2016). Organisational identity scholars in the field of organisational theory have “generally focused on the internal dynamics that underpin identity construction” (Kraatz et al., 2016, p. 16), while institutional theorists have tended to focus on the external dynamics that underpin identity construction” (Kraatz et al., 2016, p. 16).

From an institutional theory perspective, organisational identity is shaped in part by institutional claims made by organisations, where the institutional environment influences organisational identity processes and vice versa (Gioia et al., 2013). In this sense, organisational identity is shaped to balance external pressures and internal actions (Battilana & Dorado, 2010). Therefore, organisational identity is constructed and maintained not “only through the interactions and interpretations of organisational members, but through communication with external actors” (Kraatz et al., 2016, p. 17).

According to Kraatz et al. (2016), as presented in Table 1.1, organisational identity was traditionally conceptualised as a product of institutionalisation (e.g., Selznick, 1957, as cited in Kraatz et al., 2016), then in a “new” institutional theory phase, organisational identity was conceptualised as a product of category affiliation (e.g., Wry et al., 2011), and in more contemporary work it becomes a source of differentiation (e.g., Greenwood et al., 2011). Therefore, organisational identity usually “informs how businesses relate to stakeholders and why they relate to them as they do” (Brickson, 2007, p. 13). For instance, CSR

communication (e.g., sustainability reports) is often seen as a reflection of organisational identity (e.g. Sorour et al., 2021).

Table 1.1 Organisational Identity within Institutional Theory

Institutional theory		
<p>Old Institutionalism Organisations” (structured entities with purposes) gradually become “institutions” (complex social structures and broader purposes).</p>	<p>New Institutionalism Organisations seek legitimacy by conforming to institutional demands for isomorphism. Institutions are field-level phenomena.</p>	<p>Agentic Institutionalism Organisations acquire legitimacy by strategically managing their institutional context and/or integrating aspects of their institutional context to attend to different audiences.</p>
↓	↓	↓
<p>Organisational identity formation is the end product of institutionalisation. As an organisation becomes an institution, it acquires an identity.</p>	<p>Organisations adopt organisational identities that are available in their field to increase legitimacy through a process of isomorphism.</p>	<p>Organisations shape the identities of established organisational forms in a field and/or build their own distinctive identity by managing aspects of their institutional environment.</p>
Organisational Identity		

Note: Table adapted from Kraatz et al., (2016)

Furthermore, organisational identity is discussed in the context of social enterprises and social entrepreneurship in terms of the combination of identity elements influencing stakeholders’ perceptions (e.g., Moss et al., 2011, Moss et al., 2018; Navis & Glynn, 2011). By exploring organisational mission statement narratives, Moss et al. (2011) identify multiple elements that characterise the identity of social enterprises, highlighting the tensions involved in addressing both social and commercial purposes. Navis and Glynn (2011) discuss how entrepreneurial identity narratives influence investors’ perceptions by exploring legitimate distinctiveness. Navis and Glynn (2011) suggested that the organisational identity

of social enterprises needs to be similar enough to other organisations in the same market to accommodate legitimacy constraints (conformity), but different enough to be attractive to receive support from stakeholders (differentiation). Moss et al. (2018), by exploring public crowdfunding, revealed that a single identity instead of multiple identity claims is potentially more effective in raising crowdfunding for microenterprises.

These studies provide insights into how social enterprises have been fusing key identity elements of different institutional logics; that usually have little in common to influence stakeholder' perceptions (Tracey et al., 2011). However, these studies are quite limited in providing empirical evidence on how organisations communicate social identity elements and its implications for business performance.

1.2.2. Legitimacy Theory

In legitimacy literature, scholars have widely examined how texts and verbal tactics have been used by organisations seeking legitimation (Deeppure et al., 2017). The traditional definitions of legitimacy defined it as the perception that the venture is “desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” (Suchman, 1995, p. 574). In this case, legitimacy theory is viewed in terms of organisational status or reputation since it demonstrates that organisational legitimacy is a perception of organisations by stakeholders. This definition outlines “how constitutive societal beliefs become embedded in organisations, and a strategic view emphasising how legitimacy can be managed to help achieve organisational goals” (Deeppure et al., 2017, p. 31). Legitimacy is “viewed as social acceptance that results from adhering to regulative and normative organisational policies as well as cognitive norms and expectations” (Deeppure & Carter, 2005, p. 332). More recent definitions avoid the word “desirable” to emphasise the

importance of legitimacy for an enterprise to access resources (e.g., financial capital, and regulatory access and rewards). This view focuses on “strategic balance theory to address the tension between differentiating to attain profitability and conforming to attain legitimacy” (Deephouse et al., 2017, p. 32).

To be considered legitimate, the firm must be identified as belonging to a group of norms and acceptable behaviour (Deephouse et al., 2017). Therefore, external factors pressure organisations to adopt practices to conform. However, at the same time, to be considered competitive, the firm must be unique and shine over the competitors (Haans, 2019). Organisations are compelled to create a distinct but legitimate identity to leverage business performance (Haans, 2019). An organisational identity reflects the junction of these tendencies by differentiating its identity while conforming to the practices of competitors (Zuckerman, 2016).

1.2.3. Signalling Theory

Another promising line of inquiry measures enterprises’ sustainability orientation to evaluate how enterprises signal a specific strategic stance (Vaupel et al., 2023), grounding on the signalling theory (Connelly et al., 2011). Signalling theory has been used to demonstrate the importance of communicating sustainability to stakeholders in situations of information asymmetry, especially when an enterprise aims to benefit from its commitment to sustainability (Lourenço et al., 2014; Robinson et al., 2011). Connelly et al. (2011, p. 44) present the “deliberate communication of positive information in an effort to convey positive organisational attributes” as the primary focus of the signalling theory.

Many studies examining sustainability orientation are grounded on signalling theory and cover various topics, including CSR reports (e.g., Etilé & Teyssier, 2016; López-

Santamaría et al., 2021), assessment and assurance (e.g., Baier et al., 2022; Clarkson et al., 2019), and sustainable finance (Brito-Ramos et al., 2023). Lourenço et al. (2014, p. 19) used signalling theory to put forward the idea that enterprises engage in “processes leading to the institutional endorsement” of their sustainability performance. According to Lourenço et al. (2014), using sustainability rankings and certifications is a way for enterprises to signal to stakeholders their commitment to sustainability. Lourenço and colleagues analysed the market valuation of firms’ reputation for sustainability leadership and found that having such a reputation enhances market valuation. Robinson et al. (2011) put forward that applying for institutional endorsements of sustainability commitment could constitute “an effective way to signal sustainability leadership in a credible manner” (p. 504). Based on their findings, the benefits of sustainability certification “far outweigh the considerable cost and effort involved in seeking this certification” (Robinson et al., 2011, p. 501). Etilé and Teyssier (2016) used an experiment research design to study signalling power differences of third-party certified labels compared to CSR reports. They found that the CSR reports are substantially less powerful in signalling sustainability commitment than sustainability certifications. Brito-Ramos et al. (2023), by focusing on sustainability certifications, demonstrated that third-party certifications are more powerful in signalling sustainability commitment than self-declared ones. They argued that third-party certifications issued by either government or non-profit organisations are considered more trustworthy and credible compared to self-declared certifications (Brito-Ramos et al., 2023). In this context, “costly signals emerge as a mechanism to discern high-quality funds from their low-quality counterparts” (Brito-Ramos et al., 2023, p. 4).

Moreover, Moss et al. (2018) highlight that communication is crucial for guiding stakeholders, particularly for enterprises pursuing dual goals, as seen in the case of social

enterprises. However, in the social enterprise setting, very few studies have used the signalling theory to examine the communication of sustainability orientation. An exception is Lepkowska-White et al. (2023), who, through social media platforms, explore the signalling of B Corp certifications to promote and develop enterprises' socially responsible identity. Lepkowska-White et al. (2023) argued that their findings “questions assumptions implicit in signalling theory” (p. 87). They reveal an engagement in reverse decoupling, where obtaining the third-party certification benefits their business rather than signalling such certification of sustainability commitment (Lepkowska-White et al., 2023). I take issue with the interpretation of these researchers and put forward that B Corp certification is a powerful signal that firms may consider when deciding about their sustainability-orientation communication practices.

1.2.4. Stakeholder Theory

Stakeholder theory asserts that a business should generate value for all stakeholders (e.g., suppliers, customers, communities, employees and investors), not solely for their shareholders (Freeman et al., 2010). The core concept behind this theory is that enterprises aligning their purposes with the interests of their main stakeholders are more likely to achieve economic success (Freeman, 2023). While Freeman's work may not explicitly emphasise the communication of sustainability orientation, it forms a basis for understanding the importance of its communication in engaging and managing stakeholders effectively (e.g., Balmer, 2017).

Stakeholder theory sheds light on the tensions that arise when balancing the demands of various stakeholders (Smith et al., 2013). Studies based on this theory indicate that sustainability orientation can positively influence an enterprise' economic-financial

performance (Muñoz & Kimmitt, 2019). The rationality is that sustainability orientation leads stakeholders to perceive sustainable businesses as more valuable than less sustainable counterparts (Landrum, 2018). Yet, recent studies have proposed the dark side of sustainability orientation (Kautonen et al., 2020; Lynn, 2021). Sustainability orientation can also be costly and distract management from their commercial goals (Muñoz et al., 2018; Wang and Bansal., 2012). Therefore, scholars grounded in stakeholder theory suggest that the positive relationship between sustainability orientation and enterprises' economic performance is contingent on provisional and contextual aspects (Kautonen et al., 2020; Lynn, 2021).

Recent stakeholder theory developments recommend further exploration of the *doing well by doing good* paradigm by examining provisional and contextual aspects that reward sustainability orientation (Kautonen et al., 2020; Khizar et al., 2022; Lynn, 2021). In line with the above arguments, this doctoral thesis explores conditions for a positive relationship between sustainability orientation and enterprises' economic performance.

1.2.5. Theoretical Choice and Justification

In sum, I constructed a theoretical framework, employing commonly used theories applied to sustainability orientation literature and interactions with other fields. Gray et al. (2009) highlight that theory is essentially a conception of relationships, whereas a set of interrelated concepts forms a theoretical framework. Theories tend to complement each other rather than compete (Gray et al., 2009). The primary theoretical concern in this thesis is to explain various drivers and consequences of enterprises' sustainability orientation. No commonly agreed theoretical lenses exist to conceptualise and investigate sustainability orientation in

those matters (Khizar et al., 2022). Therefore, I adopt a framework of multiple theories, which can offer deeper insights than applying a single theory (Deegan et al., 2000).

Each theoretical lens has some advantages to offer (Gray et al., 2009). Legitimacy theory is largely employed in CSR literature to elucidate factors associated with enterprises' sustainability practices. Institutional theory and stakeholder theories are largely used to explain consequent factors of sustainability orientation (Khizar et al., 2022). Moreover, legitimacy theory is closely related to institutional theory and stakeholder theory (Gray et al., 2009). In this sense, they share common ground in understanding the complex dynamics between organisations and their environment. However, legitimacy theory emphasises how organisations strive to uphold legitimacy by aligning their actions with societal values, norms and expectations (Gray et al., 2009). In contrast, institutional theory focuses on the institutional pressures that shape organisational practices, while stakeholder theory highlights the importance of managing interactions with various stakeholders (Gray et al., 2009).

In my first study, I chose to apply legitimacy theory to shed light on the factors that influence sustainability orientation through the lens of corporate social responsibility. In my second study, I employed a triangulation of institutional theory, organisational identity, and signalling theory to explore the effects of different levels of sustainability orientation on enterprises' economic performance. Since this study focuses on the communication of social values, the triangulation approach provides a holistic view of the impacts of using social identity claims as a signal of sustainability commitment. Organisational identity within institutional theory underscores the institutional pressures that shape central, enduring, and distinctive aspects. Signalling theory emphasises how organisations communicate signals of their commitment to stakeholders. Finally, in my third empirical study, I turned to

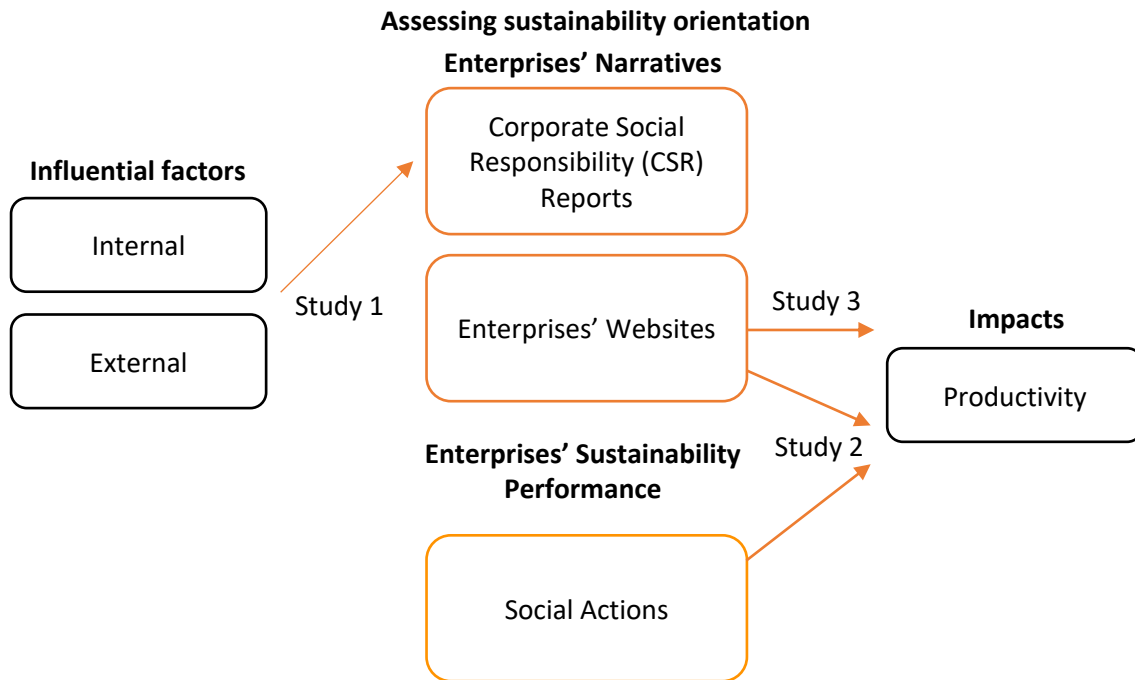
stakeholder theory to examine the influences of a communicated sustainable development goals (SDGs) orientation strategy on enterprises' economic performance.

1.3 Purpose and Overview of the Thesis

This section outlines the purpose of the doctoral thesis and provides an overview of the remaining chapters. The thesis aims to achieve two main purposes: (a) to highlight factors that drive sustainability orientation from an aggregated perspective and (b) to explore how certain sustainability orientation characteristics are associated with enterprises' economic performance. Scholars discussed that sustainability orientation is a strategic construct implemented for two main reasons (Khizar et al., 2021; Khizar et al., 2022): (a) pressure from multiple stakeholders (e.g., society, international entities and policymakers) and (b) long-term organisational benefits (e.g., economic and financial gains). Therefore, this thesis is an effort to increase transparency about critical aspects of sustainability orientation.

To provide a visual summary of this doctoral research, Figure 1.7 encompasses key aspects addressed: assessment of sustainability orientation through enterprises' narratives and sustainability performance, exploration of institutional internal and external factors influencing sustainability orientation, and examination of impacts on enterprises' economic performance of a communicated sustainability orientation strategy.

Figure 1-7 Conceptual Framework



Note: Image created by author.

The overall aim is to assess an enterprise's sustainability orientation and offer insights into its influential factors and implications on enterprises' economic performance. Moreover, this research aims to contribute to the conversation about (a) corporate sustainability; (b) conditions in which good ethics pay; and (c) the use of natural language processing (NLP) techniques to draw inferences about sustainability orientation, an aspect that is further elaborated in the methodology (Chapter 2). This research, conducted as a "PhD by Publication," comprises three distinct but interconnected studies. Designed to be interrelated in both practice and method, these empirical studies delve into different aspects of enterprises' sustainability orientation, drawing on the most appropriate theoretical backgrounds and methods.

Firstly, it is essential to acknowledge the vast literature on corporate social responsibility (CSR). In my first empirical study, I explore factors influencing sustainability orientation by framing CSR narratives. In a meaningful context, I propose exploring sustainability orientation through one of the CSR concerns mainly negated by organisations: biodiversity conservation and reporting. Among the CSR aspects, biodiversity is the most intangible aspect within the corporate sphere. Organisations tend to declare that biodiversity is usually ignored due to the difficulty of its assessment. By framing one of the CSR topics, I present influential factors to be acknowledged in corporate behaviour towards sustainability. The sustainability orientation literature highlights that enterprises' sustainability orientation is influenced by internal features (e.g., size and sector: Balasubramanian et al., 2021; Broccardo et al., 2023), and external features (e.g., social and political pressures: Testa et al., 2016). Yet, factors that motivate enterprises to engage in sustainability are usually explored independently. I propose bringing a complete overview by exploring internal and external factors in the same conceptual model.

Second, I move forward from influential aspects to explore the impacts of sustainability orientation on enterprises' economic performance. More specifically, I measure the extent of enterprises' sustainability orientation using corporate narratives presented on enterprises' websites. In addition, I also explore sustainability orientation using enterprises' sustainability performance, using the social action score. Most studies on sustainability primarily concentrate on large organisations, mainly due to the availability of information (Rubio-Andrés et al., 2020). However, small and midsize enterprises (SMEs) comprise most of the business worldwide (Bartolacci et al., 2020). Therefore, considering the relevance of SMEs, further studies are needed to examine sustainable behaviour and practices within SMEs (Bartolacci et al., 2020; Rubio-Andrés et al., 2020). Therefore, I moved from listed

organisations in study one to SMEs in study two. Enterprise websites are usually the preferable way for SMEs to communicate sustainability orientation. I propose exploring how the extension of sustainability orientation impacts enterprises' economic performance by focusing on key aspects of SMEs (Bartolacci et al., 2020; Hong et al., 2019).

Thirdly, moving forward from the extension of sustainability orientation, I explored sustainability orientation through the lens of the Sustainable Development Goals (SDGs). In my third study, I explore how communicating a narrow set of SDGs is associated with business performance among social enterprises and traditional commercial enterprises. The purpose is not only to assess the level of enterprises' narratives towards sustainability orientation but also to identify the main topics that are being communicated using the well-known SDG framework. I use the information provided on enterprises' websites to assess their alignment with the SDGs. The United Nations Sustainable Development Goals (SDGs) have become a widely accepted benchmark for enterprises' sustainability orientation (Chen et al., 2022). I propose exploring sustainability orientation through the SDG framework to bring wider discussions on aligning enterprises' strategies with the SDGs (Günzel-Jensen et al., 2020).

The ultimate purpose of this thesis is to bring clarity around grey aspects of enterprises' sustainability orientation to influence practices towards sustainability development. Identifying aspects that influence sustainability orientation and the impacts of sustainability orientation on enterprises' economic performance can generate positive progress by stimulating wide debates related to corporate sustainability. Therefore, this doctoral thesis aims to illuminate the current stage of enterprises' sustainability orientation to expand theory and practice.

The remainder of this doctoral thesis consists of five chapters. In Chapter 2, I offer a comprehensive discussion of the methodology and methods applied in the three studies. Chapters 3, 4, and 5 focus on each of the three individual empirical studies, respectively. Chapter 6 summarises the main findings from each research project and integrates them as a whole study. It concludes by presenting the overall closing remarks of the doctoral thesis, followed by its implications and limitations.

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Chapter 2. Methodology

Central to the research process is the detailed description of the research methodology and methods underlying the empirical studies. This chapter explores and explains philosophical assumptions and research methods. First, I offered a general discussion of the positivist paradigm used to investigate aspects of sustainability orientation presented in Chapter 1. Second, I discuss the overall methodology underlying the three empirical studies as a whole and provide an overview of each study's aspects.

2.1 Philosophical Assumptions

Understanding philosophical perspectives is essential in revealing assumptions that will guide the research. Easterby-Smith et al. (2021) noted at least three reasons that underline the importance of understanding and articulating research philosophy: (a) it clarifies and informs the methodological design of the research, which comprises collecting and analysing data, and addresses evidence to answer the research question(s); (b) it helps the researcher recognise the limitations of each approach; (c) it presents the researcher with alternatives that can be more or less in line with the research subject needs. The ultimate objective is to identify and define the philosophical assumptions and approaches that will speak for the unique context of the research (Jackson, 2013; Burrell & Morgan, 1979). Thus, all research is based on philosophical perspectives. Naturally, these perspectives need to be understood in the research context to be developed according to methodological needs.

The research problem investigated influences the philosophical paradigm to be adopted (Bryman & Bell, 2015). A philosophical paradigm represents the worldview of the research and its groups of behaviour (Johnson & Duberley, 2000). The context of an

individual's worldview influences their behaviours and thoughts. This happens even when the individual is unaware of it and influences how research is approached (Ryan, 2006). In research, particular worldviews must be acknowledged and clearly articulated since they inform how the questions will be formulated and answered (Ryan, 2006). The foundation of modern research philosophy is based on two major paradigms, namely positivism and interpretivism (Bryman & Bell, 2015). These two paradigms encompass specific philosophical assumptions, represented by *ontology* (study of the nature of reality) and *epistemology* (study of knowledge).

Ontology is the philosophical assumption that denotes how the world is (Johnson & Duberley, 2000). In this sense, researchers face questions about the reality to be investigated (Burrell & Morgan, 1979). For instance, whether reality is a subjective nature, a product of one's mind and individual consciousness, or an objective nature, "given out there in the world" (Burrell & Morgan, 1979, p. 1). Thus, ontological assumptions are centred on what constitutes reality. *Epistemology* is defined in terms of knowledge (Burrell & Morgan, 1979). In this sense, researchers face questions about how the world might be understood and communicated (Burrell & Morgan, 1979; Johnson & Duberley, 2000). For instance, whether it is possible to identify and communicate knowledge as something that can be acquired, that is, knowledge capable of being transmitted in tangible form, or it needs to be personally experienced, that is, knowledge more subjective based on experience (Burrell & Morgan, 1979). Thus, epistemological assumptions are centred on how knowledge can be created.

The meaning and significance of ontology and epistemology become clearer when considering it in terms of a philosophical paradigm, e.g., positivism and interpretivism. The objective of the positivism paradigm is to describe an experience using measurement and observation (O'Leary, 2004). It treats social phenomena as objects that can be scientifically

approached, which means that the "forces that surround us" are knowable and predictable (O'Leary, 2004, p.5). Thus, the views of the world and the nature of the research are assumed (O'Leary, 2004). *Positivist ontology* assumes that reality is external and stable. It can be observed and described objectively regardless of the researcher's perspective (Levin, 2008). The reality in the research context can be isolated, and observations should be repeatable. Related to this, *positivist epistemology* assumes that knowledge derives from measurement, quantification, and explanation of the relationship between two concepts (Gill & Johnson, 2010). In this sense, knowledge is something to be discovered, not produced by individuals (Ryan, 2006). Possible relationship patterns between the elements that comprise the research can be anticipated. The research problem is mostly concerned with the construction of knowledge (Bryman & Bell, 2015), and the concern related to the method is identifying ways the relationships can be expressed (Burrell & Morgan, 1979).

In contrast, the objective of the interpretivism paradigm is to explore "the cultural and historical interpretations of the social world". (O'Leary, 2004, p.10). This paradigm also assumes assumptions about the worldview. *Interpretivist ontology* assumes that reality is relative, subjective, and socially constructed (Johnson & Duberley, 2000). Reality depends on individual experiences, and multiple realities are a product of mental constructions. Similarly, *interpretivist epistemology* assumes reality is not something stable to be measured and discovered. It is interpreted in different contexts, and knowledge is understood (Alharahsheh & Pius, 2020). According to interpretivism, causality and generalisation are neither conceivable nor necessary as part of the research problem since interpretivism often looks at reality from different perspectives. A concern is the "understanding of the way in which the individual creates, modifies and interprets the world in which he or she finds

himself" (Burrell & Morgan, 1979, p. 3), and an interpretivism approach usually describes what is perceived through descriptive or qualitative research.

This thesis adopts a *positivist epistemology* approach. As discussed in the previous chapter, the studies provided in this thesis answer questions determined by the "how" rather than explaining reasons through "why". Therefore, the research questions involve the description of complex relationships between enterprises' sustainability orientation, contextual drivers and economic performance implications. Accordingly, in positivism, the researchers use quantitative data and statistical methods to test assumptions about the context usually grounded on empirical studies and theories. Positivistic research typically involves statistical analyses through quantitative data and large samples to test hypotheses and generate findings that apply to a population (Collis & Hussey, 2009). In contrast, interpretivist research typically develops theories through qualitative data, employing small samples and natural contexts to generate findings that are relevant or applicable to similar contexts as the specific research setting (Collis & Hussey, 2009). Therefore, I adopted positivism, where findings are generally quantitative, represented by numerical data, and generalisable, and where they can be applied to a population beyond a sample (O'Leary, 2004). Moreover, from a philosophical standpoint, I considered a set of epistemological assumptions based on the nature of the relationships and the construction of knowledge over ontological assumptions that explore what constitutes reality. A positivist epistemology approach argues that the findings are objective, can be generalised, and the researcher remains independent from the subject of research. In contrast, a positivist ontology perspective argues that social facts produce an objective reality that is extent independent of human beings. Therefore, I adopt a positivist epistemological approach, which posits that it is possible to understand the social world through measurement (Gill & Johnson, 2010).

In sum, the research projects in this thesis align with a positivist epistemology view. This choice is grounded in the ability to formulate hypotheses and make deductions, and the use of quantitative methods to explore the relationship between variables in each research context using statistical approaches. The knowledge derived from this thesis is expected to have broad applicability, benefiting any organisation operating in similar environmental settings.

2.2 Research Approach: Natural Language Processing (NLP)

The manifestation of corporate sustainability is diverse from a methodological perspective (Antolín-López et al., 2016). This research concentrates on corporate sustainability, with particular emphasis on the communication of an enterprise's sustainability strategy (e.g., Vaupel et al., 2023; Moss et al., 2018; Crane et al., 2019). I harness the power of natural language processing (NLP) techniques, which is a field of artificial intelligence (AI), as a tool for research in extracting insights from textual communication (e.g., Williamson et al., 2021). The following describes the application of NLP techniques in the context of management research. It also outlines the main aspects of the research design in the form of the methodology proposed for each of the three empirical studies and discusses ethical considerations.

This research is connected to the enterprise's sustainability orientation literature in many fields of business management-related literature, such as corporate social sustainability and social entrepreneurship. This doctoral thesis builds on the research gaps identified in each individual study in assessing aspects related to sustainability orientation. To this end, I use natural language processing (NLP) techniques to assess enterprises' sustainability orientation through enterprises' narratives. In many fields, social science researchers are

applying Natural Language Processing (NLP) to extract insights from textual data that they would not be able to extract manually.

NLP, a subfield of artificial intelligence (AI), can be used to process, organise, and extract information from textual content (Chan et al., 2021). NLP has been gaining momentum in management research (Hannigan et al., 2019; Kang et al., 2020), and it is emerging in entrepreneurship research (Williamson et al., 2020). Scholars often leverage NLP techniques to analyse and comprehend human language (Kang et al., 2020) by interpreting patterns in big data using computer-aided recognition tools (Hannigan et al., 2019). NLP provides scholars with accurate analytical methods to extract insights from a large amount of textual data (Hannigan et al., 2019). It is currently being applied to "optimise specific tasks or solve particular problems, such as part-of-speech tagging, word segmentation, machine translation, and automatic text summarisation" (Hannigan et al., 2019, p. 589). As a result, NLP can be used by researchers to advance and inform management theory by supporting theoretical and practical insights (Hannigan et al., 2019).

Scholars in management research have described the use of NLP techniques in many terms. Some scholars referred to the analysis of language patterns as the use of machine learning (ML) techniques (e.g., Hajikhani & Suominen, 2022; Mansouri & Momtaz, 2022; Williamson et al., 2022); others as the use of machine learning (ML) and natural language processing (NLP) techniques (e.g., Ashouri et al., 2022; Pukelis et al., 2022) and others still, as the use natural language processing (NLP) techniques (e.g., Kang et al., 2020; Smith et al., 2021). NLP is a vast and important branch of AI research, and depending on the task to be performed, it relies on many machine learning classification algorithms (Kang et al., 2020). Machine learning (ML) is another field of AI that learns to recognise and recreate patterns (Hajikhani & Suominen, 2022). ML can be understood as gaining "experience from

a dataset, consisting of a collection of examples”, where, depending on its use, it can be based on supervised learning, unsupervised learning and reinforcement learning (Shrestha et al., 2021, p. 591). The automated process of classifying objects, such as textual content, has garnered increasing interest in the field of machine learning (Hajikhani & Suominen, 2022). Text classification using machine learning algorithms enables better insights into documents by processing large amounts of textual data based on trained examples (Hajikhani & Suominen, 2022). Still, text classification is considered "one of the research hotspots in the field of NLP" (Hajikhani & Suominen, 2022, p. 9). Therefore, NLP can be described as the "intersection of linguistics, computer science, and machine learning" methods to infer insights from textual data (Smith et al., 2021, p. 2).

In this doctoral thesis, I generally refer to NLP techniques to describe the use of computer-aid methods to extract insights from textual data. These techniques range from basic tasks, such as scrapping websites and detecting keywords, to more advanced tasks, such as training machine learning algorithms for text classification. NLP techniques have been employed in the three empirical studies in different tasks, which are better explained in each study individually. However, depending on the audience of the journal outlet for each study, I adapt the language used to describe the NLP techniques applied accordingly.

The use of NLP techniques is not without limitations. NLP models can only make predictions based on the data they have been trained on, and preprocessing decisions can significantly affect their overall performance. Recent studies emphasize the importance of reproducibility, transparency, and validity, as well as the need to carefully address context-sensitive influences and selection bias (Hickman et al., 2022). In each individual study, I outline the practices implemented in each study to mitigate the limitations associated with NLP methods.

2.3 Research Design: A Three Studies Approach

This doctoral research is framed as an observational quantitative-based study that makes statistical inferences about different aspects of sustainability orientation. The research is organised into three core studies. The next sections provide a context of the methods applied in each individual study.

2.3.1. Study 1

The first study is called the “A decade of biodiversity conservation: Insights on corporate social responsibility in an emerging market context”. Large organisations are more visible than small-middle size enterprises (SMEs), and consequently receive more pressure from stakeholders (Martins et al., 2022). They have long been at the forefront of adopting sustainability agendas (Martins et al., 2022). Therefore, I take on corporate social responsibility (CSR) reporting, which is a practice more commonly applied by large organisations to provide sustainability information to draw insights about factors influencing sustainability orientation in a longitudinal perspective.

(a) Sampling

The sample of the first empirical study is comprised of large organisations, comprising a mix of private and publicly traded organisations. I sampled the organisations from the GRI’s Sustainability Disclosure Database to obtain relevant firms’ characteristics and CSR reports from the Brazilian (BR) market. The Brazilian market was chosen due to the gaps in the literature and the familiarity of the researcher with this market. Biodiversity is one crucial aspect of CSR that has been under-researched (Roberts et al., 2021) and under-practiced by businesses (Addison et al., 2019). By framing Brazil, I bring a meaningful content to explore

sustainability orientation through its well-established tradition of CSR reports and its status as the most biodiverse country in the world. Thus, organisations situated in Brazil face some of the most significant risks to global biodiversity and significant pressures on biodiversity conservation altogether.

(b) Methods

In study one, I use CSR reports, also known as sustainability reports, to assess enterprises' orientation towards biodiversity and then explore its relationship with contextual pressures and internal and external institutional factors. I divide the methodology into three phases, as represented in Figure 2.1.

The first phase is related to textual data collection, where I collect the CSR reports and extract their textual content for the organisations in my sample. Annual reports and CSR reports serve as a rich source for sustainability orientation (e.g., Vaupel et al., 2023). CSR entails sharing nonfinancial information with key stakeholders regarding organisation's environmental and social impacts and actions (Pencle & Mălăescu, 2016). The CSR reporting is being voluntarily disclosure by enterprises using narrative information (Pencle & Mălăescu, 2016), which can bring linguistic clues for readers (Krippendorff, 2019). Hence, I make use of CSR reports to assess enterprises' orientation towards biodiversity. I collect the CSR reports based on the GRI's Sustainability Disclosure Database.

Second, based on the CSR report's textual content, I assess biodiversity issues using computer-aid content analysis, applying NLP techniques. In this matter, I built an NLP model based on content analysis methods to measure the reporting on biodiversity, which assessment I named IndBio. The approach relies on term frequency (or word count) based on topic-specific dictionaries (or key term lists) (e.g., Mansouri & Momtaz, 2022). The

implementation of the NLP model is presented in the details in Chapter 3. CSR reporting has been a key focus of many researchers, with many using some form of content analysis to explore the information disclosure (Pencle & Mâlâescu, 2016). Content analysis can be defined as an "empirically grounded research methodology" focuses on textual communication and has evolved from a manual process to a computer-based content analysis (Pencle & Mâlâescu 2016, p. 110). In my first empirical study, I explored the computer-based aspect of content analysis using NLP techniques to create the InBIO assessment score. The process involves encoding, cleaning, and removing *stopwords* from the content of CSR reports. Using a term-frequency methodology, I construct a topic-specific dictionary for biodiversity reporting, primarily drawing from experts in the field. Finally, I assess the communication of biodiversity-related issues in the CSR reports using relative term frequency (RTF), which resulted in the IndBio scores.

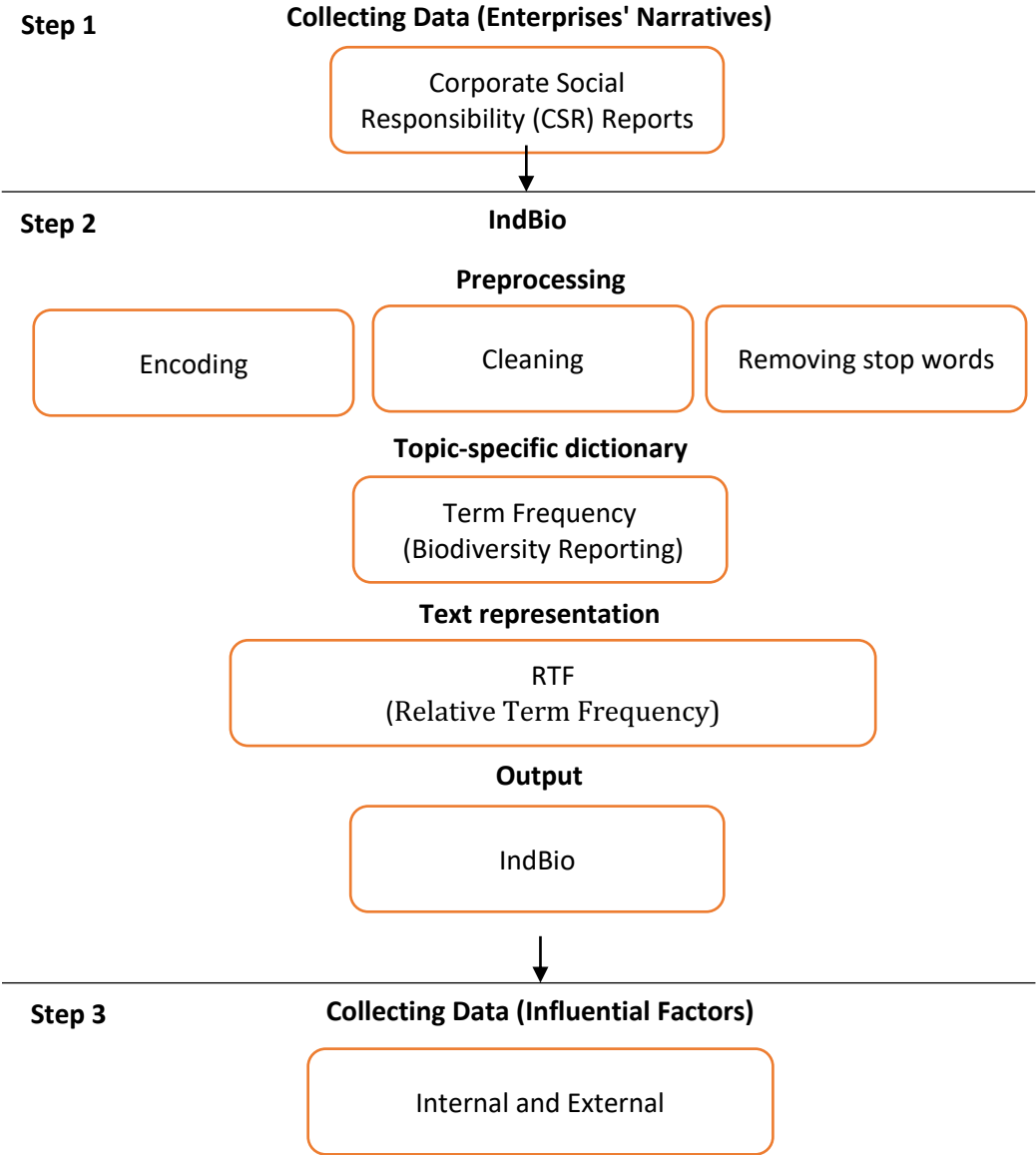
Third, I collect data to build other relevant variables related to possible institutional factors influencing organisations' sustainability orientation. It includes collecting data to assess social and political factors as drivers of sustainability orientation. This includes assessing a firm's industry risk to biodiversity, media exposure, and the government's stance on environmental protection. Chapter 3 presents further details about the method applied to assess such contextual factors.

(c) Data Analysis

I use statistical procedures and Ordinary Least Squares regression (OLS) models to extract insights about the data. Specifically, I explore the relationship between the InBIO, my dependent variable, and social and political contextual factors that possibly influence

organisations' sustainability practices. Social and political contextual factors represent independent variables. The models are constructed using packages in Python.

Figure 2-1 Methodology Workflow Study 1



Note: Image created by author.

2.3.2. Study 2

My second study is called "Should a social enterprise publicly "toot its virtuous horn," or do social actions "speak louder than words"?". In the second empirical study, I shift the focus from large organisations to SMEs, giving special focus to social enterprises. SMEs represent around 90% of organisations worldwide (Broccardo et al., 2023), but the literature focusing on the sustainability orientation of SMEs is scant (Martins et al., 2022). In addition, social enterprises, the majority represented by SMEs, are considered key drivers for a more sustainable future. Yet, their hybrid characteristic of combining social values and commercial values calls for further theory developments. In this matter, in my second study, I focus on exploring the communication of sustainability orientation and the economic performance of social enterprises. To achieve this aim, I explored signals of sustainability commitment through enterprises' narratives and sustainability performance measured by a third party.

(a) Sampling

The sample of this study of SMEs, comprising a mix of social enterprises and traditional commercial enterprises, was obtained from the PrivCo Database in the United States (UN) market. The US market was chosen due to data availability for private enterprises. The availability of financial-economic data is considered a common challenge in social entrepreneurship research (Wasserman, 2017). Researchers in the field have used the PrivCo dataset as a source of economic-financial data for major private enterprises (e.g., Cao et al., 2017). I collect all the data for social enterprises from the US market from the PrivCo dataset and randomly select double the number of social enterprises of traditional commercial enterprises in similar industry sectors. The B Corp certification was utilised to identify businesses with core social enterprise aspects as hybrid organisations (e.g., Cao et al., 2017;

Grimes et al., 2018; Siqueira et al., 2018; Stubbs et al., 2017). From the PrivCo dataset, I collect economic-financial data (e.g., revenue, quantity of employees) and overall firm's characteristics (e.g., industry sector, year founded and type) for the initial sample of enterprises for the 3 most recent financial years available.

(b) Methods

After obtaining the dataset from PrivCo with the initial sample of study two, the process of assessing enterprises' sustainability orientation and exploring its impacts started. I divide the methodology into three phases, as represented in Figure 2.2.

The first phase is related to textual data collection, where I collect information from enterprises' websites. In contrast to large organisations, the use of CSR reports is rare among SMEs. SMEs tend to demonstrate their commitment to sustainability through websites. Therefore, I take on the enterprises' websites to draw insights about using socially-oriented language and its impacts on enterprises' economic performance. Specifically, I use the "About Us" narratives present in enterprises' web pages to assess enterprises' sustainability orientation. The "About Us" narratives represent a suitable source for sustainability orientation (e.g., Haans, 2019; Biloslavo & Trnavčević, 2009). The "About Us" is where the companies communicate their purpose and what they stand for. Usually, questions like "who they are", "what they do", "how they do", and "what matters" are answered. I collect the data from "About Us" web pages through a web-scraping process for the sample of enterprises in this study. Web scraping is a process of extracting web data from HTML pages using programming language and converting it into text files.

Second, based on the websites' narratives, I assess the communication of social values using NLP techniques. In this matter, I built a model based on NLP to measure the

communication of social values, which I call socially-oriented language. Specifically, I explore the "About Us" content presented on enterprises' webpages to measure the communication of social values using NLP techniques, creating the socially-oriented language assessment score. The detailed process is presented in Chapter 4. In summary, the steps involve (a) preprocessing the textual data, which includes steps of encoding, cleaning, tokenisation, removing *stopwords* and *stemming*; (b) developing a dictionary to train the model how to identify the use of socially-oriented language; (c) deploying the socially-oriented language dictionary to classify the "About Us". I use the Bag-of-Words (BoW) for textual representation and the Random Forest (RF) algorithm for classification. The result is the socially-oriented language score.

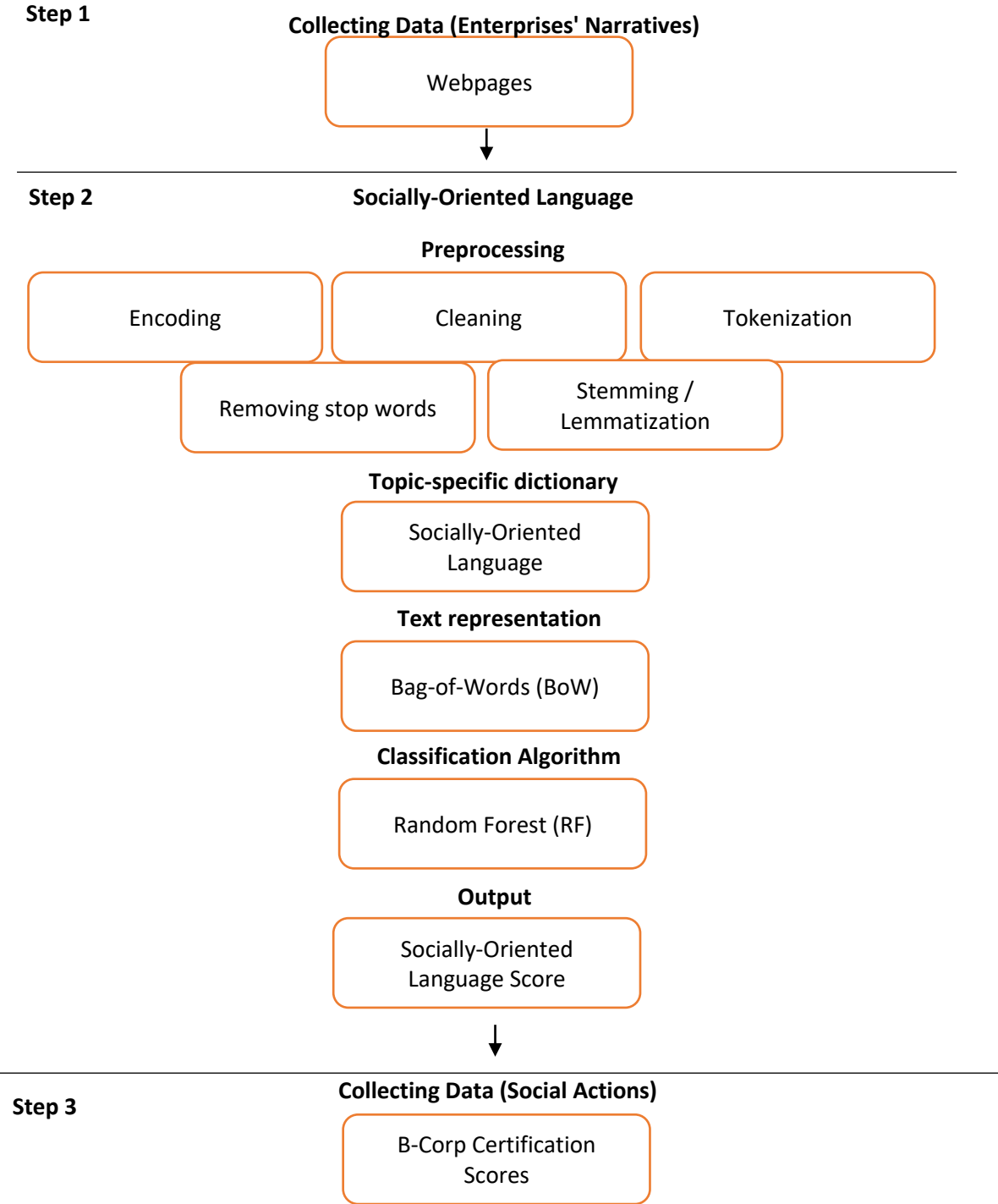
Third, I collect data related to social actions from the B Corp certification website. Sustainability performance, also known as social actions, can be considered another strong signal of sustainability commitment. Therefore, the impact of communicating social values on economic performance should also be examined by considering signals of such performance. Following previous research on social entrepreneurship (e.g., Cantele et al., 2023; Grimes et al., 2018), I assess the sustainability performance of social enterprises by relying on B Impact Assessments (BIA) from the B Corp certification. The BIA measures social actions based on five main categories: community, customers, environment, governance, and workers. The BIA index ranges from 0 to 200. To be certified as a B Corp, enterprises should achieve an overall BIA index of over 80+ points (Cantele et al., 2023).

(a) Data Analysis

I use statistical procedures and Ordinary Least Squares regression (OLS) models to extract insights about the data. Specifically, I analyse the association between economic performance

measured by productivity, the dependent variable, and the main independent variables, socially oriented language and social actions. The models are constructed using R packages.

Figure 2-2 Methodology Workflow Study 2



Note: Image created by author.

2.3.1. Study 3

The third empirical study is referred to as "Less is More? Communicating SDG Orientation and Enterprises' Economic Performance". The third study is built on study two by focusing on the communication of values but from a Sustainable Development Goals (SDGs) perspective. The SDGs have become a widely accepted benchmark for enterprises' sustainability orientation (Chen et al., 2021). Therefore, in study two, I explore the extent of the communication of social values. In study three, I propose exploring sustainability orientation by measuring the alignment of enterprises' narratives with the SDGs. In addition, I explore how the SDG orientation characteristics are associated with enterprises' economic performance. Thus, the third study examines the impact of a communicated SDG orientation on the economic performance of social and traditional commercial enterprises. I measure SDG orientation through narratives presented on enterprises' websites.

(a) Sampling

In the third empirical study, I used the initial sample from study two, which sampled SMEs from the PrivCo dataset for the United States market. I considered both social enterprises and traditional commercial businesses across various industry sectors.

(b) Methods

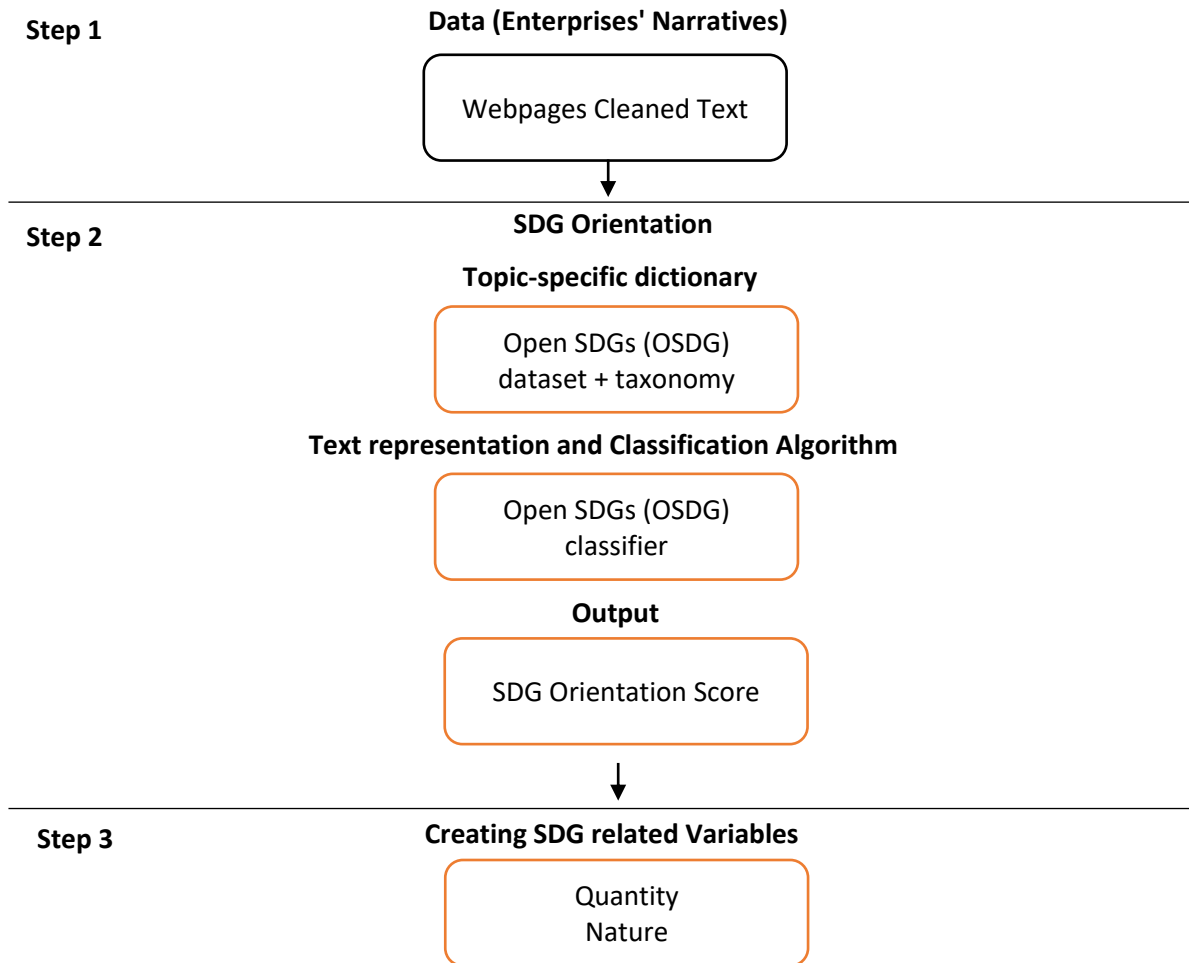
Similar to study two, I utilised the textual content in the "About Us" section to evaluate how enterprises strategically align with the SDGs. Since I collect the "About Us" textual content for the enterprises in my sample in the second study, I approach the methodology of study three in two main phases as represented in Figure 2.3. First, I assess enterprises' narratives' alignment with the SDGs, which results in the SDG orientation. I deploy the Open SDGs

(OSDG), which is an NLP model proposed by Pukelis et al. (2022), to classify the cleaned "About Us" textual content by the SDGs. The OSDG is a multilingual tool based on advanced NLP methods for classifying text data by SDGs (Pukelis et al., 2022). The OSDG dictionary was built based on an anthology integrating existing SDG research (taxonomy) and data collected via the OSDG Community Platform (Pukelis et al., 2022). The OSDG community screened the initial text, resulting in more than 20,000 labels from almost 2,000 volunteers worldwide (Pukelis et al., 2022). Second, I build the variables assessing sustainability orientation based on the classification of SDGs, measuring the quantity and nature of SDGs presented in an enterprise's narrative.

(a) Data Analysis

I apply statistical procedures and Ordinary Least Squares regression (OLS) models with interaction terms to extract insights about the data. Specifically, I use regression models to explore the relationship between enterprises' economic performance measured by productivity and independent variables related to SDG orientation. The models are constructed using packages in R.

Figure 2-3 Methodology Workflow Study 3



Note: Image created by author.

2.3.2. My Why

My academic and professional journey has influenced the methodologies and methods applied in this doctoral thesis. I am quite passionate about data analytics applied to corporate and environmental contexts. Therefore, I aimed to join the topics that I am most passionate about in my doctoral journey. My personal objective for this doctoral thesis was to explore the use of AI to draw insights into corporate sustainability. I am inspired by the role of

business in sustainable development and believe that understanding aspects of sustainability orientation can improve the relationship between businesses and their environment.

2.3.3. Ethics

Ethical approval was not necessary for this study as there was no direct human interaction involved in the data collection process. However, in the first draft of study two, I used social media data (Twitter) to measure social media engagement. I collected the number of followers on Twitter through the Twitter Developer Platform using API (application programming interfaces) and web scraping techniques. I submitted an ethics application following the overall recommendations on ethics of social media research proposed by Townsend and Wallace (2016) to ensure that the social media data was obtained and used in compliance with the highest possible ethical standards. The study received preliminary ethics approval from the Waikato Management School at the University of Waikato, encompassing both general and specific research ethics protocols (WMS 21/127). It was considered relatively low risk since it did not involve the collection of data from human research participants. As the first empirical study evolved, data related to social media (Twitter) was discarded. The final version of study two, which is presented in Chapter 4 of this doctoral thesis, does not make use of data from social media.

2.4 Conclusion

In conclusion, this doctoral thesis highlights diverse aspects related to enterprises' sustainability orientation by mainly focusing on textual communication. The use of NLP techniques in this thesis provided fundamental bases to extract insights from enterprises' narratives that traditional methods could not. Similar to other scholars, I leverage on advancements of NLP to build and test theories in social science. Moreover, opting for a PhD

by publications allowed the design of three distinct studies, each with its specific aim, as part of a larger research project that culminated in this doctoral thesis. Regardless of the different approaches in each empirical study, they were all guided and shaped by the intersection between business, sustainability and NLP in general terms.

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Chapter 3. A Decade of Biodiversity Conservation: Insights on Corporate Social Responsibility in an Emerging Market Context

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**A Decade of Biodiversity Conservation: Insights on Corporate Social Responsibility in
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A Decade of Biodiversity Conservation: Insights on Corporate Social Responsibility in an Emerging Market Context

Purpose: This study investigates whether Brazilian companies have increased their reporting on biodiversity within the past decade and whether reporting practices are linked to the government's stance on environmental protection, media coverage, and industry biodiversity risk.

Design/methodology/approach: Using content analysis and ordinary least squares regression models, we examine sustainability reports from Brazilian listed and non-listed companies from 2010 to 2020.

Findings: Our empirical analysis indicates that companies have decreased their reporting on biodiversity over the decade. Findings suggest that biodiversity reporting is associated with the level of scrutiny from external constituents, such as industry biodiversity and the president's own public policy agenda, and partially by media coverage.

Originality: The literature seems to lack an understanding of how political factors may drive social and environmental reporting practices, especially biodiversity reporting. This study addresses this issue by examining the relationship between the government's stance on environmental protection. By focusing on biodiversity reporting in an emerging country like Brazil, this study also generates insights into a highly impactful yet under-researched context.

Keywords: Biodiversity Reporting, Biodiversity Conservation, Corporate Social Responsibility, Legitimacy Theory

3.1 Introduction

Despite the pressing nature of biodiversity conservation, scholars have recently demonstrated that biodiversity reporting is under-researched (Roberts et al., 2021) and under-practiced by businesses (Addison et al., 2019). The state of biodiversity reporting seems to mirror the state of biodiversity loss. In the last decade, the world has fallen short of adequate commitments to halt biodiversity loss (CBD, 2020).

The relationship between businesses and biodiversity is interdependent (Hassan et al., 2020; Adler et al., 2018). Businesses have a role in contributing to the loss of biodiversity, which, in turn, poses a threat to their success. One significant consequence of the adverse impact on local environments and communities is the damage to companies' reputation and goodwill. To ensure the continuity of their operations, companies can benefit from reporting on biodiversity. Companies that exhibit a high level of environmental awareness are more likely to survive economic crises such as the Covid-19 pandemic (Hassan et al., 2021). Therefore, engagement in biodiversity conservation is a crucial aspect of corporate social responsibility (CSR) and an essential element of companies' "stewardship and legitimacy" (Addison et al., 2019, p. 308).

Despite biodiversity's importance to both society and companies, there is limited insight into biodiversity reporting, especially outside of developed markets (Roberts et al., 2021). While there is a growing body of literature on biodiversity reporting (Gaia and Jones, 2017), insights from developed markets do not necessarily mirror emerging markets' contexts (Alnabsha et al., 2018). It is essential to understand biodiversity reporting practices in emerging markets (Dartey-Baah and Amoako, 2021, Roberts et al., 2021) to encourage more practices in this field and drive meaningful change (Deegan, 2019). By examining

biodiversity reporting in Brazil, this study provides valuable insights into political and social factors that affect the legitimacy of organizations in emerging markets. Brazil ratified the United Nations (UN) Convention on Biological Diversity (CBD), in 1992 (MMA, 2017). Brazil has a well-established tradition of sustainability reporting (Blasco et al., 2017) and is recognized as the most biodiverse country globally (MMA, 2017). Therefore, companies situated in Brazil face some of the most significant risks to global biodiversity and significant pressures on biodiversity conservation altogether.

We examine the evolution in the reporting of biodiversity in Brazil from 2010 to 2020, a period that overlaps with the UN Strategic Plan for Biodiversity (2011-2020). We also explore contextual factors influencing such reporting, namely industry biodiversity risk, national media coverage of biodiversity issues, and the government's stance on environmental protection. Our research is based on the analysis of 676 sustainability reports from 143 Brazilian listed and non-listed companies. A longitudinal study provides unique insights into biodiversity reporting trends and influences that might not be possible from cross-sectional studies.

This study makes three major contributions to the biodiversity reporting literature. Firstly, it provides the longest longitudinal analysis of biodiversity reporting in the past decade, thereby introducing new insights that suggest that businesses' awareness of biodiversity may be declining. This is a concerning finding, given that the UN designated the period from 2011 to 2020 to address biodiversity and declared 2010 the International Year for Biodiversity. The results suggest that these initiatives may have had only a short-term impact on lower-income economies. Secondly, to the best of our knowledge, our study is the first to examine in an emerging market setting the relationship between biodiversity reporting and political, social, and institutional determinants factors, addressing Roberts et al.'s (2021)

and Blanco-Zaitegi et al.'s (2022) calls for further empirical quantitative studies. Findings indicate that higher-biodiversity risk profiles tend to report more on biodiversity, a fact observed in the 11 years-period. Governmental' instances on environmental protection tend to be the most significant factor influencing changes in corporate disclosure, and the level of national media exposure seems partially influence corporate biodiversity reporting. Third, as far as we are aware, our study is the first to highlight the political impact on corporate biodiversity disclosures in an emerging market, addressing Roberts et al.'s (2021) calls for empirical studies exploring country governance characteristics as determinant of such reporting. Findings demonstrate that the president's administration significantly influence biodiversity disclosures. The decline in effective biodiversity conservation policies that occurred during consecutive presidential administrations was mirrored by biodiversity reporting. The finding stresses that political differences at the country level should gain a large place in biodiversity reporting studies, especially in developing countries where "professionalized legislatures and bureaucracies" may not exist (Hochstetler, 2017, p. 264).

3.2 Theoretical and Hypotheses

Similar to several prior studies on biodiversity reporting (e.g., Rimmel and Jonall, 2013; Mansoor and Maroun, 2016; Adler et al., 2018; Bhattacharyya and Yang, 2019), this study is grounded on legitimacy theory. This perspective is considered one of the better-established theories in the sustainability reporting field of research (Chung & Cho, 2018; Hsiao et al., 2022). It is the most used theory in biodiversity reporting research (Roberts et al., 2021; Blanco-Zaitegi et al., 2022).

One widely used definition of legitimacy describes it as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some

socially constructed system of norms, values, beliefs, and definitions” (Suchman, 1995, p. 574). An important assumption in legitimacy theory is that companies will adopt policies and engage in activities demonstrating their adherence to the prevalent set of norms and their compliance with societal expectations (Montechia et al., 2016). In this perspective, “legitimacy is likened to a ‘resource,’ the presence of which enables organizational survival” (Adler et al., 2018, p. 795). The idea that information reporting is crucial to legitimacy management is widely accepted among legitimacy theory proponents (Deegan, 2002). Companies’ usage of social and environmental reporting is motivated by the need to address social and political exposures in the social and political environment (Cho, Michelon et al., 2015). Therefore, changes in social and political norms are reflected in the kind and extent of information disclosed by companies (Deegan, 2002).

Another key aspect emerging from legitimacy-theory-based literature is that sustainability reporting "appears to be more about image enhancement than meaningful accountability" (Cho, Michelon et al., 2015, p. 17). However, a richer understanding of motivations and influences for corporate social and environmental disclosures can hint at new reporting and accountability models, ultimately allowing for positive social and environmental changes (Deegan, 2019). In their assessment of legitimacy theory, Mahadeo et al. (2011, p. 160) derive some implications suggesting the usefulness of this theory for longitudinal studies on corporate reporting. One implication emphasizes the importance of communication for legitimation processes to be successful. The other two implications pertain to the evolutionary nature of social norms and expectations. Such norms and expectations are influenced by a sequence of events rather than just by specific events.

Deegan (2019, p. 2322) proposes some insights on how to refine and develop legitimacy theory. He mentions Adler et al. (2018) as a study showing that “how a firm is

rated in terms of its biodiversity-related risks influences the nature, and amount, of social and environmental disclosures (p. 2323)". Besides examining this aspect in our study, we examined political and social factors, namely the government's stance on environmental protection and media coverage, as elements of "normative, cultural/cognitive and regulative" influences that Deegan (2019, p. 2323) puts forward as relevant in developing legitimacy theory. These influences, in turn, are likely to influence managers' propensity to use corporate reporting as a legitimizing instrument. Deegan (2019) further explains these influences as follows: regulative influences have to do with legislations providing companies an array of rules that must be followed for sanctions not to occur; cultural/cognitive influences are related to prevailing social expectations; normative influences have to do with what manager "feel they 'ought to' do" (p. 2322).

Firm-specific factors are usually used in legitimacy theory studies to potentially explain biodiversity reporting (e.g., Adler et al., 2017; Adler et al., 2018; Rimmel and Jonall, 2013). As a proxy for community concern (e.g., Deegan et al., 2002), media attention has been explored as a factor influencing biodiversity reporting in studies grounded on legitimacy theory (e.g., Bhattacharyya and Yang, 2019). Political developments have been used in legitimacy theory studies to explain biodiversity disclosures in public agencies (e.g., Gaia and Jones, 2020). Yet, as far as we are aware, no study on biodiversity reporting has explored a broader institutional context, examining simultaneously the influence of political, social, and company-specific factors.

Following Adler et al. (2018, p. 795), we suggest that information concerning biodiversity issues is disclosed by companies "for the purpose of reassuring a community." We examine: the attention given to biodiversity-related issues in sustainability reports over a period of 11 years (H1); industry biodiversity risk as a proxy for biodiversity social

visibility (H2); the role of the media as an expression of community concern over biodiversity issues (H3); and the role of public policy pressures shaped by government-led in raising corporate concerns about biodiversity (H4).

This allows us to explore some contextual factors that legitimacy theory and its application to biodiversity reporting indicates as drivers for social and environmental reporting practices, namely political developments, national biodiversity media coverage, and different institutional contexts. We view political changes as an important influence at the intersection of regulative and cultural/cognitive influences that remains underexplored, and industry biodiversity risk and media exposure as cultural/cognitive-types of influences. Other contextual factors that we do not explore are, for example, national culture or country-level stakeholder orientation (Orij, 2010), which, as far as we are aware, have not been explored in biodiversity reporting research.

3.2.1. Biodiversity Reporting Trends

Despite the wealth of empirical literature on corporate biodiversity reporting, there is scant research based on developing countries although some of them possess the world's richest biodiversity (Buchling and Maroun, 2023), and limited research has conducted longitudinal analyses (Roberts et al., 2021). Most studies have found some improvement in biodiversity reporting. Studies focusing on developed markets suggested increasing attention from companies to biodiversity information, albeit with low rates of significant and consistent information (Rimmel and Jonäll, 2013; Adler et al., 2017; Bhattacharyya and Yang, 2019; Haque and Jones, 2020). Similar evidence was found in recent studies examining global companies that suggest quite limited biodiversity reporting, with a slight disclosure increase over the years (Hassan et al., 2020). In emerging markets, contradictory evidence exists.

Mansoor and Maroun (2016) suggested that despite advances in corporate sustainability reports, it lacks continuity, and biodiversity disclosures remain very limited, with only a few examples of detailed information on biodiversity. In contrast, other studies suggested improvements in biodiversity reporting with more detailed accounts of biodiversity issues (Maroun et al., 2018; Usher and Maroun, 2018; Buchling and Maroun, 2023). Note that emerging market studies focus solely on South Africa (Mansoor and Maroun, 2016; Maroun et al., 2018; Usher and Maroun, 2018; Buchling and Maroun, 2023) and on Malaysia (Husin et al., 2018).

The period analyzed in this study is under the period declared as UN Decade on Biodiversity (2011-2020), as we have analyzed the period from 2010 to 2020. The UN CBD is a significant international instrument for environmental preservation, which established a strategic plan to promote actions and engage stakeholders in mitigating biodiversity loss. The country ratified today's major international treaty for biodiversity conservation, the CBD, in 1992 (MMA, 2017). This kind of international agreement unfolds awareness into social, political, and institutional contexts in an interconnected manner. Furthermore, emerging markets' responses to environmental challenges tend to be positively affected by international pressure (Sommerer and Lim, 2016). Given Brazil being a signatory member of the CBD, the role of companies in biodiversity conservation, and their legitimacy, we expect the biodiversity reporting to be more extensive over time.

***H1:** The quantity of biodiversity disclosure by Brazilian companies increased during the decade of biodiversity.*

3.2.2. Industry Biodiversity Risk

Previous research has found a positive relationship between biodiversity risk and biodiversity reporting (e.g., Adler et al., 2018; Husin et al., 2018; Hassan et al., 2020). Most of these studies have focused on analyzing biodiversity reporting within specific industries (Roberts et al., 2021). It has been observed that companies in industries with higher pollution propensity are subject to greater public scrutiny and consequently, are more likely to disclose additional information on biodiversity issues than those with a lower profile (e.g., Adler et al., 2018; Husin et al., 2018; Hassan et al., 2020). Boiral and Heras-Saizarbitoria (2017) have argued that mining and forestry companies need to enhance the social acceptability of their activities due to the nature of their operations, which pertains to the concept of a license to operate. Hassan et al. (2020, p. 1429), drawing on legitimacy theory, posit that firms from riskier sectors "are in high need of employing a legitimacy-repairing or defensive impression management strategy" since they have "stronger incentives to disclose more environmental information" (ibid.). Therefore, firms facing high levels of biodiversity risk may become more visible to the public, and this increased visibility could result in more disclosure of efforts to address biodiversity loss. In addition, rich levels of biological diversity may mean increased exposure to biodiversity risks, which is the case in Brazil.

H2: The industry biodiversity risk is related to the quantity of their biodiversity disclosure.

3.2.3. Media Exposure

Bhattacharyya and Yan (2019), who explored biodiversity reporting factors in Australia, found that greater media exposure was linked to the extent of biodiversity disclosure. News media influences public opinion (Carroll et al., 2003) and echoes public sentiment on a

subject (Hopkins et al., 2017). Not surprisingly, therefore, news media can influence corporate agenda-setting (Brown and Deegan, 1998; Deegan et al., 2002). Indeed, according to Brown and Deegan (1998), media coverage of specific issues can drive specific corporate behavior. Existing evidence suggests that media raise community concern and drive social pressures, which can broadly influence reporting practices (Deegan et al. 2002). National media coverage of biodiversity may increase the salience of biodiversity to managers and enhance its perceived importance nationally. It can positively influence the quantity of biodiversity reported by companies. Biodiversity awareness is driven by “informal monitoring” (Maroun et al., 2018), such as media coverage of environmental issues (Loate et al., 2015). We extend this logic to the case of biodiversity reporting in emerging markets by hypothesizing that:

H3: National biodiversity media coverage is related to the quantity of biodiversity disclosure by Brazilian companies.

3.2.4. Government Stance on Environmental Protection

Political developments for biodiversity may also influence biodiversity reporting through a similar yet distinct mechanism. Governments are key players in biodiversity management by planning and regulating activities that draw attention to biodiversity issues and pressuring corporations (Gaia and Jones, 2020). Moreover, factors at the country level can affect environmental degradation by influencing the behavior of economic agents (Borojo et al., 2022). In turn, government initiatives may enhance pressure on CSR, influencing the propensity of environmental disclosures (Dartey-Baah, 2021; Alnabsha et al., 2018).

Gaia and Jones (2017) conducted an analysis of UK local councils to investigate the use of council narratives in biodiversity reporting as a tool to increase public engagement in

biodiversity. Talbot and Boiral (2021) identified a lack of explicit and substantial commitment to biodiversity disclosure practices in ministries and public agencies, despite national government policies in the field of biodiversity. Gaia and Jones (2020) conducted a study on biodiversity reporting among governmental organizations and found that "politicians base their political actions and election programs on an ideology" (p. 6). According to Gaia and Jones (2020), the more environmentally oriented are politicians, the greater the level of biodiversity information disclosure by the local council.

In countries where policy outcomes are closely followed by the president's own agenda, which is the case of Brazil, environmental policies may shift due to the president's visions and governing strategies (Hochstetler, 2017). This shift in environmental policies tends to occur in countries where the basic logic of the presidential system is stressed by "presidentialism gives a single individual a great deal of power and democratic legitimacy" (Hochstetler, 2017, p. 263). However, scholars usually focus on levels of economic development or system of government (democracy versus authoritarianism) as drivers of environmental policies (Hochstetler, 2017, Sommerer and Lim, 2016). In this regard, Boiral and Heras-Saizarbitoria (2017) have demonstrated that public authorities collaborate with firms at the central government level in developing countries and specialized agencies in developed countries due to differences in decision-making centralization. Unlike developed countries that often have solid public agencies and departments that can plan and carry long-term policies, in developing countries, roles tend to be more centralized within the central government (Boiral and Heras-Saizarbitoria, 2017), which causes environmental policy shifting in accordance (Hochstetler, 2017). For instance, in the latter, when central governments relax biodiversity measures, this affects various levels of government, such as

ministries and environmental protection agencies, as well as regulatory standards (Boiral and Heras-Saizarbitoria, 2017).

This study explores the relationship between biodiversity reporting and the government's stance on environmental protection in successive presidential Brazilian administrations: The last year of President Luis Inácio Lula da Silva's second presidency (2003 - 2010), President Dilma Rousseff's (2011 - August 2016), President Michel Temer's (August 2016 - 2018), and the first two years of President Jair Bolsonaro administration (2019 - 2022). These four presidents recorded different approaches and, consequently, outcomes to biodiversity conservation. Evidence from sustainability reporting research, demonstrated that political developments over the years brought about changes in corporate sustainability disclosures (Gray et al., 1995). Still, Alin et al. (2011) found that country-related differences in political outcomes toward environmental protection affect the reporting levels.

The government of Lula was significantly more active in building an environmental conservation agenda compared with subsequent presidents (Hochstetler, 2021; Hochstetler, 2017; Pereira and Viola, 2021), comprised of Dilma (e.g., Novaes and Souza, 2013), Temer (e.g., Silva, 2019), and Bolsonaro (Pereira and Viola, 2021). For instance, the Lula exercise led to the first successful approaches to reducing deforestation by spearheading biological protection areas and managing conservation tools more effectively (Hochstetler, 2021; Barbosa et al., 2021; Rochedo et al., 2018). In the subsequent governments, the environmental conservation agenda stepped backward (Rochedo et al., 2018). The Dilma administration carried on with the Lula environmental conservation agenda but failed to mollify environmental protection arrangements (Hochstetler, 2021; Barbosa et al., 2021). The Temer administration undermined socio-environmental gains by weakening the

management of conservation areas and deforestation (Menezes and Barbosa, 2021; Barbosa et al., 2021), and Bolsonaro went further by creating a permissive degradation climate which slashed away environmental conservation policies (Hochstetler, 2021; Menezes and Barbosa, 2021; Barbosa et al., 2021; Vale et al., 2021).

We hypothesize that the government's stance on environmental protection may influence biodiversity pressure on businesses. Governments that demonstrate more biodiversity preservation commitment may drive companies to report a greater quantity of biodiversity information.

H4: There is a relationship between the quantity of biodiversity disclosure and the government's stance on environmental protection.

3.3 Research Methodology

We used a content analysis methodology to extract and measure the biodiversity information present in sustainability reports. Content analysis is an appropriate technique for extracting insights from voluntary reports, and it is widely used in studies on biodiversity reporting (Adler et al., 2017). We based our study on the frequency of terms to indicate the importance of the subject matter (Krippendorff, 1980).

We developed software in Python to address notable barriers faced in sustainability reports content analysis, mainly related to the fact that text-analysis software is primarily designed for the English language. Each sustainability report in pdf was downloaded, and our software converted the reports from pdf to raw text files. First, the reports were preprocessed, a step that included counting occurrences of key terms and removing stopwords and special characters. The occurrences of key terms were counted using fuzzy match based on the standard Levenshtein distance similarity assuming the value of 90% by

default, which outputs a similarity level between two terms. Using a full match (100% of agreement), commonly applied by quantitative content analysis software, makes identifying terms with slight variations challenging. This is quite crucial in Portuguese due to singular and plural nouns (e.g., "*animal selvagem*" and "*animais selvagens*"). The software and the extracted text files are available for reproducibility of the current study at <https://github.com/hmgomes/sustainability-reports-pdf-analysis>.

3.3.1. Sample and Data

Our final sample comprises 143 companies, with 676 biodiversity reports. We extracted data from sustainability reports of both non-listed (n = 150) and listed (n = 526) Brazilian companies. We drew on the GRI's Sustainability Disclosure Database to obtain relevant firms' characteristics and sustainable reports that either cited GRI (n = 182) or followed GRI's framework (n = 494), in line with prior research (e.g., Bhattacharyya and Yang, 2019; Boiral, 2016; Boiral and Heras-Saizarbitoria, 2017). GRI guidelines are justified by their broad use in both private and public organizations in Brazil (KPMG, 2017). The examined reports were written in Portuguese and English. They refer to eleven years, with 34 reports in 2010, between 45 and 102 reports each following year (63 in 2011, 83 in 2012, 102 in 2013, 92 in 2014, 73 in 2015, 70 in 2016, 45 in 2017, 58 in 2018, 40 in 2019), and finally 16 reports in 2020. Each firm reported an average of ~5 times during the eleven years.

3.3.2. Variables

Dependent variable. The biodiversity quantity disclosure index (*IndBio*) is the variable developed to measure the level of biodiversity disclosure. It represents a biodiversity quantity disclosure index based on terms' relative frequency. The relative term frequency (RTF) of a single term is given by the number of times it occurs in the report divided by the total number

of terms. RTF is an intuitive and well-accepted method for quantifying specific content's relative importance (Drisko and Maschi 2015).

The terms used to calculate the *IndBio* were determined from two sources related to biodiversity reporting: (1) the GRI indicators; (2) keywords used in several studies (Boiral and Heras-Saizarbitoria, 2017; Adler et al. 2017; 2018). The terms in English and Portuguese can be found in Appendix 01. To ensure that the list of key terms accurately represents the concept of biodiversity disclosure, content reliability was analyzed in two steps. First, the researchers analyzed the terms in the context of the reports to appraise if the terms indeed represented a relationship with biodiversity issues. This analysis required a thorough review of the terms' frequencies and, importantly, the meticulous inspection of the contexts in which the terms appeared in the reports. Second, additional rounds of content reliability testing were undertaken iteratively. This process ensured that relevant terms were not missed and that dubious terms that could lead to erroneous conclusions were removed.

Independent variables. The annual fiscal year (*Year*) represents the fiscal year of the report from which the *IndBio* originates. For instance, the fiscal year 2010 refers to a sustainability report published in 2011.

Industry biodiversity risk (*Zone*) is a categorical variable that represents the level of exposure to biodiversity risks in different sectors. We adopted the F&C (2004) methodology of assessing the company's industry into three distinct zones of biodiversity risk. The *green* zone represents the lowest-risk sectors (e.g., health, media and entertainment, and telecommunications). The *amber* zone comprises moderate-risk sectors (e.g., beverages, transport, and chemicals). The highest-risk sectors are classified as *red* (e.g., construction, forestry and paper, mining, and oil and gas). We followed similar literature (e.g., Adler et al.,

2018) and used dummy categories based on the traffic-light *Green* (n = 94), *Amber* (n = 254), and *Red* (n = 328).

National biodiversity media coverage (*Media*) is a variable that indicates the annual normalized measure of news on biodiversity in one of the most prominent national news media outlets in Brazil, called Globo News (Newman et al., 2018). This measure is obtained by counting the number of occurrences of the term "biodivers*" on the news outlet's online platform within each time period. To eliminate the bias of increasing volume of online news each year regardless of the topic, we normalized the yearly media coverage. This normalization allows us to assess the relative popularity of the related issue over time by comparing it with a "common and innocuous" keyword (i.e., "*carnaval*"), as recommended by Dalmaijer et al. (2021).

The government's stance on environmental protection (*Gov*) is a categorical variable that represents the different presidential approaches toward biodiversity conservation. Specifically, we examine the stance of four Brazilian presidents: Luiz Inácio Lula da Silva presidency in 2010, Dilma Rousseff from 2011 to August 2016, Michel Temer from August 2016 to 2018, and the first two years of Jair Bolsonaro's administration from 2019 to 2020. In our regression analysis, we use shorthand labels for each president, namely "Lula", "Dilma", "Temer", and "Bolsonaro". In the supplementary analysis, we demonstrated how environmental policies and outcomes shifted under each presidential administration.

Control variables. *Listed* and *Assets* were included as control variables. *Listed* is a binary variable that assumes the value of 1 for companies listed on the Brazilian stock exchange, and 0 otherwise. Listed companies are publicly accountable, and thus we control for a greater

risk of public scrutiny (Khan et al. 2013). *Assets*¹ is measured as the logarithm of total assets. In line with previous studies, assets are used to control for firms' size (e.g., Bhattacharyya and Yang, 2019; Cahan et al., 2016; Hassan et al., 2020). Differences in company resources may exert an influence on the quantity of biodiversity reporting (e.g., Hassan et al., 2020).

3.3.3. Data Analysis

Data analysis proceeds in three main steps. First, Pearson correlation coefficients were calculated between study variables. Second, to estimate the hypotheses, we used Ordinary Least Squares regression (OLS) in line with previous studies (Hassan et al., 2020). *Year*, *Media*, and *Gov* were tested separately because of the shared variance discussed in the upcoming section. To estimate the impact of *Year* (H1) and *Zone* (H2), on *IndBio*, we used an OLS regression (Table 2, Model 1) that included the control variables *Assets* and *Listed*. Subsequently, to estimate *Media* (H3), we entered *Year* as dummy variables in Model 2, Table 2. Finally, we estimate the effect of *Gov* (H4) on *IndBio* in Model 3, Table 2 by removing *Media* from the regression and including *Gov*. Four, we carried on supplementary analysis and robustness tests. Our models were built using “*statsmodels*” package in Python.

¹ <https://www.refinitiv.com/>

3.4 Results and Discussion

3.4.1. Correlation Matrix

Table 1 presents the analysis of potential multicollinearity issues. We treated categorical variables as binary coded variables and used the point-biserial correlation coefficient to calculate the Pearson correlation matrix and chi-square test. The analysis revealed that biodiversity disclosure is significantly positively associated with *Zone*, *Lula Gov*, and *Media*, while it is negatively associated with *Year*. We also observed high correlation coefficients ($>|0.5|$) among *Year*, *Media*, and *Gov*, which raised multicollinearity concerns. We removed *Media* and *Gov* from the same model to address this issue. In addition, we dropped *Lula* as the variable of reference for *Gov*, and *Green* for *Zone* and added year as a dummy variable to control for time effects, dropping *2010* as the reference category. This approach is in line with previous literature (e.g., Adler et al., 2018, Husin et al., 2018, Rimmel and Jonall, 2013) and is known as "dummy variable coding" or "treatment coding," which helps to avoid issues with perfect multicollinearity. Therefore, we established separate OLS models to test our H4, in line with previous literature (e.g., Bhattacharyya and Yang, 2019; Cahan et al., 2016).

Table 3.1 Correlation Matrix

Variable	IndBio	Assets	Listed	Year	Z. Green	Z. Amber	Z. Red	Media	G. Bolsonaro	G. Dilma	G. Lula	G. Temer
IndBio	1.000***											
Assets	0.051	1.000***										
Listed	-0.049	-0.423***	1.000***									
Year	-0.079**	-0.020	0.185***	1.000***								
Zone Green	-0.204***	-0.042	-0.084**	-0.061	1.000***							
Zone Amber	-0.305***	-0.021	0.054	-0.056	-0.312***	1.000***						
Zone Red	0.437***	0.049	0.006	-0.013	-0.39***	-0.753***	1.000***					
Media	0.087**	-0.008	-0.0463	-0.653***	0.065*	-0.081**	0.034	1.000***				
Gov Bolsonaro	-0.046	-0.013	0.135***	0.555***	0.019	0.011	-0.023	0.005	1.000***			
Gov Dilma	-0.005	0.019	-0.164***	-0.555***	0.027	0.01	-0.029	-0.093**	-0.475***	1.000***		
Gov Lula	0.101***	0.001	0.009	-0.386***	0.005	-0.081**	-0.075*	0.702***	-0.069*	-0.364***	1.000***	
Gov Temer	-0.020	-0.014	0.098**	0.506***	-0.051	0.028	0.008	-0.323***	-0.127***	-0.671***	-0.098**	1.000***

Note: Table by authors. Pearson's correlation coefficients are presented in the diagonal. We also tested Spearman correlation, and it gave us similar results. Significant correlations at levels **p<.05 and ***p<.01.

3.4.2. Main Findings

Table 2 presents the regression results. They provide support for the hypotheses tested, except for H1.

Hypothesis 1 proposed that biodiversity reporting would improve over time. Differently from what was hypothesized, the results demonstrated a declining trend for biodiversity disclosure over time. Model 1 in Table 2 illustrates that the relationship between *IndBio* and *Year* was negative and significant in the data ($\beta = -0.0069$, $p = 0.047$). In addition, the inclusion of the independent variables improved the model's fit compared to the control variables alone ($p = 0.05$), Model 0 in Table 2. Therefore, this study reveals that companies did not sustain higher biodiversity awareness from 2010 over the subsequent ten years. The overall decline in the quantity of biodiversity reporting from 2010 to 2020 is concerning since our analysis overlaps with the "Decade of Biodiversity" (2011-2020). Our study suggests that practices reinforcing biodiversity protection and conservation are *not* improving in Brazil. Surprisingly, our findings that Brazilian companies' biodiversity reporting is deteriorating appear to contradict other relevant studies in both emerging markets (Maroun et al., 2018; Usher and Maroun, 2018; Buchling and Maroun, 2023) and developed markets (Rimmel and Jonäll, 2013; Adler et al., 2017; Bhattacharyya and Yang, 2019) that have found opposite trends. For instance, in a study comparing the impact of the UN Decade on Biodiversity declaration on Australian mining companies' biodiversity, Adler et al. (2017) discovered a substantial increase in biodiversity disclosure from 2010 to 2013. Notwithstanding, prior studies focus on shorter time spans (average 3 years, at some point between 2010 to 2017) than what we examined (over ten years). Indeed, if we compare our results over specific

periods, such as 2014-2015 and 2016-2017, we would find a similar trend. The picture looks far more somber once we zoom out to take the whole eleven years into account.

While some studies have shown a short-term increase in biodiversity disclosures, evidence suggests that the quality of corporate reports is not improving, as indicated by Bhattacharyya and Yang (2019) and Hassan et al. (2020). The biodiversity disclosures are “minimalistic and vague” (Hassan et al., 2020, p. 710). This lends credence to the notion that legitimacy-theory-based reporting is more about image than meaningful accountability (Cho, Michelonet et al., 2015). Yet, among the mega-diverse countries, Brazil is one of the countries that present the highest biodiversity disclosure levels (Skouloudis et al., 2019). However, another emerging perspective is that image-motivated reporting leads to higher-quality reporting (Maroun et al., 2018, Schoeneborn et al., 2019). This raises an intriguing question: Are Brazilian companies talking less about biodiversity because they have already transited to a higher quality of biodiversity reporting? We have reasons to believe that this is not the case, based on the social and political contextual factors investigated.

Hypothesis 2 proposed that companies more exposed to environmental scrutiny are more likely to present higher levels of biodiversity reporting than their counterparts. In line with what was hypothesized, the results in Table 2, Model 2 indicate that higher industry biodiversity risk tends to be associated with higher biodiversity reporting. Moreover, compared to the green biodiversity risk zone, the highest zone risks had a positive and strong significant association with high biodiversity reporting ($\beta = 0.1469$, $p = 0.000$). Likely highest risk profiles provide more levels of biodiversity information in all the 11 time periods analyzed, compared with the lowest risk profiles. Our research provides insights on social visibility represented by firm-specific factors related to biodiversity reporting. Some studies have examined the association between the volume of biodiversity reporting and companies’

biodiversity risk profiles. Rimmel and Jonall (2013) found that some Swedish companies provided limited continuous biodiversity information. Among these companies, those in lower-risk sectors provided the most biodiversity information. On the contrary, Adler et al. (2018), Bhattacharya and Managi (2013), Husin et al. (2018) and Hassan et al. (2020) identified some positive associations between risk profile and biodiversity disclosures. Our findings are in line with those of these latter studies. Yet, we agree with Addison et. al., (2019), industry risk on biodiversity is not the sole driver for disclosure, as we demonstrated in Table 2 that disclosure changes are associated with government (Model 3) and partially with media (Model 2).

Hypothesis 3 proposed that media attention toward biodiversity was associated with subsequent biodiversity quantity reporting. The regression results shown in Model 2 of Table 2 indicates a positive relationship ($\beta = 0.0319$, $p = 0.009$). This positive relationship provides only limited support for the hypothesis at hand. Bhattacharyya and Yan (2019) compared Australian companies' biodiversity disclosure across various industries, finding an increase in reporting between 2012 and 2015. To explain this variance, they found that greater media exposure was linked to the extent of biodiversity disclosure. Our findings are consistent with those of Bhattacharyya and Yan (2019), indicating that media is typically positively linked to disclosure levels. However, since we have a decreasing trend for *IndBio* over time, our regression has found that one of the country's leading news providers has shown a declining trend in the extent of biodiversity conservation coverage over the observational period. Media trends may indicate a reduction in public concern during the period under study. Bhattacharyya and Yan (2019) argue that companies are unlikely to take biodiversity seriously unless they identify the benefits of risk-mitigating measures for financial gains or reputation. Business shift “corporation’s talk, decisions, and actions related to its core

operations toward justifications couched in economic, cost-benefit terms” (Cho, Laine et al., 2015, p. 79). Therefore, since businesses are highly influenced by consumer preferences (Bhattacharyya and Yan, 2019), the poor response to biodiversity concerns could be due to diminishing public interest. To better understand a company’s actions, it is crucial to consider the social and political context in which it operates. This perspective can help identify diverse stakeholder demands and expectations, which may sometimes be conflicting (Cho, Laine et al., 2015). Furthermore, biodiversity protection may not always result in immediate corporate benefits, and political measures may be necessary to achieve this goal (Bhattacharyya and Yan, 2019). Our results may suggest that media visibility, as an expression of community concern, influences the company's disclosure of biodiversity to some extent.

Hypothesis 4 proposed a relationship between biodiversity reporting and the government stance on biodiversity conversation, where the *IndBio* would relate positively to strong national biodiversity governance. The estimates in Table 2, Model 3 for *Gov* indicate that compared to our reference variable Lula, the three other presidents present a negative and significant relationship with the *IndBio*, giving empirical support to H4. Bolsonaro presented the lowest coefficient ($\beta = -0.0708$, $p = 0.031$), followed by Dilma ($\beta = -0.0616$, $p = 0.063$) and Temer ($\beta = -0.0591$, $p = 0.040$). Indeed, our results demonstrate that biodiversity disclosure is significantly lower where the government orientation to biodiversity is poorer. *IndBio* is statistically significantly associated with the government’s stance on environmental protection, as represented by the presidential administration. In a study in South African, Buchling and Maroun (2023) demonstrated an improvement in biodiversity reporting in a state-owned enterprise over the period of 2013-2017, attributing this progress to the South African government’s support of biodiversity causes. In addition, it is essential to acknowledge the significance of governments as companies’ stakeholders . Thus, corporate

reports are also used to influence public policies and negotiate agreements with governments (Boiral and Heras-Saizarbitoria, 2017). Boiral and Heras-Saizarbitoria (2017) provide evidence that companies describe their participation in environmental agreements and initiatives signed between government agencies and companies in their sustainability reports.

Biodiversity disclosure levels decreased significantly after President Lula's term, with the lowest coefficient observed under Bolsonaro's administration. Events provide insights into the loss of government momentum towards biodiversity conservation and its role in setting the national agenda (or vice versa; Likens, 2010). A decline in biodiversity conservation support with political changes has been noted internationally (e.g., US: Hejny, 2018; India: Rastogi et al., 2012). Our findings endorse Reale et al. (2018) that investigated the measurement of biodiversity conservation actions of listed companies in Brazil and noted that organizations “do not yet internalize the importance of promoting biodiversity conservation actions as a way to minimize their impacts” (p. 14).

Table 3.2 The Relationship between IndBio and its Determinant Factors

DV: IndBio	(0) OLS	(1) OLS	(2) OLS	(3) OLS	(4) OLS w/ cluster	(5) OLS w/cluster	(6) LM
(Intercept)	13.975** (p = 6.894)	12.887** (p = 6.461)	0.0773 (p =0.066)	0.1919 (p =0.084)	0.0773 (p =0.098)	0.1919 (p =0.129)	13.015*** (p =5.021)
Assets	0.0039 (p = 0.007)	0.0010 (p = 0.036)	0.007 (p = 0.004)	0.0007 (p = 0.004)	0.0018 (p = 0.006)	0.0007 (p = 0.006)	0.005 (p = 0.006)
Listed	-0.0100 (p = 0.047)	-0.0220 (p = 0.226)	-0.0263 (p = 0.023)	-0.0263 (p = 0.023)	-0.0301 (p = 0.038)	-0.0263 (p = 0.038)	-0.025 (p = 0.040)
Year (ordinal)	-0.0069** (p = 0.003)	-0.0063** (p = 0.003)					-0.006*** (p = 0.03)
<i>Year (ref. cat.: 2010)</i>							
Year_2011			-0.0224 (p = 0.036)	0.0066 (p = 0.025)	-0.0224 (p = 0.029)	0.0066 (p = 0.019)	
Year_2012			0.0153 (p = 0.025)	0.0007 (p = 0.022)	0.0153 (p = 0.018)	-0.0007 (p = 0.016)	
Year_2013			0.0185 (p = 0.022)	-0.0122 (p = 0.021)	0.0185 (p = 0.026)	-0.0122 (p = 0.023)	
Year_2014			0.0165 (p = 0.024)	-0.0212 (p = 0.015)	0.0165 (p = 0.019)	-0.0212 (p = 0.015)	
Year_2015			0.0352 (p = 0.026)	-0.0003 (p = 0.024)	0.0352 (p = 0.029)	-0.0003 (p = 0.024)	
Year_2016			0.0021 (p = 0.026)	-0.0366 (p = 0.024)	0.0021 (p = 0.023)	-0.0366 (p = 0.018)	
Year_2017			0.0101 (p = 0.032)	-0.0363 (p = 0.027)	0.0101 (p = 0.035)	-0.0363 (p = 0.024)	
Year_2018			0.0258 (p = 0.029)	-0.0217 (p = 0.025)	0.0258 (p = 0.025)	-0.0217 (p = 0.020)	
Year_2019			-0.0101 (p = 0.034)	-0.0251 (p = 0.032)	-0.0101 (p = 0.024)	-0.0251 (p = 0.022)	
Year_2020			-0.0211 (p = 0.052)	-0.0422 (p = 0.040)	-0.0211 (p = 0.030)	-0.0422 (p = 0.022)	
<i>Zone (ref. cat.: Green)</i>							
Zone Amber		0.0336 (p = 0.0262)	0.0350 (p = 0.026)	0.0350 (p = 0.03)	0.0359 (p = 0.032)	0.0350 (p = 0.032)	
Zone Red		0.2335*** (p = 0.025)	0.2338*** (p = 0.026)	0.2338*** (p = 0.03)	0.2338*** (p = 0.039)	0.2338*** (p = 0.029)	
Media			0.0168** (p = 0.007)		0.0168** (p = 0.008)		
<i>Gov (ref. cat.: Lula)</i>							
Gov Dilma				-0.0628* (p = 0.033)		-0.0629* (p = 0.034)	
Gov Temer				-0.0580* (p = 0.029)		-0.0580* (p = 0.030)	
Gov Bolsonaro				-0.0673** (p = 0.03)		-0.0673** (p = 0.029)	
Group Firm							0.033 (p = 0.034)
N	676	676	676	676	676	676	676
N and mean size group							143 and 4.7
R-squared	0.01	0.200	0.204	0.204	0.204	0.204	
Adj. R-squared	0.005	0.194	0.187	0.187	0.187	0.187	

Note: Table by authors. Regression coefficients and std err in parentheses. Significance * p < .10, ** p<.05, ***p<.01. Categorical variables of reference: Year 2010, Green Zone and Gov Lula

3.4.1. Supplementary Analysis and Robustness Tests

To better understand how presidential administrations approach biodiversity protection, we looked at environmental outcomes. Weak outcomes can indicate weak governance commitment to other environmental dimensions (Sommerer and Lim, 2016). We first examined the strength of environmental laws (*EnvLaw*) from 2010 to 2019 using a color-coded system (blue for strengthened, grey for stagnant, and red for weakened) applied by Barbosa et al. (2021). Then we used the same system to assess changes in 2020 based on Vale et al. (2021). Second, we looked at the Forest and Biodiversity Index (*FABI*) provided by Euromonitor Passport² (e.g., Environmental Sustainability: Kikkas and Kulik, 2018), where higher scores indicate better forest coverage. Third, we also used the annual deforestation rate (*DR*) in the Amazon, obtained from PRODES³ (e.g., Rochedo et al., 2018; Hochstetler, 2017), which is likely the region's most accurate source of deforestation data (Pereira and Viola, 2022). Higher *DR* scores indicate worse sustainable forest management and biodiversity conservation. Figure 1 displays the average values of the variables *IndBio* and *Media* over time, alongside values for *EnvLaw*, *FABI*, and *DR*, during each president's administrations (*Gov*).

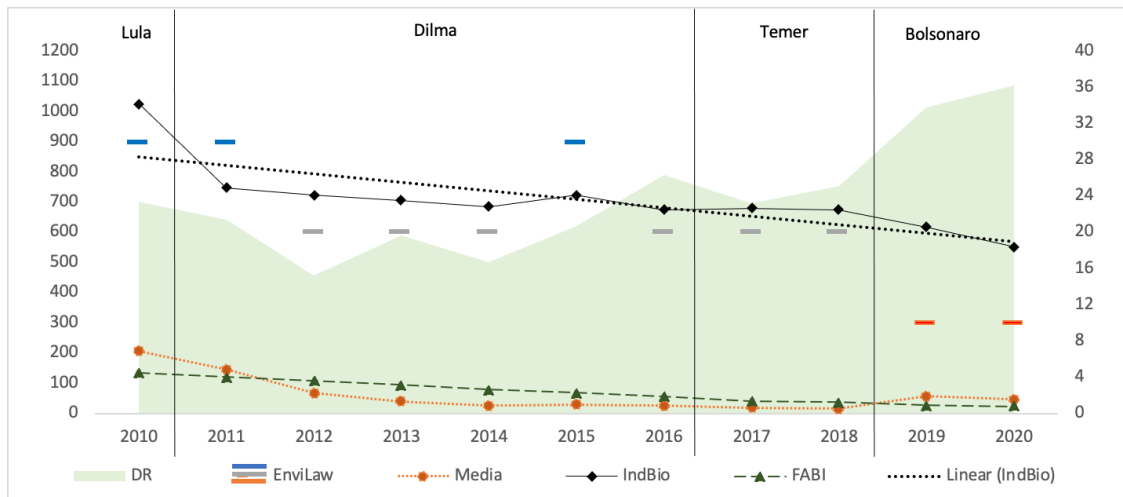
The plot reveals that environmental outcomes shifted significantly in each presidential administration from 2010 to 2020, closely followed by *IndBio*. Firstly, there is a declining trend in biodiversity reporting, with a slight but steady decrease over the years, except for 2015 and 2017. The highest levels of reporting were recorded during

² <http://www.euromonitor.com/>

³ http://terrabrasilis.dpi.inpe.br/app/dashboard/deforestation/biomes/legal_amazon/rates

Lula’s administration in 2010 and the lowest during Bolsonaro’s administration in 2019 and 2020, mirrored by the levels of *DR* and *FABI*. Furthermore, the highest levels of biodiversity disclosure match the periods where positive environmental laws were established (2010, 2011, and 2015).

Figure 3-1 Temporal Additional Analysis



Note: Figure by authors. EnviLaw demotes blue=strengthened, grey=stagnant, and red=weakened. Numerical scales adjusted to better visualization. DR (km²) in 1:10. FABI in 1:100. Media in 1:1. IndBio 1:0.01.

Figure 1 confirms that media coverage of biodiversity shows a decreasing trend, but with a rapid rise in 2019, followed by a decrease in 2020. Notably, the increased media attention in 2020 is mirrored by biodiversity disclosures in 2019, but not in 2020. Therefore, our supplementary analysis endorses that media is only partially associated with corporate disclosure. Despite the increased media attention, the low levels of biodiversity reporting in 2020 could be explained by the fact that companies did not perceive any advantages in reacting promptly to biodiversity media scrutiny due to other influential factors. These tendencies may reinforce that the awareness of biodiversity conservation in the Brazilian context has been lower in the recent years analyzed, especially in 2020 under the Bolsonaro administration.

We used OLS with clustered standard errors and multilevel modeling techniques to check for the robustness of the results. Our choice of a clustered model was motivated by the nested structure of the data. Yearly observations ($n = 676$) are clustered within companies ($n = 143$). A clustered model accounts for dependencies in the data and is robust to missing observations (Finch et al., 2019). We present the clustered results in Table 2, Models 4 and 5. These results are highly similar to those represented in Models 2 and 3 of Table 2. In addition, given the longitudinal nature of the study based on a mix of companies, we perform additional company effect tests to corroborate the findings. Firms with certain features could disclose more information about biodiversity, which could impact our results over the years. Thus, we estimated the effect of grouping companies in our multilevel model to account for unobserved company-specific characteristics that violate assumptions of independent errors. Model 5, Table 2 presents the results of the multilevel models with *IndBio* as the dependent variable and company as the grouping variable (*Group Firm*). This allowed us to confirm the negative trend for *IndBio* over the years at the firm level. Finally, we run Hausman as an extra test to tell us whether we will use random-effects versus fixed-effect regression analysis (e.g., Hassan et al., 2020) to investigate whether a firm's features influence biodiversity disclosure. Hausman test statistic results suggested that the fixed effect model is recommended. In summary, our results seem to be robust to the potential endogeneities that may be affected by omitted variable bias or/and reverse causality.

3.5 Conclusion

The results of the study provide grim insights into trends and drivers of corporate biodiversity reporting in Brazil. Despite the relevance of biodiversity conservation in a long-term perspective, we identified a decline in companies' biodiversity reporting expressed in quantity. This reduction signals a loss of focus on biodiversity from Brazilian

companies over the period 2010-2020. The social and political factors hypothesized to influence biodiversity reporting can explain some of the variances in biodiversity reporting over time. In addition, this study also found a positive relationship between biodiversity reporting and a higher biodiversity risk profile, endorsing the hypothesis that social visibility represented by industry risk could result in more corporate disclosure.

The relationship between biodiversity reporting and the government's stance on environmental protection was significant. Four different political leaders were in power in Brazil during the observational period, with different orientations toward promoting biodiversity conservation. Moreover, the media coverage of biodiversity declined in frequency, with expectations for 2019 and 2020. This evidence suggests that national media and, consequently, civil society appear to be less engaged with biodiversity conservation despite international pressures. These bleak findings align with the increasing rates of biodiversity degradation, further iterating the urgent need for global awareness, action, and research to promote biodiversity conservation. Our results complement recent studies on contextual factors influencing CSR practices that show that it depends “essentially on the level of scrutiny from external constituents” and “external endorsement becomes crucial to reach high implementation levels” over time (Jacqueminet and Durand, 2020, p. 1501 and 1486). Furthermore, this study provides evidence to illustrate that positive influences on corporate disclosures may have been short-lived when a longer time horizon is considered in developing countries. In addition, results suggest that the decline in biodiversity reporting may be partially explained by a loss of national momentum towards biodiversity conservation, which may be a "canary in the mine" for biodiversity worldwide.

3.5.1. Limitations

The method is based on an objective approach, which does not assess the quality of corporate biodiversity conservation activities, despite prior studies indicating a positive correlation between the quantity and quality of environmental disclosure (e.g., Lee, 2017). Future research might target the link between the quantity and the quality of biodiversity reporting on emerging market context.

3.5.2. Implications

This study holds implications for research, practice, and society. For research, the theoretical and empirical illustration present in this study is an initial step in examining the complex internal and external pressures that influence corporate behavior towards biodiversity, which can sometimes conflict. Furthermore, it highlights the need to further investigate the relationship between political leaders' support for biodiversity conservation, social norms and corporate disclosures. The application of legitimacy theory to the study of sustainability reporting is extended to the examination of an aspect at the intersection of cultural/cognitive and regulative, that of the government stance regarding sustainability aspects. For practice, our findings can inform regulators, NGOs, and investors in developing strategies that encourage businesses to improve reporting practices and contribute to biodiversity conservation, particularly for companies operating in high biodiversity risk industries. Lastly, the societal impact of this study lies in raising awareness about the decline in biodiversity reporting over the 11 years, which could potentially inspire public attitudes and policymakers towards environmental conservation, thereby influencing business in ecosystem preservation and long-term global sustainability.

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Appendices – Supplementary Information

Appendix 3-A: Biodiversity terms and GRI dimensions to biodiversity

PT - Portuguese	EN - English	GRI indicator reference
Biodiversidade	Biodiversity	
Ecossistema	Ecosystem	
Área de proteção	Protection Area	
Área protegida	Protected area	
Área de preservação	Preservation Area	
Área preservada	Preserved Area	
Reserva legal	Legal reserve	
Área afetada	Affected area	
Área impactada	Impacted Area	
Área degradada	Degraded area	
Área desmatada	Deforested area	
Desmatamento	Deforestation	
Habitat	Habitat	
Área restaurada	Restored area	
Fauna	Fauna	
Flora	Flora	
Vegetação	Vegetation	
IUCN	IUCN	
Diversidade biológica	Biological diversity	
Animais selvagens	Wildlife	
Árvores nativas	Native tree	
Bioma	Biome	
Inventário natural	Natural inventory	
Espécie	Species	
304-1	304-1	GRI Standard
304-2	304-2	GRI Standard
304-3	304-3	GRI Standard
304-4	304-4	GRI Standard
EN11	EN11	G3.1-EN11 and G4-EN11
EN12	EN12	G3.1-EN12 and G4-EN12
EN13	EN13	G3.1-EN13 and G4-EN13
EN14	EN14	G3.1-EN14 and G4-EN14
EN15	EN15	G3.1-EN15

Note: Table by authors.

Chapter 4. Should a Social Enterprise Publicly “Toot its Virtuous Horn,” or Do Social Actions “Speak Louder than Words”?

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Should a Social Enterprise Publicly “Toot its Virtuous Horn,” or Do Social Actions

“Speak Louder than Words”?

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Should a Social Enterprise Publicly “Toot its Virtuous Horn,” or Do Social Actions “Speak Louder than Words”?

This study explores the relationship between the communication of social values and the economic performance of social enterprises. We draw on natural language processing (NLP) techniques to assess the communication of social values based on the textual content of enterprises' websites and associate these values with enterprise performance based on productivity. Our findings suggest that the effect of communicating social values on economic performance varies between social enterprises and traditional commercial enterprises. Unlike traditional commercial enterprises, social enterprises do not achieve economic performance advantages by communicating social values. Instead, it is the social actions of social enterprises that positively influence economic performance. This research breaks new ground in social entrepreneurship research by demonstrating that social actions are more significant than communicating social values for the economic performance of social enterprises. Moreover, our study provides an NLP method that future research can employ to examine the communication of enterprise social values.

Plain English Summary

Social actions speak louder than words for social enterprises. Social enterprises combine social purposes with market-oriented income generation and are key drivers for a more sustainable future. Social enterprises tend to believe that the communication of social values can make them stand out among competitors and potentially improve their economic performance. Yet, little is known about measuring an enterprise's communication of social values and whether such language enhances the economic performance of a social enterprise. We explore the relationship between signals of

sustainability orientation and the economic performance of 730 small and middle-sized enterprises (SMEs). Using natural language processing (NLP), we measure the communication of social values as a signal of sustainability orientation and explore its impacts, also considering social actions as an additional signal of sustainability orientation. Our study breaks new ground in social entrepreneurship research by revealing that the communication of social values does not positively impact the economic performance of social enterprises, unlike traditional commercial enterprises. However, our analysis demonstrated a positive relationship between social actions and the economic performance of social enterprises. Our study has implications for research and practice. For research, the theoretical and empirical illustration present in this study is an initial step in examining the complex relationship between the communication of social values and enterprises' economic performance. Additionally, our study presents a new methodological approach to assessing socially-oriented language. For practice, our findings offer practical guidance for social enterprises to align their strategic efforts with social actions rather than communicate social values. This is particularly useful for social enterprises that typically have limited resources.

Keywords: Social entrepreneurship, socially-oriented language, natural language processing (NLP), economic performance

4.1 Introduction

Enterprises are facing increasing social pressure to operate in a responsible and sustainable fashion to address global challenges. Different forms of non-traditional firms have been created in response to these pressures. Among them, social enterprise as a type of hybrid organisation is an emerging domain that combines social purpose and market-

oriented income generation. This new organisational form is seen as the driving force for a more sustainable society (Cantele *et al.*, 2023). The centrality of social purposes over economic value creation distinguishes social enterprises from traditional commercial ventures (Bandyopadhyay and Ray, 2019). The communication of social aspects should allow social enterprises to stand out among competitors, leading to the prospect of better economic performance (Wymer *et al.*, 2016). Yet, the role that communicating social values plays is not always clear for social enterprises. Little is known about measuring an enterprise's communication of social values, and whether using such language contributes to the economic performance of a social enterprise.

In the entrepreneurship literature, the term 'social' encompasses social and environmental aspects (e.g., Bagnoli and Megali, 2011). Social enterprises are businesses that "fund their primary goal of addressing social or environmental issues through revenue-earning business models" where "both social and business aspects are central to their survival" (Bandyopadhyay and Ray, 2019, p. 122). Therefore, while social purposes are a prominent focus for social enterprises, income generation remains a significant aspect (Peredo and McLean, 2006). The pursuit of social values, along with revenue-earning objectives, produces tensions that can impact an enterprise's market competitiveness (Doherty *et al.*, 2014). Scholars argue that this hybrid identity is the primary source of tension within social enterprises (Moss *et al.*, 2011; Smith *et al.*, 2013). In this matter, the communication of organisational identity, also denoted as identity claims, constitutes a crucial aspect of enterprises' strategy (Navis and Glynn, 2011), influencing, among other things, enterprises' economic performance (Martens *et al.*, 2007). Social enterprises can express their organisational identity by adopting either a more social or a more market-oriented approach (Seiler and Bortnowska, 2023).

A review of previous literature uncovers mixed insights about the impacts of communicating social values on social enterprise performance. On the one hand, research shows that when social enterprises claim an alternative identity from commercial enterprises, they receive more positive investors' decisions and stakeholders' perceptions (e.g., Kim *et al.*, 2016; Mersland *et al.*, 2019). Therefore, social enterprises should seek to actively create awareness about their social values (Bandyopadhyay and Ray, 2019). On the other hand, despite the belief that social enterprises should communicate their social values, research show that they do not achieve the desired outcomes and demonstrable competitive advantage (Gehman and Grimes, 2017; Miles *et al.*, 2014). The communication of social elements may signal inconsistent ideas of identity claims, which may backfire (Gehman and Grimes, 2017). Therefore, this study aims to address this gap by examining how the communication of social values impacts the economic performance of social enterprises.

We approached this aim from three different foci, as outlined in our research questions. Does the communication of social values impact the economic performance of social enterprises? (*RQ1*). Does the impact of communicating social values on economic performance vary between social and traditional commercial enterprises? (*RQ2*). Is the impact of social actions on economic performance more significant than that of the communication of social actions for social enterprises? (*RQ3*). We contend that the relationship between enterprises' claims and economic performance must also consider the existence of other signals of sustainability commitment. In this regard, we build on organisational identity (Albert and Whetten, 1985) and signalling theory-based explanation (Connelly *et al.*, 2011) to explore sustainability orientation and economic performance. Signalling theory indicates that social claims serve as a signalling device of sustainability commitment. However, this theory also introduces the existence of other

signals, such as third-party assessments of sustainability performance, also referred to as social actions (e.g., in our case, B Corp certification scores). Moreover, from an organisational identity perspective, social actions can be understood as part and parcel of an organisational identity construction (Carlos *et al.*, 2018). Therefore, we suggest that the impact of social claims on economic performance should also be examined by considering signals of social action (e.g., Kwong *et al.*, 2023 and Lepkowska-White *et al.*, 2023).

This study provides theoretical and empirical implications by examining the complex relationship between the communication of social values and economic performance (e.g., Abbott *et al.*, 2019). We add to the literature by applying signalling theory to examine third-party endorsement of social action (e.g., Lepkowska-White *et al.*, 2023; Lourenço *et al.*, 2014; Robinson *et al.*, 2012). By offering an interpretation of the findings based on signalling theory, this study also provides novel insights into this theory, namely by discussing the effect of multiple signals of sustainability orientation on economic performance. In addition, we inform societal actors about the extent to which the disclosure of social values, as a component of corporate strategic orientation, can benefit social enterprises. We also provide an NLP method to measure socially oriented language that traditional approaches could not provide. Finally, we have empirically grounded comparative insights between social enterprises and traditional commercial enterprises to better understand the performance of hybrid enterprises.

4.2 Theoretical Background and Research Questions

4.2.1 The Role of Organisational Identity

Organisational identity can be defined as central, enduring, and distinctive statements for an enterprise (Albert and Whetten, 1985). It is established as a collective property at the enterprise level that answers “who are we as an organisation?” (Albert and Whetten,

1985; Ashforth and Mael, 1996; Gioia *et al.*, 2013) and “what do we stand for” (Biloslavo and Trnavčević, 2009).

In today's complex world, organisational identity is “a mechanism that mediates between external pressures and internal demands of continuity” (Kirchner 2010, p. 3), where it generally “informs how businesses relate to stakeholders and why they relate to them as they do” (Brickson 2007, p. 13). It develops over time in the interaction between internal and external actors (Gioia *et al.*, 2013; Kraatz *et al.*, 2016). In this sense, one of the purposes of organisational identity is to communicate what is special, unique, or distinctive about an enterprise (Scott and Lane, 2000; Grimes *et al.*, 2018). Therefore, organisational identity is a critical resource for sensemaking (Weber and Glynn, 2006). Scholars have largely treated it as a strategic tool, emphasising maintaining a positive image among stakeholders for economic gains (Scott and Lane, 2000).

4.2.2. Communication of Social Values and Social Entrepreneurship

Enterprises that engage in (re)shaping their organisational identity seek the support of both internal and external stakeholders (Ashforth and Mael, 1996). Among the various factors influencing an organisation's identity, sustainability aspects play a significant role (Grimes *et al.*, 2018). Sustainability aspects are intricately linked with organisational identity (Sorour *et al.*, 2021). Enterprises have been constructing and communicating identities to portray themselves as socially responsible entities to their stakeholders (Andrews, 2021). In line with this, the communication of social values (Delmas and Burbano, 2011) is often associated with a “mechanism through which the corporation maintains its identity and gains relevance in a specific context” (Andrews, 2021, p. 218).

In the context of social entrepreneurship, enterprises communicate their organisational identity to influence internal and external perceptions (e.g., Avila and Amorim, 2021; Battilana *et al.*, 2022; Moss *et al.*, 2018; Moss *et al.*, 2011; Navis and

Glynn, 2011). However, the hybrid characteristic of social enterprises raises identity tensions with their various stakeholders (Smith *et al.*, 2013), which can ultimately impact enterprises' performance (Smith *et al.*, 2013). For instance, founders may be more aligned with identity claims that better represent their social mission, while investors and suppliers may be better aligned with identity claims that reflect commercial purposes (Smith *et al.*, 2013). A way for social enterprises to effectively position themselves with divergent stakeholders is by deciding when to emphasise their social aspects (Smith *et al.*, 2013). Enterprises can communicate their identity by adopting different perspectives of self-representation, which, in turn, affects their competitiveness (Toschi *et al.*, 2023). Moss *et al.* (2018) revealed that the communication of social values rather than economic values positively impacts crowdfunding success for social ventures. Yet, at the same time, emphasising social values may not always lead to desired economic outcomes (Gehman and Grimes, 2017; Miles *et al.*, 2014). For example, communication of social values can threaten social enterprises' reputation (Carlos and Lewis, 2018) and increase tensions with other demands (e.g., commercial gains) imposed by stakeholders (Battilana *et al.*, 2022).

Moreover, communicating social values can have different implications for social and traditional commercial enterprises. Although there is little prior research on how the communication of social values might impact enterprises in different contexts, scholars offer some evidence. In the case of traditional commercial enterprises, the literature tends to show a positive relationship between social claims and economic performance. The communication of social values helped traditional commercial enterprises' productivity by increasing sales, attracting better staff, and giving employees more satisfaction (Biloslavo and Trnavčević, 2009). Even if traditional commercial enterprises engage in misleading behaviour, they are more likely to garner favourable recognition when communicating social values, regardless of their actual social impact (De Jong *et al.*,

2018). Therefore, whether communicating social values is perceived as a competitive advantage might depend on the organisational context (Cao *et al.*, 2017).

Grimes *et al.* (2018) argue that social values may be viewed as a competitive advantage in certain contexts but not in others. In a context where social values can be viewed as distinctive (e.g., traditional commercial enterprises), communicating them can have a positive effect. However, in contexts where these values are already embraced (e.g., social enterprises), such communication may not confer competitive advantages due to the limited market differentiation it offers (Grimes *et al.*, 2018). Delmas and Grant (2014) also noted that the distinctiveness of an actor's values is a common characteristic that depends on the context. In this study, we argue that since social and traditional commercial enterprises are two different organisational contexts, the impacts of communicating social values are likely to be different. Social values are more central among social enterprises than traditional commercial enterprises (Defourny and Nyssens, 2017). Hence, the centrality of social values is a common characteristic among social enterprises; communicating social values does not necessarily make them more distinctive, consequently not impacting social enterprises' economic performance positively. In the context of traditional commercial enterprises, where the focus is on profit maximisation, the demonstration of social values could be a distinct advantage for their economic performance. For instance, in the oil field, traditional commercial enterprises cannot be anything but oil enterprises with all the heavy social impacts inherent in their industry sector (Andrews, 2021). Yet, some found it necessary to make sense of the environment in which they operated and constructed an organisational identity as a responsible oil organisation. These enterprises express a social identity through corporate responsibility initiatives to gain a distinctive market advantage (Andrews, 2021).

Moreover, organisational identity is "inextricably linked to the nature of organisational practices and the way things are done in an organisation" (Wickert *et al.*, 2017, p. 499). Even when the social identity is not explicitly communicated externally, practices such as social actions still manifest organisational identity. Carlos *et al.* (2018) discuss that sustainability impacts organisational identity, but such sustainability aspects can sometimes be absent in organisational identity statements. Therefore, we suggest that enterprises' corporate narratives' association with economic performance should also be examined by considering signals of social actions since it is a construction of the organisational identity.

4.2.3. Signalling Theory

According to Connelly *et al.* (2011), signalling theory "is useful for describing behaviour when two parties have access to different information" (p. 39), i.e. in settings with information asymmetry between insiders and outsiders. Considering an enterprise (insider) as the signaller and its stakeholders as the receivers (outsiders), the enterprise signals to its stakeholders to reduce information asymmetry. Connelly *et al.* (2011) present the "communication of positive information in an effort to convey positive organisational attributes" (p. 44) as the primary focus of this theory. Consistent with the assumptions of the signalling theory, one way enterprises can signal their sustainability orientation is through social claims in corporate narratives; another way is signals of social performance through third-party assessment.

Scholars in corporate social responsibility (CSR) have grounded on signalling theory to demonstrate the positive appeal of using certifications to communicate sustainability commitment (e.g., Brito-Ramos *et al.*, 2023; López-Santamaría *et al.*, 2021; Baier *et al.*, 2022; Clarkson *et al.*, 2019). The certifications have been used to show the importance of signalling social performance to stakeholders in a setting of information

asymmetry if an enterprise wishes to reap the rewards of its commitment to sustainability (Kim, 2021; Lourenço *et al.*, 2014; Robinson *et al.*, 2011). For instance, Lourenço *et al.* (2014) used signalling theory to put forward the idea that enterprises engage in "processes leading to the institutional endorsement" (p. 19) of their social actions. Being ranked on the DJSI (the one examined by these researchers) and being scored by the B Corp assessment (the one we examine) is a way of signalling superior sustainability performance. B Corp certification is conducted by B Lab, a not-for-profit organisation that critically assesses enterprises' social actions.

A few studies in the social entrepreneurship setting have directly drawn on signalling theory to highlight social performance as a positive signal for critical stakeholders (e.g., Kwong *et al.*, 2023 and Lepkowska-White *et al.*, 2023). Kwong *et al.* (2023) measured social actions using quality scores, highlighting social performance as a positive signal for social enterprises' reputation. They demonstrated that social actions indirectly enhance economic performance by improving reputation. Lepkowska-White *et al.* (2023) used B Corp certification as a signal of social actions. They outlined the communication of the B Corp assessment on the enterprise's social media platforms. We take issue with the interpretation of these researchers and put forward that B Corp certification is a powerful signal of sustainability orientation.

The B Corp assessment of social performance can be understood as a signal of sustainability commitment, which reduces information asymmetries between social enterprises and stakeholders (e.g., Lepkowska-White *et al.*, 2023). Signalling theory implies that signals should be observable, which suggests that stakeholders should be able to notice the signal (Connelly *et al.*, 2011). The B Lab website ranks and publishes the social action assessments of the social enterprises certified as B Corp, making the assessments visible to the public (Lepkowska-White *et al.*, 2023). We consider in an

articulated manner that a third-party certification of social action is a signal of an enterprise's sustainability efforts.

4.2.4. Measuring and Comparing Social Enterprises' Performance

Measuring a social enterprise's performance by integrating financial and social measures would be ideal (Bagnoli and Megali, 2011). However, assessing and comparing social outcomes is complex, and relying solely on traditional financial indicators may raise concerns (Lee and Seo, 2017). Therefore, studies have emphasised that productivity is a reasonably valid measure that allows comparisons between social enterprises and traditional commercial enterprises (Abbott *et al.*, 2019; Lee and Seo, 2017; Battilana *et al.*, 2015). Supporters of economic metrics claim that efficiency is an essential aspect of any enterprise (Lee and Seo, 2017). An unproductive social enterprise might be unable to carry out its operations and, consequently, achieve its core social purpose (Abbott *et al.*, 2019). In this sense, social enterprises are expected to follow business models to assure "operational excellence in terms of the efficient use of resources" (Lee and Seo, 2017, p.2). In addition, productivity mirrors the combination of managerial and production capabilities when controlling for sectors' differences (Battilana *et al.*, 2015). Therefore, it is well suited to assess economic performance differences across enterprises from different industry sectors (Battilana *et al.*, 2015).

4.3 Methods

The limited prior theoretical and empirical developments in the social entrepreneurship literature around the communication of social values warrants an exploratory study. We obtained our dataset for social and traditional commercial enterprises from the PrivCo

Database⁵ in the United States market. The PrivCo dataset has been used by researchers in the field as a source of financial data for major private enterprises (e.g., Cao *et al.*, 2017). The B Corp certification was utilised to identify businesses that have core aspects of social enterprises as hybrid organisations (e.g., Cao *et al.*, 2017; Grimes *et al.*, 2018; Siqueira *et al.*, 2018; Stubbs *et al.*, 2017). Furthermore, by employing natural language processing (NLP), we extracted insights associated with the communication of social values from the textual content in the "About Us" section of the enterprises' websites. Scholars have taken enterprises' websites as a basis to explore organisational identity (e.g., Haans, 2019; Biloslavo and Trnavčević, 2009). Specifically, the "About Us" section is where organisations usually share information about "who they are" and "what they do.", serving as a representation of organisational identity. Therefore, we excluded enterprises that lacked an "About Us" section on their websites by employing web scrapping techniques in January 2021.

4.3.1. Sample

We examined data from 730 small and middle-sized private enterprises (SMEs), comprising a mix of social enterprises (n = 139, 19%) and traditional commercial enterprises (n = 591, 81%). Further characteristics of the enterprises in our sample are provided in Table 1.

⁵ <https://www.privco.com>

Table 4.1 Details of the Sample - Firm's Characteristics

Category	Qty Enterprises	% Enterprises
Size		
1–9 employees	88	12.1%
10–49 employees	294	40.3%
50–249 employees	244	33.4%
250–999 employees	67	9.2%
1000+ employees	37	5.1%
Age		
1–10 years old	91	12.5%
11–20 years old	281	38.5%
21–30 years old	141	19.3%
30+ years old	217	29.7%
Industry		
Basic Materials	6	0.8%
Consumer Discretionary	320	43.8%
Consumer Staples	83	11.4%
Energy	9	1.2%
Health Care	62	8.5%
Industrials	152	20.8%
Real Estate	17	2.3%
Technology	60	8.2%
Telecommunications	9	1.2%
Utilities	12	1.6%
Total	730	100%

Note: The groups presented for size and age are only used for better interpretation of the data.

4.3.1. Capturing Socially Oriented Language with NLP

We developed a method based on NLP to measure the communication of social values represented in the “About Us” section of enterprises’ websites⁶. While the literature offers some sustainability-related libraries and pre-trained NLP methods, to the best of our knowledge (and following a thorough exploration), no available methods assess the

⁶ Detailed explanations of the data classification and validation processes are illustrated in the Supplementary Material.

probability of a given text being aligned with socially-oriented language. NLP is a computational approach to interpreting and recognising patterns in large amounts of textual data (Kang *et al.*, 2020). It encompasses many tasks, one of which involves presenting the model with examples from which it can learn distinct patterns (Athey and Imbens, 2019). We provided our NLP model training examples with 17,900 pages for socially-oriented language and 17,400 pages for non-socially-oriented language to train the model how to discern between them. The socially oriented training examples were based on content related to corporate social responsibility (CSR) and United Nations (UN) Sustainable Development Goals, and the non-socially oriented language examples were on general textbooks from Project Gutenberg⁷. Once we had our training set, we transformed the sentences into meaningful numeric representations using the Bag-of-Words technique, which is a popular word embedding technique that assigns numbers based on word frequency that yields effective results (Cichosz, 2018; Gasparetto *et al.*, 2022). We used the Random Forest (RF) classifier algorithm to build and train our predictive model as a binary classification. RF is a widely used classifier due to its high predictive performance and minimal need for extensive parameter tuning (Cichosz, 2018; Gasparetto *et al.*, 2022). Training and testing the proposed NLP model demonstrated high accuracy (accuracy: 0.9864, recall: 0.9298, precision: 0.9655). Next, we used our NLP model to draw inferences about the use of socially-oriented language on the “About Us” website narratives.

⁷ Project Gutenberg is an online library with over 60,000 free online textbooks (<http://www.gutenberg.org/about/>)

4.3.2. Variables

(a) Dependent variable

We use productivity to measure enterprises' economic performance (e.g., Abbott *et al.*, 2019; Battilana *et al.*, 2015; Bagnoli and Megali, 2011; Lee and Seo, 2017). *Productivity* is a numerical variable represented by the natural logarithm of the ratio between the annual revenue and the number of employees for the fiscal year 2020⁸. The descriptive statistics for the productivity variable in our study are as follows: M=12.90, SD=13.79, Min=3.46, and Max=16.58.

(b) Independent variables and moderator

Following previous literature, we consider *type* as a binary variable indicating whether an enterprise is a social enterprise or a traditional commercial enterprise (e.g., Abbott *et al.*, 2019; Cao *et al.*, 2017; Siqueira *et al.*, 2018). In addition, similar to scholars that assess sustainability orientation from textual data (e.g., Mansouri and Momtaz, 2022; Moss *et al.*, 2018), we consider the *socially-oriented language* to assess the communication of social values. This variable refers to the assessment of how explicitly an organisation conveys its social values through written content to its audience. It is a numerical variable that measures the probability of an enterprise's "About Us" narratives aligning with socially-oriented language with scores ranging from 0 to 1 (see subsection 3.3). Descriptive statistics for the socially-oriented language are as follows: M=0.27, SD=0.23,

⁸ We repeat our analysis with data from 2019 to exclude COVID-19 effects, and the results are highly similar to those represented.

Min=0.06, and Max=0.91. Following previous research on social entrepreneurship (e.g., Cantele *et al.*, 2023; Grimes *et al.*, 2018), we used an aggregate score of social performance, the B Impact Assessments (BIA)⁹ from the B Corp certification, for the social enterprises in our sample. The *BIA* assess social actions based on five main categories: community, customers, environment, governance, and workers. The *BIA* index ranges from 0 to 200. For enterprises to be certified as a B Corp, they should achieve an overall BIA index of over 80+ points (Cantele *et al.*, 2023).

(a) Control variables

We account for productivity differences across industries. *Industry* is a categorical variable that denotes the industry group to which a firm belongs. We encoded the different industry levels as dummy variables (e.g., Grimes *et al.*, 2018; Battilana *et al.*, 2015). We controlled for the extent of enterprises' resource access using firm size, where larger enterprises tend to "access to better resources" (Cacciolatti *et al.*, 2020, p. 110). *Size* is measured by the log of the total number of employees at an enterprise (Battilana *et al.*, 2015). We also controlled for enterprises' age. *Age* is a numerical variable measured by the number of years since the enterprise's founding, scaled by 1/10 (Battilana *et al.*, 2015). Business ability to convert resources into outcomes (e.g., Battilana *et al.*, 2015), pressures to conform to the norms of the industry (Haans, 2019), and the influence of sustainability orientation on funding initiatives may differ depending on the age of the firm (Cacciolatti *et al.*, 2020).

⁹ B Corp Impact Data, B Lab, data. world/blab/b-corp-impact-data, Accessed 21 October 2022.

4.3.1. Statistical Procedures

We use interaction effects in ordinary least squares (OLS) regression to estimate our RQs. *RQ1* focuses on the extension of the communication of social values and its impacts on the economic performance of social enterprises. *RQ2* builds off *RQ1* by comparing the effects of the communication of social values on economic performance among social and traditional commercial enterprises. *RQ3* provides additional clarification by investigating whether social actions have a greater impact on the economic performance of social enterprises compared to the communication of social values. We also conduct robustness tests to verify the identified relationships. We included control variables in the regression to address unobserved company-specific characteristics that may potentially impact the productivity of enterprises. Additionally, we employed a multilevel model to better accommodate variations across different industries. Our choice of a multilevel model was motivated by the nested structure of the data (e.g., Moss *et al.* 2018). We have 730 firms distributed among 10 industry sectors, as demonstrated in Table 1. We also performed a separate regression for only traditional commercial enterprises and for only social enterprises to further test the moderation effect. Our statistical procedures were built in the statistical software tool, R.

4.4 Results

Table 2 provides the results for the regression models. For all the models, we calculated the variance inflation factors (VIF) scores to evaluate the presence of multicollinearity, which ranged from 1.05 to 1.37. These scores are significantly below the threshold of 5.0, demonstrating that our estimates are not prone to multicollinearity (Vittinghoff *et al.*, 2005). *RQ1* explores whether the communication of social values is positively related to enterprises' economic performance. Model 1 suggests that *socially-oriented language* is positively and significantly associated with *productivity* ($\beta = 0.98$, $p = 0.001$), indicating

that the more an enterprise communicates social values, the higher its economic performance. Therefore, we generally found support for a positive effect of communicating social values regarding productivity.

RQ2 explores whether the relationship between the communication of social values and productivity will differ among social and traditional commercial enterprises. In Model 2, we tested our OLS regression model by adding an interaction term between *venture type* and *socially-oriented language* for *productivity*. Including the interaction effect was a significant improvement from the covariate-only models, $F(1, 737) = 7.6246, p < 0.01$). The coefficient of the interaction term with social enterprises as a categorical reference was negatively statistically significant ($\beta = -1.35, p = 0.01$). Therefore, the effect of the *socially-oriented language* on *productivity* depends on the *type* of enterprise. To bring clarity about this relationship, we performed a separate regression for only traditional commercial enterprises (Model 1a) and another for only social enterprises (Model 1b). The regression demonstrates that for traditional commercial enterprises, the socially-oriented language coefficient is positive and significant ($\beta = 1.38, p = 0.01$), while for social enterprises, the coefficient is positive and not significant ($\beta = 0.004, p = 0.98$). These findings indicate that traditional commercial enterprises might benefit from greater communication of social values, while no significant benefits are identified in social enterprises. Therefore, although we found support for a positive effect of communicating social values with regard to productivity for traditional commercial enterprises, our findings do not support the notion that higher levels of socially-oriented language can benefit social enterprises' productivity.

Furthermore, in addressing *RQ3*, we expand our understanding of social enterprises' economic performance by exploring whether social actions, measured by *BIA* scores, are associated with economic performance. Model 2b suggests that the *BIA*

coefficient is positive and significant ($\beta = 0.01$, $p = 0.012$), indicating a positive relationship between social actions and social enterprises' economic performance. Adding the variables *socially-oriented language* and *BIA* scores to the regression significantly improved the model fit ($F(1, 121) = 2.6247$, $p < 0.05$) over our control model (Model 2b). The results suggest that enterprises with higher *BIA scores* are more likely to have better economic *productivity*.

Table 4.2 Results of Regression Models for Productivity and Socially Oriented Language

Dependent variable: Productivity	Model 1 - OLS	Model 2 - OLS w/ interaction term	Model 3 – LMER w/ interaction term	Model 1a – OLS only traditional enterprises	Model 1b – OLS only social enterprises	Model 2b – OLS only social enterprises
(Intercept)	12.90*** (0.52)	12.91*** (0.52)	12.31*** (0.26)	13.29***(0.76)	13.00*** (0.43)	12.43*** (0.48)
Industry_Consumer Discretionary	-0.80 (0.51)	-0.89 (0.51)		-1.20 (0.75)	-0.34 (0.39)	-0.47 (0.39)
Industry_Consumer Staples	-0.67 (0.52)	-0.75 (0.52)		-1.11 (0.77)	-0.09 (0.40)	-0.18 (0.39)
Industry_Energy	0.26 (0.65)	0.18 (0.65)		-0.31 (0.88)	2.25 (0.77)	1.95** (0.76)
Industry_Health Care	-1.89*** (0.53)	-1.92*** (0.53)		-2.19*** (0.77)	-1.20** (0.61)	-1.48** (0.60)
Industry_Industrials	-0.74 (0.51)	-0.85 (0.51)		-1.12 (0.76)	-0.61 (0.40)	-0.76 (0.40)
Industry_Real Estate	0.52 (0.59)	0.45 (0.58)		0.32 (0.82)	-1.56 (0.77)**	-1.64** (0.75)
Industry_Technology	-0.82 (0.53)	-0.85 (0.53)		-1.08 (0.77)	-0.49 (0.42)	-0.63 (0.42)
Industry_Telecommunications	-0.18 (0.65)	-0.19 (0.65)		-0.39 (0.88)	-0.44 (0.76)	-0.46 (0.74)
Industry_Utilities	0.42 (0.62)	0.34 (0.61)		0.37 (0.86)	-0.31 (0.60)	-0.48 (0.59)
Size	-0.003 (0.03)	-0.01 (0.03)	-0.02 (0.04)	-0.02 (0.03)	-0.05 (0.05)	-0.06 (0.05)
Age	-0.10*** (0.02)	-0.10*** (0.02)	-0.08*** (0.02)	-0.12*** (0.02)	-0.002 (0.02)	0.008 (0.03)
Socially-oriented language	0.97*** (0.22)	1.37*** (0.26)	1.4*** (0.27)	1.38*** (0.28)	0.004 (0.22)	-0.09 (0.22)
Type_social enterprise	0.16 (0.12)	0.63** (0.21)	0.65*** (0.22)			
Socially-oriented language:Type_social enterprise		-1.28** (0.47)	-1.35*** (0.49)			
BIA						0.01** (0.003)
Group Industry			Included			
N and n group	730	730	730 and 10	591	135	135
R-squared	0.18	0.19		0.20	0.22	0.25
Adj. R-squared	0.16	0.17		0.18	0.14	0.18

Note: The above table presents regression coefficients and std error (in parentheses). Significance * p < .10, ** p<.05, ***p<.01. Social enterprise is the categorical variable of reference for type. Socially-oriented language:Type_social enterprise is the interaction term.

4.5 Discussion and Conclusion

This study shows that communicating social values does not significantly impact social enterprises' productivity, but it does positively impact traditional commercial enterprises. Additionally, our analysis demonstrated a positive relationship between social actions and the productivity of social enterprises. We believe that this finding is consistent with the signalling theory-based idea that the impact of social claims on economic performance is influenced by the existence of other more powerful signals, such as social performance. Social performance acts as a positive signal, while socially oriented narratives do have a similar signalling value for social enterprises.

Our findings support the proposition that “actions speak louder than words” for social enterprises, corroborating Miles *et al.* (2014) argument that social enterprises do not benefit from the self-promotion of social values, unlike for-profit enterprises. One of the reasons for this effect could be that the core of a social enterprise is established by working on a social need. Social enterprises usually face additional scrutiny from stakeholders since they should not necessarily work “to attract a customer base but toward achieving a solution for those in need” (Nigri *et al.*, 2017, p. 555). In this sense, social enterprises are expected to place efforts on achieving social performance. While traditional commercial enterprises are expected to attract stakeholders by communicating their strategies to grow, social enterprises are expected to place their efforts on acting on their social purposes (Miles *et al.*, 2014).

Another reason is based on people's motivation to act entrepreneurially to alleviate others' suffering (Shepherd, 2015). Through an altruist logic, social enterprises should create positive impacts without expecting future rewards (Dentoni *et al.*, 2018; Shepherd, 2015). A legacy mindset from the nonprofit sector leads social entrepreneurs to avoid practices that are "too much" business-oriented and against their primary purposes (Bull, 2007). Communicating

social values can sometimes be perceived as a marketing tool that is a standard marketing strategy employed by commercial enterprises (Nigri *et al.*, 2017). In this sense, social enterprises that engage too much in activities that can be seen as commercial tools do not get rewarded for their efforts in communicating social values (Miles *et al.*, 2014).

Given the ongoing calls for developing theories and tools to enable social enterprises to account for the generation of value beyond economic goals (Nigri *et al.*, 2017; Smith *et al.*, 2013), it is reasonable to suggest that conventional methods for communicating social values are not good fits for social enterprises (Nigri *et al.*, 2017). Communicating social values, which we viewed as a signal of sustainability commitment, does not significantly impact social enterprises' productivity, but it does positively impact the productivity of traditional commercial enterprises. Therefore, it reinforces the importance of the business context for social enterprises. Furthermore, social performance is the mission of all social enterprises (Miles *et al.*, 2014). Moreover, the "ability to undertake a social mission requires an equally important ability to show that you are actually pursuing it" (Nigri *et al.* (2017, p. 91). We could assume that social claims in organisational statements might not be enough for social enterprises since they are being urged to provide evidence of their accomplishments. In this sense, we could also consider that social impact assessment "has a great communicative power" to social enterprises (Nigri *et al.*, 2017, p. 91). Researchers have established a positive relationship between the communication of social impact assessment and economic performance (e.g., Epstein and Yuthas, 2017). This relationship becomes particularly evident when social enterprises exhibit elevated levels of social impact assessment (Glynn and Navis, 2013; Gehman and Grimes, 2017).

4.5.1. Implications for Research and Practice

This study has implications for both research and practice. For research, the theoretical and empirical illustration present in this study is an initial step in examining the complex

relationship between the communication of social values and enterprises' economic performance. Our study reinforces that social and traditional commercial enterprises experience different external pressures. When it comes to communicating social values, social enterprises “should not adopt a one-size-fits-all approach” (Cao *et al.*, 2017, p.1). Rather than adhering to a one-size-fits-all strategy, these enterprises should tailor their identity to their specific context (Cao *et al.*, 2017). This study contributes to organisational theory by testing the notion of social identity claims as a source of competitive advantages in the context of social enterprises (Battilana *et al.*, 2015). It also contributes to the signalling theory (Connelly *et al.*, 2011) by proposing a multi-signal framework. In addition, this study contributes to the literature on social entrepreneurship by grounded comparative insights between social enterprises and traditional commercial enterprises to better understand the performance of hybrid business models (Abbott *et al.*, 2019; Doherty *et al.*, 2014).

Finally, our research is among the first to introduce an innovative approach that utilises NLP to assess socially-oriented language in text data. To train our model, we focused on content related to CSR and sustainable goals. We have also validated our model in a real-world business setting. The introduction of this model creates new opportunities for future research. The NLP method proposed in this study can serve as a foundation, allowing other researchers to replicate our work in different contexts. Specifically, researchers in the field of entrepreneurship can utilise our model to empirically analyse the extent of social values through textual data in various business contexts. This, in turn, can lead to a broader discussion on the relative importance of the social and economic claims and performance implications (Avila and Amorim, 2021).

For practice, given that the communication of social values has rarely been examined in the social entrepreneurship literature, our results can inform social entrepreneurs to redirect their strategic orientation efforts in two ways. Our findings provide social entrepreneurs with

practical guidance, shedding light on the importance of aligning their actions to reach social impact rather than solely focusing on communicating their social values. Our study shows that the communication of social values does not have a significant effect on the economic performance of social enterprises. However, traditional commercial businesses benefit from promoting their social values. It is an important insight for enterprises that often have limited resources, which is usually the case for social enterprises (Miles *et al.*, 2014).

4.5.2. Limitations and Future Research

In terms of limitations, it is important to note that while sustainability certifications have gained significant attention and popularity, some social enterprises may choose not to pursue such certifications (Grimes *et al.*, 2018). While this approach helps overcome data availability challenges, future studies could explore social enterprises *with* and *without* sustainability certifications to expand this proposed investigation.

Our results also indicate investigation on the direction of how socially-oriented language might benefit social enterprises: (a) what forms of socially-oriented communication can effectively strengthen organisational identity and garner stakeholder support?; and (b) can social enterprises derive substantial benefits by adopting a socially-oriented communication strategy that emphasises their social impact? We hope that our work affords a foundation to suggest wider debates on the implications of communicating social values for social enterprises in both theoretical considerations and practical applications.

Chapter 4. References¹⁰

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¹⁰ The reference list's style matches the manuscript's version submitted to the journal.

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Appendices – Supplementary Information

Appendix 4-A: Developing and measuring socially-oriented language from textual data

One of our variables of interest is the use of socially-oriented language. Constructing this variable required training and deploying a natural language processing (NLP) model to classify the probability levels of textual content expressing social values.

Appendix 4-B: Collecting “bank-knowledge” on socially-oriented language

To assess the levels of socially-oriented language, we developed an NLP measure using text classification techniques developed in Python. Before running the model, deploying a bank of knowledge on socially and non-socially oriented content is necessary to teach the NLP models how to distinguish between different language patterns based on these pre-labelled examples.

The first step creates a training set consisting of only socially-oriented language examples based on content related to corporate social responsibility and sustainable goals. Textbooks such as the *Sustainable Development Goals Series*, *Encyclopedia of the UN Sustainable Development Goals* and *Sustainable Development Goals: Their Impacts on Forests and People*; and documents from *Global Report Initiative (GRI)*, *Sustainable Development Goals (SDGs)*, *UN Global Compact*, *Danish Institute for Human Rights Global Compact Self-Assessment*, *B-Corp and GIIRS Rated Companies*, are some examples of the documents used to create the social-oriented language. The training source for the social-oriented language has 285 documents, which totalise nearly 17,900 pages of content.

The second step creates a training set composed only of examples of non-socially-oriented language. This was constructed by using resources on Project Gutenberg. We used 46 texts from Project Gutenberg to create a knowledge bank with non-social examples, which represents 17,400 pages proximally. Both socially and non-socially sources were converted from "pdf" to "txt" files and stored as raw text data, with one text file per document.

Appendix 4-C: Word embedding using Bag-of-Words (BoW) to create and measure the socially-oriented language

We used the word embedding technique called Bag-of-Words (BoW) to represent words in vectors. BoW is one of the most common word embedding approaches that yields effective results despite its simplest vector text representation (Cichosz, 2018; Gasparetto *et al.*, 2022). It creates numerical vectors out of the words in a document where each unique word's occurrence is marked considering its frequency in the texts. The output of the BoW implementation is the dictionary to train the classifier. This allows the NLP model to tag a new text according to patterns of the pre-labelled classes. In this case, it was deployed in the “About Us” related content.

The BoW implementation is carried on in a sequence of activities, starting from the raw text datasets by: (a) Removing *stopwords* and special characters. The *stopwords* are words that can be considered irrelevant for indexing in a result set because they are words that have little meaning (prepositions, articles, and conjunction). (b) Applying *stemming* from reducing the number of features to be analysed. *Stemming* is the process of reducing different inflects forms of a word to be analysed as a single in their word stem, as they share similar meanings. For instance, the word “walking” is transformed into its base form, "to walk" (Arumugam *et al.*, 2018). (c) Extracting words from a document. The words are extracted from a document using regular expressions. (d) Implementing tokenisation. This function builds our vocabulary by looping through all our documents for a given dataset, extracting the words from each, removing duplicates using the set function, and returning a sorted list of words. It creates the vocabulary with all unique words per dataset. (e) Mapping the vocabulary. The pre-processed datasets will be transformed into vectors representing each word's occurrence within a document, disregarding grammar or word order. The occurrence of each unique word in a vocabulary is marked, which builds our dictionary. The dictionary represents the vocabulary

mapping words to indices, for example: {'house':0, 'theatre':1, ...}. (f) Removing words with low variance. It returns a list with corresponding vocabulary words in order of relevance per dataset, excluding the ones with low variance.

Appendix 4-D: Validating the socially-oriented language classification

We used the Random Forest (RF) classifier algorithm to build and train our predictive model as a binary classification. The socially-oriented language represents the positive pre-labelled class (value = 1), and the non-socially oriented language represents the negative pre-labelled class (value = 0). The RF is a supervised classifier commonly used for text classification that usually yields excellent predictive performance (Cichosz, 2018; Gasparetto *et al.*, 2022).

We set apart some data from both data frames to validate the model, creating the train and validation data frames for binary classifiers. We used the group of validation data to see if the model can predict socially and non-socially language by evaluating the model's performance. In the end, testing the internal validation of these classifiers using train and test split techniques demonstrated high levels of accuracy in the training dataset (accuracy: 0.9864, recall: 0.9298, precision: 0.9655). The high levels of accuracy suggested that the model is reliable in its technical meaning. Reliability can be defined as the extent to which a measuring procedure yields the same results on repeated trials (Carmines and Zeller, 1979). This means that the model is consistent with a measure where the results can be reproduced. However, do the results represent what they are supposed to measure? The effectivity of NLP models further trained on a specific domain depends, among other things, on the quality of the training data since it labels different patterns of language based on the given examples. Thus, despite the high levels of accuracy in the testing set, further steps were required to check the validity of the model. Validity refers to the extent to which the conclusions drawn about relationships within our data are reasonable and credible (Trochim, 2006). While NLP models are increasingly applied in social science studies, the extent to which these models are valid

representations is often not addressed (Fang *et al.*, 2022). We addressed this issue for more accurate text representation methods by applying steps of validity analysis.

After using the trained RF classifier to determine the levels of socially-oriented language employed by an enterprise in their “About Us”, we focused on validating the classifications of the proposed NLP method by inspecting its measurements with an external source, a human judgement. Therefore, the validity is assessed in the form of data annotation. We used a manual classification technique to demonstrate a proof of concept. The advantage of validating the model through a manual classification is that it is a comprehensive and transparent way to demonstrate the overall robustness of the method from a human perspective. Manual text classification involves human categorisation, where the content of a text is interpreted and categorised by a person into predefined labels under analysis through a coding process. This validation method is called content validity since the validation is given by deductive characteristics (Schreier, 2012). Since manual text classification is a laborious effort (Gheyle and Jacobs, 2017), we stratified a sampling subset with approx. 1,5% of social and traditional commercial enterprises with the highest and lowest scores for socially-oriented language. Then, we coded relevant elements of the “About Us” narratives that fall into the socially-oriented language category for every enterprise in the subset sample. We used NVivo¹¹ to support the manual classification since it is designed for qualitative coding data. The NVivo supports selecting and coding portions of text, which include a few words or whole passages, into pre-labelled categories. In the end, NVivo provides some statistics. The software counted the number of words coded as the socially-oriented language that appeared in the text and

¹¹ <https://lumivero.com/products/nvivo/>

divided it by the total number of words in the given document. This manual text classification gives the percentage of the use of socially-oriented language for each enterprise' "About Us."

The agreement coefficient assesses the validity of the proposed method. The coefficient of agreement is "the degree in which different coders get the same results" (Gheyle and Jacobs, 2017), which is the comparison of the categorisation agreement between manual and automatic classification. One of the most used criteria for agreement coefficients is the percentage agreement (Gheyle and Jacobs, 2017), commonly used in traditional content analysis but also applied to validate NLP models. Percentage agreement is calculated by the percentage of equally coded units in relation to the total amount of coded units. A simple or naïve measure to assess validity is "beyond chance" agreement (Gheyle and Jacobs, 2017). Agreement beyond change "builds on the observation that even random coding would result in matching codes 50% of the time, purely by luck/chance" (Gheyle and Jacobs, 2017, p. 10). A naïve measure serves as a sanity test by answering the question: Is the model learning something? To harmonise the difference in the scales across the manual and automatic classification methods, the classification scores were normalised between 0 and 1. The agreement coefficients were distributed among social enterprises and traditional commercial enterprises. Our validity test shows that the proposed socially-oriented language method presents good levels of agreement. Therefore, our method assessment demonstrates that the use of socially-oriented language is reliable and correlates with real-world observations.

Appendix 4-E: Supplementary information - Web scraping

We used web scraping techniques from packages in Python to research and collect "About Us" related textual content from enterprises' websites. First, we research and print all relevant "About Us" internal links from the main enterprises' homepages through some defined keywords to find the related information. List of keywords: *'about', 'about-us', "who-we-are", 'values', 'our-philosophy', 'our-promise', 'our-stance', 'mission-values', 'mission', 'mission-*

statement, *'our mission'*, *'our vision'*, *'our-commitment'*, *'what-we-do'*. Second, we used web scraping to collect the text from the “About Us” related internal links, grouping and saving them per company file.

Chapter 5. Less is More? Communicating SDG Orientation and Enterprises' Economic Performance

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Less is More? Communicating SDG Orientation and Enterprises' Economic Performance

As the interest in sustainable development increases, businesses can benefit from aligning their orientation with the Sustainable Development Goals (SDGs). It remains unclear, however, how focusing on a broader or narrower set of SDGs affects enterprises' economic performance. This study examines the impact of a communicated SDG orientation on the economic performance of social enterprises and traditional commercial businesses. Using natural language processing (NLP) techniques to analyse textual content from 661 enterprises' websites, we found a positive relationship between the communication of a narrow set of SDGs and enterprises' economic performance. The extent of this effect is similar between social and traditional commercial enterprises. Therefore, stakeholders may value an enterprise's SDG orientation strategy that focuses on a narrow set of SDGs in distinct purpose-driven institutional contexts.

Keywords: Sustainability orientation, sustainable development goals (SDGs), social enterprises, economic performance, natural language processing (NLP).

5.1 Introduction

Businesses are increasingly encouraged to adopt practices that contribute positively to social and environmental issues (Kuang, 2021). Recent literature emphasises the importance of enterprises balancing social and economic pursuits (Battilana et al., 2019). As such, the United Nations Sustainable Development Goals (SDGs) have become a widely accepted benchmark for enterprises' sustainability orientation (Chen et al., 2021). While a number of scholars suggest that the pursuit and communication of such goals could improve enterprise competitiveness (Demuijnck and Fasterling, 2016), doing good does not always mean doing

well (Kautonen et al., 2020; Lynn, 2021; Mansouri and Momtaz, 2022). Recent studies demonstrated the dark side of sustainability orientation on enterprises' competitiveness (Kautonen et al., 2020; Muñoz and Kimmitt, 2019). As such, the extent of enterprises' SDG orientation can be a critical strategic choice for corporate performance (Giarratana and Pasquini, 2022; Hornstein and Zhao, 2018).

The integration of sustainability into corporate strategy, known as sustainability orientation (Roxas and Coetzer, 2012), has become a vital aspect of business strategy (Ahmić, 2022). One stream of literature is devoted to assessing enterprises' sustainability orientation by exploring corporate narratives through textual communication (e.g., Mansouri and Momtaz, 2022; Moss et al., 2018). Prior research suggests that communicating a broad set of SDGs (e.g., diverse social offerings) can positively impact an enterprise's economic performance (Landrum, 2018; Seo et al., 2021). This is because focusing on a variety of sustainability demands can enhance enterprises' legitimacy and competitiveness (Landrum, 2018). At the same time, scholars have suggested that focusing on a broad set of SDGs can negatively impact an enterprise's economic performance (Giarratana and Pasquini, 2022). The broad set of SDGs can increase enterprises' operational complexity (Battilana and Dorado, 2010), leading to business failure (Muñoz et al., 2018). This risk is particularly pronounced when there is a great emphasis on social goals, which is usually the case for social enterprises (Young, 2012).

Therefore, recent stakeholder theory developments challenge the doing well by doing good paradigm and recommend further exploring provisional and contextual aspects that reward sustainability orientation (Lynn, 2021). We contribute to this understanding by exploring to what extent a communicated enterprise's SDGs orientation positively impacts enterprises' performance. Our research question frames the inquiry: How does the communication of SDGs affect enterprises' economic performance?

We deploy an SDGs textual classifier based on Natural Language Processing (NLP) to examine the influence of enterprises' orientation towards the SDGs on the economic performance of social enterprises and traditional commercial enterprises. NLP is a computational approach that has the potential to advance management theories by effectively extracting valuable insights from a large amount of textual data that traditional approaches could not provide (Kang et al., 2020).

5.2 Theory and Hypotheses Development

Stakeholder theory posits that a firm should create value not only for investors but for all stakeholders (Freeman et al., 2010). The key idea that holds this concept is that enterprises focusing on purposes aligned with their main stakeholders are more likely to have economic success (Freeman, 2023). Yet, this can only happen if stakeholders are aware of enterprises' purposes, which can be achieved through effective communication of such purposes (Balmer, 2017; Lepkowska-White et al., 2022). For these reasons, the range of a communicated enterprise's SDG orientation can be crucial to balancing the dynamics of doing well and doing good (e.g., Giarratana and Pasquini, 2022; Seo et al., 2021).

Several studies grounded in stakeholder theory have found that sustainability orientation positively relates to enterprise performance (Muñoz and Kimmitt, 2019). The underlying rationale is that aligning business practices with the growing demand for sustainability (Landrum, 2018) can lead stakeholders to perceive sustainable businesses as more valuable than their less sustainable counterparts. Yet, recent studies proposed that sustainability orientation can help businesses, but it can also be costly and distract management from their commercial goals (Muñoz et al., 2018; Wang and Bansal., 2012). In this matter, scholars grounded in stakeholder theory suggest that the positive relationship between sustainability orientation and enterprises' economic performance is contingent on provisional and contextual aspects (Lynn, 2021; Kautonen et al., 2020). One of the key arguments is that

enterprises can lose sight of their economic objectives when pursuing and communicating a broad range of social purposes (Kautonen et al., 2020). Therefore, enterprises' SDG orientation could represent a trade-off (Giarratana and Pasquini, 2022; Seo et al., 2021). We follow Kautonen et al. (2020), proposing that the positive relationship between sustainability orientation and enterprises' economic performance is contingent on the extent of enterprises' SDG orientation.

The stakeholder theory indicates that enterprises can enhance long-term value creation by prioritising the interests of a wide range of stakeholders (Freeman et al., 2010). Accordingly, Seo et al. (2021), based on the quantity of philanthropy causes within similar nature categories, suggested that enterprises can enhance their competitiveness by addressing a broad set of SDGs. Enterprises may reach more stakeholders by communicating a broader array of SDGs, as individuals can resonate with one or more of the enterprises' SDGs (Giarratana and Pasquini, 2022). It also increases the chance that enterprises reflect heightened investors' and other stakeholders' attention to the SDGs (Chen et al., 2021). At the same time, the stakeholder theory goes beyond this argument, suggesting that enterprises should generate "as much value as possible for stakeholders, without resorting to trade-offs" (Freeman et al., 2010, p. 28). While a wide range of SDGs can increase the number of supports, it can also increase the enterprise's tensions in dealing with many different stakeholders' demands (Chen et al., 2021; Giarratana and Pasquini, 2022). An antagonistic relationship usually leads to trade-offs that can undermine either enterprise's sustainability or profit objectives (Kautonen et al., 2020). Giarratana and Pasquini (2022) reinforce the argument by exploring enterprises' SDG orientation through product portfolio in terms of quantity. They suggested that a broad range of SDGs could increase business economic tensions by escalating costs, dividing focus on investments, and harming the enterprises' image among stakeholders. Therefore, by grounding on the stakeholder theory, we could assume that communicating a narrow set of SDGs can attract

stakeholders with similar interests, decreasing the conflicts that generally lead to trade-offs (Giarratana and Pasquini, 2022).

Empirical studies explore the orientation of enterprises towards SDGs in terms of quantity and nature (e.g., Giarratana and Pasquini, 2022; Seo et al., 2021). Many SDGs are correlated by nature and tend to be treated simultaneously (Giarratana and Pasquini, 2022). Therefore, we explore the extent of enterprises' SDG orientation considering the number of goals (SDGs-quantity) and their similarity according to the nature of their outcomes (SDGs-similarity). The SDG outcomes can be classified according to the SDG "wedding cake" framework (Rockström and Sukhdev, 2016), where the layers represent the economy, society, and biosphere (Folke et al., 2016). Although the SDG outcomes are interconnected across various sustainability dimensions due to their systemic nature, their placement in a specific layer indicates an emphasis on a particular area (Fet et al., 2023). Therefore, we employ the wedding cake framework to assess each SDG from a business perspective (e.g., Fet et al., 2023). We hypothesise that focusing on a narrow set of SDGs that emphasise a specific layer of sustainability (economy, society, or biosphere) could enhance enterprises' economic performance, as summarised in H1 and H2.

***H1:** There is a negative relationship between the quantity of SDGs orientation and enterprises' economic performance.*

***H2:** There is a positive relationship between enterprises' SDGs orientation emphasising similar sustainability outcomes and their economic performance.*

Furthermore, explanations of the relationship between doing well and doing good "are couched within the details of relevant institutional context" (Lynn, 2021, p. 525). Social enterprises and traditional commercial enterprises operate within distinct institutional contexts (Kautonen et al., 2020). Although the literature lacks comparative insights on the topic, scholars offer some evidence. The centrality of social purposes over economic purposes

distinguishes social enterprises from traditional commercial ventures (Bandyopadhyay and Ray, 2020). The higher the centrality of social purposes, as observed in social enterprises, the higher its social visibility (Giarratana and Pasquini, 2022). As such, higher social visibility can moderate the relationship between enterprises' SDGs orientation and economic performance (Giarratana and Pasquini, 2022). Still, similar to the dynamics presented by traditional commercial enterprises, an enterprise enhances legitimacy and competitiveness by conforming to stakeholder expectations (Bansal and Roth, 2000).

Social enterprises tend to face more scrutiny from the stakeholders over the authenticity of their social claims than traditional commercial enterprises (Giarratana and Pasquini, 2022). It occurs due to the visibility of social purposes as a central attribute of enterprises' competitiveness (Bandyopadhyay and Ray, 2020). A social enterprise failing to demonstrate commitment to one of the SDGs claimed could face authenticity threats to all other SDGs (Alhouti et al., 2016). Moreover, clear communication of value propositions is a crucial aspect of a social enterprise's legitimacy (Mersland et al., 2019). Communicating a broad set of SDGs may attract a diverse group of stakeholders, increasing the complexity of dealing with several stakeholders' expectations (Teasdale, 2010). In turn, the tensions can threaten the legitimacy of social enterprises (Battilana and Dorado, 2010), leading to reduced stakeholder support (Doherty et al., 2014; Klein et al., 2021) and potentially contributing to business failure (Battilana and Lee, 2014). We expect the dynamics of a narrow set of SDGs to be present from the vantage point of a social enterprise and a traditional commercial enterprise, as presented in H3.

***H3.** The relationship between a narrow set of SDGs and enterprises' economic performance is positive for both social.*

5.3 Methods

The "About Us" section of enterprise websites is where they usually share information about "who they are" and "what they do" (e.g., Haans, 2019). In our observational study, we utilised the textual content in the "About Us" section to evaluate how enterprises strategically align with the SDGs. To overcome challenges in measuring SDGs properties (Chen et al., 2021), we applied the Open SDGs (OSDG), an NLP model proposed by Pukelis et al. (2020). The OSDG is a multilingual tool built from an anthology integrating existing SDG research for classifying text data by SDGs (Pukelis et al., 2022). We performed sanity checks to ensure this approach accurately identifies SDGs within a business context.

5.3.1. Sample and Procedures

We sampled private enterprises from the PrivCo Database for the United States market. The PrivCo dataset is a financial data provider on major private companies and has been cited by many researchers in the field (e.g., Cao et al., 2017; Chen and Kelly, 2015). In addition, we used web scraping techniques to select enterprises that contained textual content related to the "About Us" on their websites and with text that met the criteria for the OSDG textual classifier. Our final sample includes 661 observations, with 105 (16%) social enterprises and 556 (84%) traditional commercial enterprises across various industry sectors¹².

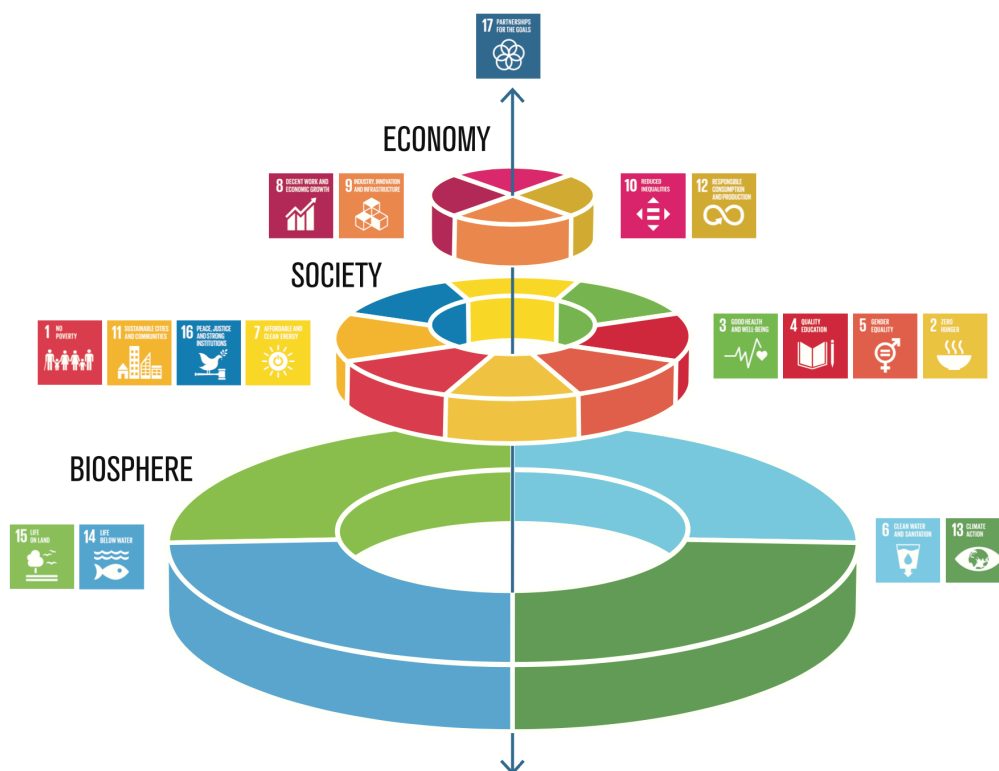
¹²The industry sector is based on the Industry Classification Benchmark (ICB), which comprises enterprises from financials (n=238, 36%), consumer Discretionary (n=186, 28%), industrials (n=98, 15%), consumer staples (n = 7%), health care (n=36, 5%), technology (n = 31, 5%), utilities (n = 11, 2%), basic materials (n = 7, 1%), energy (n = 6, 1%).

5.3.2. Measures

Dependent Variable. The dependent variable in our study is *Productivity*, which serves as a crucial measure of an enterprise's economic performance (Abbott et al., 2019; Battilana et al., 2015; Bagnoli and Megali., 2011; Lee and Seo, 2017). *Productivity* is a numerical variable represented by the natural logarithm of the ratio between the annual revenue and the number of employees for 2020. Productivity is a valid measure for comparing the economic performance of social and traditional commercial enterprises (Abbott et al., 2019; Lee and Seo, 2017) across different industry sectors (Battilana et al., 2015). **Independent Variables.** We draw the core independent variables, namely *SDGs-quantity* and *SDGs-similarity*, from the enterprises' "About Us" web pages using the OSDG textual classifier (Pukelis et al., 2020). *SDGs-quantity* represents the number of unique SDGs identified in each enterprise's textual content from SDG1 to SDG16 (e.g., Patuelli and Sacacco, 2023). The measure is a continuous variable from 1 to 16 related to the number of SDGs; it moves towards 16 when more text content is matched across the different SDGs (e.g., value 3 = SDG1, SDG6, SDG12). *SDGs-similarity* classifies the SDGs presented in an enterprise narrative into SDG wedding cake layers according to the nature of the goal's outcome. It is measured from 1 to 3 based on the number of layers: economy, society, and biosphere. Value 1, 2, and 3 means that SDGs are classified under one layer, two layers, and three layers respectively. As presented in Figure 1, the SDG wedding cake is based on the framework proposed by Rockström and Sukhdev (2016), which assigns SDGs as follows: The top layer, the Economy, comprises goals 8, 9, 10, and 12. The middle layer, Society, encompasses goals 1, 2, 3, 4, 5, 7, 11, and 16. The bottom layer, Biosphere, includes goals 6, 13, 14, and 15. In addition, *Type* is a binary variable indicating whether a firm is a social or traditional commercial enterprise. We used the B Corp Certification to identify the businesses with core social hybrid organisation aspects in our sample (e.g., Cao et al., 2017; Siqueira et al., 2018). **Control Variables.** We used the number

of *employees* to control for firm size. It reflects the scale of business operations and resource access (Cacciolatti et al., 2020). *Age* is a numerical variable indicating the number of years since the enterprise's founding. Sustainability orientation on financial outcomes may differ depending on the firm's age (e.g., Cacciolatti et al., 2020; Mansouri and Momtaz, 2022). *Industry* denotes the industry group a firm belongs to, and it is encoded as a dummy variable (e.g., Grimes et al., 2018). The relevance of the SDGs varies across industries due to the nature of operational sustainability impacts (Sætra, 2021).

Figure 5-1 SDG Wedding Cake - Layers



Note: Source from Rockström (2016). Image credit: Azote for Stockholm Resilience Centre, Stockholm University CC BY-ND 3.0. Economy Layer = SDG8-Decent Work and Economic Growth; SDG9-Industry, Innovation and Infrastructure; SDG10-Reducing Inequality and SDG12-Responsible Consumption and Production. Society Layer: SDG1-No Poverty; SDG2-Zero Hunger; SDG3-Good Health and Well-being; SDG4-Quality Education; SDG5-Gender Equality; SDG7-Affordable and Clean Energy; SDG11-Sustainable Cities and Communities; SDG16-Peace, Justice, and Strong Institutions. Biosphere Layer: SDG6-Clean Water and Sanitation; SDG13-Climate Action; SDG15-Life On Land and SDG14-Life Below Water.

5.3.3. Data Analysis

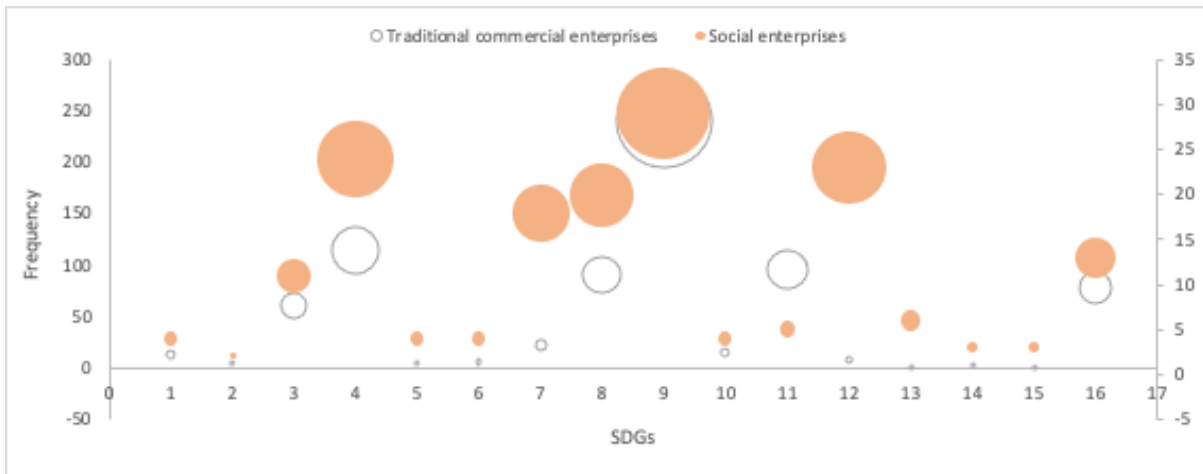
Data analysis proceeds in three main steps. First, we used descriptive analysis to understand the SDG orientation among social and traditional commercial enterprises. Second, we tested H1 and H2 using OLS regression models and H3 using interaction effects. Third, we carried out robustness tests by checking multicollinearity and using multilevel models using R packages.

5.4 Data Analysis and Results

5.4.1. Descriptive Statistics

Figure 2 shows that the enterprises of our sample touched all labelled SDGs. In proportion, social enterprises tend to demonstrate higher levels of SDG orientation than traditional commercial enterprises. Moreover, by analysing the overall frequency, the SDG9-Industry, Innovation & Infrastructure (28.8%) is the most identified goal in our sample. In addition, SDG4-Quality Education (14.8%) and SDG8-Decent Work and Economic Growth (11.9%) are the second and third most common goals in the enterprises' narratives. In contrast, the SDGs related to biodiversity, SDG15-Life On Land (0.43%) and SDG14-Life Below Water (0.75%), followed by SDG2-Zero Hunger (0.75%) and SDG13-Climate Action (0.75%), are among the goals that received less attention. In addition, a fraction of enterprises is aligned with SDG10-Reducing Inequality (2%) and SDG5-Gender Equality (1%). Regarding the quantity of SDGs communicated per enterprise, 7 is the maximum number of goals identified with 1.7 as the mean value.

Figure 5-2 Enterprises SDG Orientation



Note: The size of each bubble indicates how many Sustainable Development Goals (SDGs) are presented in the narratives for both social enterprises and traditional commercial enterprises. The larger the bubble, the higher the number of SDGs mentioned in the enterprises' narratives. In SDGs read 1 = SDG1-No Poverty, 2 = SDG2-Zero Hunger, 3 = SDG3-Good Health and Well-being, 4 = SDG4-Quality Education, 5 = SDG5-Gender Equality, 6 = SDG6-Clean Water and Sanitation, 7 = SDG7-Affordable and Clean Energy, 8 = SDG8-Decent Work and Economic Growth, 9 = SDG9-Industry, Innovation and Infrastructure, 10 = SDG10-Reducing Inequality, 11 = SDG11-Sustainable Cities and Communities, 12 = SDG12-Responsible Consumption and Production, 13 = SDG13-Climate Action, 14 = SDG14-Life Below Water, 15 = SDG15-Life On Land and 16 = SDG16-Peace, Justice, and Strong Institutions.

5.4.2. Regression Models

Table 1 reports the results for our model specifications. In Model 1 we tested H1 and H2, and in Model Model 2 and Model 3 we tested H3. Adding the independent variables improved the model fit compared to using them solely as covariates $F(4, 648) = 16.42, p < .001$. We checked for multicollinearity using the VIFs, which are below the widely accepted threshold of 10 (e.g., Kautonen et al., 2020). The highest score is 7.8, which is a score from the interaction term. Next, due to the nested structure of the data, we used a multilevel model to account for differences across industries, Models 4, 5 and 6. We have 661 firms distributed among 7 industry sectors, where the majority ($n = 238$) are from financials, and the minority ($n = 6$) are

from energy industry sectors. These results are similar to those in Models 1, 2 and 3. In H1, we tested the relationship between SDGs-quantity and economic performance. Model 1 reveals a significant negative association between the number of SDGs mentioned in an enterprise's narrative and the likelihood of higher productivity ($\beta = -0.34, p = 0.03$). Our results support H1, suggesting that enterprises that present a narrow SDG orientation are more likely to present higher economic performance. In H2, we tested the relationship between SDGs-similarity and productivity. Model 1 demonstrates a non-significant relationship between enterprises' economic performance and SDGs-similarity ($\beta = 0.19, p = 0.18$). Our results do not support the proposition that a communicated SDG orientation strategy emphasising a specific layer of sustainability could benefit enterprises' economic performance. H3 anticipates a similar effect of SDG orientation on the performance of both social enterprises and traditional commercial enterprises. First, we added an interaction term between the enterprises' type and SDGs-quantity ($\beta = 0.10, p = 0.62$) for productivity in Model 3. Next, we added an interaction term between the enterprises' type and SDGs' similarity ($\beta = 0.20, p = 0.29$) for productivity in Model 4. In both cases, the interaction term is not significant. Thus, as anticipated, when comparing a social enterprise to a traditional commercial enterprise, the result indicates similar patterns in the effects of SDG orientation on economic performance.

Table 5.1 The Relationship between Productivity and its Determinant Factors

DV: Productivity	Model 1 (OLS)	Model 2 (OLS with interaction term for SDGs quantity)	Model 3 (OLS with interaction term for SDGs similarity)	Model 4 (LM)	Model 5 (LM with interaction term for SDGs_quantity)	Model 3 (LM with interaction term for SDGs_similarity)
(Intercept)	12.38*** (p = 0.26)	12.39*** (p = 0.27)	12.44*** (p = 0.29)	12.10*** (p = 0.31)	12.11*** (p = 0.31)	12.16*** (p = 0.33)
Employees	0.03 (p = 0.05)	0.03 (p = 0.05)	0.03 (p = 0.05)	0.03 (p = 0.27)	0.03 (p = 0.27)	0.03 (p = 0.27)
Age	-0.05*** (p = 0.01)	-0.05*** (p = 0.01)	-0.05*** (p = 0.01)	-0.05*** (p = 0.14)	-0.05*** (p = 0.14)	-0.05*** (p = 0.14)
Type: SE	0.54*** (p = 0.10)	0.51*** (p = 0.12)	0.28 (p = 0.25)	0.53*** (p = 0.12)	0.50*** (p = 0.15)	0.28 (p = 0.31)
SDGs_quantity	-0.34* (p = 0.16)	-0.37* (p = 0.17)	-0.35* (p = 0.16)	-0.36* (p = 0.17)	-0.38* (p = 0.18)	-0.36* (p = 0.17)
SDGs_similarity	0.19 (p = 0.14)	0.18 (p = 0.14)	0.13 (p = 0.16)	0.19 (p = 0.16)	0.18 (p = 0.16)	0.14 (p = 0.17)
SDGs_quantity: Type SE		0.10 (p = 0.20)			0.10 (p = 0.16)	
SDGs_similarity: Type SE			0.20 (p = 0.19)			0.20 (p = 0.22)
Industry Dummies	Yes	Yes	Yes			
Industry Group				Yes	Yes	Yes
N	661	661	661	661	661	661
mean size group				7	7	7
R2	0.13	0.13	0.17			
Adj. R ²	0.11	0.11	0.19			

Note: The above table presents regression coefficients and std error in parentheses. Significance *** p < .001; ** p < 0.01; * p < .05. Multilevel models with random effects. SE = Social Enterprises.

5.5 Discussion

Drawing on stakeholder theory and recent literature on entrepreneurship, we assume that one critical strategic decision for doing well by doing good is the enterprise's SDG orientation (e.g., Freeman, 2023; Giarratana and Pasquini, 2022; Hornstein and Zhao, 2018). Our results demonstrated that enterprises communicating their purpose with a narrow set of SDGs in terms of quantity, regardless of the sustainability dimension of SDGs outcomes, tend to be positive for economic performance. This relationship tends to be similar among social enterprises and traditional commercial enterprises. Therefore, our insights demonstrates that the extent of SDGs communicated by firms holds significance for their stakeholders, which, in turn, positively impacts their economic performance.

The stakeholder theory suggests enterprises should create as much value as possible for stakeholders. Still, making as much value as possible does not mean placing enterprises' strategic orientation towards a large array of SDGs. As Freeman (2023) suggested, enterprises with a purpose aligned with their main stakeholders to guide the day-to-day operations are likely to achieve maximum value creation. Therefore, our findings corroborate the proposition that communicating a broad range of SDGs could increase enterprises' complexity and divert management attention away from commercial objectives (Giarratana and Pasquini, 2022). When comparing social enterprises and traditional commercial enterprises, Kautonen et al., 2020 suggested that adhering to stakeholder preferences for sustainability can be good for business if not taken too far (Kautonen et al., 2020). Our findings support that both social and traditional commercial enterprises should focus on a narrow number of SDGs to better balance sustainability orientation and economic performance. In addition, following the dynamics of authenticity (Alhouti et al., 2016) and mission drift (Battilana and Dorado, 2010), we understand that focusing on a broad range of SDGs can increase the risk of jeopardising

enterprises' image among stakeholders by appearing less authentic, especially in the context of social enterprises.

Furthermore, our results demonstrated a non-significant relationship between a communicated SDG orientation strategy with similar sustainability outcomes and economic performance. This notion can be supported by the interconnectivity between different SDGs (Philippidis et al., 2020; Smith et al., 2021). The "wedding cake" framework illustrates how SDGs are interlinked (Folke et al., 2016). For instance, challenges like climate change, hunger, and poverty are correlated and should be treated simultaneously (Giarratana et al., 2022). Yet, poverty and hunger fall within the societal layer of the cake, while climate change is part of the biosphere layer. This illustrates the bidirectional relationship between the economy (top cake layer), which serves society (middle cake layer), which in turn operates within the biosphere (bottom of the cake) (Philippidis et al., 2020). Therefore, our results highlight a nuanced consideration of specific SDGs in a way that suits organisational purpose, instead of a more aggregated view of the sustainability dimensions. For enterprises, especially social enterprises (Kouamé et al., 2022), its long-term depends on whether sustainability propositions resonate with the stakeholders that support them (Giorgi, 2017). In this matter, scholars suggest that a category signals essential features to an audience, which helps stakeholders formulate their expectations towards that category (Romanelli and Khessina, 2005). Our results suggest that communicating a sustainability-oriented strategy at the goal level can serve as a signal that resonates better with stakeholders.

Moreover, the SDG9-Industry, Innovation & Infrastructure from the economy layer is the goal that exhibits the highest frequency. This aligns with the literature suggesting that SDG9 is the most discussed goal in corporate practices (Mio et al., 2020). In contrast, the SDGs related to biodiversity, SDG15-Life On Land and SDG14-Life Below Water, are among the goals that received less attention. Biodiversity conservation is among the worldwide problems

that businesses have less practised (Addison et al., 2019). In addition, our results demonstrated that a fraction of enterprises is aligned with SDG10-Reducing Inequality and DG5-Gender Equality, topics that heightened social attention in recent years, such as the emergence of the “me-too” movement in the U.S. (Chen et al., 2021).

In summary, the strategic selection of social goals can impact the balance between economic and social welfare logic (see Kautonen et al., 2020; Battilana and Dorado, 2010). Yet, the “responsiveness to stakeholders alone is not guarantee of performance” (Kautonen et al., 2020, p. 6). The stakeholder theory suggests that trade-offs must be avoided (Freeman, 2023). A key aspect might be a narrow SDG orientation strategy to align with their main stakeholders while decreasing conflicts.

As with many entrepreneurship research studies, there is limited availability of economic-financial data for private enterprises (Wasserman, 2017). Therefore, a common limitation is the relatively small sample size. In addition, this study only focuses on enterprises from the U.S. Given the increasing presence of social enterprises worldwide, we cannot fully generalize our results for countries with distinct institutional settings (e.g., She and Michelon, 2023).

5.6 Implications for Theory and Practice

This study has implications for both research and practice. For research, this study contributes to the entrepreneurship literature and stakeholder theory by exploring and comparing conditions under which enterprises' SDG orientation positively influences economic performance across social enterprises and traditional commercial businesses (Abbott et al., 2019; Doherty et al., 2014; Lynn, 2021). In addition, this study serves as a proof of concept of the use of big data to overcome challenges in measuring enterprises' contribution to the SDGs (Chen et al., 2021; Mio et al., 2020; Patuelli and Saracco, 2023). Finally, we add to the literature

by stimulating wider discussions on aligning enterprises' strategies with the SDGs (Günzel-Jensen et al., 2020).

For practice, given that SDGs challenge businesses worldwide (Rosati et al., 2019) and the limited literature directly addressing business and SDGs sparse (Mio et al., 2020), our results can inform social entrepreneurs and business leaders in reshaping their sustainability-oriented strategies. Our results inform social entrepreneurs and business leaders about the value of communicating a narrow set of SDGs for enterprises' economic performance. Furthermore, our findings suggest that enterprises should align their purpose with the main stakeholders (not all) to guide the day-to-day operations to achieve maximum value creation. Trying to do it all generates complexity and tension. A focused strategy would allow stakeholders to evaluate what the enterprise can achieve and attract those who share similar interests. It is an important insight for enterprises, especially social enterprises, that often have limited resources and must decide wisely about their allocation (Miles et al., 2014).

5.7 Conclusion

Our study investigates enterprises' SDG orientation through the lens of stakeholder theory using enterprises' textual communication. The findings show that stakeholders can positively value a narrow set of SDGs for both social enterprises and traditional commercial enterprises. For practitioners, this implies that focusing deeply on a smaller set of SDGs may be perceived better than trying to do it all. The main implication for future research is a call for empirical evidence that compares conditions under which enterprises can do well by doing good considering social and traditional commercial enterprises' contexts.

Chapter 5. References¹³

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Chapter 6. Overall Discussion

Sustainability issues, a global concern, are challenging our society worldwide. Society is in a continuous process of sustainability transition, striving to balance social and commercial purposes (Chistov et al., 2023). The alignment of economic, social, and environmental sustainability principles in an enterprise's core strategy, commonly known as sustainability orientation (Kuckertz & Wagner, 2010), is the emphasis of this doctoral research. The aim is to assess an enterprise's sustainability orientation, provide a breakdown of influential factors, and explore the implications of sustainability orientation on the enterprises' economic performance of enterprises.

This research generates novel understandings by increasing transparency about critical aspects of sustainability orientation. It offers empirical and theoretical contributions that expand our knowledge on assessing the influential factors and implications of sustainability orientation. Each individual study tackles specific aspects of enterprises' sustainability orientation and proposes methods to overcome challenges in assessing sustainability orientation. Moreover, the thesis' chapters collectively lay a cohesive foundation for future research.

In this concluding chapter, I clarify the contributions of this thesis to knowledge. Firstly, I briefly recap the contributions of the three empirical studies to frame the overall discussion. Secondly, I examine the overarching theoretical implications of this doctoral thesis as a cohesive body of work. Thirdly, I conclude by outlining the research limitations, suggesting avenues for future research to address them, and offering final reflections.

6.1 Brief Overview of Findings

This thesis highlights influential factors and impacts related to sustainability orientation. In addition, it proposes using natural language processing (NLP) techniques to assess sustainability orientation based on textual data, a method that has not been widely explored in this context.

In Chapter 3, I draw on the CSR literature to explore internal and external contextual factors that influence sustainability orientation. This study showed that environmental pressures are essential in shaping enterprises' behaviour towards sustainability, yet such external contextual factors can produce short-lived spam practices. International pressures, such as the call to action proposed by the United Nations, generate a move towards sustainable development. However, our results demonstrated that enterprises failed in terms of long-term sustainability commitment. The findings demonstrated that enterprises' practices are strongly influenced by political stances at the national level and social scrutiny and partially influenced by media. As such, this doctoral thesis sheds light on the factors that lead to integrating environmental and social aspects into enterprises' strategic decisions from an aggregated perspective. Moreover, the study illustrated innovative uses of data and methods by framing CSR reports in Brazil.

In Chapter 4, I draw on the communication of social values to assess sustainability orientation and explore the implications of such orientation on enterprises' economic performance. A novel approach for sustainability orientation was employed, revealing that business practices spread among traditional commercial enterprises do not necessarily fit social enterprises. The communication of social values, which usually brings positive economic impacts for traditional commercial enterprises, does not significantly benefit social enterprises. Acting on social actions can positively impact social enterprises' economic performance more

than its communication. Moreover, the study presents a novel method of measuring socially-oriented language using NLP techniques.

In Chapter 5, which represents the last empirical study proposed in this thesis, I assess sustainability orientation based on the Sustainable Development Goals (SDGs) and explore the effects of a communicated SDG orientation strategy on enterprises' economic performance. The SDGs become a common framework for business worldwide. However, insights demonstrated that enterprises that adopted a sustainability orientation strategy that focuses on communicating a broad set of SDGs can backfire on enterprises' performance. The research suggests similar patterns in this matter for social enterprises and traditional commercial enterprises. Moreover, the study tests and introduces a novel method that has not yet been applied in a business context by using an SDG textual classifier based on advanced NLP methods.

6.2 Theoretical Implications

This doctoral thesis has generated new insights into the interactions and relationships of sustainability orientation, thereby enriching the theoretical foundation across multiple disciplines of strategic management. Sustainability orientation literature has emphasised the question "does it pay to be sustainable" (Khizar et al., 2022, p. 719). The research presented in this thesis emphasises the "how". I demonstrated provisional and contextual aspects that (a) drive sustainability orientation and (b) reward sustainability orientation.

This thesis makes three primary theoretical contributions. Alongside enriching theory, the contributions provide insights into gaps highlighted in the thesis overview (Chapter 1). The first theoretical contribution of this doctoral research is to clarify how social and political factors drive sustainability practices from an aggregate and longitudinal perspective. This contribution addresses the "fragmented" lenses and the "lack of environmental-level factors" being explored as influencing enterprises' sustainability orientation. Second, this doctoral

research generates new insights into the *doing well by doing good* paradigm. I elaborate on how a communicated sustainability orientation strategy affects enterprises' economic performance by shedding light on the questions: "How does the communication of social values impact the economic performance of social enterprises?" and "How does the communication of SDGs affect enterprises' economic performance?". Third, I introduce new methods to examine sustainability orientation by demonstrating that textual narratives can overcome challenges (e.g., poor data and difficult-to-measure outcomes) in measuring sustainability orientation and advancing the field.

6.2.1. Elaborating on Contextual Factors

This thesis introduces a novel longitudinal frame for examining social, political and institutional context factors influencing the sustainability orientation construct. This thesis has theoretical implications by (a) highlighting the evolutionary nature of social norms (e.g. Mahadeo et al., 2011) and (b) demonstrating an aggregated view of how different environmental pressures affect an enterprise's practices towards sustainability. Enterprises are influenced by a sequence of pressures rather than isolated pressures for sustainability orientation, yet few studies have considered social and political pressures over time. Normative, cultural and regulative influences are put forward as relevant in developing theory (e.g., Deegan, 2019). The results presented in Chapter 4 reinforce a significant propensity that political and social norms are reflected in the extent of enterprises' sustainability orientation (e.g., Cho et al., 2015; Deegan, 2002). While this is in accordance with the literature, it stands in contrast to the need for a long-term sustainability-orientated strategy.

Furthermore, I explored the role of the media, particularly news outlets, as an expression of community concern (social), government agenda on environmental protection (political) and industry environmental risk as a proxy for social visibility (institutional). I found evidence that suggests a significant influence of the government's agenda on enterprises'

practices towards sustainability. The decrease in effective environmental conservation policies across successive presidential administrations is mirrored by what enterprises are communicating (or not communicating) in their CSR reports. Interestingly, evidence demonstrates that such a decline is followed by the overall decrease in national media coverage on the topic in Brazil over this same observational period. Moreover, enterprises operating in industrial sectors with higher environmental risk communicated more about their commitment to their sustainability reports independent of the period. Therefore, results illustrated that aggregated models are crucial for developing a comprehensive understanding of the dynamics between the environment and institutions for sustainability orientation. Moreover, a longitudinal focus can provide valuable insights into such dynamics. This thesis emphasises further consideration of the temporal nature of the sustainability orientation construct.

6.2.2. Extending the Doing Well by Doing Good Paradigm

This thesis demonstrates contextual conditions for the positive effect of sustainability orientation on enterprises' economic performance. In contrast to the common belief of the *doing well by doing good* paradigm (Kautonen et al., 2020; Lynn, 2021), in Chapters 4 and 5, I demonstrated conditionals where this relationship can be true. The communication of social values, as a measure of sustainability orientation, can positively affect the economic performance of traditional commercial enterprises but does not significantly impact the economic performance of social enterprises. Moreover, I found that social actions, another measure for sustainability orientation, present a more positive role to play in the economic performance of social enterprises. While the communication of social values tends to be a strategy applied by enterprises to create a favourable social identity and consequently reap market benefits, in this thesis, social enterprises do not gain benefits from it. For social enterprises, social action acts as a positive signal of sustainability commitment, while the extent of socially oriented narratives does not have similar signalling value.

This extends our understanding of sustainability orientation on social entrepreneurship: The extent of communicating social values differs in importance when dealing with distinct purpose-driven institutional contexts. It is "widely understood that organisations rely on narratives to convey their identity as well as influence" stakeholders' perceptions (Toschi, 2023, p. 1272). Yet, we cannot simply assume that the communication of social values is always beneficial for enterprises' economic performance. This thesis's insights reinforce that social and traditional commercial enterprises are under distinct contextual pressures. This research opens two important topics that should be further explored. Firstly, social enterprises with the aim of pursuing both social and commercial purposes would tend to frame a communication approach in this light. In this sense, for social enterprises, the mere communication of social values can be recognised as conforming to a market category but not bringing distinctiveness from their competitors. Second, rather than communicating social values, social actions have great communicative power for social enterprises. Social enterprises are being urged to provide evidence of social commitment. In this sense, conventional methods for communicating social commitment are not good fits for social enterprises. Further research is required to enhance our understanding of how social enterprises can skilfully use narratives to communicate social commitment in terms of form and content to derive economic benefits.

Similarly, the thesis provides insights not only on the extent of communicating social values but also on its content based on the Sustainable Development Goals (SDGs). Recent literature demonstrated that the SDGs have become a broadly accepted benchmark for sustainability orientation (Chen et al., 2021) and aligning enterprises' sustainability orientation with the SDGs can be a crucial decision for corporate performance (Giarratana & Pasquini, 2022; Hornstein & Zhao, 2018). This thesis supports the idea that enterprises' SDG orientation strategy can influence the balance between social and economic welfare logic (e.g., Battilana & Dorado, 2010; Kautonen et al., 2020). However, a key aspect is focusing on a narrow set of

SDGs to align enterprises' sustainability orientation with their primary stakeholders while reducing tensions and complexity.

This thesis reinforces the tension in the literature surrounding the doing well by doing good paradigm and the need for further exploration of conditions that support this positive relationship (Lynn, 2021). First, while addressing various sustainability demands can enhance an enterprise's legitimacy and competitiveness, this thesis underscores the conflicts that arise when focusing on a broad range of SDGs. From a stakeholder perspective, it is possible to assume that communicating a narrow set of SDGs can attract stakeholders with similar interests, thereby reducing conflicts that typically result in trade-offs (Giarratana & Pasquini, 2022). Second, social enterprises typically face greater scrutiny from stakeholders compared to traditional commercial enterprises because of the central focus on social purposes. Consequently, social enterprises and traditional commercial enterprises operate within distinct institutional contexts (Kautonen et al., 2020). However, both business models are under the influence of the dynamics of conformity and distinctiveness. In this sense, a clear communication of value propositions is essential for legitimacy and competition in both scenarios. For both social and traditional commercial enterprises, communicating a broad set of SDGs can attract stakeholders from groups with diverse interests, which in turn increases enterprises' complexity of dealing with several stakeholders' expectations. The thesis findings emphasise the importance of a nuanced consideration of specific SDGs as part of the core business strategy to guide the everyday operations of enterprises rather than adopting a more generalist approach. The long-term success of enterprises depends on whether sustainability propositions resonate with their supporting stakeholders (Giorgi, 2017). In this matter, scholars suggest that a category signals essential features to an audience, which helps stakeholders formulate their expectations towards that category (Romanelli & Khessina, 2005). As discussed by Freeman (2023), while all organisations must generate profit, focusing enterprise

actions on a purpose such as "eliminating poverty," brings people together around a shared idea, and from there, "great things can happen" (p. 9).

This thesis demonstrates that sustainability orientation is far from simplistic and illustrates differential conditions under which doing well by doing good can be true. As such, it offers a valuable theoretical contribution to understanding the implications of sustainability orientation, particularly enhancing our understanding of its impact on social entrepreneurship.

6.2.3. Introducing Novel Methods

This doctoral thesis demonstrated how natural language processing (NLP) methods can be used to examine and develop the sustainability orientation literature and other fields of management-related research. As management researchers debate regarding how to use computational techniques, such as artificial intelligence, to develop research (Chan and Skiena, 2021), this thesis provides a proof of concept for applying advancements in computer-aid methods in future studies. The three empirical studies applied innovative computer-aid methods, which helped to capture novel insights into different aspects of sustainability orientation. To this end, the thesis presents (a) how to make use of enterprises' narratives to draw insights about sustainability orientation; (b) how advancements in artificial intelligence, specifically NLP with machine learning methods, can be used to overcome challenges in assessing sustainability orientation and leveraged insights for better theory-driven arguments.

Sustainability orientation research has largely focused on questionnaires as a way of measuring sustainability. In this thesis, I explored enterprises' narratives presented on sustainability reports and websites to measure sustainability orientation. Scholars can leverage textual data to overcome challenges related to data accessibility since textual data is accessible in the public domain and is becoming affordable to compute. Moreover, textual data is rich and can provide a novel vantage point of view for advancing many fields of management research.

Furthermore, besides employing textual data, this doctoral thesis provides a valuable example of different NLP techniques to assess sustainability orientation effectively.

In Chapter 3, I demonstrated using simple NLP techniques to leverage traditional content analysis. I was able to draw insights from over 650 sustainability reports, which can be considered a large volume of data to analyse through conventional manual methods. In Chapter 4, I demonstrated using NLP with machine learning methods to build a novel model to assess sustainability orientation. While the literature offers some sustainability-related libraries and pre-trained NLP methods, no available methods assess the probability of a given text being aligned with socially oriented language. I developed an NLP to interpret and recognise the communication of social values represented in enterprises' narratives that traditional methods could not. In Chapter 5, I built up on the research on Sustainable Development Goals (SDGs) classification and tested it in a novel context. I deploy an SDG classifier based on advanced NLP techniques to assess sustainability orientation based on its alignment with the SDGs.

Natural language processing (NLP) is gaining prominence in social science and has seen increasing application in the field of Sustainable Development in recent years (Chan & Skiena, 2021). However, fewer scholars have applied NLP in the context of sustainability orientation. As discussed by Chan and Skiena (2021), NLP can help overcome the cost and time barriers of structuring qualitative data, enabling its more widespread use and associated benefits. Therefore, this thesis offers a concept of how advancements in NLP can be used to measure sustainability orientation constructs, making an important contribution to advanced research.

6.3 Limitations and Conclusions

6.3.1. Limitations

This research acknowledges limitations in addition to those already noted. While the specific limitations of each empirical study are detailed in their respective chapters, in this section, I

highlight limitations that should be taken into account based on the discussion and suggest ways for future research to make advancements in addressing them.

First, the three empirical studies provide insights into sustainability orientation from an analytical perspective, where the analysis is modelled as a correlation study. The modelling is not without limitations. Many factors can influence sustainability orientation and affect enterprises' economic performance. Some interesting variables could have been omitted in the analysis (e.g., Cantele et al., 2023). While I grounded the models based on theory-driven arguments and empirical evidence from scholars in the field, whether the observed effects have a causal nature will need further investigation. Causation studies have the potential to advance and extend organisational theories (Stevenson et al., 2020), and especially experimental-based studies research remains underapplied in entrepreneurial contexts (Stevenson et al., 2020; Williams et al., 2019). A causation study using an experimental method can test and investigate enterprises' behaviours and implications, which help in organisational theory development.

Second, sustainability orientation is intricately linked to the decisions of managers, which is related to the unique characteristics of individual leaders and the influence of societal and organisational factors. Further examination could integrate the streams of literature on sustainability orientation that focus on the firm-level and individual-level perspectives. Modelling a framework that captures environmental pressures and motivations based on the personality of founders and business leaders could enrich the literature. The various interactions among these variables could spark the recognition of ways to incentivise sustainability-oriented business models, underscoring the significance of these aspects in sustainability orientation.

Third, the three empirical studies are based on samples comprising hundreds of organisations from multiple industries, which offered validity of the results. Yet, each study framed a specific country. Therefore, the generalisation of results should consider differences

in institutional settings at the country level. Country-level characteristics can influence enterprises' sustainability orientation (Alonso-Martínez et al., 2020). Future studies on sustainability orientation could consider replicating and comparing the findings to other institutional settings to validate and enrich the proposed conceptual model. Future studies should seek to confirm these findings with samples that cover different countries that are diverse enough to conduct cross-settings analysis. Moreover, based on the conceptual differences in defining social enterprises in the United States and European countries, it could be relevant to replicate this study, taking into account countries in Europe to conduct a comparative analysis.

Fourth, this research examined social, political and institutional factors driving sustainability orientation to provide an aggregated view of influential factors. However, this empirical research does not claim to provide an exhaustive list of all possible factors influencing enterprises' practices towards sustainable practices. Moreover, this study has framed an aspect of corporate sustainability orientation (CSR) that is usually under-practiced by organisations, biodiversity conversation, to draw insights about sustainability orientation. For the purposes of this study, this methodological choice was based on the fact that a topic that organisations usually neglect would be more sensitive in capturing the relationship between organisations and environmental pressures. Sustainability orientation considers a broad array of measures aimed at contributing to environmental conservation and protection or reducing enterprises' negative impact on the environment (Roxas & Coetzer, 2012). However, this study does not claim to provide readers with a complete framework of institutional efforts as part of the sustainability orientation construct. Capturing a holistic view of sustainability orientation could offer profound insights into the long-term factors that influence enterprises' sustainability practices, emphasising the need for a more comprehensive framework in the field.

Fifth, using productivity as a measure of economic performance provides an indication of the relative performance of enterprises. It is robust when considering the typically smaller scale of many social enterprises to draw comparative insights into operational efficiency (Abbott et al., 2019). However, relying on one single measure can bring limitations (Abbott et al., 2019). Future studies could include productivity as a part of a broader spectrum of performance metrics to capture and compare enterprises' efficiency based on resource allocation (Abbott et al., 2019).

Sixth, given that our NLP techniques are central to this thesis, it is crucial to discuss some limitations in this regard. In the first two empirical studies, I applied NLP techniques based on word count methods. This kind of approach is simple, computationally inexpensive and provides great levels of accuracy. However, approaches based on word count lack the ability to consider context and semantic nuances of language, characteristics present in more advanced NLP techniques (e.g., transformer-based language models). In my third empirical study, I deployed a method based on advanced NLP techniques that were designed to understand the context. However, the approach currently applied is based on a binary scale alignment (e.g., whether certain text is associated with certain SDGs). One option to advance this approach for assessing sustainability orientation would be to modify the prediction models from a classification problem, predicting alignment, to a regression problem, predicting the extent of the contribution, as discussed by Chen et al., 2021.

6.3.2. Conclusions

Enterprises' sustainability orientation has been on the rise in the past 10 years. This study, however, is the first to explore the grey areas of the sustainability orientation construct from an aggregated perspective and using natural language processing techniques. This doctoral thesis, underpinned by quantitative approaches and a multi-theoretical foundation, aims to understand the factors influencing sustainability orientation and its implications for enterprises'

economic performance. The overarching research objective is to bring clarity to various aspects of enterprises' sustainability orientation, with the ultimate goal of sparking broad discussions on sustainability development. Through this research, I aspire to contribute to the current literature on sustainability orientation and bridge the gap between the *doing well by doing good* paradigm, offering a beacon of hope for a more sustainable future.

My personal experience inspired this research. I would like to seize this moment to share and reflect on my PhD journey, highlighting key moments that have shaped my research. The first moment occurred even before my PhD started. Working as a Financial and Reporting Analyst, I noticed how much financial aspects guided strategic decisions. The inclusion of sustainability issues in project calculations provided some right-level guidance. Still, the complexity of measuring sustainability issues in a corporate context provided some challenges to more detailed and less abstract information to thoughtfully support decision-making. I started my master's in Economics and Environmental Studies, focusing on learning ways to leverage sustainability in organisations. There, I had my first contact with ways to measure non-financial aspects and learned more about data analytics and machine learning models. It was set; I wanted to build on this knowledge to bring some novelty into corporate sustainability. It led me to the topic of my doctoral thesis. The second moment occurred when I drafted a research project about applying content analysis in sustainability reports using NLP techniques. I learned in my doctoral studies that the use of novel methods was not enough to bring novelty to the literature. What was really engaging was the conclusions that the use of such methods could bring. Therefore, it shifted my mindset, and my research was guided by how the use of novel methods could contribute to theory and practices. The third moment occurred when I was presented with the context of social enterprises. It opened a new perspective. Shifting my research from large organisations to SMEs, I could bring novel insights to guide social enterprises in their process of balancing social and commercial purposes while addressing

social problems. These moments collectively guided my PhD journey and reinforced my belief that assessing sustainability orientation is crucial to guide enterprises' practices towards a more sustainable future.

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Appendices

Appendix 6-A: Decision letter - Preliminary ethics application

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Evelize Culpí Mann
By email: evelizecm@gmail.com

18 November 2021

Dear Evelize

Ethics Application WMS 21/127
Social enterprises and the promotion of green identity: An artificial intelligence approach

The above research project, as outlined in your submitted application, has been granted preliminary Ethics Approval for Research by the Waikato Management School Human Research Ethics Committee.

Please note: you will need to submit a final ethics application prior to commencing the data collection stage of your research.

Best wishes for your research.

Kind regards,

Amanda Sircombe

Amanda Sircombe
WMS Research and Postgraduate Manager

Appendix 6-B: Co-authorship forms



Co-Authorship Form

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This form is to accompany the submission of any PhD that contains research reported in published or unpublished co-authored work. **Please include one copy of this form for each co-authored work.** Completed forms should be included in your appendices for all the copies of your thesis submitted for examination and library deposit (including digital deposit).

Please indicate the chapter/section/pages of this thesis that are extracted from a co-authored work and give the title and publication details or details of submission of the co-authored work.

Chapter 3: A Decade of Biodiversity Conservation: Insights on Corporate Social Responsibility in an Emerging Market Context

Nature of contribution by PhD candidate	Conceptualisation, Methodology, Software, Formal analysis, Data curation, Writing – original draft, Writing – review & editing.
Extent of contribution by PhD candidate (%)	80

CO-AUTHORS

Name	Nature of Contribution
Heitor Murilo Gomes	Software, Writing – review & editing.
Amanda J. Williamson	Supervision, Methodology, Formal analysis, Writing – review & editing.
Manuel Castelo Branco	Conceptualisation, Methodology, Writing – review & editing.

Certification by Co-Authors

The undersigned hereby certify that:

- ❖ the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and
- ❖ that the candidate wrote all or the majority of the text.

Name	Signature	Date
Heitor Murilo Gomes		25/06/2024
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Please indicate the chapter/section/pages of this thesis that are extracted from a co-authored work and give the title and publication details or details of submission of the co-authored work.

Chapter 4: Should a Social Enterprise Publicly "Toot its Virtuous Horn," or Do Social Actions "Speak Louder than Words"?

Nature of contribution by PhD candidate: Conceptualisation, Methodology, Software, Formal analysis, Data curation, Writing – original draft, Writing – review & editing.

Extent of contribution by PhD candidate (%): 80

CO-AUTHORS

Name	Nature of Contribution
Narges Safari	Supervision, Conceptualisation, Formal analysis, Writing – review & editing.
Amanda J. Williamson	Supervision, Conceptualisation, Methodology, Formal analysis, Writing – review & editing.
Stuart Dillon	Supervision, Writing – review & editing.
John Oetzel	Supervision, Writing – review & editing.
Heitor M. Gomes	Conceptualisation, Software, Writing – review & editing.
Albert Bifet	Conceptualisation, Software, Writing – review & editing.
Manuel Castelo Branco	Conceptualisation, Writing – review & editing.

Certification by Co-Authors

The undersigned hereby certify that:

- ❖ the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and
- ❖ that the candidate wrote all or the majority of the text.

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Please indicate the chapter/section/pages of this thesis that are extracted from a co-authored work and give the title and publication details or details of submission of the co-authored work.

Chapter 5: Less is More? Communicating SDG Orientation and Enterprises' Economic Performance

Nature of contribution by PhD candidate

Extent of contribution by PhD candidate (%)

CO-AUTHORS

Name	Nature of Contribution
Narges Safari	Supervision, Conceptualisation, Formal analysis, Writing – review & editing.
John Oetzel	Supervision, Conceptualisation, Writing – review & editing.
Stuart Dillon	Supervision, Conceptualisation, Writing – review & editing.
Amanda J. Williamson	Supervision, Conceptualisation, Methodology, Writing – review & editing.

Certification by Co-Authors

The undersigned hereby certify that:

- ❖ the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and
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Name	Signature	Date
Narges Safari		17 June 2024
John Oetzel		26/6/24
Stuart Dillon		24/06/2024
Amanda J. Williamson		24/06/2024

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