Exploring the leverage points perspective, sustainability embeddedness and corporate sustainability: a systematic integrative review

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DECLARATION

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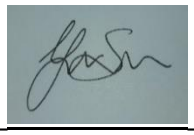

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ABSTRACT

The relationship between business and society is evolving with private sector organisations playing a fundamental role in the quest for sustainable development through corporate sustainability. Despite the pressure for organisations to be sustainable, many organisations are stagnant in their journey to sustainability embeddedness. The leverage points perspective has been identified as a potential framework to assist organisations in organisational change towards sustainability embeddedness. However, limited research has been conducted on the leverage points perspective within the context of corporate sustainability and sustainability embeddedness, and there have been calls to further develop the framework for sustainability discourse and practice. This study conducted a systematic integrative review on the leverage points perspective within corporate sustainability and sustainability embeddedness literature. Only published literature between 1999-2023 was included, as the study builds on Meadow's (1999) framework which was first developed in 1999. The study aimed to determine the state of literature on an emerging topic, the leverage points perspective, identify evidence-based interventions from the literature, and synthesise them into a practical framework for organisations and practitioners. The study sought to address the urgency for transformational change towards sustainability embeddedness and the dearth of research on the leverage points perspective within corporate sustainability discourse. An integrative review was adopted for its suitability in exploring emerging topics in fragmented and interdisciplinary fields. A search strategy was developed to outline data sources, search terms, and eligibility criteria to identify, collect, and screen relevant publications. The search strategy yielded 45 publications on the leverage points perspective within the context of corporate sustainability and sustainability embeddedness. These publications were analysed in two stages to answer this study's research questions. The descriptive analysis provided insight into the state of the literature by describing six characteristics of the publications. The thematic content analysis, facilitated by Atlas.ti software, revealed 42 evidence-based interventions and three main themes across the literature. Findings from this systematic integrative review offer insights into literature development on the leverage points perspective within the context of corporate sustainability and sustainability embeddedness from 1999 to 2023. As part of the study's main contribution, these interventions were

synthesised into a practical navigational framework for organisations and practitioners to leverage change towards sustainability embeddedness. The framework included in this study builds on Meadows' (1999) and Abson *et al.*'s (2017) leverage points perspective framework by integrating the 42 evidence-based interventions and three main themes. In doing so, this study contributed to corporate sustainability and sustainability embeddedness discourse and practice.

Key words: leverage points perspective, sustainability embeddedness, corporate sustainability, integrative literature review, descriptive analysis, evidence-based interventions, sustainability adoption, thematic analysis, transformational change, qualitative research

OPSOMMING

Die verhouding tussen besigheid en die samelewing is besig om te ontwikkel, met organisasies in die privaatsektor wat ’n fundamentele rol speel in die soeke na volhoubare ontwikkeling deur middel van korporatiewe volhoubaarheid. Ondanks die druk op organisasies om volhoubaar te wees, het baie organisasies gestagneer in die reis om volhoubaarheid te veranker. Die hefboompunteperspektief is as ’n moontlike raamwerk geïdentifiseer om organisasies met organisatoriese verandering te help ten einde volhoubaarheid te veranker. Beperkte navorsing is egter gedoen oor die hefboompunteperspektief in die konteks van korporatiewe volhoubaarheid en die verankering van volhoubaarheid, en daar is versoeke dat die raamwerk vir volhoubaarheidsdiskoers en -praktyk verder ontwikkel moet word. Hierdie studie het ’n sistematiese integrerende oorsig gedoen van hoe die hefboompunteperspektief oor korporatiewe volhoubaarheid en die verankering van volhoubaarheid in die literatuur gedek is sedert die ontstaan van die hefboompunteperspektief in 1999 tot 2023. Die studie het gepoog om die stand van die literatuur oor ’n opkomende onderwerp – die hefboompunteperspektief – te bepaal, bewysgebaseerde intervensies in die literatuur te identifiseer, en dit in ’n praktiese raamwerk vir organisasies en praktisyne te sinteseer. Die studie het verder gepoog om die dringendheid van transformasionele verandering vir die verankering van volhoubaarheid en die gebrek aan navorsing oor die hefboompunteperspektief in die diskoers oor korporatiewe volhoubaarheid te identifiseer. ’n Integrerende oorsig is gedoen weens die geskiktheid daarvan om opkomende onderwerpe in gefragmenteerde en interdissiplinêre velde te verken. ’n Soekstrategie is ontwikkel om databronne aan te dui en na terme en geskiktheidskriteria te soek om relevante publikasies te identifiseer, te versamel en te sif. Die soekstrategie het 45 publikasies oor die hefboompunteperspektief in die konteks van korporatiewe volhoubaarheid en die verankering van volhoubaarheid opgelewer. Hierdie publikasies is in twee fases ontleed om hierdie studie se navorsingsvrae te beantwoord. Beskrywende analise het insig oor die literatuur verskaf deur ses kenmerke van die publikasies te beskryf. Die tematiese inhoudsanalise, wat gefasiliteer is deur Atlas.ti-sagteware, het 42 bewysgebaseerde intervensies en drie hooftemas oor die literatuur onthul. Die bevindinge van hierdie sistematiese integrerende oorsig het insig verskaf oor die

ontwikkeling van literatuur oor die hefboompunteperspektief in die konteks van korporatiewe volhoubaarheid en die verankering van volhoubaarheid vanaf 1999 tot 2023. As deel van die studie se belangrikste bydrae is hierdie intervensies gesintetiseer in ’n praktiese navigasieraamwerk vir organisasies en praktisyne om verandering te benut vir die verankering van volhoubaarheid. Die raamwerk in hierdie studie bou op Meadows (1999) en Abson *et al* (2017) se hefboompunteperspektiefraamwerk deur die 42 bewysgebaseerde intervensies en drie hooftemas te integreer. Sodoende dra hierdie studie by tot korporatiewe volhoubaarheid en die diskoers oor en praktyk van die verankering van volhoubaarheid.

Sleutelwoorde: hefboompunteperspektief, verankering van volhoubaarheid, korporatiewe volhoubaarheid, integrerende literatuuroorsig, beskrywende analise, bewysgebaseerde intervensies, volhoubaarheidsaanneming, tematiese analise, transformasionele verandering, kwalitatiewe navorsing

OKUCASHUNIWE

Ubudlelwane phakathi kwamabhizinisi nomphakathi buya buvela ngokwezinhlangano ezizimele nokuyizona ezidlala indima ebalulekile ekusimamiseni intuthuko ngokuthi kusimame ukusebenzisana ebhizinisini. Nakuba kunengcindezi mayelana nokusimama kwezinhlangano, kodwa izinhlangano eziningi zisamile ekutheni kube nokusimama okunzulu. Amandla emibono ahlonzwe njengohlaka olunamandla okusiza izinhlangano ekushintsheni zibe nokusimama okunzulu. Ngalokhu-ke, sekuye kwenziwa ucwaningo mayelana namandla emibono phakathi kokusimama okunzulu nokusebenzisana kwezebhizinisi, kanti futhi kuye kwenziwa nezicelo zokuqhubeka nokuthuthukisa uhlaka lokusinyanyiswa kwezindlela zokuxoxisana nokusebenza. Lolu cwaningo luqhamuke nendlela yokubuyekeza ngokohlelo oludidiyele kubhekwe amandla emibono ekubhaleni maqondana nokusimama okunzulu nokusebenzisana kwezebhizinisi, lowo mbhalo washicilelwa ngemuva kokusungulwa kohlaka oluthinta amandla emibono ngo-1999 kuya ngo-2023. Inhloso yalolu cwaningo ukuthola izinga lokubhala ngezihloko zezinto ezihlalukayo, amandla emibono, ukuhlonza izindlela ezisekelwe ubufakazi obususelwe ezincwadini, kanye nokuhlanganisa lokhu kube uhlaka oluzosetshenziswa izinhlangano nabasebenzi balo mkhakha. Ngalolu cwaningo kuhloswe ukuba kumelwane nokushesha kokuguquka kwezimo ekusimameni okunzulu kanjalo nokusilela kocwaningo oluthinta amandla emibono emkhakheni wokusinyanyiswa kwamabhizinisi. Kwamukelwe uhlelo lokubuyekeza okudidiyele ngokokusimama kwalo ekuhloleni izihloko zezinto ezihlalukayo ngokwemikhakha eyahlukene. Kuye kwasungulwa amasu okuphenya ukuze kucaciswe kahle ngemithombo yolwazi, kanye nokuphenya ngamatemu kanjalo nemibandela yokufaneleka ukuze kuhlonzwe, kuqoqwe, nokuhlola izishicilelo ezihambisana nalolu cwaningo. Ngaphansi kwalawa masu kutholakale izishicilelo ezingama-45 mayelana namandla emibono ngaphansi kokusimama okunzulu nokusebenzisana kwezebhizinisi. Lezi zishicilelo ziye zahlaziywa ngokuthi zihlukaniswe izigaba ezimbili ukuze kuphenduleke imibuzo yalolu cwaningo. Ukuhlaziya okuchazayo kuye kwanikeze umqonda ngesimo semibhalo yezincwadi ngokuthi kucacise ngezinto eziyisithupha eziveza isimo salokho okushicilelwe. Ukuhlaziywa kwengqikithi, okwenziwa isofthiwe ye-Atlas.ti, kuveze izindlela ezingama-42 ezisekelwe ubufakazi kanye nezihlokwana ezintathu ezimqoka ezithinta yonke imibhalo yezincwadi.

Imiphumela yalolu hlelo lokubuyekeza okudidiyele iveze ubunjalo ekuthuthukisweni kwemibhalo yezincwadi mayelana namandla emibono ngaphansi kokusimama okunzulu nokusebenzisana kwezebhizinisi kusuka ngo-1999 kuya ku-2023. Njengengxenye yalokho obekuhloswe yilolu cwaningo, lezi zindlela ziye zahlanganiswa zaba uhlaka oluzosetshenziswa yizinhlangano kanye nabasebenzi ukuze kusetshenziswe lolo shintsho ekusimameni okunzulu. Uhlaka olufakwe kulolu cwaningo lususelwe ku-Meadows' (1999) and Abson et al.'s (2017) ngokohlaka lwamandla emibono okuhlanganisa izindlela ezingama-42 kanye nezihlokwana ezintathu ezimqoka. Ngokwenza lokhu, lolu cwaningo lube negalelo ekuxoxisaneni nasekusebenzeni mayelana nokusimama okunzulu nokusebenzisana kwezebhizinisi.

Amagama amqoka: amandla emibono, ukusimama okunzulu, ukusimama kokusebenzisana, uhlelo lokubuyekeza okudidiyele, ukuhlaziya okuchazayo, izindlela zokungenelela ezisekelwe ubufakazi, ukwamukelwa kokusimama, ukuhlaziywa kwengqikithi, uguquko, ucwaningo lweqophelo.

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Thank you to my Heavenly Father for blessing me with great opportunities and mostly, a loving family. My family's moral and emotional support, encouragement, and belief in me provided strength and confidence – not only during my academic career, but also in life.

PERSONAL REFLECTION

As I concluded this study, I reflected on my personal postgraduate journey. The fundamental rationale for this study stems from the raison d'être of any sustainability researcher or practitioner – the desire to contribute to the quest for sustainable development and to play a part in creating a sustainable future where 'no one is left behind' (United Nations, 2015). Research requires motivation, dedication, commitment, patience, and a thirst for knowledge. The journey of completing my Master of Commerce degree has proven to be no exception. This dissertation has been akin to a rollercoaster ride with many ups and downs, and what a journey it has been. The rather unconventional methodological approach for a master's degree within the field of business and management research was certainly a challenge but has provided an opportunity for learning and development. Looking back at the first research article I completed for my honour's degree, my growth as a researcher is evident. With persistence, hard work, and dedication one can become a master in academic research.

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DEFINITIONS OF KEY TERMS

The key terms used in this study are defined as follows:

Corporate Sustainability: An organisation's simultaneous pursuit of economic, social, and environmental prosperity in the creation of value, for present and future stakeholders (Dyllick & Muff, 2015; Elkington, 1998; van der Heijden, Cramer & Driessen, 2012).

Integrative review: A distinctive form of a systematic review that moves beyond the description of the body of evidence. It aims to generate new knowledge or derive new insights about a topic in an integrated way by reviewing, integrating, critiquing, and synthesising representative literature on a topic to develop new frameworks or perspectives (Torraco 2005, 2016b; Elsbach & van Knippenberg, 2018, 2020).

Leverage: "Where a small amount of energy might have greater effect" (Birney, 2020:750).

Leverage Points: Areas within a complex system where small interventions may lead to fundamental, paradigmatic, and transformational changes in the system as a whole (Abson *et al.*, 2017; Fischer & Riechers, 2019; Meadows, 1999).

Leverage Points Perspective: A non-linear hierarchy of twelve increasingly influential leverage points and four system characteristics, ranging from deep to shallow, that provide areas of leverage within which interventions can be made (Meadows, 1999; Abson *et al.,* 2017).

Organisation: A "system of consciously co-ordinated activities that allow groups of people to co-ordinate efforts" (Witjes, Vermeulen & Cramer, 2017:135).

Sustainable Development: The simultaneous pursuit of social, environmental, and economic development, which seeks to meet the needs of present generations without compromising the ability of future generations to meet their own needs (WCED, 1987; Dyllick & Hockerts, 2002).

Sustainability Adoption: How organisations integrate, manage, and implement corporate sustainability, which is usually portrayed as a journey with stages along a continuum (Le Roux, 2018; Vidal, Kozak et al., 2015).

Sustainability Embeddedness: When an organisation instils corporate sustainability throughout its culture, strategy, management processes, and operations, by every level, department, and function, and throughout the value chain. This is a ubiquitous process of continuous, emergent, and deliberate, transformational changes, supported by the accumulation of transitional changes. In this way sustainability becomes deeply engrained in the value created by the organisation, in engagement and collaboration with stakeholders, and in the organisational existence as a business imperative (Laszlo & Zhexembayeva, 2011; Valente, 2012, 2015; Dyllick & Muff, 2015; Lozano, Ceulemans & Seatter, 2015; Le Roux & Pretorius, 2016a,b, 2018; Hahn *et al.*, 2018; Derqui, 2020; Kitsios, Kamariotou & Talias, 2020; Nunhes, Bernardo, & de Oliveira, 2020; Wijethilake *et al.*, 2021; Barreiro-Gen *et al.*, 2022; van der Genugten *et al.*, 2022).

System: An interconnected set of elements that are coherently organised in a way to achieve a purpose or serve a function (Meadows, 2008).

System Characteristics: A “nested hierarchy of, tightly interacting, realms of leverage within which interventions in a given system of interest may be made” (Abson *et al.,* 2017:32).

Transformational change: A “fundamental, system-wide reorganisation across technological, economic and social factors, including paradigms, goals and values” (Chan et al., 2020:694).

LIST OF ABBREVIATIONS AND ACRONYMS

The following abbreviations and acronyms were used throughout this study:

CS	Corporate Sustainability
CSR	Corporate Social Responsibility
LP(s)	Leverage Point(s)
LPP	Leverage Points Perspective
MDGs	Millenium Development Goals
SDGs	Sustainable Development Goals
SE	Sustainability Embeddedness
WCED	World Commission on Environmental Development
UNISA	University of South Africa

CHAPTER 1: RESEARCH ORIENTATION

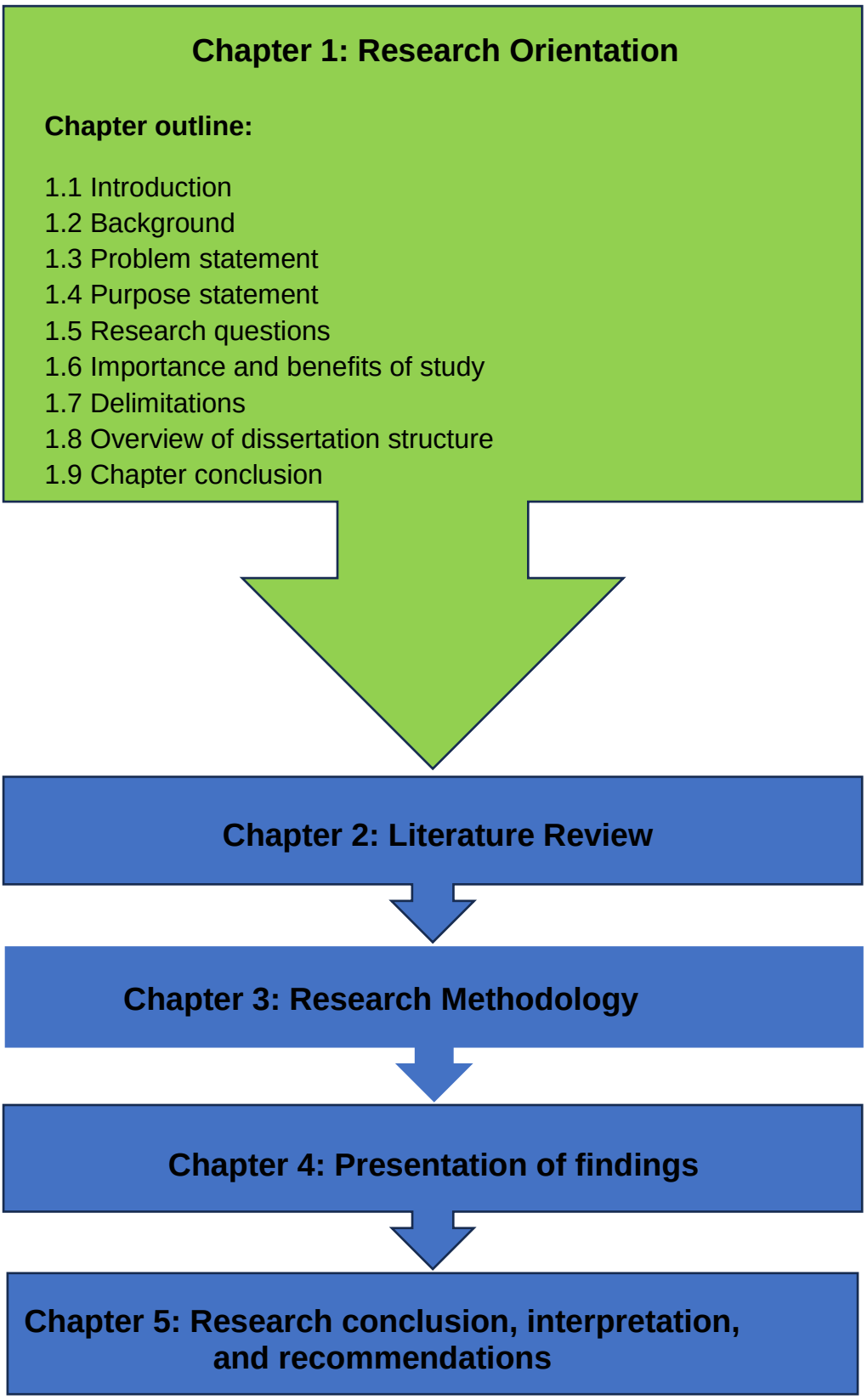

Figure 1.1 Overview of Chapter 1

Source: Author's work

1.1 INTRODUCTION

"*The world is a complex, interconnected, finite, ecological-social-psychological-economic system. We treat it as if it were not, as if it were divisible, separable simple and infinite. Our persistent, intractable, global problems arise directly from this mismatch*" *(Meadows, 2008:101).*

We have entered a new era, the age of Sustainable Development (Sachs, 2015; Chan *et al.,* 2020). This age is defined by the pursuit to address the interconnected and interdependent global challenges of inequity, inequality, climate change and environmental degradation, often referred to as the quest for sustainable development (Leach *et al.*, 2018; United Nations, 2020). In response to these global challenges, sustainable development is actively being adopted and pursued by modern society as the leading model for societal development (Sneddon, Howarth & Norgaard, 2006; Waas, Hugé, Verbruggen & Wright, 2011; Derqui, 2020). Sustainable development is defined as the simultaneous pursuit of social, environmental, and economic development, which seeks to meet the needs of present generations without compromising the ability of future generations to meet their own needs (WCED, 1987; Dyllick & Hockerts, 2002; Thakhathi, Le Roux & Davis, 2019). The most recent milestone on the quest for sustainable development, Transforming Our World: The 2030 Agenda for Sustainable Development, was brought forth by the United Nations in 2015. This agenda paved a path towards sustainable development for the world to follow through the collaborative inception of 17 Sustainable Development Goals (SDGs) and 169 targets across the three dimensions of sustainability (United Nations, 2015). However, achieving the goals outlined in the 2030 Agenda for Sustainable Development (Chan *et al*., 2020; Elkington, 2018) faces significant challenges, given the current trajectory of socio-economic and biophysical unsustainability within society and business (Dyllick & Muff, 2015; Fischer *et al*., 2007; Fischer & Riechers, 2019). Consequently, the relationship between business and society is evolving (Bergman, Bergman & Berger, 2017), with private sector organisations playing a fundamental role in the quest for sustainable development through corporate sustainability (Hahn, Pinkse, Preuss & Figge, 2015; Hahn, Figge, Pinkse & Preuss, 2018; Scheyvens, Banks & Hughes, 2016; Bergman, Bergman & Berger, 2017; Vildåsen, 2018).

Corporate Sustainability (CS)**,** or business sustainability, is broadly defined as an organisation's simultaneous pursuit of economic, social, and environmental prosperity in the creation of value, for present and future stakeholders (Elkington, 1998; van der Heijden, Cramer & Driessen, 2012; Dyllick & Muff, 2015; Derqui, 2020). Rooted in the macro-notion of sustainable development, the concept of CS encapsulates an organisation's role in creating a more sustainable future for business and society (Landrum, 2017; Thakhathi, Le Roux & Davis, 2019). Many organisations have embraced their ethical responsibility and role in sustainable development through a public commitment to, and adoption of CS (Waas, Hugé, Block, Wright, Benitez-Capistros & Verbruggen, 2014; Derqui, 2020; Nunhes, Bernardo & de Oliveira, 2020; Trollman & Colwill, 2021). This, however, necessitates significant and fundamental changes in an organisation's business premise and outlook (Lozano, 2013; Lozano, Ceulemans & Scarff Seatter, 2015; Vermeulen & Witjes, 2016; Kiesnere & Baumgartner, 2019a). Organisations will need to embed sustainability throughout their organisational system in order to effectively adopt, integrate, and implement CS (Valente, 2012; Perrott, 2014; Dyllick & Muff, 2015; Le Roux & Pretorius, 2016a; Landrum, 2017; Derqui, 2020; Nunhes, Bernardo, & de Oliveira, 2020; Arvidsson, 2022).

Sustainability Embeddedness (SE) is defined as when an organisation instils CS into its culture, strategy, management processes, and operations, at every level, department, and function throughout the value chain (Valente, 2012, 2015; Eccles, Perkins & Serafeim, 2012; Perrott, 2014; Dyllick & Muff, 2015; Vidal *et al.*, 2015; Engert, Rauter & Baumgartner, 2015; Engert & Baumgartner, 2016; Derqui, 2020; Kitsios, Kamariotou & Talias, 2020; Nunhes, Bernardo, & de Oliveira, 2020). This requires contemporary organisations to undergo transformational change if they wish to embed sustainability effectively within the organisation (Thakhathi, Le Roux & Davis, 2019). Organisations that excel in sustainability have undergone significant changes in their organisational paradigm, shifting from a business-centred perspective towards an outside-in perspective that has adopted firm-wide SE as an organisational way of life (Valente, 2012; Perrott, 2014; Dyllick & Muff, 2015; Le Roux & Pretorius, 2016a; Landrum, 2017). However, literature and practice reveal that there is still a limited understanding of SE, and that challenges regarding its adoption continue to

persist (Linnenluecke & Griffiths, 2009; Lubin & Esty, 2010; Laszlo & Zhexembayeva, 2011; Valente, 2012; Eccles, Perkins & Serafeim, 2012; Lozano, 2013; Enders & Remig, 2014; Le Roux & Pretorius, 2016a; Baumgartner & Rauter, 2017; Derqui, 2020; Costa *et al.*, 2022). Indeed, organisational-level engagement with implementing CS is "still limited and intentional rather than actual" (Khaled, Ali & Mohamed, 2021:2). Despite the increased commitment towards CS, organisations and practitioners continue to grapple with the interpretation and operationalisation of SE in practice (Valente, 2012, 2015). As a result, many organisations show a commitment to CS but are incognisant of the necessary actions to take, leaving them stagnant in their journey towards SE. This practical gap in the adoption of SE inhibits the realisation and implementation of CS in practice. This is problematic given the importance of organisations' role in the quest for sustainable development (Rake & Grayson, 2009; Waas *et al.*, 2011; Lozano, 2013; Dyllick & Muff, 2015; Vidal *et al.*, 2015; Landrum, 2017; Derqui, 2020; Kitsios, Kamariotou & Talias, 2020). Therefore, this study aims to address this sustainability adoption gap by exploring the promising *Leverage Points Perspective* (LPP).

Recent literature has shed light on the LPP as a valuable framework for sustainability discourse and practice that can bolster transformational change towards sustainability (Meadows, 1999; Abson *et al*., 2017: Fischer & Riechers, 2019; Leventon, Abson & Lang*,* 2021; Riechers *et al.,* 2021). The LPP is a framework of 12 leverage points and four system characteristics that was originally developed by the seminal author, Donella Meadows (1999) and further conceptualised by authors, Abson *et al.* (2017). *Leverage Points* (LPs) are defined as areas within a complex system, ranging from shallow to deep, where small interventions may lead to paradigmatic and transformational changes in a system such as an organisation (Meadows, 1999; Abson *et al.*, 2017; Fischer & Riechers, 2019). There have been calls to further develop the framework for both theory and practice (Abson *et al.,* 2017; Fischer & Riechers, 2019; Leventon, Abson & Lang*,* 2021). Fischer and Riechers (2019:117) argue that the LPP "deserves greater attention, because it holds substantial promise to inspire new directions in sustainability science and practice." However, limited research has been conducted on the LPP within the context of SE and CS, which reveals that this novel topic is underexplored, and highlights the need for an integrative

review (Torraco, 2016a,b). This study set out to conduct a systematic integrative review of literature on the LPP within the context of CS and SE, to determine the state of development and identify evidence-based interventions for practice.

1.2 BACKGROUND

In the endeavour to contribute to the quest for sustainable development, organisations will first need to become sustainable themselves (Dyllick & Muff, 2015; Thakhathi, 2019; Derqui, 2020). Currently, CS discourse is shifting from the fundamental questions of *if* and *why* towards understanding *how* organisations can embed sustainability (Glavas & Mish, 2015; Le Roux & Pretorius, 2018). Recognised as a legitimate business approach (Valente, 2012), SE is also a precondition for the transformation to a comprehensively sustainable organisation (Dyllick & Muff, 2015; Valente, 2015; Arvidsson, 2022). Progressing along the sustainability adoption continuum to SE requires an organisation to undergo significant and fundamental changes in its business premise and outlook, organisational culture and structure, strategies, policies, and practices (Lozano, 2013; Lozano, Ceulemans & Seatter, 2015; Vermeulen & Witjes, 2016; Kiesnere & Baumgartner, 2019a). However, the adoption and implementation of SE is challenging, complex, and pervasive (Chofreh & Goni, 2017; Epstein & Buhovac, 2010; Hahn, Preuss, Pinkse & Figge, 2014; Vidal *et al*., 2015; Waas *et al*., 2014).

Organisational change, in particular transformational change, is seen as a fundamental aspect of the transition to SE, but there is a lack of understanding regarding the paradigmatic and transformational organisational changes necessitated by SE (Valente, 2015). Traditional linear sustainability frameworks and models mostly rely on deliberate, linear processes with definitive steps and fixed goals to execute transitional and technical changes within business-as-usual practices (Tsoukas & Chia, 2002; Rake & Grayson, 2009; Petrini & Pozzebon, 2010; Eccles, Perkins & Serafeim, 2012; van der Heijden, Cramer & Driessen, 2012; Le Roux & Pretorius, 2018; Kiesnere & Baumgartner, 2019a). These traditional models typically overlook or neglect to consider the continuous, emergent, ubiquitous, and complex nature of organisational change for SE, as well as the necessary organisational and strategic

paradigm shifts (Valente, 2012; Lozano, 2013; Nguyen & Bosch, 2013; Lozano, Ceulemans & Seatter, 2015; Vermeulen & Witjes, 2016; Nunhes, Bernardo, & de Oliveira, 2020; van der Genugten *et al.*, 2022). Valente (2015) suggests that existing literature lacks a detailed understanding of paradigm shifts and offers little insight into how sustainability dimensions become embedded within organisations. Sustainability literature offers comprehensive insights into why companies should adopt a sustainable approach, but provides very little in terms of *how* the dimensions of sustainability can be embedded within organisational systems (Glavas & Mish, 2015; Klettner, Clarke & Boersma, 2014; Valente, 2015).

In practice, organisations and practitioners (managers, decision-makers, employees, and business leaders) acknowledge the importance of CS, but often lack a clear understanding of the concrete actions required to embed sustainability (PricewaterhouseCoopers, 2019; UNGC & Accenture Strategy, 2019; Ahlström *et al.*, 2020; Kitsios, Kamariotou & Talias, 2020; Trollman & Colwill, 2021; Arvidsson, 2022). This is evidenced by organisations' inability to interpret and operationalise the concept of CS. Despite the implementation of well-intentioned efforts, interventions often fall short in practice (Waas *et al*., 2014; Dyllick & Muff, 2015; Abson *et al*., 2017). Both literature and practice reveal a gap in the adoption of SE, henceforth referred to as the SE gap (Petrini & Pozzebon, 2010; Valente, 2015; Vidal *et al.*, 2015; Engert, Rauter & Baumgartner, 2015; Lozano, Ceulemans & Seatter, 2015; Engert & Baumgartner, 2016; Le Roux & Pretorius, 2016a; Baumgartner & Rauter, 2017; Landrum, 2017; Derqui, 2020; Trollman & Colwill, 2021; Costa *et al.*, 2022). This practical gap has led to a disconnect between organisational commitment (words) and implementation (action) and inhibits the realisation of CS in practice (Waas *et al.*, 2014; Dyllick & Muff, 2015; Vidal, Kozak & Hansen, 2015; Fischer *et al.*, 2019; PricewaterhouseCoopers, 2019; Ahlström *et al.*, 2020; Kitsios, Kamariotou & Talias, 2020; Trollman & Colwill, 2021). Merely exhibiting a strong commitment, such as virtue signalling or green-washing, alongside fragmentary approaches will not be adequate to actualise CS in practice (Bergman, Bergman & Berger, 2017). Overcoming this practical gap will require "… a critical reexamination of established concepts and new approaches …" (Dyllick & Muff, 2015:4), such as the underexplored LPP (Abson *et al.,* 2017; Fischer & Riecher, 2019; Chan *et al.,* 2020).

The LPP holds considerable potential for leveraging transformational change towards sustainability, such as the transformation towards SE (Meadows, 1999; Abson *et al.,* 2017; Fischer & Riecher, 2019; Birney, 2021). Whilst research on the LPP has gained traction in sustainable development research (Chan *et al.,* 2020; Leventon, Abson & Lang, 2021), there is a need to explore the LPP within the CS and SE. A scoping review was conducted across eight electronic databases to determine the extent of literature on the topic. The scoping review revealed a lack of literature on the LPP within the context of CS and SE, highlighting the theoretical gap of this study, namely the underexplored LPP. The LPP within the CS and SE is an emerging topic within a interdisciplinary field that can benefit from an integrative review of the literature to address this theoretical gap (Torraco, 2005, 2016a,b; Snyder, 2019; Cronin & George, 2023). The lack of integrative reviews in business and management research further emphasised the need for an integrative and systematic review of topics in the field and highlights the methodological gap that will be addressed by this study (Torraco, 2016b; Snyder, 2019; Dwertmann & van Knippenberg, 2021). Furthermore, considering the gap in the adoption of SE, this study set out to explore the literature to identify evidence-based interventions. These interventions were synthesised into a navigational framework to provide organisations with an integrated view of the actions that they can implement to progress to SE.

This study aimed to explore the LPP within CS and SE literature, to address the theoretical and practical gaps highlighted in this chapter. While the theoretical gap was addressed by determining the state of the literature on the topic from its inception in 1999 to 2023, the practical SE gap was addressed by identifying practical and actionable evidence-based interventions for organisations. In addition, the researcher compiled a consolidated account of all evidence-based interventions identified in the literature to develop a comprehensive navigational framework for organisations to embed sustainability.

1.3 PROBLEM STATEMENT

Despite increasing pressure for organisations to be sustainable, a disconnect persists between organisational commitment (words) and adoption (action) of corporate sustainability (Waas *et al.*, 2014; Dyllick & Muff, 2015; Vidal, Kozak & Hansen, 2015; Fischer *et al.*, 2019; Ahlström *et al.*, 2020; Kitsios, Kamariotou & Talias, 2020; Trollman & Colwill, 2021). Both organisations and practitioners continue to grapple with the integration and operationalisation of SE, which hinders the realisation of CS in practice. This has left many organisations stagnant in their journey towards SE. Both literature and practice have revealed that organisations are facing a gap in the adoption of SE (Petrini & Pozzebon, 2010; Valente, 2015; Vidal *et al.*, 2015; Engert, Rauter & Baumgartner, 2015; Lozano, Ceulemans & Seatter, 2015; Engert & Baumgartner, 2016; Le Roux & Pretorius, 2016a; Baumgartner & Rauter, 2017; Landrum, 2017; Derqui, 2020; Trollman & Colwill, 2021; Costa *et al.*, 2022).

Literature has shed light on the underexplored LPP, which has the potential to enhance understanding of the adoption gap by enabling transformational change towards SE (Meadows, 1999; Abson *et al*., 2017; Fischer & Riechers, 2019; Bryant & Thomson, 2021; Leventon, Abson & Lang, 2021; Riechers *et al*, 2021). However, limited research has been conducted on the LPP within the context of CS and SE. Consequently, there have been calls for further development of the framework to enrich sustainability discourse and practice (Fischer & Riechers, 2019; Leventon, Abson & Lang, 2021; Riechers *et al.,* 2021). This study addresses the aforementioned practical and theoretical gaps by conducting an integrative review of the LPP within CS and SE literature. In doing so, this study addresses a methodological gap, since integrative reviews are not common in business and management research (Torraco, 2016b; Snyder, 2019; Dwertmann & van Knippenberg, 2021). A systematic integrative review of the literature enabled the researcher to provide insight into the development of the LPP literature from 1999 to 2023. Furthermore, the systematic integrative review allowed the researcher to identify evidence-based interventions across the literature, that were then synthesised to provide an integrated view of the LPP and evidence-based interventions.

1.4 PURPOSE STATEMENT

The purpose of the study was to conduct a systematic integrative review on the LPP within CS and SE literature. Only published literature between 1999-2023 was included, as the study builds on Meadow's (1999) framework which was first developed in 1999. A systematic integrative review enabled the researcher to provide insight into the state of the LPP literature within CS and SE literature, and to uncover evidence-based interventions from the literature. Lastly, the systematic integrative review facilitated synthesis of these interventions into a practical navigational framework for organisations and practitioners to leverage change towards SE.

1.5 RESEARCH QUESTIONS

Main research question:

How has the leverage points perspective literature within the context of corporate sustainability and sustainability embeddedness developed over the period 1999 to 2023?

The sub-questions:

1. What is the current state of literature on the leverage points perspective within the context of corporate sustainability and sustainability embeddedness?
2. What evidence-based interventions have been identified by the leverage points perspective literature that are relevant for corporate sustainability and sustainability embeddedness practice?
3. In what way can these evidence-based interventions be synthesised into a practical framework for organisations and practitioners?

1.6 JUSTIFICATION OF THE STUDY

This systematic integrative review sought to contribute in three main ways. Firstly, this study aimed to make a theoretical contribution to CS literature by exploring LPP within the context of CS and SE. Integrative reviews are particularly well-suited for exploring new or emerging topics in interdisciplinary fields. Such reviews allow for a holistic

conceptualisation and synthesis of the literature, which is particularly beneficial for complex phenomena such as LPP within the context of CS and SE (Torraco, 2016a,b; Snyder, 2019; Cronin & George, 2023). The systematic integrative review aimed to provide insight into the state of LPP literature by analysing the publications' key characteristics, including commonly used research designs and methodologies, the number of annual publications, and the sustainability focus of the publications. By doing so, the study addressed the first research sub-question. In addition, this study adds a theoretical contribution to CS and LPP literature by developing a non-linear framework for organisations and practitioners. This framework extends the original LPP framework conceptualised by Meadows (1999) and Abson *et al*. (2017) and explicitly recognises the transformational and paradigmatic changes required by SE, as opposed to the traditional linear frameworks and models (Petrini & Pozzebon, 2010; Eccles, Perkins & Serafeim, 2012; van der Heijden, Cramer & Driessen, 2012; Le Roux & Pretorius, 2018; Kiesnere & Baumgartner, 2019a).

Secondly, this systematic integrative review sought to make a practical contribution to CS and SE practice by identifying evidence-based interventions across the LPP literature within the context of CS and SE. By means of a systematic integrative review, numerous evidence-based strategies, actions, practices, policies, and initiatives were revealed, which were termed "evidence-based interventions", for the purpose of this study. The evidence-based interventions provide organisations with practical actions that can be utilised to leverage change towards SE. Furthermore, this study aimed to develop a pragmatic framework for organisations and practitioners that provides an integrated and synthesised view of the evidence-based interventions. The evidence-based interventions that were identified and the framework that was developed answers the second and third research sub-questions and contributes to the gap in the adoption of SE by facilitating transformational change towards SE. As one of the primary contributions of this study, the proposed framework sought to provide both theoretical insights and practical applications. In doing so, the study aspired to shed further light on the LPP as a valuable framework for CS discourse and practice (Abson *et al.,* 2017; Fischer & Riechers, 2019; Birney, 2021).

Lastly, the study intended to make a methodological contribution. Integrative reviews are not new to business and management research (Elsbach & van Knippenberg, 2020), but it remains scarce in business and management discourse (Torraco, 2016b; Snyder, 2019). This highlights a methodological gap and need for more integrative reviews with a systematic and comprehensive methodology (Dwertmann & van Knippenberg, 2021). This study aimed to address this methodological gap by conducting a systematic integrative review of the LPP within the context of CS and SE literature, which is an emerging topic situated within business and management discourse.

1.7 DELIMITATIONS

This systematic integrative review was limited to literature on the LPP within the context of CS and SE. Studies that did not refer to LPP or its seminal authors (Meadows, 1999; Abson *et al.,* 2017), were excluded from this review. The current study only considered literature from the inception of the LPP until the present. Therefore, the review was limited to research that was published between 1999 and 2023. Lastly, the publications were limited to peer-reviewed research that is available in English.

1.8 RESEARCH DESIGN AND METHODOLOGY

This study conducted a systematic integrative review based on a qualitative approach that explored the LPP within the context of CS and SE literature. An integrative review, as defined by Torraco (2005:356, 2016b:62), " … is a distinctive form of research that generates new knowledge about a topic by reviewing, critiquing, and synthesising representative literature on a topic in an integrated way such that new frameworks and perspectives on the topic are generated." This research design was chosen because integrative reviews are particularly useful when seeking to conduct research on new or emerging topics within fields that are fragmented and interdisciplinary (Snyder, 2019; Cronin & George, 2023). This makes the systematic integrative review an appropriate method to explore complex concepts such as "sustainability embeddedness" and "leverage points perspective" within an interdisciplinary field, in particular, CS. Furthermore, an integrative review is not restricted to empirical

research with a specific research design (Dwertmann & van Knippenberg, 2021; Oermann & Knafl, 2021). Integrative reviews can incorporate relevant studies with diverse methodologies, research designs, approaches, and paradigms, which facilitates a more nuanced and comprehensive understanding of complex topics, including the LPP within the context of CS and SE (Whittemore & Knafl, 2005; Toracco, 2016a,b; Elsbach & van Knippenberg, 2020; Klein, Ramos & Deutz, 2020; Oermann & Knafl, 2021).

This systematic integrative review consisted of five steps: (1) problem identification, (2) literature search, (3) data evaluation, (4) data analysis, and (5) presentation of findings (Whittemore and Knafl, 2005; Oermann & Knafl, 2021). The researcher conducted a scoping review as part of the preliminary phase and problem identification of this study. The scoping review was included as an additional measure to determine the extent of literature on the topic of the LPP within the context of CS and SE. A search strategy was developed to identify and collect relevant literature for the literature search step. Three primary data sources were used, namely, 14 electronic databases, internet searches (Google Scholar), and an ancestry search (Torraco, 2016a; Al-Tabbaa, Ankrah & Zahoor, 2019; Kutcher & LeBaron, 2022; Owens, 2020). A well-constructed search strategy is an important measure of rigour that can ensure that a review is credible and dependable. Through the search strategy and data screening, 45 relevant publications were identified and included in this systematic integrative review. These publications were then analysed in two stages: the descriptive analysis and the thematic content analysis. Whilst the descriptive analysis served to answer this study's first research sub-question, the thematic content analysis addressed the second and third sub-questions. The findings from both stages answered the main research question. By systematically identifyng, collecting, and analysing relevant studies on the LPP within the context of CS and SE literature, this systematic integrative review provided review-driven insights on the development of the literature from 1999 to 2023. Additionally, the researcher revealed 42 evidence-based interventions that were integrated into a practical navigational framework (Snyder, 2019; Elsbach & van Knippenberg, 2020; Dwertmann & van Knippenberg, 2021; Cronin & George, 2023). Therefore, the systematic integrative review was apt,

as it allowed the researcher to comprehensively answer this study's research questions.

1.9 OVERVIEW OF DISSERTATION STRUCTURE

This section presents a brief description of the contents of each chapter.

Chapter 1 serves as the research orientation for this dissertation and introduces the study. This chapter outlines the problem and purpose statements, the main research question, and the sub-questions. The chapter also discusses the justification of this study, its delimitations, and the chosen methodology.

Chapter 2 provides the literature review for this dissertation, pertaining to CS, SE, and the LPP literature.

Chapter 3 covers the methodological decisions taken, and the research process that was followed to systematically conduct the integrative review and scrutinise the literature.

Chapter 4 presents the research findings from the two-stage analysis that answered the main research questions and three sub-questions of this study.

Chapter 5 covers the conclusion, synthesis, recommendations, and directions for future research. Figure 1.1 at the start of this chapter provides an outline of the abovementioned chapters and visually presents the structure of this dissertation. A similar figure will be provided at the start of each chapter, wherein the current chapter will be highlighted in green, to guide the reader.

1.10 CHAPTER CONCLUSION

Chapter 1 served to orientate the reader with regard to this study. The chapter began with an introduction and background to the research, followed by the study's research purpose, problem statement, main research question, and sub-questions. The chapter then considered the importance and benefits of this study, which highlighted the

intended practical, theoretical, and methodological contributions that the study hoped to make, as well as the delimitations. Thereafter, the chapter provided a brief discussion of the research methodology and systematic integrative review. Lastly, the chapter provided an overview of the dissertation structure. Figure 2.1 presents the structure of the following chapter, Chapter 2: Literature Review, which will scrutinise the literature on the main concepts of this study, namely CS, SE, and the LPP.

CHAPTER 2: LITERATURE REVIEW

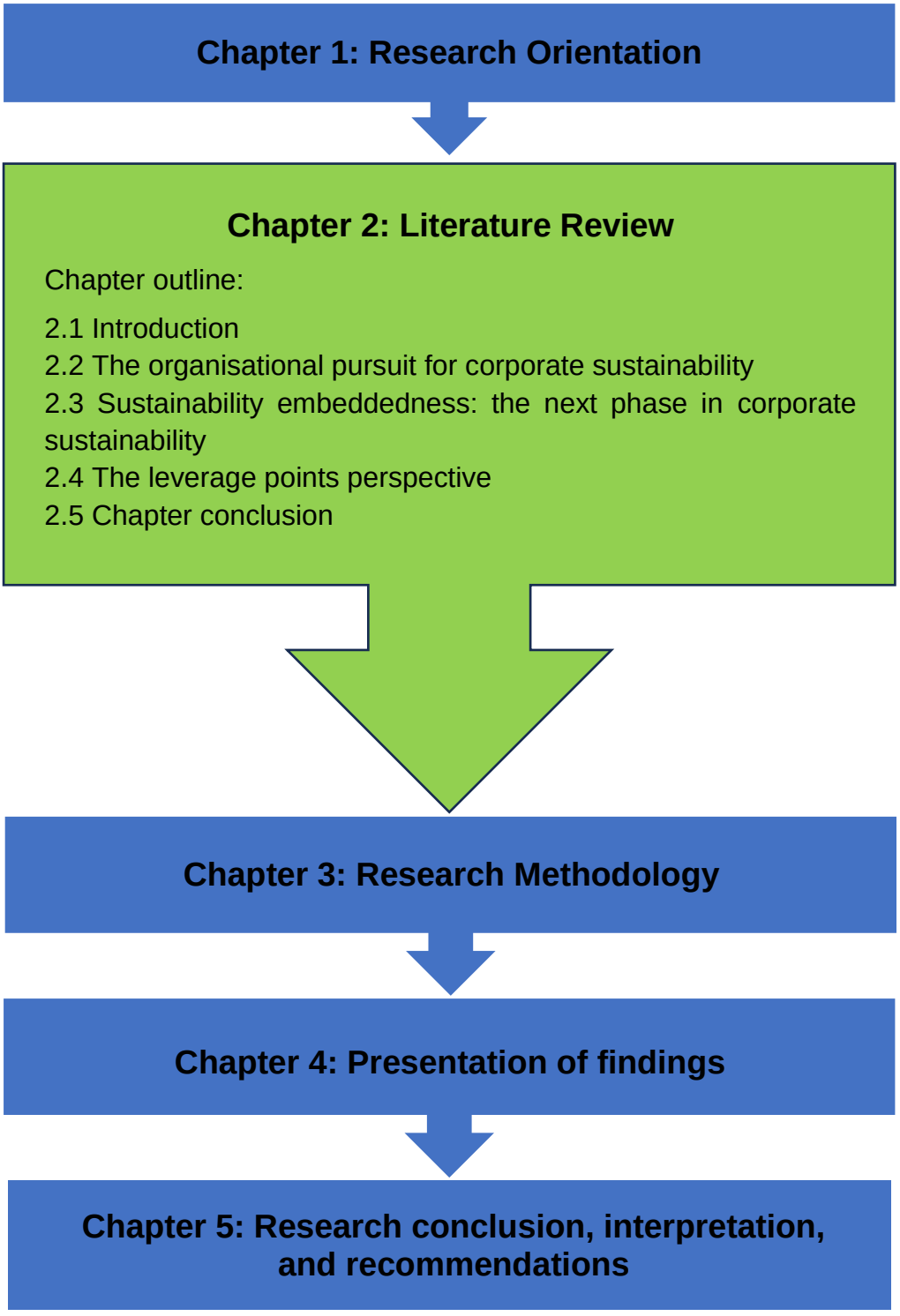

Figure 2.1: Overview of Chapter 2

Source: Author's work

2.1 INTRODUCTION

Chapter 1 introduced the reader to this study by providing an overview of the research problem and purpose, research objectives, methodology, and dissertation structure. The purpose of the study was to conduct a systematic integrative review of literature on the leverage points perspective within the context of corporate sustainability over the period 1999 to 2023. Chapter 2 serves as the literature review, commencing with an exploration of the macro-level context in which organisations operate. It explicates the meaning of corporate sustainability by examining its core principles, and considers corporate sustainability in practice. The subsequent section delves into the extant published literature on sustainability embeddedness, investigating the phases of sustainability adoption, organisational change for sustainability, the internal drivers of sustainability embeddedness, and levels of decision making. This section concludes by conceptualising a definition for sustainability embeddedness. The next section of the chapter scrutinises the leverage points perspective literature. It begins by introducing systems thinking, and proceeds with an in-depth discussion of the leverage points perspective, highlighting its potential applications in corporate sustainability practice.

2.2 THE ORGANISATIONAL PURSUIT FOR CORPORATE SUSTAINABILITY

This section of the literature review presents an overview of the quest for sustainable development and the need for organisational-level sustainability. Building upon this, the meaning of corporate sustainability is then considered by explicating its core principles. Subsequently, the section delves into corporate sustainability in practice, highlighting a practical gap that this study will explore, namely the adoption of sustainability embeddedness.

2.2.1 The quest for sustainable development

Organisations have found themselves in a new era, the Age of Sustainable Development (Sachs, 2015). This age is encapsulated by the pursuit to address the interconnected and interdependent global challenges of inequity, inequality, climate change and environmental degradation – the quest for Sustainable Development

(Leach *et al.*, 2018; United Nations, 2020). These urgent challenges have manifested as a result of an anthropocentric worldview, epitomised by human centeredness, where socio-economic and ecological issues are only considered and addressed to the extent that they align with the traditional economic paradigm (Valente, 2012; Dyllick & Muff, 2015; Trollman & Colwill, 2021). In response to these challenges, sustainable development is actively being adopted and pursued by modern society as the leading model for societal development (Sneddon, Howarth & Norgaard, 2006; Waas, Hugé, Verbruggen & Wright, 2011). Sustainable development is defined as the simultaneous pursuit of social, environmental, and economic development, which seeks to meet the needs of present generations without compromising the ability of future generations to meet their needs (WCED, 1987; Dyllick & Hockerts, 2002).

There have been several historical milestones on the quest for sustainable development, such as the *UN Conference on the Human Environment* (1972), the *Growth Limits Report* (1972), *Our Common Future* or *Brundtland Report* (1987), the *Earth Summit* (1992), the *Millennium Summit* (2000), and most recently *Transforming Our World: The 2030 Agenda for Sustainable Develop*ment (2015) (Meadows, Meadows, Randers & Behrens, 1972; WCED, 1987; Sneddon *et al.*, 2006; Waas *et al.*, 2011; United Nations, 2015b; De Wit, 2017; Nunhes, Bernardo & de Oliveira, 2020; Costa *et al.*, 2022). These milestones and the combined efforts across all sectors of society (government, private sector, civil society, and non-governmental institutions) have led to invaluable progress in indicators such as poverty, life expectancy, and education (Bergman, Bergman & Berger, 2017; Fischer & Riechers, 2019). Over a period of 15 years the Millennium Development Goals (MDGs), established by the Millennium Summit, achieved significant milestones towards sustainable development. These accomplishments include: reducing the number of people living in extreme poverty by more than 50%; cutting the proportion of undernourished people in developing regions by almost half; decreasing the global mortality rate for children under five by a little over half; averting more than 50 million disease-related deaths; providing improved drinking water access to 1.9 billion people; facilitating improved sanitation for 2.1 billion people; and increasing global internet penetration by 37% (United Nations, 2015a). These global goals led to invaluable progress in social, environmental, and economic development, and set the tone for the successor to the

Millennium Development Goals; namely, the Sustainable Development Goals (SDGs) (United Nations, 2015b; Bergman, Bergman & Berger, 2017).

Despite the abovementioned achievements, numerous authors, including Fischer *et al.* (2007), Dyllick and Muff (2017), Fischer and Riechers (2019), Ahlström *et al.* (2020), and Chan *et al.* (2020), point out that the current state of the global socio-ecological system is superimposed by a discerning trajectory of unsustainability. For example, a projected 657 to 676 million people still live in extreme poverty, compared to 836 million in 2015 (SDG1); to meet drinking water, sanitation and hygiene targets will require a four-fold increase in the rate of current progress (SDG6); approximately 733 million people continued to live without electricity in 2020 (SDG7); energy-related CO_2 emissions increased by 6% in 2021, reaching its highest recorded level (SDG13); over 400 species are at risk of extinction within the following decades; and ten million hectares of forests are destroyed every year (SDG15) (United Nations, 2022). In view of the current trajectory of socio-economic and biophysical unsustainability, it is improbable that many of the 17 SDGs will be achieved by 2030 (Elkington, 2018; Chan *et al.*, 2020).

The expanding discrepancy between the current state of our global system (what is being done) relative to what would be sustainable (what needs to be done) can be encapsulated by the notion of an expanding 'sustainability gap' (Fischer *et al.*, 2007; Dyllick & Muff, 2015; Fischer & Riechers, 2019; Ahlström *et al.*, 2020; Chan *et al.,* 2020). The inadequate attempts at addressing sustainability call attention to the paramount need for all sectors of society to participate in this global endeavour. In particular, the private sector has a fundamental role to play in the quest for sustainable development through corporate sustainability (Hahn, Pinkse, Preuss & Figge, 2015; Hahn, Figge, Pinkse & Preuss, 2018; Scheyvens, Banks & Hughes, 2016; Bergman, Bergman & Berger, 2017; Vildåsen, 2018). However, organisations will first need to become sustainable themselves (Dyllick & Muff, 2015; Thakhathi, 2019; Derqui, 2020). The following section seeks to explicate the meaning of sustainability at the meso-, organisational-level, namely, corporate sustainability, by examining the core principles of the concept.

2.2.2 The meaning of corporate sustainability

The relationship between business and society is evolving (Bergman, Bergman & Berger, 2017). In the 21st century, terms such as 'sustainability', 'sustainable development', and 'corporate sustainability' reverberate throughout companies as organisational purpose moves beyond the previously superimposed economic paradigm (Waas *et al.*, 2014; De Wit, 2017). Rooted in the macro-notion of sustainable development, the concept of corporate sustainability encapsulates an organisation's role in creating a more sustainable future for business and society (Landrum, 2017; Thakhathi, Le Roux & Davis, 2019). *Corporate Sustainability (CS)***,** or business sustainability, is broadly defined as an organisation's simultaneous pursuit of economic, social, and environmental prosperity in the creation of value for present and future stakeholders (Dyllick and Muff, 2015; Elkington, 1998; van der Heijden, Cramer & Driessen, 2012). As a form of corporate self-regulation, it deals with the complex responsibilities that organisations have towards society and the planet (Bergman, Bergman & Berger, 2017). For the purpose of this study, the term organisations refer to corporations, enterprises, firms, and other similar business entities (Nawaz & Koç, 2019). Consequently, an organisation is defined as "a system of consciously co-ordinated activities that allow groups of people to co-ordinate efforts" (Witjes, Vermeulen & Cramer, 2017:135).

The sustainability debate on whether the private sector should address environmental and social challenges is well-established (Cochran, 2007; Elrick & Thies, 2018). Equally well-established are calls for the application of the macro-, system-level concept of sustainable development to the meso-, organisational-level through CS (Hahn *et al.*, 2015), given the concept's suitability and applicability to the field of business, management, and operations (Nunhes, Bernardo, & de Oliveira, 2020). In response to demanding external pressures, such as stakeholder concerns and a changing external environment, organisations and practitioners across industries and geographies are showing a commitment to sustainable development. Organisations achieve this by adopting CS and sustainable practices to balance their economic aspirations with societal and environmental needs (Dyllick & Muff, 2015; Glavas & Mish, 2015; Landrum, 2017; Thakhathi, le Roux & Davis, 2019).

Parallel to the increased interest in practice, the academic field of CS has expanded significantly. In 2019 alone, various special issue calls for articles, conferences, and literature on sustainability (Hahn *et al.*, 2015; Kourula, Pisani & Kolk, 2017), reached up to 3 338 publications (Sanchez-Planelles, Segarra-Oña & Peiro-Signes, 2021). Amidst the growing body of knowledge, ample interpretations and definitions of CS have emerged (Engert, Rauter & Baumgartner, 2015; Landrum & Ohsowski, 2018; Derqui, 2020). For example, Dyllick and Hockerts (2002:131) published one of the most frequently referenced definitions for CS:

> "… meeting the needs of a firm's direct and indirect stakeholders (such as shareholders, employees, clients, pressure groups, communities etc), without compromising its ability to also meet the needs of future stakeholders as well. Towards this goal, firms have to maintain and grow their economic, social, and environmental capital base …"

Similarly, van Marrewijk and Were (2003:107) provided a broad definition, by referring to CS as "a company's activities - voluntary by definition - demonstrating the inclusion of social and environmental concerns in business operations and in interactions with stakeholders." Lozano (2011:50), who supports a holistic perspective on CS, is of the opinion that it should be understood as:

> "Corporate activities that proactively seek to contribute to sustainability equilibria, including the economic, environmental and social dimensions of today, as well as their inter-relations within and throughout the time dimensions (i.e. short, long-, and longer-term), while addressing the company's systems … as well as with its stakeholders."

Whereas Bergman, Bergman & Berger (2017:10) constructed the following definition by means of an empirical analysis of the literature: "a systematic business approach and strategy that takes into consideration the long-term social and environmental impact of all economically motivated behaviours of a firm in the interest of consumers, employees, and owners or shareholders."

Montiel and Delgado-Ceballos (2014) conducted a literature review on the field of CS, across 24 academic journals from 1995 to 2013. The authors found that no standardised definition for CS exists and that the field is still evolving. Evidently, there are various definitions for CS and an absence of consensus (Hahn *et al.*, 2015; Engert & Baumgartner, 2016; Landrum +& Ohsowski, 2018; Derqui, 2020). Despite the lack of a single unifying definition in the literature, there is agreement that CS consists of several prominent key principles (Delgado-Ceballos, Montiel & Antolin-Lopez, 2014; Derqui, 2020; Costa *et al.*, 2022). The following section discusses the core principles of CS, namely (1) the tri-dimensional construct; (2) the long-term perspective; and (3) stakeholder engagement and collaboration.

2.2.2.1 The core principles of corporate sustainability

Firstly, CS is a *tri-dimensional construct*. It is widely accepted in discourse and practice that sustainability consists of three dimensions – social, environmental, and economic (Hahn *et al.*, 2015; Derqui, 2020). The *economic* dimension refers to sustainable economic growth for long-term economic welfare creation (Waas *et al.*, 2011). It does not only consider short-term financial concerns, such as return on investment (ROI), but also long-term economic concerns, such as return to shareholders and long-term competitive advantage (Petrini & Pozzebon, 2010). The *social* dimension is concerned with personal well-being and pursuing social justice and prosperity by addressing inequity and inequality (Waas *et al.*, 2011; Perrott, 2014). At the organisational-level this relates to how organisations can add value to the communities in which they operate and to society as a whole (Dyllick & Hockerts, 2002). The *environmental* dimension is generally viewed as environmental protection or management to conserve or enhance, rather than destroy or erode, the natural resource base of our planet (Waas *et al.*, 2011). This implies that organisations need to manage their impact on the environment and their consumption with respect to the rate at which the natural resource base is restored.

In the view of Costa *et al.* (2022), the three dimensions of sustainability are more suitable to the business context when transposed from the social dimension to Corporate Social Responsibility (CSR), the environmental dimension to environmental management, and the economic dimension to value creation. In support of this view,

and for the purpose of the current study, CS will be used as an umbrella term for CSR, environmental management, and value creation, along with their various synonymous terms. The majority of definitions of sustainability draw upon influential frameworks such as the Brundtland Report and the triple bottom line (TBL), developed by Elkington (1998) and further discussed by Engert, Rauter and Baumgartner (2015) and Nunhes, Bernardo, and de Oliveira (2020). In the business context, sustainability should be understood by means of the TBL, since it is acknowledged as a credible framework to introduce and operationalise the three dimensions of sustainability (Nunhes, Bernardo, & de Oliveira, 2020; Costa *et al.*, 2022). These three dimensions should be recognised and treated as interconnected and interdependent (Montiel & Delgado-Ceballos, 2014; Bergman, Bergman & Berger, 2017; Elkington, 2018), however, they have only recently started to converge in CS practice as a tri-dimensional construct (Dyllick & Muff, 2015). Managers often find it difficult to juxtapose the dimensions of sustainability, inhibiting organisations and practitioners to realise true CS in practice (Le Roux & Pretorius, 2016a).

Secondly, CS demands a *long-term perspective*. When environmental management and CSR are added to economic value creation, a long-term vision becomes both necessary and expected (Montiel & Delgado-Ceballos, 2014; Derqui, 2020). However, several authors have noted that tensions exist between the short- and long-term orientations since the two often contradict one another (Hahn *et al.*, 2015; Scheyvens *et al.*, 2016; Derqui, 2020; Costa *et al.*, 2022). As is explained by Scheyvens, Banks and Hughes (2016:378), the dominant business model, which is narrowly focused on short-term planning and profits, clashes with the long-term CS model. An obsession on short-term performance and profits, referred to as short-termism, may compromise sustainability efforts as it opposes the ethos of sustainability (Dyllick & Hockerts, 2002; Costa *et al.*, 2022). Therefore, when organisations seek to adopt and implement CS, they will need to embrace a long-term perspective in their vision, strategy, and operations. This calls for practitioners to manage the trade-offs between short-term economic performance and long-term sustainability considerations (Hahn *et al.*, 2015).

Thirdly, CS necessitates *stakeholder engagement and collaboration*. A critical element of CS is the engagement with a wider range of stakeholders than would be considered

in orthodox management (Petrini & Pozzebon, 2010; Nunhes, Bernardo, & de Oliveira, 2020). The stakeholders include, but are not limited to, employees, suppliers, local communities, non-governmental organisations (NGOs), shareholders, customers, local authorities, and the environment. These stakeholders are often grouped into primary and secondary, or internal and external stakeholders (De Wit, 2017) that present numerous, often opposing, demands (Hahn *et al.*, 2015). Furthermore, Derqui *et al.* (2020) mention that opportunities and threats are broadening from a single organisational level to the entire corporate network. This means that companies are held more responsible for their entire value chain, but they are not alone in addressing sustainability concerns. Embedding CS by making it a part of the organisation, and dealing with its interconnected dimensions in the long-term, requires collaboration and partnerships between an organisation and its stakeholders (Derqui, 2020; Nunhes, Bernardo, & de Oliveira, 2020). Organisations that choose to adopt CS should present a strong commitment to consider all stakeholders, recognise their demands, and collaborate with them to create sustainable growth for all parties involved (Linnenluecke & Griffiths, 2009; Nunhes, Bernardo, & de Oliveira, 2020; Arvidsson, 2022).

Ultimately, CS is a tri-dimensional construct that requires the simultaneous consideration of CSR and environmental management in value creation. This demands a long-term perspective and necessitates stakeholder engagement and collaboration. Not only are the three dimensions of sustainability interconnected and interdependent, but so are the three principles of CS. It is therefore cardinal for practitioners to consider all three principles when seeking to achieve CS in practice.

2.2.3 Corporate sustainability in practice and the need for sustainability embeddedness

CS has become a business imperative, a pre-condition for doing business, and a critical part of most organisations (Epstein & Buhovac, 2010; Laszlo & Zhexembayeva, 2011; Lozano, 2013; Le Roux & Pretorius, 2016b). Thakhathi, Le Roux and Davis (2019) contend that CS is the greatest challenge that contemporary organisations face. Companies can no longer operate without integratively considering the interconnected nature of CS in their operations, decision-making, management, and

strategy (Hahn, Preuss, Pinkse & Figge, 2014; Engert & Baumgartner, 2016; Landrum, 2017; Tsalis, Malamateniou & Koulouriotis, 2020). Organisations are not simply economic machines, resource-extracting and profit-seeking, but interdependent organisations embedded in a larger global socio-ecological system striving for sustainable development (De Wit, 2017; Thakhathi, Le Roux & Davis, 2019; Ahlström, Williams & Vildåsen, 2020; Nunhes, Bernardo, & de Oliveira, 2020).

Interest in CS from the private sector is, for example, attested by the 16 540 companies across 158 countries that have signed up to the UN Global Compact (UNGC) by 2022 (UNGC, 2022). The UNGC and Accenture Strategy conducted a comprehensive study exploring how Chief Executive Officers (CEOs) view sustainability by drawing on insights from more than 1 000 CEOs across 99 countries and 21 industries, along with an additional 1 500 business executives surveyed and 100 in-depth interviews conducted (UNGC & Accenture Strategy, 2019). The study, conducted by consulting firm Accenture, found that 99% of CEOs who participated believe that sustainability is important to the future success of their business. However, only 48% are implementing sustainability into their operations; 25% do not see the connection between sustainability and value creation; and 79% of the CEOs hold that their companies are not contributing to achieving the SDGs (UNGC & Accenture Strategy, 2019). This is important since CEO narratives are critical in organisational vision, performance, and operations (Arvidsson, 2022). Furthermore, PricewaterhouseCoopers (PwC) analysed 1 141 companies across 31 countries in order to examine the extent to which companies have embedded the SDGs into strategy and disclose information about these goals. PwC found that 72% of the companies publicly mention SDGs in their public reports, but only a quarter mentioned it where business strategy is discussed. From the analysed companies, only 5.37% set qualitative goals and 2.75% set quantitative goals (PricewaterhouseCoopers, 2019).

These insights into CS practice provide evidence that organisations and practitioners understand the importance of sustainability, but they do not have a clear understanding of the concrete actions required to realise CS. What is required is for organisations and their practitioners to adopt CS and integrate it in an embedded way

throughout their organisational system (Perrott, 2014; Scheyvens *et al.*, 2016; Landrum, 2017; Derqui, 2020). The next section will provide an in-depth discussion on the concept of sustainability embeddedness.

2.3 SUSTAINABILITY EMBEDDEDNESS: THE NEXT PHASE IN CORPORATE SUSTAINABILITY

This section provides an in-depth discussion on the concept of sustainability embeddedness (SE). Firstly, it discusses sustainability and the phases of the journey to CS. Subsequently, it reviews the literature on organisational change for sustainability, followed by the conceptualisation of a definition for SE. Lastly, the section discusses sustainable management, focusing on levels of management, particularly organisational culture and learning.

2.3.1 The adoption of corporate sustainability

Since its inception, CS has continuously gained attention and commitment in the private sector (Cochran, 2007; Hahn *et al.*, 2014; Chofreh & Goni, 2017; Sanchez-Planelles *et al.*, 2021). Organisations are facing increased pressure from multiple stakeholders and a growing sustainability gap to adopt sustainable perspectives (Engert and Baumgartner, 2016). However, as previously stated, simply showing a strong commitment and fragmentary approaches is not adequate to effectively integrate, manage, and implement sustainability (Waas *et al.*, 2011; Valente, 2012; Dyllick & Muff, 2015; Vidal *et al.*, 2015; Engert & Baumgartner, 2016; Landrum, 2017). The fundamental business decision of the 21st century is therefore not whether organisations should choose to adopt sustainability, but rather how they will do so.

Sustainability adoption refers to how organisations understand, manage, integrate, and implement sustainability (van Marrewijk & Were, 2003; Perrott, 2014; Vidal *et al.*, 2015; Nunhes, Bernardo, & de Oliveira, 2020; Arvidsson, 2022). Sustainability adoption is considered a journey or path through which an organisation becomes comprehensively mature in CS (Mohrman & Worley, 2010; Valente, 2015; Derqui, 2020). This journey is usually portrayed as a continuum with paradigmatic phases or stages (Valente, 2012; Perrott, 2014; Arvidsson, 2022). These phases are

abstractions that represent organisational paradigms, archetypes, perspectives, worldviews, or interpretations of sustainability (Valente, 2012; Dyllick & Muff, 2015; Landrum, 2017). An organisation's approach to sustainability is subject to the specific organisational context and the organisational paradigm that has been adopted, which can change over time (Perrott, 2014; Landrum, 2017; Witjes *et al.*, 2017). According to Landrum (2017:6), the phases are "differentiated by their approach to integration, ambition of the vision, complexity of innovation, and extent of collaboration."

Numerous authors have contributed to CS discourse through the development of sustainability adoption models or typologies, also known as systematic or developmental change models. Several models were assessed to establish a conceptual understanding of the different phases in the adoption of sustainability at the organisational-level (Roome, 2004; Dunphy, Griffiths & Benn, 2007; Valente, 2012, 2015; Perrott, 2014; Dyllick & Muff, 2015; Landrum, 2017). The sustainability adoption models vary in their total number of phases, ranging from three to eight, as well as in their respective points of departure. The models either start at a point of non-compliance and rejection towards sustainability, or at compliance with new laws and regulations (Dunphy *et al.*, 2007; Landrum, 2017). What most of these models agree on is that SE is the penultimate goal for organisations to aspire to in terms of sustainability adoption and a prerequisite for becoming a sustainable organisation. (Dunphy *et al.*, 2007; Valente, 2012, 2015; Perrott, 2014; Dyllick & Muff, 2015; Derqui, 2020; Arvidsson, 2022). Subsequently, the stages of sustainability adoption can be broadly categorised into three phases: the reactive phase; the proactive phase; and the SE phase. Although organisations may not fit into a pure typology, patterns will reflect one of the three phases (Landrum, 2017). Figure 2.2 illustrates the three phases of sustainabilty adoption, each of which will be discussed in the next section.

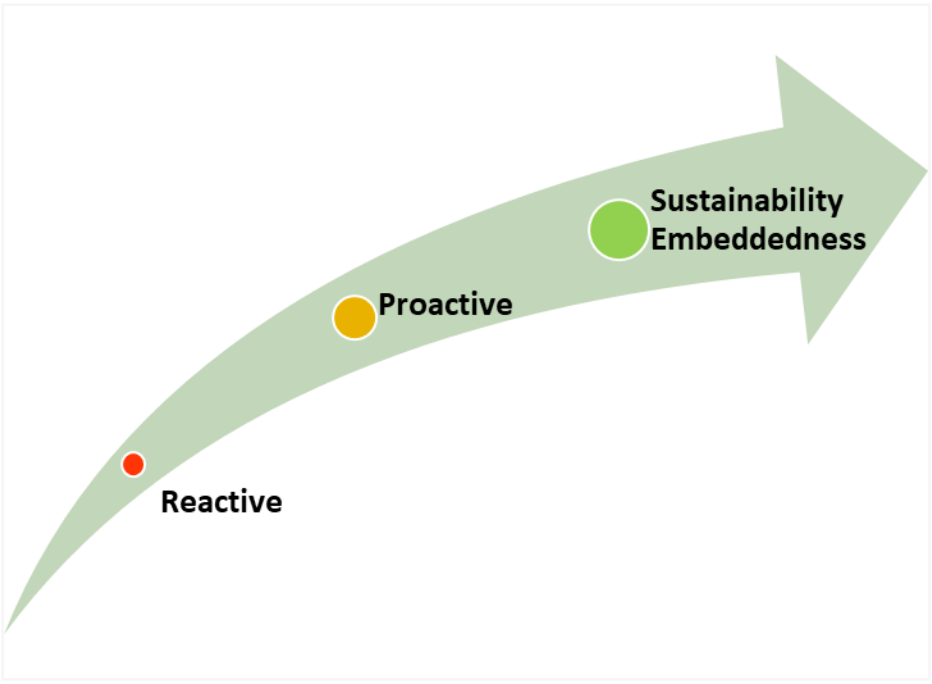

Figure 2.2: Phases of sustainability adoption
Source: Author's work

2.3.1.1 Phases of sustainability adoption

The *reactive phase* refers to organisations that continue with orthodox business-as-usual, and conform to the profit-driven paradigm (Dyllick & Muff, 2015; Landrum, 2017). The organisational culture and all management levels assume an inside-out and short-term perspective, focussed on the pursuit for shareholder value (Laszlo & Zhexembayeva, 2011; Perrott, 2014; Dyllick & Muff, 2015). Reactive organisations reactively respond to new social and environmental laws and regulations, merely through discrete and incremental improvements over the business-as-usual, without any changes in the organisational worldview (Valente, 2012; Dyllick & Muff, 2015; Landrum, 2017). These organisations are only concerned with social and environmental concerns that present economic opportunities and risks, with the organisation at the centre of decision-making (Dyllick & Muff, 2015). Hence, sustainability has no relevance to the vision, business model, strategy, or management (Laszlo & Zhexembayeva, 2011; Landrum, 2017). Reactive organisations generally operate within the "non-responsiveness" or "compliance" stages of sustainability adoption (Dunphy *et al.*, 2007; Perrott, 2014). Responses from

these unsustainable organisations are, for example, defensive lobbying and investing in ad hoc retrofits (Valente, 2015; Landrum, 2017).

The *proactive phase* refers to organisations that have initated a commitment towards CS, which marks the start of intgegrating sustainability as an intrinsic part of an organisation (Dunphy *et al.*, 2007; Perrott, 2014; Dyllick & Muff, 2015). These organisations mostly operate within the "emergent", "strategic proactivity" or "business-centered sustainability" phase of sustainability adoption (Dunphy *et al.*, 2007; Valente, 2012; Perrott, 2014; Landrum, 2017). According to Dyllick and Muff (2015:13), three fundamental shifts occur when organisations transition to more mature levels of sustainability. Two of these shifts occur in the transition from the reactive to proactive phase, specifically a change in organisational concerns (from economic to tri-dimensional) and in value created (from shareholder value to a broadened value propositions that includes the TBL). The third shift occurs from the proactive to the embedded phase, which concerns changes in organisational paradigms (Dyllick & Muff, 2015). Organisations within this phase proactively anticipate social and environmental concerns, consider a longer-term perspective and broader set of stakeholders than with orthodox management, and begin to incorporate CS into strategic planning and management (Rake & Grayson, 2009; Perrott, 2014; Dyllick & Muff, 2015; Valente, 2015; Landrum, 2017). Notwithstanding, these organisations still assume an inside-out perspective and are partial towards shareholders, since they frame sustainability concerns in terms of the business-case for CS (Dyllick & Muff, 2015; Hahn *et al.*, 2015; Landrum, 2017). Proactive organisations typically implement sustainability through bolt-on approaches, such as establishing independent sustainability departments or functions, and indirect cost-savings from sustainability projects (Laszlo & Zhexembayeva, 2011; Perrott, 2014).

The *sustainability embedded phase* refers to organisations that are fully committed towards CS and have comprehensively integrated and instilled sustainability throughout the organisational system (Dunphy *et al.*, 2007; Valente, 2012). These organisations mostly operate from the "holistic", "true business sustainability", "sustainable enterprise", or "sustaining corporation" phases of sustainability adoption (van Marrewijk & Were, 2003; Roome, 2004; Dunphy *et al.*, 2007; Perrott, 2014; Dyllick

& Muff, 2015). The sustainability-embedded phase is not a definitive end-goal, but a state of continuous improvement and adaptation (Linnenluecke & Griffiths, 2009; Valente, 2012). Organisations that excel in sustainability have matured from initial bolt-on and siloed approaches to a SE approach, which is integrated and strategic (Lubin & Esty, 2010; Laszlo & Zhexembayeva, 2011; Lozano, 2013). These organisations have undergone significant changes in their organisational paradigm, shifting from an inside-out, business-centred perspective towards an outside-in perspective that has adopted firm-wide SE as an organisational way of life (Valente, 2012; Perrott, 2014; Dyllick & Muff, 2015; Le Roux & Pretorius, 2016a; Landrum, 2017). SE is recognised as a legitimate business approach (Valente, 2012) and the precondition for transitioning from a proactive company to a comprehensively sustainable organisation (Dyllick & Muff, 2015; Valente, 2015; Arvidsson, 2022). SE demands that organisations deeply engrain CS throughout the organisational paradigm (culture, values, and beliefs), strategy, business-model, operations, policies and processes, structure, decision-making, and at all levels of management (Dunphy *et al.*, 2007; Perrott, 2014; Dyllick & Muff, 2015; Landrum, 2017; Derqui, 2020; Nunhes, Bernardo, & de Oliveira, 2020; Arvidsson, 2022). Organisations within this embedded phase of sustainability adoption create collaborative stakeholder relationships and harness the "collective cognitive and operational capabilities" of their social, ecological, and economic stakeholder network (Valente, 2012:586).

However, literature reveals that there is still a limited understanding of SE and that challenges regarding its adoption persist (Linnenluecke & Griffiths, 2009; Lubin & Esty, 2010; Laszlo & Zhexembayeva, 2011; Valente, 2012; Eccles, Perkins & Serafeim, 2012; Lozano, 2013; Enders & Remig, 2014; Le Roux & Pretorius, 2016a; Baumgartner & Rauter, 2017; Derqui, 2020; Costa *et al.*, 2022). As a result, many organisations are stagnant or stuck in the proactive phase, inhibiting the realisation and implementation of CS in practice (Rake & Grayson, 2009; Waas *et al.*, 2011; Lozano, 2013; Dyllick & Muff, 2015; Vidal *et al.*, 2015; Landrum, 2017; Derqui, 2020; Kitsios, Kamariotou & Talias, 2020). This calls further attention to the need for studies and frameworks that contribute to an improved understanding of SE and how to adopt it in practice. The following section will provide an overview of the organisational

change for sustainability literature and the necessary changes required for SE and CS.

2.3.1.2 Organisational change for corporate sustainability: sustainable transformations

CS has become a major driver of organisational change for contemporary businesses (De Matos & Clegg, 2013; Thakhathi, Le Roux & Davis, 2019; Wijethilake, Upadhaya & Lama, 2021). Progressing along the sustainability adoption continuum to SE requires organisations to undergo significant and fundamental changes in their business premises and outlook (Lozano, 2013; Lozano, Ceulemans & Seatter, 2015; Vermeulen & Witjes, 2016; Kiesnere & Baumgartner, 2019a). Organisations and practitioners are subsequently realising that organisational change is part and parcel of SE (Petrini & Pozzebon, 2010; De Matos & Clegg, 2013; Thakhathi, Le Roux & Davis, 2019). Organisational change is a well-established field of research, characterised by an extensive body of literature comprising established theories, models, and frameworks (Petrini & Pozzebon, 2010; van der Genugten, Calo & Wiering, 2022). Organisational change for sustainability, in this study also referred to as sustainable transformations, refers to how organisations change from their present state to a more sustainable state (Barreiro-Gen, Lozano, Carpenter & Bautista-Puig, 2022).

Scrutiny of the organisational change for sustainability literature reveals two dichotomies: *deliberate versus emergent change* (Tsoukas & Chia, 2002; van der Heijden, Cramer & Driessen, 2012; Lozano, Ceulemans & Seatter, 2015; Wijethilake *et al.*, 2021; van der Genugten *et al.*, 2022), and *transitional versus transformational change* (Petrini & Pozzebon, 2010; Eccles, Perkins & Serafeim, 2012; Valente, 2012; Vermeulen & Witjes, 2016; Landrum, 2017; Hahn *et al.*, 2018). The first dichotomy, deliberate versus emergent change, is concerned with whether the organisational change was intended from the outset. *Deliberate change*, alternatively referred to as planned or intended change, represents organisational change that is premeditated for an intended outcome and follows linear processes with definitive steps (Tsoukas & Chia, 2002; van der Heijden, Cramer & Driessen, 2012; Lozano, Ceulemans & Seatter, 2015). This type of change is prevalent in traditional models and approaches for

organisational change, such as the well-recognised unfreeze-change-refreeze model developed by Lewin (1947, cited in Cummings, Bridgman & Brown, 2016; van der Genugten *et al.*, 2022). However, an excessive reliance on deliberate change may hinder organisations and practitioners from recognising the continuity and complexity inherent in sustainable transformations (Tsoukas & Chia, 2002; van der Genugten *et al.*, 2022). Oftentimes organisational change will also have implications beyond those initially intended by an organisation (Lozano, Ceulemans & Seatter, 2015).

The theory of *emergent change* refers to organisational change that typically arises organically and from the bottom-up (Lozano, Ceulemans & Seatter, 2015; van der Genugten *et al.*, 2022). Emergent change is an unfolding process that is less rigid and has less discrete steps than deliberate change, but still requires strategic intent to guide the organisational change towards a specific goal (van der Genugten *et al.*, 2022). Van der Heijden, Cramer and Driessen (2012) found that SE is typically an unpredictable and emergent process. This is because this complex process is continuous and context-dependent, and no uniform strategy or approach exists (van der Genugten *et al.*, 2022). Rather than dictate organisational change, these non-linear approaches facilitate change through many small emergent changes, and by creating a culture of adaptability (van der Heijden, Cramer & Driessen, 2012; van der Genugten *et al.*, 2022). This allows organisations to realise large-scale change and recognises the continuity, complexity, and pervasiveness of sustainable transformations. However, organisations should not exclusively rely on emergent change. Wijethilake *et al.* (2021) investigated a parallel dichotomy in the organisational culture literature; namely, control versus flexibility. The authors found that each orientation plays a different role, and argue that organisations should embrace both perspectives, a hybrid approach, to promote organisational change and sustainable transformations. Similarly, organisations and practitioners should embrace both deliberate and emergent change to facilitate sustainable transformations, since both theories play different yet important roles (Wijethilake *et al.*, 2021).

The second dichotomy, transitional versus transformational change, is concerned with the scope of organisational change. *Transitional change* refers to organisational change that is incremental or involves minor adaptations (Eccles, Perkins & Serafeim,

2012; Lozano, Ceulemans & Seatter, 2015; Vermeulen & Witjes, 2016; Landrum, 2017), and is also commonly known as incremental change (Hahn *et al.*, 2018). Transitional changes have a definite beginning and end (Eccles, Perkins & Serafeim, 2012), and are typically related to changes in organisational management practices, systems, policies, and structure (Petrini & Pozzebon, 2010). Hahn *et al.* (2018), however, argue that incremental changes lack the necessary scale of change required by SE. *Transformational change* refers to major or radical organisational changes in response to the external environment that affect the strategy (mission, vision, and goals), leadership, and culture (values, norms, and beliefs) (Petrini & Pozzebon, 2010; Lozano, Ceulemans & Seatter, 2015; Hahn *et al.*, 2018; Wijethilake *et al.*, 2021). This type of change is strongly advocated by sustainability discourse, since SE requires organisations to go beyond technical fixes of a business-as-usual approach by radically changing the organisational and strategic paradigms (Valente, 2012, 2015; Kiesnere & Baumgartner, 2019a; Derqui, 2020; Nunhes, Bernardo, & de Oliveira, 2020; Wijethilake *et al.*, 2021; van der Genugten *et al.*, 2022). Transformational changes have clear direction to embed sustainability but do not have a definite beginning and end. These changes may take years or decades to realise, especially when directed towards a concept that is continuously evolving (Avery & Bergsteiner, 2011; Eccles, Perkins & Serafeim, 2012; Trollman, 2020). Transformational change relies on the accumulation of many transitional changes to support the radical change of sustainable transformations (Eccles, Perkins & Serafeim, 2012). Parallel to the aforementioned dichotomy, Hahn *et al.* (2018) affirm that either / or logic can be detrimental as it may result in an over-reliance on either transitional change, that could fall short of the required paradigmatic change, or transformational change, which could compromise the successful dissemination of sustainable transformations. Focusing excessively on either transformational or transitional changes may hinder the adoption of SE.

In light of the dual dichotomy of organisational change, this study adopts the view that organisational change to SE, or sustainable transformations, is a continuous process of emergent and deliberate transformational changes throughout the organisation, supported by the accumulation of incremental, transitional changes (Petrini & Pozzebon, 2010; van der Heijden, Cramer & Driessen, 2012; Hahn *et al.*, 2018;

Kiesnere & Baumgartner, 2019a; Bryant & Thomson, 2021; Wijethilake *et al.*, 2021; Barreiro-Gen *et al.*, 2022; van der Genugten *et al.*, 2022). This leads to a sustainability-oriented culture of adaptability and change readiness that allows organisations to progress along the continuum of sustainability adoption (Tsoukas & Chia, 2002; Linnenluecke & Griffiths, 2009; Lozano, Ceulemans & Seatter, 2015; Nunhes, Bernardo, & de Oliveira, 2020). Nevertheless, organisations and practitioners ultimately need to strategically manage and usher in the transformational change towards SE (Lozano, 2013; Storm *et al.*, 2021).

Traditional sustainability adoption and organisational change models and frameworks mostly rely on deliberate and linear processes, with definitive steps and fixed goals to execute transitional and technical changes over the business-as-usual (Tsoukas & Chia, 2002; Rake & Grayson, 2009; Petrini & Pozzebon, 2010; Eccles, Perkins & Serafeim, 2012; van der Heijden, Cramer & Driessen, 2012; Le Roux & Pretorius, 2018; Kiesnere & Baumgartner, 2019a). These traditional models typically overlook or neglect to consider the continuous, emergent, ubiquitous, and complex nature of organisational change for SE, as well as the necessary organisational and strategic paradigm shifts (Valente, 2012; Lozano, 2013; Nguyen & Bosch, 2013; Lozano, Ceulemans & Seatter, 2015; Vermeulen & Witjes, 2016; Nunhes, Bernardo, & de Oliveira, 2020; van der Genugten *et al.*, 2022). This underscores the need for more research and frameworks that recognise that this process is not always linear, and that embrace the transformational changes required to embed sustainability. This may require exploration of new avenues for CS and SE (Dyllick & Muff, 2015). In light of the gap in the adoption of SE, this study will explore the promising leverage points perspective within the context of CS and SE, which will be discussed in Section 2.4 of this chapter. A non-linear framework that considers the transformational and paradigmatic changes can provide organisations and practitioners with an improved understanding of how to adopt SE.

2.3.2 Internal drivers of sustainability embeddedness

The transformation to a truly sustainable organisation hinges on SE as a precondition (Perrott, 2014; Dyllick & Muff, 2015; Valente, 2015; Derqui, 2020; Arvidsson, 2022). Becoming a sustainable organisation requires SE at every level of an organisation. To

holistically adopt SE, organisations will need to transform culture, vision and mission, strategy, leadership, organisational structure, management, and operations, each of which represents a significant challenge (Perrott, 2014; Lozano, Ceulemans & Seatter, 2015; Baumgartner & Rauter, 2017; Chofreh & Goni, 2017; Kiesnere & Baumgartner, 2019a; Derqui, 2020; Nunhes, Bernardo, & de Oliveira, 2020). In the transformational change to CS, SE emerges as a complex and pervasive process involving the entire organisation. The business management and organisational change in sustainability literature explicitly emphasizes culture (Linnenluecke & Griffiths, 2009; Valente, 2012; Nunhes, Bernardo, & de Oliveira, 2020; Wijethilake *et al.*, 2021), organisational structures (Baumgartner, 2014; Vidal *et al.*, 2015; Baumgartner & Rauter, 2017; Chofreh & Goni, 2017; Witjes *et al.*, 2017; Derqui, 2020), and leadership (Tsoukas & Chia, 2002; Petrini & Pozzebon, 2010; van der Heijden, Cramer & Driessen, 2012; Lozano, 2013; Engert & Baumgartner, 2016; Kiesnere & Baumgartner, 2019a,b; Thakhathi, Le Roux & Davis, 2019) as cardinal internal factors for driving organisational change to SE.

2.3.3 Organisational structure and levels of decision-making

Practitioners at every decision-making level should be actively involved in embedding sustainability within the organisation's culture, strategies, and operations (Perrott, 2014; Baumgartner & Rauter, 2017; Chofreh & Goni, 2017; Kiesnere & Baumgartner, 2019a; Derqui, 2020; Nunhes, Bernardo, & de Oliveira, 2020). Organisational structure pertains to the arrangement of management, and includes the hierarchy of structural levels within an organisation (Vidal *et al.*, 2015; Witjes *et al.*, 2017). According to Vidal *et al.* (2015), establishing an appropriate management structure is regarded as an important way of embedding CS in an organisation. There are four structural levels within an organisation: normative, strategic, tactical, and operational (Baumgartner, 2014; Chofreh & Goni, 2017; Witjes *et al.*, 2017). These levels, also referred to as the levels of management, or levels of decision-making, have distinct roles and responsibilities that contribute to SE. Figure 2.3 provides an illustration of the four levels of decision-making within organisations.

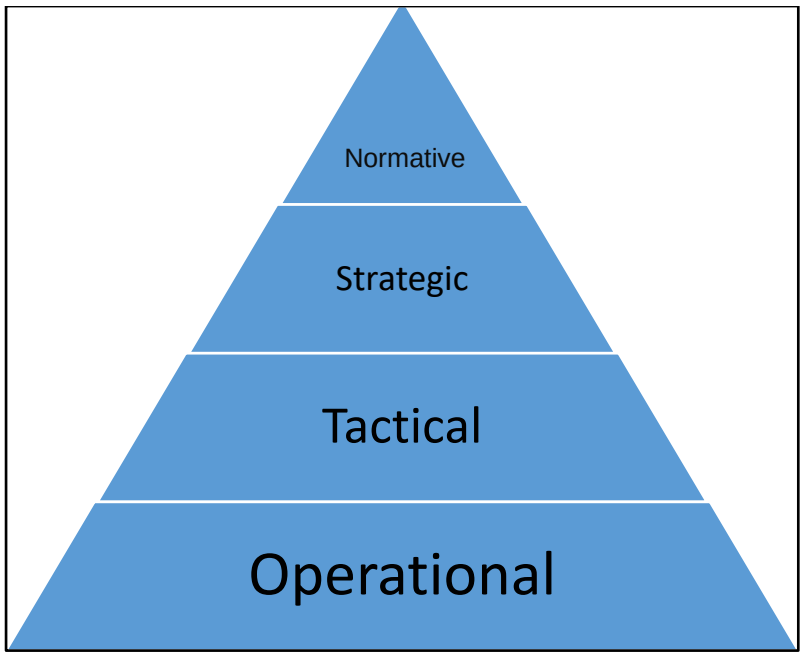

Figure 2.3: Levels of decision-making

Source: Baumgartner (2014), and Chofreh and Goni (2017)

The *normative level* encompasses the organisational paradigm (reactive, proactive, or sustainability embedded) and culture (shared values, beliefs, and attitudes) that influence the behaviour and decisions made at all other levels. Management at the normative level is responsible for setting the corporate vision and mission, as well as determining the fit between the corporate culture and CS (Baumgartner, 2014). The *strategic level* is concerned with complex, strategic decisions and actions made for the long-term performance of an organisation (Chofreh & Goni, 2017). Strategic level management is responsible for establishing long-term goals and objectives and developing a complementary CS strategy based on the direction set by the normative level (Baumgartner, 2014; Chofreh & Goni, 2017). Derqui (2020) contends that sustainability must be "truly embedded" in the organisational strategy for organisations to successfully realise and implement CS. However, numerous studies report that sustainability has not been embedded at the strategic level, since organisations lack a strategic approach to SE (Engert, Rauter & Baumgartner, 2015; Engert & Baumgartner, 2016; Baumgartner & Rauter, 2017; Nawaz & Koç, 2019; Derqui, 2020; Kitsios, Kamariotou & Talias, 2020). This is attributed to CS not being recognised as a strategic endeavour, neither within strategic management nor within the organisational strategy.

The *tactical level* is concerned with medium-term objectives, decisions, and actions. Tactical level managers, who are typically divisional or departmental managers, are responsible for developing actionable plans to realise the strategic goals and objectives (Chofreh & Goni, 2017). At the tactical level, the broad strategy and objectives established by the strategic level are articulated and elaborated on in more detail for the operational level (Chofreh & Goni, 2017). The *operational level* is responsible for the implementation of normative, strategic, and tactical objectives, policies, and decisions (Engert, Rauter & Baumgartner, 2015; Chofreh & Goni, 2017). Notwithstanding the aforementioned, when all levels of management participate in the implementation process, greater SE is fostered (Kiesnere & Baumgartner, 2019a). Management at the operational level ensures that the strategic plans and strategies are executed within each department and function of an organisation (Baumgartner, 2014; Kiesnere & Baumgartner, 2019a). The decisions and actions taken at the operational level represent the daily activities of an organisation (Baumgartner & Rauter, 2017).

2.3.3.1 Organisational culture

The organisational paradigm and culture reflect the extent to which organisations subscribe to CS (Baumgartner, 2014). Organisational culture is paramount in the success or failure of sustainable transformations (Wijethilake *et al.*, 2021). Organisations that seek to progress to SE will have to undergo deep-seated cultural and paradigmatic changes to present a sustainability-oriented culture (Linnenluecke & Griffiths, 2009; Valente, 2012; Lozano, 2013; Witjes *et al.*, 2017). This type of organisational culture is focused on the three dimensions of sustainability, and recognises the role of leaders and stakeholder involvement in instigating sustainable transformations (Nunhes, Bernardo, & de Oliveira, 2020). By establishing a clear definition of CS and organisational vision, an organisation can promote the integration of sustainability into its culture and make sustainability a priority for the entire organisation (Engert & Baumgartner, 2016; Thakhathi, Le Roux & Davis, 2019). Some authors suggest that SE can lead to the adoption of a sustainability-oriented culture, which can be developed from the top-down or bottom-up (Linnenluecke & Griffiths, 2009; Lozano, 2013; Derqui, 2020; Barreiro-Gen *et al.*, 2022).

2.3.3.2 Organisational learning

Learning is also regarded as a strong internal driver of sustainable transformations in several research domains (Witjes *et al.*, 2017; Hahn *et al.*, 2018; Kiesnere & Baumgartner, 2019a; Bryant & Thomson, 2021; Iqbal & Ahmad, 2021). Organisational learning refers to transposing experience to knowledge, and is concerned with systems thinking, collaboration, and the ability to self-organise (Iqbal, Ahmad & Halim, 2020). Bryant and Thompson (2021) conducted a longitudinal case study that provides evidence of the capacity of learning to be a key leverage point for sustainable transformations. Given the continuous, complex, pervasive, and uncertain nature of organisational change for sustainability, learning can assist practitioners in sustainable transformations (Lozano, Ceulemans & Seatter, 2015; Bryant & Thomson, 2021). When organisations embed sustainability into organisational culture, sustainability-oriented learning and continuous change are initiated (Kiesnere & Baumgartner, 2019a).

2.3.3.3 Sustainability Leadership

Transforming organisational systems (including culture, strategy, management, and operations) towards adopting SE and realising CS requires new leadership skills and practices (Suriyankietkaew & Avery, 2014; Boeske & Murray, 2022). Sustainability leadership provides a management approach and leadership style that fosters a readiness for, and reinforces organisational change for SE (Thakhathi, Le Roux & Davis, 2019; Iqbal *et al.*, 2020). A distinction should be made between organisational management and sustainability leaders, “since these are not necessarily the same” (Kiesnere & Baumgartner, 2019a). Whereas management generally refers to the leaders situated at the various structural levels of an organisation, sustainability leaders are not confined to specific levels, roles, or positions (Laszlo & Zhexembayeva, 2011; Valente, 2015; Gerard, McMillan & D’Annunzio-Green, 2017). Sustainability leadership is about anyone, whether they assume a formal leadership position or not, who assumes responsibility for acting on sustainability challenges (Ferdig, 2007; Avery & Bergsteiner, 2011). It expands the definition and understanding of traditional leadership to include everyday leaders who initiate, implement, or

institutionalise organisational change for sustainability (Ferdig, 2007; Thakhathi, Le Roux & Davis, 2019; Boeske & Murray, 2022).

At the individual level, sustainability leaders equitably juxtapose the seemingly diverse yet interrelated principles of CS in decision-making and action (Ferdig, 2007; Rake & Grayson, 2009; Hahn *et al.*, 2015). At the organisational level, sustainability leadership develops sustainability thinking, knowledge dissemination through open communication, and a culture of learning by focusing on sustainable change and the long-term perspective (Thakhathi, Le Roux & Davis, 2019; Iqbal *et al.*, 2020). Organisations should encourage sustainability leadership at every level by promoting long-term commitment and perspectives, establishing shared visions and goals, engaging with stakeholders, encouraging innovation, and developing an engaged workforce (Avery & Bergsteiner, 2011; Iqbal & Ahmad, 2021). In doing so, organisations can foster sustainability leadership as a management approach and leadership style, to drive organisational change and facilitate the adoption of SE (Kiesnere & Baumgartner, 2019a; Boeske & Murray, 2022).

2.3.4 Sustainability embeddedness conceptualised

Even though a single recognised definition for SE does not yet exist, for this study, the following definition was deduced from the reviewed literature: SE is defined as when an organisation instills CS throughout culture (values, beliefs, norms, and behaviours), strategy (planning, business model, goals, and objectives), management processes (sustainable management), and operations (implementation and daily activities) at every level, department, and function, and throughout the value chain (Linnenluecke & Griffiths, 2009; Lubin & Esty, 2010; Laszlo & Zhexembayeva, 2011; Valente, 2012, 2015; Eccles, Perkins & Serafeim, 2012; Perrott, 2014; Dyllick & Muff, 2015; Vidal *et al.*, 2015; Engert, Rauter & Baumgartner, 2015; Engert & Baumgartner, 2016; Derqui, 2020; Kitsios, Kamariotou & Talias, 2020; Nunhes, Bernardo, & de Oliveira, 2020). This is an ubiquitous process of continuous, emergent, and deliberate, transformational changes, supported by the accumulation of transitional changes (van der Heijden, Cramer & Driessen, 2012; Lozano, Ceulemans & Seatter, 2015; Hahn *et al.*, 2018; Kiesnere & Baumgartner, 2019a; Bryant & Thomson, 2021; Wijethilake *et al.*, 2021; Barreiro-Gen *et al.*, 2022; van der Genugten *et al.*, 2022). In this way

sustainability becomes deeply engrained in the value created by the organisation, in engagement and collaboration with stakeholders, and in the organisational existence as a business imperative. Embedding sustainability eventually leads to long-term social, environmental, and economic value creation for the organisation and its stakeholders in achieving CS (Laszlo & Zhexembayeva, 2011; Valente, 2012, 2015; Dyllick & Muff, 2015; Le Roux & Pretorius, 2016a,b, 2018; Derqui, 2020).

2.4 THE LEVERAGE POINTS PERSPECTIVE

This section of the chapter introduces systems thinking and highlights the leverage points perspective, as conceptualised by Meadows (1999) and Abson *et al.* (2017). Subsequently, it explores the advantages of adopting the leverage points perspective, shedding light on its potential for sustainability discourse and practice.

2.4.1 Systems thinking

Early literature on CS was rooted in a systems logic that considers the multifaceted nature of sustainability (Hahn *et al.*, 2018). The term system thinking was first coined by author Barry Richmond in 1987 (Arnold & Wade, 2015). According to Arnold and Wade (2015:675), systems thinking can be defined as "a set of synergistic analytic skills used to improve the capability of identifying and understanding systems, predicting their behaviours, and devising modifications to them in order to produce desired effects. These skills work together in a system." Social-ecological systems thinking view organisations as interdependent entities embedded in a global social-ecological system (Ahlström *et al.*, 2020; Nunhes, Bernardo, & de Oliveira, 2020). A systems thinking lens allows researchers and practitioners to understand the complexities of change processes, as well as the interconnected interactions within and between organisations (Lozano, 2013). Consequently, systems thinking is gaining increased attention in various fields of practice and research, in particular in the diverse field of sustainability (Sarriot, Kouletio, Jahan, Rasul & Musha, 2014). This is of particular relevance to organisations and practitioners, given the complex, ubiquitous, and multi-dimensional nature of SE and sustainable transformations (Nguyen & Bosch, 2013; Leventon, Abson & Lang, 2021; van der Genugten *et al.*, 2022).

2.4.2 The leverage points perspective

The concept of leverage points is not new to systems thinking and sustainability literature. In 1999, Donella Meadows conceptualised 12 intervention points for leveraging change within complex systems (Meadows, 1999). *Leverage Points* (LPs) are defined as areas within a complex system where small interventions may lead to fundamental, paradigmatic, and transformational changes in the system as a whole (Abson *et al.*, 2017; Fischer and Riechers, 2019; Meadows, 1999). The leverage points perspective was initially developed as a metaphor and practical heuristic framework for conceptualising potential interventions within complex systems to augment systemic change (Leventon, Abson & Lang, 2021). Therefore, much like an organisation, a system can be defined as an interconnected set of elements that are coherently organised to achieve a purpose or serve a function (Meadows, 2008). As this study is situated within the discipline of CS, it focuses on organisations as the specific systems of interest.

In considering how to influence the behaviour of a system, Meadows (1999) developed the *Leverage Points Perspective* (LPP), a non-linear hierarchy of twelve increasingly influential LPs, as illustrated in Table 2.1. The basic premise is that greater change is achieved by targeting LPs higher up on the hierarchy, such as the rules or paradigms that shape the system, as opposed to lower LPs, such as the feedback loops of various information flows and material or buffer stocks of the system (Leventon, Abson & Lang, 2021). The hierarchy thus ranges from shallow LPs where interventions are easy to implement, yet are limited in their potential for bolstering transformative change, to deep LPs where interventions are difficult to implement yet have considerable potential to bring about significant, paradigmatic change (Abson *et al.*, 2017; Fischer and Riechers, 2019). Meadows (1999) contends that the hierarchy is not fixed and that there are exceptions to every LP that can move it up or down the order of leverage. Notwithstanding, institutions tend to be self-reinforcing and resistant to change, therefore higher LPs are more difficult to act on due to increased resistance to change from within the system (Abson *et al.*, 2017; Meadows, 1999). This means that the paradigmatic and transformational changes required to embed sustainability in practice may be met with high levels of internal organisational resistance, inhibiting

SE and CS in practice. This highlights the need for frameworks and tools that will support organisations and practitioners seeking to embed sustainability to catalyse organisational change in the transformations to SE.

Based on the seminal work of Meadows (1999), Abson *et al.* (2017) simplified the 12 LPs into four broad system characteristics: parameters, feedbacks, design, and intent. As is explained by Abson *et al.* (2017:32), the four system characteristics represent "a nested hierarchy of, tightly interacting, realms of leverage within which interventions in a given system of interest may be made." Any system of interest (corporation, economy, city, or ecosystem) can be characterised by the four system characteristics and 12 LPs as system properties (Leventon, Abson & Lang, 2021). Table 2.1 provides an overview of the LPP and illustrates the four system characteristics and the specific LPs to which they relate, ranging from shallow to deep. The table was developed from the seminal work by Meadows (1999) and Abson *et al.* (2017).

Table 2.1: The leverage points perspective

	System Characteristics (Abson *et al.,* 2017*)*	**Leverage Points** (Meadows, 1999)
Deep	**Intent**	1. The power to transcend paradigms.
		2. The mindset or paradigm out of which the system arises.
		3. The goal of the system.
	Design	4. The power to add, change, evolve, or self-organise system structure.
		5. The rules of the system (incentives, punishments, constraints).
		6. The structure of information flows.
Shallow	**Feedbacks**	7. The gain around driving positive feedback loops.
		8. The strength of negative feedback loops, relative to impacts they are trying to correct.
		9. The lengths of delays, relative to the state of system change.
	Parameters	10. The structure of material stocks and flows.
		11. The size of buffers and other stabilizing stocks, relative to their flows.
		12. Constants, parameters, numbers (such as subsidies, taxes, standards).

Source: adapted from Abson *et al.,* 2017

Parameters refer to modifiable, mechanistic characteristics of a system that are typically targeted, such as incentives, taxes, standards, or physical elements, namely the rate of material flows or the size of stocks (Abson *et al.*, 2017). *Feedback* characteristics are the interactions between the components of a system that drive internal dynamics. This characteristic includes the flow of information and the strengthening or weakening of feedback loops. *Design* represents the social structure and institutions within a system that manage the feedback and parameters (Abson *et al.*, 2017; Leventon, Abson & Lang, 2021). These characteristics relate to the structure of information flows (access to information), the rules of the system, and the power to add, change or self-organise the system structure. *Intent* characteristics refer to the underpinning values, goals, and norms of actors that shape the emergent direction to which a system is oriented, and the paradigms out of which they arise (Meadows, 1999; Abson *et al.*, 2017). Abson *et al.* (2017) contends that intent is an emergent characteristic that arises from numerous, possibly conflicting goals, worldviews, and behaviours within a system. For instance, economic growth or SE can be seen as the emergent intent of an organisational system, depending on which dominant trajectory the system of interest supports.

2.4.3 Sustainability and the leverage points perspective

Literature has shed light on the underexplored LPP which promises considerable potential for sustainability (Abson *et al.*, 2017; Birney, 2021; Chan *et al.*, 2020; Fischer and Riechers, 2019; Leventon, Abson & Lang, 2021). This perspective has begun to gain traction in sustainability science and practice, serving as a theoretical lens, practical tool, and heuristical framework for facilitating sustainable transformations in systems (Birney, 2021; Fischer and Riechers, 2019; Leventon, Abson & Lang, 2021). Practitioners are beginning to comprehend the complexity inherent in equitably and integratively addressing the dimensions of sustainability, sparking interest in the domain of systems thinking, and subsequently, the LPP (Birney, 2021; Hahn *et al.*, 2014). CS requires a holistic view of sustainability, rather than a focalised, disciplinary framing. Focalised framings often imply that sustainability can be addressed without considering the goals, values, and paradigms that underpin systems (Abson *et al.*, 2017). Chan *et al.* (2020:694) expresses that achieving key societal goals, in particular the SDGs, requires significant and paradigmatic change and reorganisation of goals

and values across technological, economic, and social factors. This involves the catalysation of systemic changes for sustainability, where the challenges are complex and the goals are ambitious (Birney, 2021:750), such as an organisation's transformation towards SE. The LPP complements calls for a paradigmatic change away from the traditional, neoliberal paradigm by providing a system-based, change-oriented perspective (Göpel, 2016; Leventon, Abson & Lang, 2021; Valente, 2012).

Valente (2012:586) contends that management scholars need to incorporate frameworks and tools that leverage the inherent complexity of organisational situations to understand how organisations embed sustainability in practice. The current study proposes that the LPP is such a framework, however, the LPP is underexplored within the context of CS and SE. The topic of this study, the LPP within the context of CS and SE, is an emerging topic within an interdisciplinary field that can benefit from an integrative review of the literature (Torraco, 2005, 2016a,b; Snyder, 2019; Cronin & George, 2023). Therefore, this study seeks to explore the LPP within the context of CS and SE literature to address the theoretical and practical gaps highlighted in Chapter 1. The theoretical gap, namely the underexplored LPP, will be addressed by conducting a systematic integrative review to determine the state of the literature from its inception (1999) to the present (2023). The practical gap in the adoption of SE will be addressed by identifying practical and actionable evidence-based interventions across the literature that are applicable to practice. This study also intends to develop a framework that provides a synthesised and integrated view of the interventions for organisations and practitioners to catalyse transformation change towards SE.

2.4.3.1 The leverage points perspective for corporate sustainability practice

A study by Fischer and Riechers (2019) provide four key advantages of taking an LPP in sustainability discourse and practice. Drawing from their work, three of the four advantages are discussed to showcase the latent potential and utility of this perspective for CS practice, namely: (1) bridging causal and teleological explanations of systems change; (2) explicitly recognising deep areas to leverage change; and (3) serving as a boundary object.

Firstly, an LPP can bridge causal and teleological explanations of system change. In causality, change is seen to arise from variables influencing one another. This has led to predictive models and forecasting that are especially useful in decision-making (Fischer *et al.*, 2019). Teleology refers to how change is seen to arise from human intent, shaping the trajectory of a system. In teleology, backcasting is used, where a desired normative endpoint is defined, such as sustainable development or CS, and then the means to reach a goal is determined. Baumgartner (2014) contends that backcasting is a suitable solution to solving sustainability problems, in particular, developing CS strategies. The hierarchy of 12 LPs and four system characteristics form a coherent framework, which is unique because it spans the range from deeply causal to deeply teleological, recognising both causality and teleology as mechanisms of change (Fischer *et al.*, 2019). The parameters and feedback LPs fall within the scope causality (rhetoric), whereas the design and intent LPs fall within teleology (targeted action). Similarly, parameters and feedbacks fall within the scope of transitional changes, whereas design and intent fall within transformational changes. These seemingly contradictory interpretations and theories of change are integrated within the meta-perspective LPs (Fischer & Riechers, 2019). This means that the LPP considers and embraces, rather than overlooks or neglects, the necessary sustainable transformations required to progress along the journey to SE. In this regard, this perspective provides organisations and practitioners with the means to link well-intentioned commitments towards CS with actions to adopt and implement SE in practice.

Secondly, the LPP explicitly acknowledges significant, deep LPs (Fischer and Riechers, 2019). Given the growing sustainability gap, authors Abson *et al.* (2017:118) argued that to date many of the sustainability interventions implemented in practice have addressed highly tangible, but shallow LPs. Focusing on shallow LPs inhibits organisations from achieving SE, leaving many organisations in the reactive or proactive phase of sustainability adoption. In practice, the shallow LPs, or the proverbial ‘low hanging fruit’, that these organisations typically target are the parameters which include carbon pricing, green taxes, agri-environmental schemes, and financial incentives (Abson *et al.*, 2017). Although these shallow interventions have beneficial outcomes, they are unlikely to generate the necessary transformative

and paradigmatic changes required to progress along the sustainability adoption continuum. By explicitly differentiating between shallow and deep areas of intervention, the LPP provides academics and practitioners with a perspective to make more impactful interventions (Abson *et al.*, 2017). Birney (2021) urges change makers and practitioners to focus on these deep areas of intervention. Engaging with deep LPs is of paramount importance for organisations and practitioners seeking to deal with and overcome the gap between the desired and actual state of SE.

Thirdly, a LPP can function as a methodological boundary object. For sustainability discourse, this means that it can provide scholars from various disciplines and societal stakeholders with a common entry point to work together (Abson *et al.*, 2017; Fischer and Riechers, 2019; Leventon, Abson & Lang, 2021). According to Leventon, Abson & Lang (2021:722), "In doing so, the concept is stretched, reshaped, and expanded to offer new insights … and consider what these various directions offer in understanding, and actively contributing to systems change." In practice, the LPP can provide organisations and stakeholders with a way of finding common language and perspectives to bridge worldviews (Leventon, Abson & Lang, 2021). Functioning as a methodological boundary object, the LPP can facilitate collaborative relationships between organisations and their respective stakeholder networks, which is one of the core principles of CS. Engaging and collaborating with stakeholders is conducive to a sustainability-oriented culture, sustainable management, and sustainability leadership (Avery & Bergsteiner, 2011; Lozano, 2013; Baumgartner & Rauter, 2017; Derqui, 2020; Iqbal *et al.*, 2020).

Fischer and Riechers (2019:117-119) argue that a LPP has "considerable appeal to non-academic audiences" and "holds substantial promise to inspire new directions in sustainability science and practice." In accordance with this argument, the three advantages discussed illuminate the considerable potential that the LPP holds for CS practice (Abson *et al.*, 2017; Birney, 2021; Chan *et al.*, 2020; Fischer and Riechers, 2019; Leventon, Abson & Lang, 2021; Meadows, 1999). Despite its promising potential, a scoping review across eight academic databases (Ebscohost, Emerald, Google Scholar, ProQuest, Sage Publications, Scopus, Web of Science, and Unisa's Institutional Repository) reveal that the LPP is largely underexplored in CS and SE

discourse. Evidently, the LPP within the context of CS and SE is a new and emerging topic as it has not been comprehensively studied within the context of CS and SE. This highlights a need for a review of the literature, particularly an integrative review. Integrative reviews are well-suited for complex topics that are new and emerging, or situated within fragmented and interdisciplinary fields (Toracco, 2016a,b). Therefore, the LPP within the context of CS and SE, which is situated within the interdisciplinary field of CS, can benefit from a systematic and integrative review of the literature. Considering this theoretical gap, the following chapter explores the LPP within the broader CS literature by means of a systematic integrative review. This is undertaken in the hope of making a theoretical contribution by shedding more light on the LPP within the context of CS, and of making a practical contribution by developing a practical framework for organisations to overcome the gap in the adoption of SE.

2.5 CHAPTER CONCLUSION

This chapter provided a review of the key concepts that are relevant to the current study. The chapter started with a discussion on the quest for sustainable development, followed by the definition and core principles of CS. The chapter then considered CS in practice, which underscored the gap in the adoption of SE. The next section scrutinised the SE literature by reviewing the concepts of sustainability adoption and its three phases, organisational change for sustainability, and the internal drivers of SE, as highlighted by the literature, namely organisational structure, culture, learning, and leadership. The section was concluded by conceptualising a definition for SE. The last section of this chapter examined the LPP literature (Meadows, 1999; Abson *et al.,* 2017). This section introduced systems thinking, and provided an in-depth discussion on the LPP and its potential for CS practice. The discussion highlighted the theoretical gap explored in this study, namely the underexplored LPP within the context of CS and SE. The following chapter discusses the methodological decisions that were made and the research process that was followed to conduct the systematic integrative review.

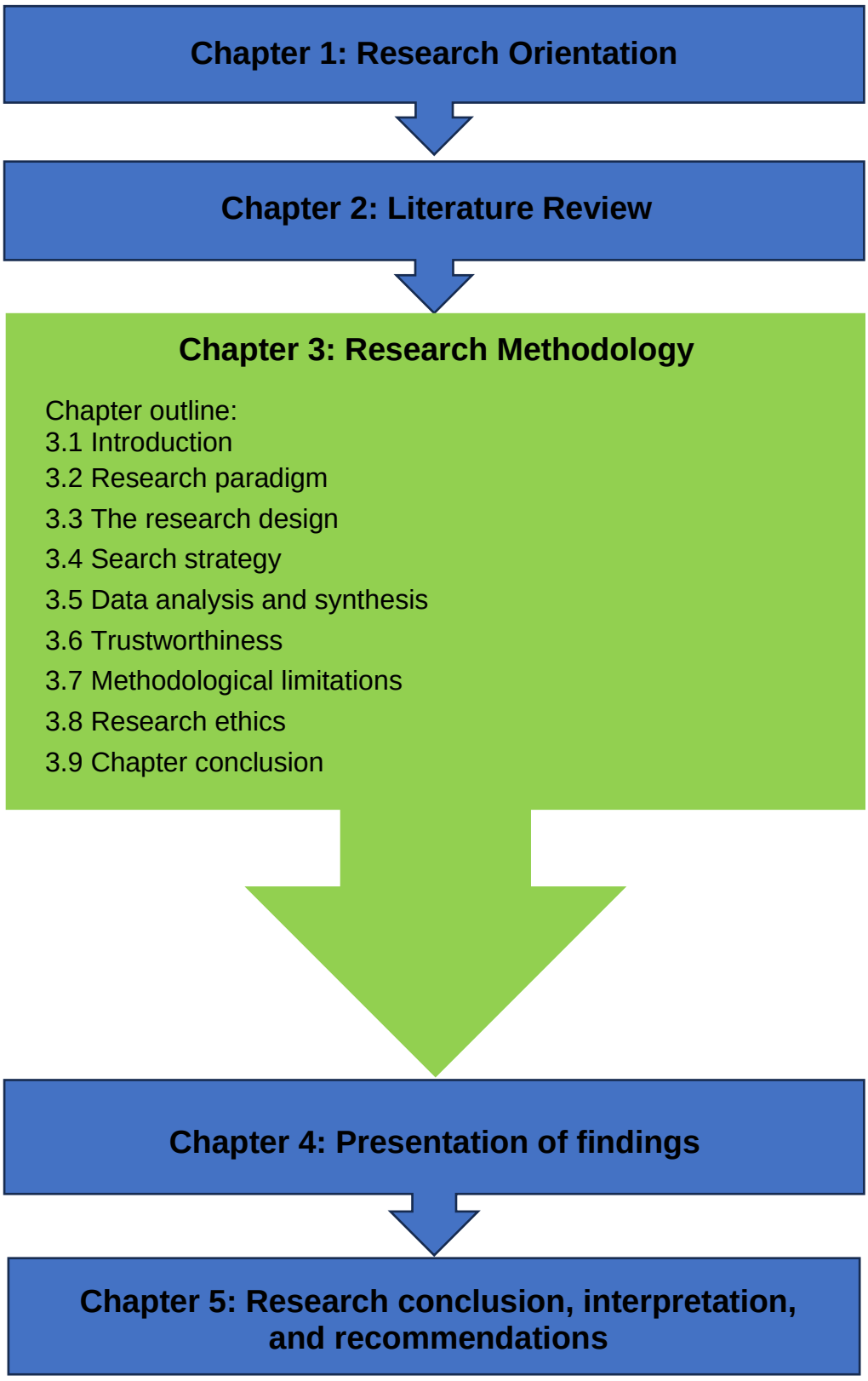

Figure 3.1: Overview of Chapter 3

Source: Author's work

3.1 INTRODUCTION

Chapter 2 provided an overview of literature on the concepts of corporate sustainability (CS), sustainability embeddedness (SE), and the leverage points perspective (LPP). The chapter discussed organisations' role in the quest for sustainable development through CS and highlighted the gap in the adoption of SE that organisations face in practice. Chapter 2 drew attention to the underexplored LPP as a potential framework for sustainability discourse and practice, which is the subsequent theoretical gap that will be explored in the current study. The purpose of the current study was to conduct a systematic integrative review of literature on the LPP within the context of CS and SE. This study contributes theoretically by tracing the development of literature from 1999 to 2023. It contributes practically by identifying evidence-based interventions and synthesising them into a navigational framework to support organisations and practitioners on their journey to SE.

Chapter 3 presents the methodological decisions and systematic research process employed to conduct this systematic integrative review, enabling the researcher to answer the research questions. The chapter begins with the research paradigm that guided the study. The next section provides a comprehensive discussion of review methodologies and the integrative review method as the chosen research design for this study. The strengths and challenges of this methodological design are also discussed. The section is followed by the search strategy, which discusses the data sources, search terms, eligibility criteria, and implementation of the search strategy. Thereafter, the chapter explains the methods for data extraction, followed by the data analysis and synthesis strategies implemented in the study. The research methodology chapter concludes with the limitations of conducting a systematic integrative review, trustworthiness, and the ethical considerations of this study.

3.2 RESEARCH PARADIGM

The research paradigm represents the interpretive framework used by researchers when conducting research. The fundamental philosophical assumptions (ontology, epistemology, axiology, and methodology) are rooted within the paradigm that researchers adopt (Creswell, 2013, 2014). The research paradigm of this study is

derived from pragmatic constructivism (Haas & Haas, 2002; Nørreklit, 2013; Ivanova, Ryabinina & Tyunin, 2019). The pragmatic constructivist paradigm integrates pragmatism and constructivism (Haas & Haas, 2002; Ivanova et al., 2019). Constructivism, also referred to as interpretivism, is concerned with how reality is subjectively interpreted and constructed to understand the world and focus on distinctive processes, such as socialisation, discourse, or education (Haas & Haas, 2002; Creswell, 2014). Pragmatism is concerned with actionable applications and solutions to problems, with a focus on the research problem, rather than on methods, by using a multitude of available approaches to derive knowledge about the problem (Creswell, 2013, 2014). Pragmatic constructivism embeds a pragmatist epistemology within a constructivist ontology (Haas & Haas, 2002; Ivanova et al., 2019). The pragmatic constructivist paradigm is concerned with direct participation in the research process to develop new concepts and practical results to address real-world problems that arise in the construction of reality (Ivanova et al., 2019; Henriksen, 2021). This enabled the pragmatic constructivist paradigm to function as the philosophical underpinning for a systematic integrative review within an interdisciplinary field.

3.3 THE RESEARCH DESIGN

Systematic literature reviews as a research methodology emerged in the late 1970s from the medical sciences (Al-Tabbaa, Ankrah & Zahoor, 2019; Owens, 2020). Since then, review methodologies have become an established and recognised methodology (Al-Tabbaa, Ankrah & Zahoor, 2019), with a plethora of review types that are systematic and methodological (Sutton, Clowes, Preston & Booth, 2019; Oermann & Knafl, 2021). The various types of review methodologies have branched into many fields of research, including business and management discourse (Snyder, 2019; Dwertmann & van Knippenberg, 2021). Review methodologies are used in research to scrutinise and synthesise existing research to advance knowledge and further research; provide an overview of a research area, topic, or phenomenon; identify gaps or inconsistencies in the literature; generate new insights by integrating research (empirical and non-empirical); set direction for future research; and/or answer specific research questions (Torraco, 2005, 2016a,b; Al-Tabbaa, Ankrah & Zahoor, 2019; Snyder, 2019; Elsbach & van Knippenberg, 2020; Dwertmann & van Knippenberg,

2021; Oermann & Knafl, 2021). Subsequently, review methodologies can address research questions with more power than a single empirical study (Snyder, 2019).

There are many different types of review methodological designs to choose from when deciding to conduct a systematic and methodological review of literature (Oermann & Knafl, 2021). Grant *et al*. (2009) developed a typology of reviews that identifies 14 review types and associated methodologies. This typology includes, for example, the critical review, scoping review, systematic review, qualitative systematic review, and meta-analysis. Sutton, Clowes, Preston, and Booth (2019) identify 48 different types of reviews that were grouped into seven broad review families. Snyder (2019) distinguishes between three broad types of reviews, namely systematic reviews, narrative reviews, and integrative reviews, to provide an overview of and guidelines for literature reviews as a research methodology for business research. Despite the similarities and conceptual overlap that exist between review types (Whittemore & Knafl, 2005; Grant & Booth, 2009; Owens, 2020), each type of review has a specific definition and purpose (Whittemore & Knafl, 2005; Snyder, 2019; Sutton et al., 2019). Selection of a review methodological design depends on the purpose of the research, topic, and research area(s) of interest (Oermann & Knafl, 2021).

For the current study, a review methodological design was deemed appropriate because the topic of interest, the LPP within the context of CS and SE, is a new and emerging topic, which integrative reviews are well-suited for (Toracco, 2016a,b; Snyder, 2019). Furthermore, the purpose of this study was not to conduct empirical research, but to comprehensively review and synthesise existing knowledge on the LPP, within the context of CS and SE (Snyder, 2019; Elsbach & van Knippenberg, 2020; Dwertmann & van Knippenberg, 2021; Cronin & George, 2023). To accomplish this, a systematic integrative review methodological design was necessary to collect, analyse, and synthesise the interdisciplinary research articles that used diverse methodologies. This enabled the researcher to conduct an in-depth analysis and to gain review-driven insights into the current and potential future state of LPP literature within the context of CS and SE. In addition, the use of an integrative review facilitated the identification of numerous evidence-based interventions across the literature that have been identified through empirical and non-empirical research. Subsequently,

since the current study's research questions could not have been addressed by the outcome of a single empirical study, a review methodological design was selected as the appropriate methodology. The next section discusses the systematic integrative review as the main research design choice for the current study, highlighting why this approach was deemed appropriate to answer the research questions.

3.3.1 The systematic integrative review

An integrative review, as defined by Torraco (2005:356, 2016b:62), "is a distinctive form of research that generates new knowledge about a topic by reviewing, critiquing, and synthesising representative literature on a topic in an integrated way such that new frameworks and perspectives on the topic are generated." Similarly, Elsbach and van Knippenberg (2018:2; 2020:1278) define integrative reviews as "reviews of the literature that move beyond description of a body of evidence to derive new insights through integration and/or critique." The purpose of an integrative review is to systematically identify and collect multiple relevant studies on a topic or research field to provide review-driven insights and to develop new theoretical or conceptual frameworks through the critical analysis and synthesis of literature (Snyder, 2019; Elsbach & van Knippenberg, 2020; Dwertmann & van Knippenberg, 2021; Cronin & George, 2023). This methodological design also aims to provide an agenda, direction, or implications for future research on the topic, phenomenon, or research field under investigation (Torraco, 2016a; Cronin & George, 2023).

The integrative review is well suited for dynamic or complex topics that are new, emerging, or growing rapidly, such as the LPP within the context of CS and SE (Torraco, 2005, 2016a,b; Snyder, 2019; Cronin & George, 2023). In addition, integrative reviews are particularly useful when seeking to conduct research on fields that are fragmented and interdisciplinary, such as the field of CS (Snyder, 2019; Cronin & George, 2023). This makes the integrative review an appropriate method to scrutinise and synthesise literature in business, management, and sustainability discourse. This is particularly evident when examining concepts such as "sustainability embeddedness" and the "leverage points perspective", as these are research streams that are still developing, but growing rapidly. Integrative reviews have an ability to go further than systematic reviews by uncovering connections, combining perspectives

and insights, or providing theoretical extensions from different research disciplines to advance knowledge (Snyder, 2019; Dwertmann & van Knippenberg, 2021; Cronin & George, 2023). Subsequently, considering that the LPP is an emerging topic within the interdisciplinary field of CS, the systematic integrative review is an appropriate method to scrutinise and synthesise literature on the topic, and allows the researcher to answer this study's research questions.

An integrative review is not only descriptive, but also integrative, since it analyses and synthesises current knowledge across disciplines or fields to generate new conceptual or theoretical frameworks (Snyder, 2019; Elsbach & van Knippenberg, 2020; Dwertmann & van Knippenberg, 2021). This analysis and synthesis usually require a qualitative approach (Cronin & George, 2023), and as such, integrative reviews are typically qualitative in nature (Dwertmann & van Knippenberg, 2021). The methodological review design is different from other review types, for example, systematic reviews, narrative reviews, meta-synthesis, or qualitative synthesis, because these types of reviews are confined to empirical research that utilise specific research designs (Dwertmann & van Knippenberg, 2021; Oermann & Knafl, 2021). Integrative reviews incorporate relevant studies with diverse methodologies, including empirical, theoretical, academic, and non-academic research that have used varied research designs (qualitative and quantitative), approaches, and paradigms (Whittemore & Knafl, 2005; Dooleen, 2017; Klein, Ramos & Deutz, 2020; Oermann & Knafl, 2021). This diverse sampling frame is an important advantage of integrative reviews since it differentiates it from other review types and facilitates a more nuanced and comprehensive understanding of complex topics (Whittemore & Knafl, 2005; Elsbach & van Knippenberg, 2020; Klein et al., 2020; Oermann & Knafl, 2021). This approach allowed the researcher to comprehensively review diverse literature on the complex topics of the LPP within the context of CS and SE. Furthermore, a systematic integrative review was deemed appropriate to answer this study's research questions as it enabled the researcher to collect, analyse, and synthesise literature associated with the LPP within the broader field of CS. Lastly, this approach assisted the researcher to identify evidence-based interventions across the literature that were synthesised into a practical framework for SE.

Several high-impact journals publish articles that have applied an integrative review, for example, the *International Journal of Management Reviews, Academy of Management Annals,* and *Annual Review of Organizational Psychology and Organizational Behaviour*. There are also journals, namely *Organizational Psychology Review* and the *Journal of Applied Psychology*, that are dedicated to the publication of integrative reviews (Dwertmann & van Knippenberg, 2021). Although integrative reviews are not new to business and management research (Elsbach & van Knippenberg, 2020), they remain scarce in business and management discourse (Torraco, 2016b; Snyder, 2019). This highlights a methodological gap and need for more integrative reviews with a systematic and comprehensive methodology (Dwertmann & van Knippenberg, 2021).

There are challenges with conducting any type of research methodology, including integrative reviews. A general challenge of an integrative review is that there is not a universally accepted, one-size-fits-all structure, format, or methods statement (Whittemore & Knafl, 2005; Torraco, 2016b; Dwertmann & van Knippenberg, 2021). Integrative reviews have been criticised for their lack of systematic and well-articulated methodological approaches (Whittemore & Knafl, 2005; Grant & Booth, 2009; Dwertmann & van Knippenberg, 2021). When systematic and explicit methods are not used, the risk of bias and an incomplete review is drastically increased (Whittemore & Knafl, 2005). An additional challenge of an integrative review is that the inclusion of a diverse sampling frame and integration across multiple research areas, fields, or disciplines may hinder the fair representation of various perspectives and the synthesis of that knowledge to yield new insights (Cronin & George, 2023). To address these challenges, the current study has borrowed methods, techniques, and approaches from various methodological review designs to augment the rigour and trustworthiness of the review. The integrative review adopted a systematic approach to gather, evaluate, and analyse the literature (systematic review), narratively described current knowledge on a topic (narrative review), and provided directions for future research (theoretical) (Cronin & George, 2023). The critical analysis and synthesis were facilitated by incorporating an analysis technique from qualitative research, specifically thematic analysis, to reduce potential bias and augment the credibility of this systematic integrative review (Whittemore & Knafl, 2005).

Additionally, this study included a checklist to ensure that a rigorous process was followed throughout the duration of the research process, as presented in Table 3.3.

The main framework that guided this systematic integrative review was the five-step framework developed by the seminal authors Whittemore and Knafl (2005). The authors provided a systematic approach and methodological strategies to conduct an integrative review that reduces bias, enhances trustworthiness, and contributes to the quality of the review (Whittemore & Knafl, 2005; Dooleen, 2017; Oermann & Knafl, 2021). Several authors support the framework or agree on the steps therein (Torraco, 2005, 2016b; Dooleen, 2017; Oermann & Knafl, 2021). Additionally, numerous authors have applied the framework when conducting integrative reviews (Carey, Philippon & Cummings, 2011; Kornhaber, Cross, Betihavas & Bridgman, 2016; Valenti, Scelles & Morrow, 2018; Kanninen, Häggman-Laitila, Tervo-Heikkinen & Kvist, 2021). The integrative review framework as proposed by Whittemore and Knafl (2005) consists of five steps: (1) problem identification, (2) literature search, (3) data evaluation, (4) data analysis, and (5) presentation of findings. Figure 3.2 illustrates the five steps that were executed to conduct this systematic integrative review.

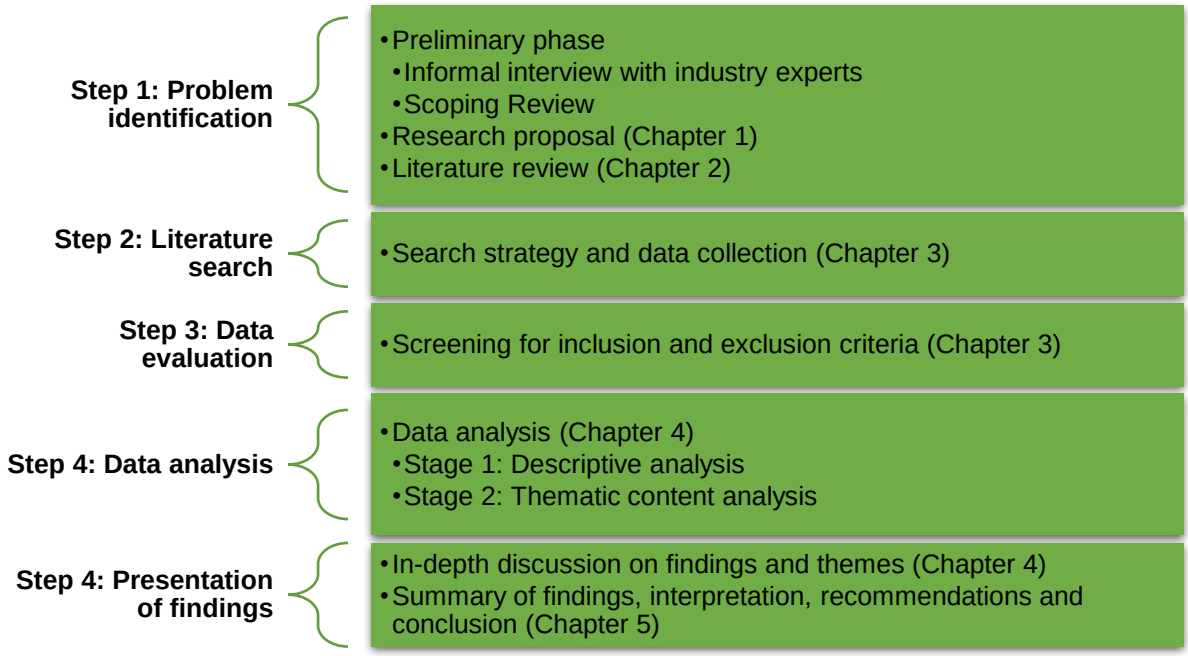

Figure 3.2: The systematic integrative review steps

Source: Author's work

3.3.2 The systematic integrative review process

This section discusses the steps of this systematic integrative review with relation to the chapters of this study, as shown in Figure 3.2. As part of the first step, problem identification, a scoping review was conducted with the terms “leverage points”, “sustainability embeddedness”, and “corporate sustainability” to establish the extent of literature on the topic. The scoping review included eight electronic databases, namely EBSCOhost, Emerald, Google Scholar, Sage Publications, ProQuest, Scopus, Web of Science, and Unisa’s Institutional Repository. The scoping review revealed that the LPP literature does not refer to SE, hence going forward, this study focused more broadly on CS, which encompasses SE. The scoping review also revealed that the LPP remains largely underexplored in CS literature, highlighting the theoretical gap that will be explored in this study. Thereafter, the research proposal (chapter 1) and literature review (chapter 2) were completed, which further informed the practical and theoretical gaps of this study.

The methodological decisions that were made, and the search strategy that was executed to complete step two, the literature search, are discussed in the next section of this chapter. Step three, data evaluation, is concerned with screening the identified literature for the inclusion and exclusion criteria. This step is also discussed and executed in Chapter 3. The fourth step, data analysis, is executed in Chapter 4 and consists of two stages, the descriptive analysis and thematic content analysis. Lastly, the findings are presented in Chapter 4, as well as summarised and synthesises in Chapter 5, to complete the fourth and final step, which is the presentation of the findings. Chapter 5 also presents the practical framework as part of this study’s main contributions, and provides the managerial and theoretical recommendations, as well as directions for future research.

3.4 SEARCH STRATEGY

This section of the chapter represents the second and third steps of the systematic integrative review. The search strategy delineates the author's strategy for identifying, collecting, and screening the literature to be included in the study (Torraco, 2005, 2016a). This includes the selection of appropriate data sources, search terms, additional search strategies, as well as the eligibility (inclusion and exclusion) criteria (Torraco, 2016a; Snyder, 2019; Dwertmann & van Knippenberg, 2021). The search strategy was methodically developed, executed, and reported on to ensure trustworthiness and rigour of this review.

3.4.1 Data sources

In an integrative review, the literature (research articles, publications, and grey literature) constitutes the data (Torraco, 2005). The primary data source for this systematic integrative review was electronic databases. Given the comprehensive nature of the literature search in integrative reviews, at least two to three data sources should be employed (Whittemore & Knafl, 2005; Kutcher & LeBaron, 2022). For the current study, three data sources were utilised, namely electronic databases, internet searches and an ancestry search.

Firstly, a total of 14 electronic databases were included in the search. The inclusion of electronic databases is essential to conduct a comprehensive literature search (Torraco, 2016a) and archive literature on the internet as publication items (Al-Tabbaa, Ankrah & Zahoor, 2019). The following electronic databases were included in this study: ABI/Inform Complete, CAB Abstracts with Full Text, EBSCOhost (all databases), Elsevier / ScienceDirect (all journal and book titles), Emerald Journals and Emerald Case Studies, Environment Complete, JSTOR, ProQuest (all databases), Sage Journals Online, Scopus, Web of Science Core Collection, WorldCat, Wiley Online Library, and UnisaETD: electronic theses and dissertations (Al-Tabbaa, Ankrah & Zahoor, 2019; Wallnoefer & Riefler, 2022). These databases were selected because they cover a broad array of relevant literature on the LPP within the context of CS and SE. Given the interdisciplinary and fragmented nature of the literature on CS, it was

deemed necessary to include all the above-mentioned databases to ensure that a comprehensive review of literature was conducted.

The second source of data for the integrative review involved internet searches. Literature searches on internet sources provided another source for soliciting relevant literature (Kutcher & LeBaron, 2022). This systematic integrative review utilised internet searches, specifically Google Scholar, to identify potentially relevant journal articles that are located outside of the selected electronic databases. In doing so, searches across Google Scholar contributed to a comprehensive search strategy and review.

The third source for this study made use of an ancestry search. An ancestry search, also referred to as reverse snowballing, entails searching the reference lists of retrieved literature to identify and gather additional data to be included in the initial sample (Whittemore & Knafl, 2005; Owens, 2020; Kutcher & LeBaron, 2022). This is a valuable strategy for identifying additional relevant literature (Torraco, 2005, 2016a). Utilising these data sources and strategies for the systematic integrative review facilitated a comprehensive and exhaustive search of the literature on the LPP within the field of CS. Lastly, grey literature was excluded as a data source from this systematic integrative review. Grey literature refers to unpublished dissertations and theses, conference papers or white papers, publications in obscure journals, business or governmental reports, and technical documents (Oermann & Knafl, 2021; Kutcher & LeBaron, 2022). The researcher made this decision considering the time and resource constraints of this study and to ensure that the data gathered were of high quality. Grey literature was not included in this study because it does not align with the aim of focusing on the most influential research on the topic. Since grey literature was excluded from the review and the data was limited to peer-reviewed journal articles, the data evaluation step of this systematic integrative review only consisted of a screening and did not require a quality appraisal of the publications associated with grey literature (Mol and Wynstra, cited in Lange, 2014:12; Kutcher & LeBaron, 2022).

3.4.2 Search terms

Search terms represent the words or phrases that are used in the search strategy to identify relevant literature across the selected data sources (Snyder, 2019). The research questions and topic should guide the identification of appropriate search terms (Snyder, 2019). In line with the research questions, the search terms identified from the topic were “leverage points” and “sustainability embeddedness” (or “embedding sustainability”). A pilot search revealed that these search terms, however, did not yield sufficient data. Subsequently, the search term “sustainability embeddedness” was broadened to “corporate sustainability” since CS literature encompasses SE discourse. It is also important to consider various communities of practice that may study the topic using different terminology and various synonyms for the search terms that may be used in discourse (Cronin & George, 2020). The researcher identified several synonymous terms for “corporate sustainability” across communities of practice that were included in the list of search terms for this review, namely “business sustainability”, “corporate social responsibility” or “CSR”, and “environmental management”. The following search terms were included in the search string:

= (“leverage points”) AND (“sustainability embeddedness” OR “embedding sustainability” OR “corporate sustainability” OR “business sustainability” OR “corporate social responsibility” OR “CSR” OR “environmental management”)

These search terms were considered broad enough to facilitate a comprehensive search and capture relevant literature on the LPP for SE in the field of CS. The Boolean operator ‘AND’ and ‘odds ratio (OR)’ were used to combine the search terms in the search function of each database (Al-Tabbaa, Ankrah & Zahoor, 2019). Each combination of search terms, for example “leverage points” AND “corporate sustainability”, or “leverage points” AND “environmental management”, was searched for within the title, keywords, and abstract field across all data sources.

3.4.3 Search limitations

The search limitations, or “boundary conditions”, describe the parameters of the search strategy and literature to be included in the initial sample (Elsbach & van Knippenberg, 2020:1282). According to Elsbach and van Knippenberg (2020), the publication timeline, publication outlets, and theoretical or conceptual perspectives covered should be discussed. In conjunction with the research questions, the following search limits were applied in the search strategy to identify and collect the most relevant literature:

1. **Published between 1 January 1999 and 30 June 2023**

   This search limitation is the timeframe for the integrative review. Only literature written or published between 1 January 1999 and 30 June 2023 were included in the initial sample. The start date was selected because LPP was first published in 1999 by the seminal author Donella Meadows. Subsequently, any literature published or written prior to this date would not have referred to the concept as defined by Meadows (1999). The data collection and analysis were conducted in May / June of 2023, thus academic articles published after this date could not have been included in the review.

2. **Search within**

   For the electronic databases, the search was restricted to the selected search terms within the title, keywords, and abstract of the literature across all selected sources. When the selected search terms were present in the abstract, keywords, or abstract of literature, it ensured that the literature was relevant to the topic under investigation.

3. **Peer-reviewed journal articles in English language**

   The search strategy was limited to peer-reviewed journals. Peer-reviewed journal articles provide validated knowledge and high-quality data. In the interest of screening and analysis, the search was also limited to publications written in English.

4. Type of literature

This systematic integrative review did not limit the search based on the methodological design choice of journal articles. Therefore, literature of all methodologies, empirical and theoretical, qualitative, and quantitative, were included in this study.

5. Publication outlets used

To maintain a diverse sample frame and comprehensive search strategy, this integrative review did not set limits regarding the publication outlets.

3.4.4 Eligibility criteria

The eligibility criteria are the predetermined inclusion and exclusion criteria used to systematically and unambiguously discard or retain the literature collected by the search strategy (Torraco, 2005, 2016b; Higgins & Green, 2011). The eligibility criteria further delineated the scope of the sampling frame by determining which of the collected literature (published and grey) were to be included in the final sample and subsequent analyses. The eligibility criteria are essential to the search strategy and for search quality (McCrae, Blackstock & Purssell, 2015; Snyder, 2019). Therefore, the researcher developed pre-specified eligibility criteria prior to the implementation of the search strategy. In doing so, only data relevant to the study's purpose and objectives were collected, analysed, and synthesised. By clearly demarcating the sampling frame and consistently applying the eligibility criteria, the credibility and dependability of this systematic integrative review were augmented. This facilitated the generation of more meaningful and accurate findings. The eligibility criteria used to screen the collected literature for the final sample are presented in Table 3.1.

Table 3.1 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
1. The leverage points perspective is the main subject or focus. 2. Situated within the context of corporate sustainability. 3. Published between 1 January 1999 and 31 May 2023. 4. Peer-reviewed journal articles. 5. Full text is available. 6. Available in English.	1. The leverage points perspective is not the main subject or focus. 2. Not situated within the context of corporate sustainability. 3. Published before 1 January 1999 or after 31 May 2023. 4. Grey literature. 5. Full text is not available. 6. Not available in English.

Source: Authors' own compilation

The inclusion criteria required that the LPP was the main subject or focus of each journal article, within the context of CS and SE. The publications that did not refer to "leverage points" or either of its seminal authors, namely Meadows (1999) and Abson (2017), were not included in the study. This criterion ensured that the data were relevant to this study's research questions. The publications were also required to be available in full text and in English. This is important as the screening and analysis required the researcher to read each article in full. The eligibility criteria did not exclude literature based on the research approach, research design, location, setting, or research outcomes. Research publications of all methodologies, empirical and theoretical, qualitative, and quantitative, were included in this study. By not limiting the sampling frame of the search strategy to specific research methodologies, a more nuanced and comprehensive review was facilitated (Whittemore & Knafl, 2005; Elsbach & van Knippenberg, 2020; Klein et al., 2020; Oermann & Knafl, 2021). More specifically, this enabled the researcher to extensively identify evidence-based interventions from across a wide range of literature, as illuminated by various research approaches and designs.

3.4.5 Implementation of the search strategy and screening

Prior to implementation of the search strategy to execute step two, the literature search, the researcher conducted a pilot test of the search strategy across six

databases (EBSCOhost, Emerald, Sage, ProQuest, Scopus, and Web of Science). The pilot test revealed that the search terms did not generate sufficient data. The search term “sustainability embeddedness” was broadened to “corporate sustainability” to identify more relevant literature. As explained by Dwertmann and van Knippenberg (2020), reviews are often iterative processes that allow for learning and reflection on the research questions, additional search terms, and eligibility criteria as the researchers learn more about the literature. Journal articles were identified by means of a computer-assisted search within the title, keywords, and abstract, using the search terms and Boolean operators across the selected databases (Whittemore & Knafl, 2005; Owens, 2020; Oermann & Knafl, 2021). From the electronic database search, 553 records were identified, from which 200 duplicates were removed before screening.

The database search was followed by an internet search on Google Scholar for peer-reviewed journal articles using the search terms, Boolean operators, and search limitations (Owens, 2020; Kutcher & LeBaron, 2022). The search strategy generated 91 publications from the internet search. Furthermore, an ancestry search, or reverse snowballing, was also used to search for and identify additional relevant literature in the reference lists of the articles that were gathered from the database and internet searches (Owens, 2020; Oermann & Knafl, 2021). This ancestry search ensured that the literature search was comprehensive since it revealed additional articles for the review. This process was continued until repetition of the search results was evident, depicted by a high rate of duplicate articles across the data sources (Owens, 2020). The internet and ancestry searches provided 108 additional articles that were not identified by the database search, 34 of which were duplicates from the database search. An audit trail of the methodological decisions made was systematically and explicitly reported on throughout the review process, including the strategies and methods used to ensure that this study is dependable and confirmable. In addition, test-retest reliability was utilised to further augment the rigour of this systematic integrative review. The publications gathered from the data sources made up the initial sample of this study. A total number of 661 manuscripts were gathered from the database, internet, and ancestry searches, of which 234 were duplicates. This high

rate of duplicates suggests that the search strategy was comprehensive and exhaustive.

Following the data evaluation step, the final sample was determined by means of a staged review to screen the identified articles for eligibility against the inclusion and exclusion criteria (Snyder, 2019). A staged review required first screening the title, keywords, and abstracts (and in some cases the introduction) of the literature, followed by the researcher reading the full text of each article (Oermann & Knafl, 2021). The first stage was sequentially executed as the literature was identified from each respective data source. The articles that were included after the first stage were sought for retrieval, the records for which the full text could not be retrieved were excluded from the review. Thereafter, the second stage entailed scrutiny of each journal article's full text to assess the data for eligibility. Records that met the inclusion criteria were retained and the articles that did not were discarded. The final sample consisted of 45 manuscripts that met the criteria and were included in step three, the data analysis stage.

Figure 3.3, the PRISMA 2020 flow diagram, illustrates the implementation of the literature search and data evaluation steps (steps 2 and 3) of this systematic integrative review. Page et al. (2020) provide a template for the PRISMA flow diagram from which Figure 3.3 was adapted. The PRISMA flow diagram is most commonly used for standard systematic reviews but can be used across different types of reviews, including integrative reviews (Page et al., 2020). Figure 3.3 provides a visual representation of the number of publications that were included and excluded at each step of the data collection and screening identified from the data sources. This includes the publications that were retrieved in full, not retrieved, included, and excluded from the review during the first and second stages of screening, and those that made up the final sample of this systematic integrative review. All data included in the final sample were recorded in Table 15, which is available in Appendix D. Table 15 also provides a summary of the data's main characteristics, namely, author(s), title, year, methodology, sustainability focus, and the main contributions or findings.

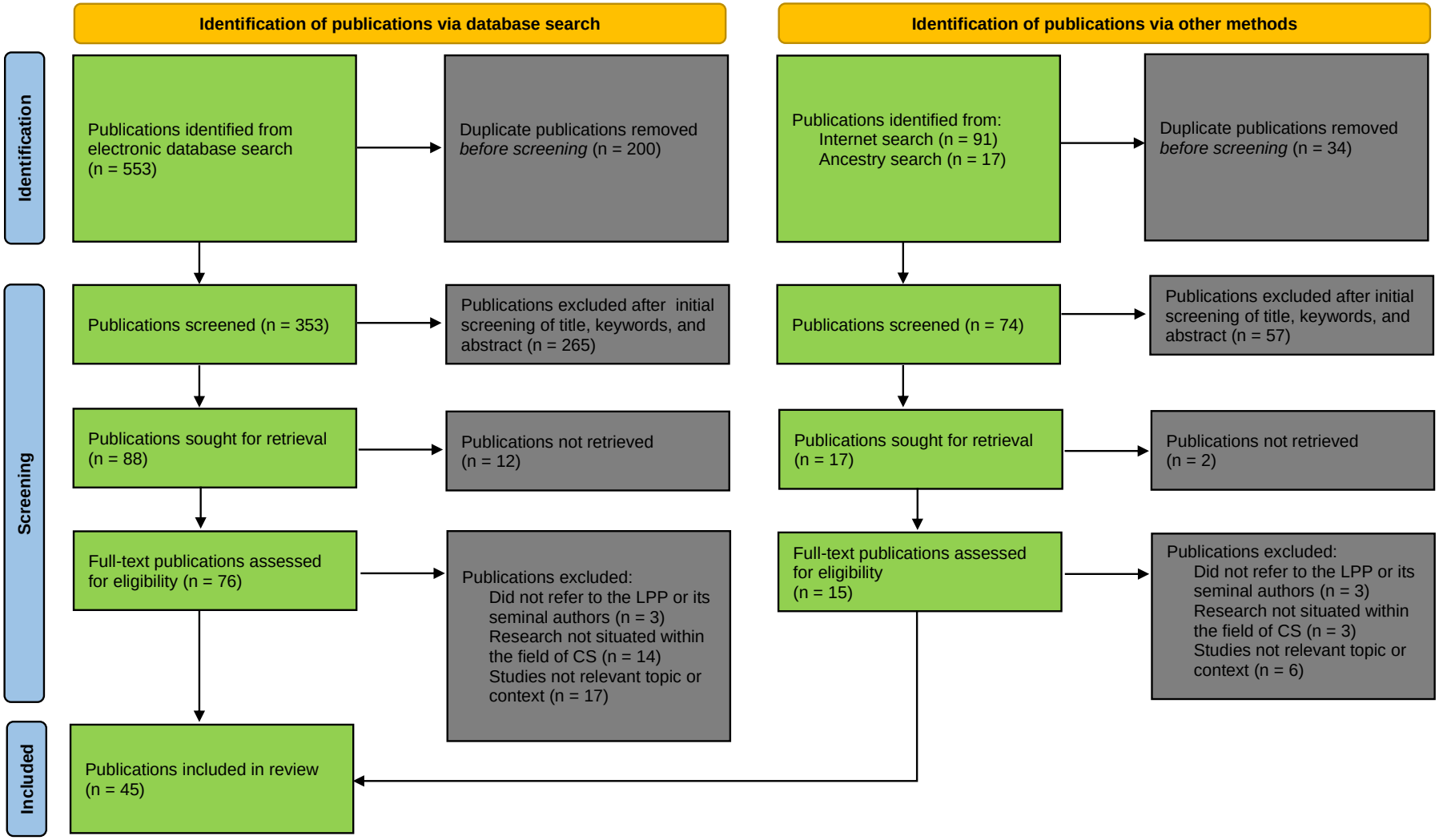

Figure 3.3: PRISMA 2020 Flow Diagram
Source: adapted from Page *et al*., 2020

3.5 DATA ANALYSIS AND SYNTHESIS

This section of the chapter represents the fourth step of the research methodological process that was followed, namely data analysis. An integrative review requires a critical analysis and creative synthesis of the literature identified and gathered by the search strategy (Elsbach & van Knippenberg, 2020). Critical analysis systematically deconstructs a topic to analyse the literature's strengths, weaknesses, deficiencies, omissions, inaccuracies, similarities, or contradictions about the topic (Torraco, 2016b). This systematic integrative review made use of two analysis strategies to conduct the critical analysis and synthesis, namely, descriptive analysis (counts and tallies) and thematic content analysis. The first strategy involved sample counts and tallies to extract data and descriptively analyse the literature (Oermann & Knafl, 2021). The researcher extracted relevant information from each journal article by using a predetermined set of characteristics, specifically, author(s), title, year of publication, journal, sustainability focus, research design and methodology, data collection and analysis methods, geographical location, how the LPP was utilised in the research, and the main contributions or findings with regards to the LPP. The data were populated in a data table, as shown in Table 15 in Appendix D, to categorically organise and compare the data across all journal articles.

The second strategy comprised thematic content analysis to further inquire into the substance of each respective publication. Thematic content analysis is a qualitative analytic method that involved coding meaningful and relevant texts within the contents of the 45 publications that were included in this review (Braun & Clarke, 2006; Kanninen et al., 2021). According to the thematic analysis approach, the data was then analysed using thematic analysis to aggregate and group the codes into categories of overarching subthemes and themes (Creswell, 2013; Guest, MacQueen & Namey, 2012). The codes were systematically organised into themes to identify trends, strengths, inconsistencies, and gaps in the literature to further the analysis and synthesis (Whittemore & Knafl, 2005; Kanninen et al., 2021; Oermann & Knafl, 2021). This was done by scrutinising each article in full to identify evidence-based interventions and uncover themes across literature on the LPP within the broader field of CS. The thematic analysis was facilitated by Atlas.ti, the computer assisted

qualitative data analysis software (QACDAS) (Braun & Clarke, 2006; Guest, MacQueen & Namey, 2012; Clarke & Braun, 2014; Neuendorf, 2018). The researcher was guided by Braun and Clarke's (2006) thematic analysis process. The authors contend that this is a recursive process, rather than linear, since, instead of moving sequentially through the phases, the researcher can move back and forth throughout the process as required (Braun & Clarke, 2006). Figure 3.4 below outlines the process that was followed for this stage of the analysis, which consists of six phases that demonstrate a rigorous approach.

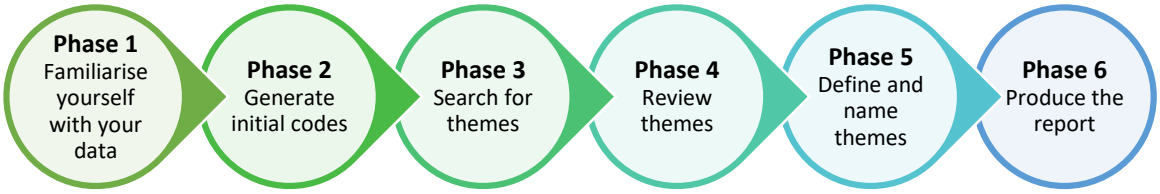

Figure 3.4: The thematic analysis process
Source: adapted from Braun and Clarke (2006)

At the first phase, the researcher became familiar with the data during the data evaluation step and second stage of screening, which involved scrutinising each publication in full. At the second phase, the data were coded, using both deductive and inductive coding. Whilst inductive coding was used to generate codes based on the data, deductive coding was utilised by pre-defining codes. After the data had been coded, phase three involved sorting and analysing the codes to uncover overarching sub-themes and themes (Braun & Clarke, 2006; Clarke & Braun, 2014). At phase four, the collection of candidate codes, themes, and sub-themes were reviewed and refined. The sub-themes were used to aggregate and group the codes (Guest *et al.,* 2012). For instance, codes were identified by scrutinising the 45 publications that were included in the review and then grouped into the sub-themes. Many of the sub-themes were pre-determined based on the 12 LPs and four system characteristics of the LPP (Meadows, 1999; Abson *et al.,* 2017), specifically for theme one and two. The sub-themes were then grouped into three main themes that captured the essence of the various evidence-based interventions. Table 3.2 below presents the analytical

structure that was used in the thematic content analysis, specifically phases two to five. Once the themes were finalised, the final phase involved reporting on the thematic content analysis (Braun & Clarke, 2006). This phase of the thematic analysis process aligned with the final step for conducting a system integrative review, namely presentation of the findings (Whittemore & Knafl, 2005).

Table 3.2: Analytical Structure

Aggregate Theme	Sub-theme	Codes
		Codes
	Sub-theme	Codes
		Codes
Aggregate Theme	Sub-theme	Codes
		Codes
	Sub-theme	Codes
		Codes

Source: Author's work

Whilst analysis seeks to deconstruct, synthesis seeks to create something new. Synthesis refers to the integration of existing knowledge, ideas, and concepts to develop new models, perspectives, theories, or ways of thinking about a topic (Torraco, 2016b). Utilising findings from the thematic content analysis, the researcher synthesised the data into a classification scheme of constructs. These constructs were then used in conjunction with the original LPP framework proposed by Meadows (1999) and Abson *et al*. (2017), to develop a reconceptualization for CS and SE practice. The synthesis also informed the theoretical and managerial recommendations, as well as the directions for future research (Torraco, 2016a). The descriptive analysis sought to address the first research sub-question, namely, to determine the state of literature on LPP within the field of CS over the period 1999 to 2023. The thematic content analysis and subsequent synthesis were used to answer the second and third sub-questions by identifying and synthesising evidence-based interventions from across the literature.

3.6 TRUSTWORTHINESS

Throughout the chapter, various frameworks, strategies, and methods have been adopted and discussed that contributed to the rigour and trustworthiness of this systematic integrative review. It is well established in qualitative literature that trustworthiness consists of four criteria; namely, credibility, dependability, confirmability, and transferability (Lincoln & Guba, 1985; Elo *et al.,* 2014; Stahl & King, 2020). Although review studies, qualitative or not, do not typically include a section on trustworthiness, this section provides a discussion to demonstrate the trustworthiness and rigour of the current study.

With regards to this review, credibility refers to how accurately and reliably the data addressed the intended focus, while confirmability refers to the extent to which the findings represent the literature and how bias has been mitigated (Polit & Beck, 2012; Elo *et al.,* 2014). This study adopted established methodological frameworks from seminal authors to guide this study in answering the research questions, which facilitated trustworthiness of this review through credibility and confirmability. This includes Whittemore and Knafl's (2005) framework for integrative reviews, Braun and Clarke's (2006) thematic analysis process, and Toracco's (2005, 2016a,b) checklist for writing an integrative review. In addition, a comprehensive search strategy was methodologically developed and executed to further establish trustworthiness during the data collection and analysis through credibility and dependability (Elo *et al.,* 2014).

Dependability refers to the stability of data over time and to conditions and is concerned with whether the findings can be replicated if the study were to be repeated (Polit & Beck, 2012). Dependability was established through systematically reporting on the methodological decisions that have been made throughout this study, such as the search strategy, to make sure that this systematic integrative review can be replicated by independent researchers. Peer debriefing was utilised to further augment the dependability and confirmability of this systematic integrative review (Stahl & King, 2020). This involved utilising peer debriefers who reviewed, interpreted, and asked questions about the study to ensure that it resonated not only with the researcher, but also with aspects such as the search strategy and preliminary findings (Creswell,

2014). The peer debriefers are typically familiar with the study or researcher, such as a study's supervisors.

Transferability refers to the extent to which findings can be applied or transferred to other contexts (Elo *et al.,* 2014). According to Stahl and King (2020), the transferability of qualitative research can be regarded as a suggestion that, in and of itself, needs to be further researched to determine its applicability to other contexts. This review did not set out to uncover findings that are generalisable. The study rather set out to determine the state of literature on the LPP, within the broader field of CS, and to identify the evidence-based interventions that have been researched across the literature. These findings from this study are not generisable but may be transferable to similar contexts. Although the evidence-based interventions and integrated framework intended to contribute to CS and SE practice, verifying the framework fell outside the scope of this study. The following section presents Toracco's (2016a, 2016b) checklist for writing an integrative review, which was utilised to ensure that a comprehensive review was conducted.

3.6.1 Integrative review checklist

To ensure that a rigorous process was followed throughout the duration of the research process, a checklist was utilised in this study. Review studies typically use the PRISMA checklist, however, it is best suited for traditional systematic reviews or meta-analysis (Snyder, 2019; Sutton et al., 2019; Page et al., 2020). Therefore, Toracco's (2005, 2016a,b) checklist was implemented instead, since it is more applicable to integrative reviews and this study. Table 3.3 presents the checklist for writing an integrative review.

Table 3.3: Checklist for writing an integrative literature review

A. Before Writing an Integrative Literature Review	
1. What will the integrative literature review address (i.e., review of a new topic? a mature topic?). Is the topic of the review clearly defined? Are the scope and boundaries of the review demarcated to show the bodies of literature that will and will not be reviewed?	✓
2. Is there a need for the integrative literature review? Is an integrative literature review the most appropriate form of research to address the problem? Will the review article make a significant, value-added contribution to new thinking in the field?	✓

3. Is the perspective taken by the author on the literature review explained to readers (e.g., neutral representation vs. taking a position or point of view)? Are the assumptions of the author regarding the literature review stated?	✓
B. Organizing an Integrative Literature Review	
4. Is the integrative literature review organized effectively?	✓
(a) Is the literature review organized for logical flow of ideas, organization, and readability?	✓
(b) Is the literature review organized around a coherent structure for clarity about what is being reviewed and how the main concepts or themes of the topic come together as a unified idea (e.g., temporal, methodological, or conceptual structure)?	✓
c) Should diagrams or other visual representations be used to show how the literature review is structured and to enhance the reader's understanding of how the topic is addressed in the literature?	✓
5. Are the methods for conducting the integrative literature review sufficiently described?	✓
(a) How was the literature for the review selected? What key subject terms (or keywords) were used to search the literature? What databases were used to search the literature?	✓
(b) Is a table or matrix used to track which keywords and databases led to relevant literature and which did not? If so, is the use of the table mentioned in the review for readers?	✓
(c) Are the criteria stated for retaining or discarding the literature retrieved?	✓
(d) Is there a discussion of how each piece of literature was reviewed (e.g., complete reading of each literature source, reading of abstracts only, a staged review)?	✓
(e) Is there a discussion of how the main ideas and themes from the literature were identified and analysed?	✓
(f) Is the description of the methods for searching, analysing, and interpreting the literature as transparent as possible for the reader? Is the description of the literature review methodology written so that if other researchers attempted to replicate the integrative literature review, sufficient information would be available to do so?	✓
C. Writing an Integrative Literature Review	
6. Does the review critically analyse existing literature on the topic (i.e., is a critique provided)?	✓
(a) Does the critical analysis describe both the strengths and weaknesses of the literature?	✓

(b) Does the critical analysis identify literature deficiencies, omissions, inaccuracies, conflicting perspectives and inconsistencies, and aspects of the topic or phenomenon that are missing, incomplete, or poorly represented in the literature?	✓
(c) Would it be beneficial for the review to include a concept map, analysis matrix, or other visual representation of the main ideas and conceptual relationships of a topic to enhance the reader's understanding of the critical analysis of the literature?	✓
7. Does the integrative literature review synthesize knowledge from the literature into a significant, value-added contribution to new knowledge on the topic?	✓
8. Does the integrative literature review lay the foundation for future research by formulating questions for further research on the topic?	✓
9. Does the integrative literature review describe the logic and conceptual reasoning used by the author to synthesize the model or framework from the review and critique of the literature?	✓
10. Does the integrative literature review explore the future of the topic or field? Does the review identify factors that are shaping the future of the topic, discuss pending developments in the field, and assess the direction for future events and trends?	✓
11. Has the integrative literature review been examined and revised for clear, concise, understandable writing?	✓

Source: Torraco, 2016a

3.7 METHODOLOGICAL LIMITATIONS

This study's limitations are as follows: *Firstly***,** given any dissertation, this study was bounded by time and resource constraints. The time and resource constraints did not allow for the inclusion of grey literature, which was a methodological limitation of the integrative review (Kutcher & LeBaron, 2022). Subsequently, the data evaluation of grey literature was not necessary and excluded from this study. *Secondly*, the integrative review only included literature between 1 January 1999 and 30 June 2023. Literature published or written outside of this time frame would not have been included in this review, but this is an acceptable practice in review methodologies (Al-Tabbaa, Ankrah & Zahoor, 2019). *Lastly*, although the conceptual framework developed through synthesis of the evidence-based interventions and is intended for use in practice, empirically verifying the framework falls outside the scope of this study.

3.8 RESEARCH ETHICS

According to the University of South Africa's *Procedures for Master's and Doctoral degrees* (Unisa, 2020:20), "The ethical implications of the proposed research must be considered when the student is developing the research proposal." The researcher should apply for ethical clearance after approval of the proposal and before conducting any research activities. All research (primary, secondary and conceptual) must obtain ethical clearance by the appropriate University of South Africa Ethics Review Committee (Unisa, 2020). The study was approved by the College of Economic and Management Sciences Research Ethics Review Committee at Unisa on 23 March 2022. Ethical clearance was valid until 22 March 2025. The assigned ethical clearance reference number for the approval of the study is 2022_CRERC_018 (FA). A copy of the ethical clearance certificate can be found in Appendix B.

This study neither involved human participants (primary research), nor the analysis of secondary data (secondary research). The current study could thus be classified as conceptual research since the systematic integrative review was only concerned with analysis of information available in the public domain, specifically peer-reviewed publications. Based on the University of South Africa's ethics standards, this study and subsequent research activities were only regarded as a Category 1 Risk – Negligible. The study posed no ethical risks and the research only involved non-invasive procedures.

3.9 CHAPTER CONCLUSION

Chapter 3 presented the methodological decisions that were made and the systematic research process that was followed to conduct a systematic integrative review and enable the researcher to answer this study's research questions. This chapter provided an in-depth discussion of systematic integrative reviews. This qualitative methodological review design was chosen since it is appropriate for reviewing new or emerging topics within interdisciplinary fields (Snyder, 2019; Cronin & George, 2023), and given the need for more integrative reviews in business and management discourse (Torraco, 2016b; Snyder, 2019; Dwertmann & van Knippenberg, 2021). The systematic integrative review also allowed for a diverse sampling frame, which

facilitated a more nuanced and comprehensive review of diverse literature on the LPP within the field of CS (Whittemore & Knafl, 2005; Elsbach & van Knippenberg, 2020; Klein et al., 2020; Oermann & Knafl, 2021). A search strategy was developed and implemented to complete the second and third steps of this review, namely the literature search and data evaluation steps. The search strategy explained the data sources, search terms, search limitations, eligibility criteria, and how the search strategy was executed. The search strategy was methodically developed, implemented, and reported on throughout the study to ensure that a trustworthy and rigorous review was conducted. The research methodology chapter concluded with the strategies for data analysis, limitations of this review, trustworthiness, and the ethical considerations relevant to the study. The following chapter, Chapter 4, will present the data analysis (step 4) and presentation of findings (step 5) of this systematic integrative review.

CHAPTER 4: PRESENTATION OF FINDINGS

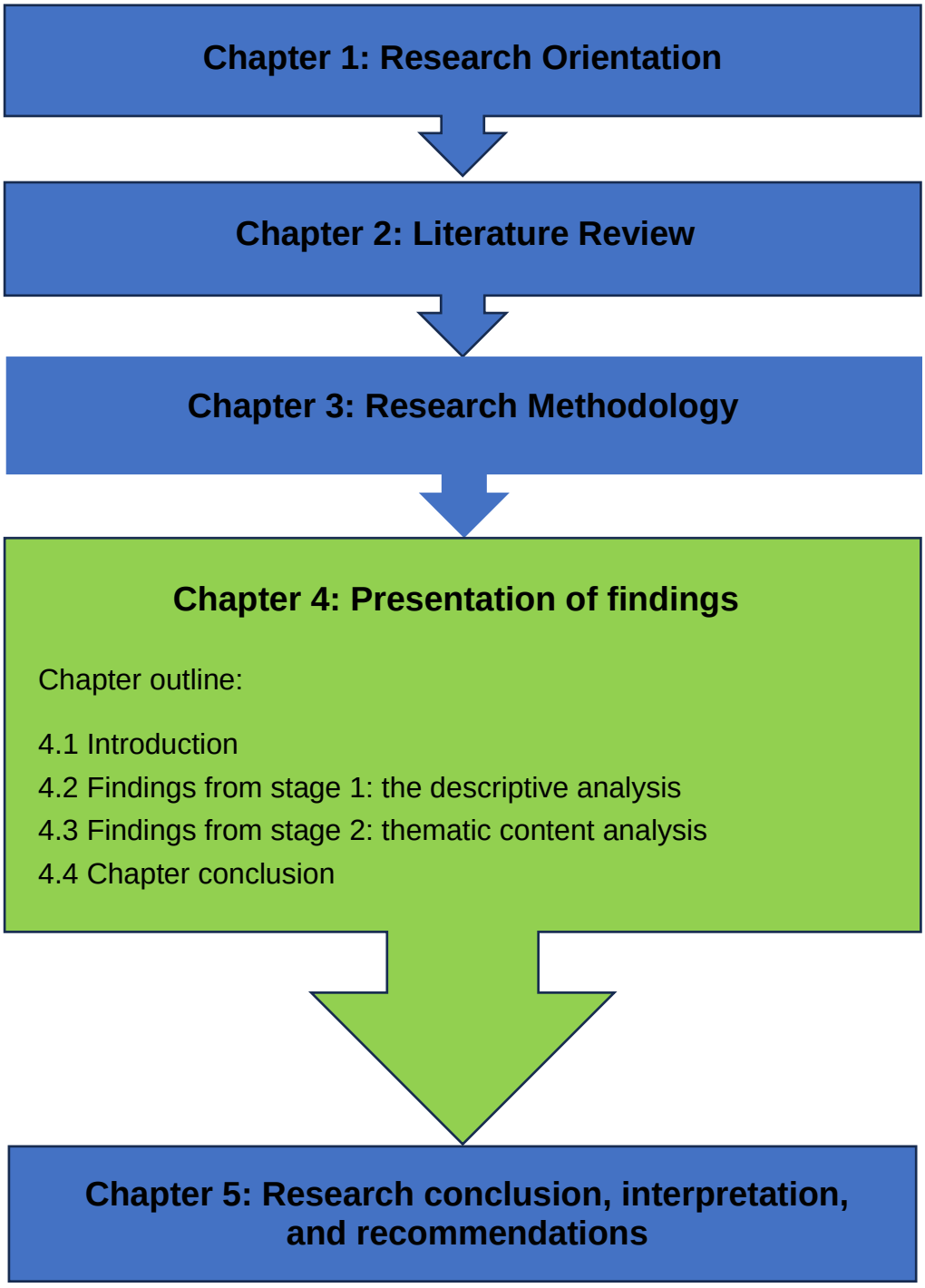

Figure 4.1: Overview of Chapter 4

Source: Author's work

4.1 INTRODUCTION

Chapter 3 provided an overview of the research approach and design, and the literature search and data evaluation steps of this systematic integrative review. Chapter 4 presents the findings from the analysis and is presented as part of a two-stage analysis.

The purpose of this study was to determine the state of literature on the leverage points perspective (LPP) within the context of corporate sustainability (CS) from 1999 to 2023, and to identify evidence-based interventions from the literature. Furthermore, the study aimed to synthesise these interventions into an actionable framework for organisations and practitioners to leverage change in the transformation towards sustainability embeddedness (SE). As discussed in Chapter 3, this required the researcher to conduct both a descriptive analysis and thematic content analysis. The findings from each respective stage of analysis are presented and discussed in the following sections. The first stage, comprising the descriptive analysis, shed light on the evolution of literature on the LPP within the context of CS and SE from 1999 to 2023, thereby addressing the first research sub-question. The second stage, the thematic content analysis, provides deeper insight into the literature's content to identify and synthesise evidence-based interventions into a practical framework for organisations and practitioners, thereby addressing the second and third sub-questions. By determining both the state of literature and the evidence-based interventions identified within the literature over the period 1999 to 2023, the main research questions of this study are addressed.

4.2 FINDINGS FROM STAGE 1: THE DESCRIPTIVE ANALYSIS

The aim of the descriptive analysis was to investigate the state of research publications between the period 1999 to 2023, using six main characteristics. The six study characteritsics and insights obtained from the descriptive analysis that answered the first research question are discussed in the following sub-sections, as outlined in Figure 4.2. Table 15 in Appendix D provides a list of all publications that were included in the systematic integrative review, as well as the data that were extracted from each paper for the descriptive analysis.

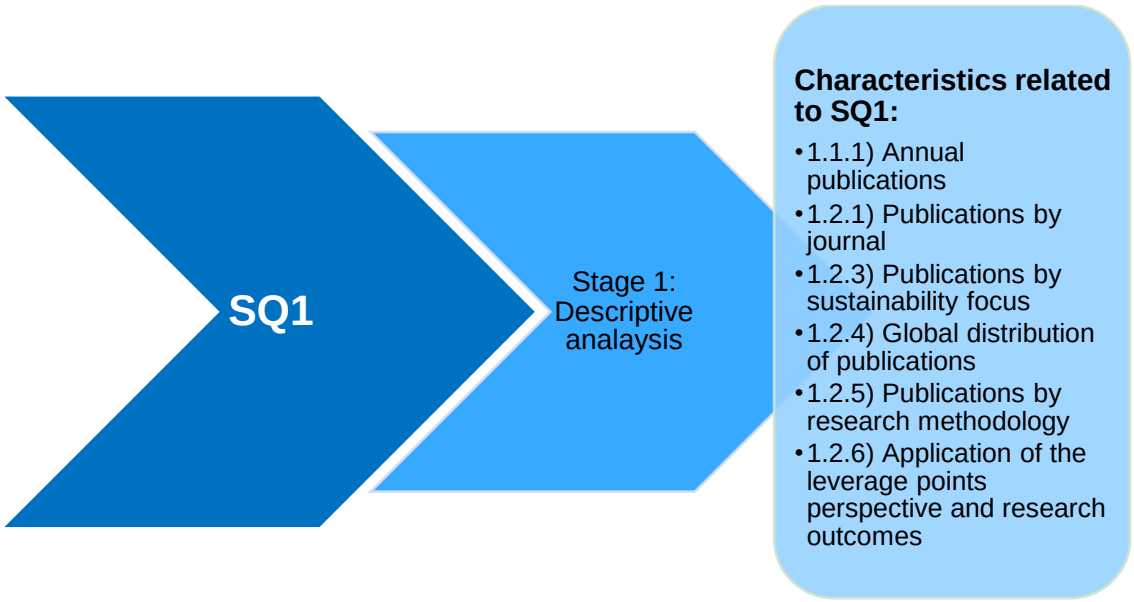

Figure 4.2: Characteristics related to research question one
Source: Author's design

4.2.1 Annual publications

The number of annual publications, as shown in Figure 4.3, illustrates the distribution of articles that were published over the period 1999 to 31 July 2023 on the LPP within the CS literature. According to the number of annual publications, interest on the topic has increased significantly over the last few years (2018 – 2023), and the number of annual publications has increased more than six times from 2010 to 2023. It also appears that 2023 (data up until July) will be the year with the most publications to date. Overall, this shows that academic interest on the LPP has risen considerably within the context of CS and SE literature.

When looking at the number of annual publications recorded per year, the topic underwent a period of stagnation from the inception of the LPP in 1999 to 2009, and again in 2014 and 2016. It was difficult to locate any relevant publications within the topic prior to 2010, which might be because the LPP had not yet been utilised in businesses, management, or CS discourse. There was a slight increase in the annual publications on the topic from 2010 to 2013, however, this only accounts for eight out of the forty-five publications (17.78%). From 2017 to 2023 (July), 37 out of the 45 papers (82.22%) were published, which shows developmental progress. This surge in

the number of annual publications may be attributed to the authors Abson *et al.* (2017), who contributed extensively to the LPP literature from 2017 onwards and brought attention to the underexplored framework. In addition, other authors, such as Fischer and Riechers (2019), have also shed light on the value of the LPP for exploring sustainability discourse and practice. Notably, the LPP within the context of CS and SE is an emerging topic that is growing rapidly, emphasising the importance of the topic.

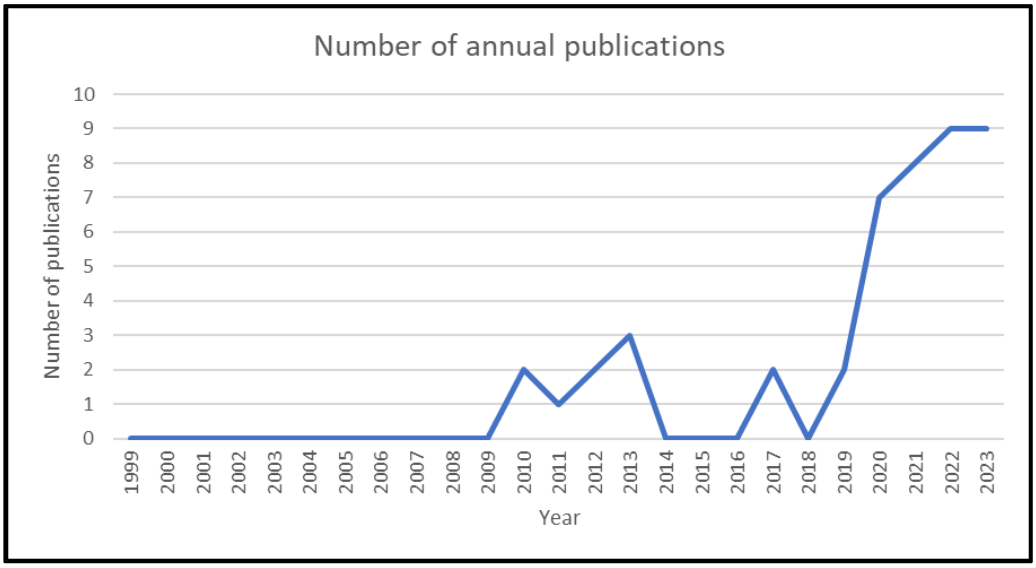

Figure 4.3: Number of annual publications

Source: Author's compilation

4.2.2 Publications by journals

The descriptive analysis also considered the journals from which the various publications were published to identify the most prevalent journals on the LPP within the context of CS and SE literature. The 45 publications included in the systematic integrative review are published across 29 different journals. The majority of journals (22 journals or 75,86%) published only one paper relevant to the LPP within the broader CS literature. The remaining seven journals (24,14%) published a total number of 23 articles, which accounts for more than half of the papers on the topic (51,11%). The four top publishing journals with the greatest number of publications on the topic were *Sustainability Science* (seven papers), *Ecosystems and People* (four papers), *Sustainability* (three papers) and the *Journal of Cleaner Production* (three

papers). These four journals account for more than one third (37,78%) of the papers included in the review and are evidently central in the growth and increased academic interest of the literature. Scholars that want to look for or publish literature on the LPP within the context of CS and SE should consider these top publishing journals. The remaining three journals, *Earth's Future*, the *International Journal of Sustainability in Higher Education*, and *Systems Research and Behavioural Science*, each published two papers. Interestingly, the descriptive analysis revealed that the 45 publications are located across journals from various disciplines, which exemplifies the inter- and multidisciplinary nature of the topic.

4.2.3 Publications by sustainability focus

The researcher classified the publications included in the review into four categories based on their sustainability focus. Three categories were derived from the dimensions of CS; namely, environmental management, economic and governance, and corporate social responsibility (Hahn *et al.*, 2015; Derqui, 2020; Costa *et al.*, 2022). 'Sustainability embeddedness' was included as the fourth category to classify publications that did not relate directly to these dimensions but still focused on relevant topics, such as organisational change, overcoming short-terminism, management, internal information flows, or supply chain networks.

According to the number of publications categorised by sustainability focus, as shown by Table 4.1, more than one third of the publications (16 papers or 36%) that studied or utilised the LPP, focused on environmental management. The economic dimensions, which included studies regarding governance and the social dimension, were only studied by five publications (11%) each. The publications categorised under SE accounted for nearly half of the studies (19 papers or 42%). These publications focused on various aspects of SE with regards to the LPP, most notably sustainable transformations (seven publications or 16%) and supply chain management (two publications or 4%). Organisational change, artificial intelligence, short-terminism, and sustainable resource management was studied by one publication (2%) each. Out of the three dimensions, the LPP has been studied and adopted most predominantly by the field of environmental management. This shows that literature on the LPP within the context of CS and SE has largely neglected the social and economic dimensions

of CS. According to the literature, as highlighted in Chapter 2, CS is a tri-dimensional construct that requires the equitable and integrative consideration of all three dimensions for sustainability to become embedded (Hahn *et al.*, 2015; Derqui, 2020; Costa *et al.*, 2022). Therefore, further research on the social and economic dimensions are necessary to develop a holistic and comprehensive understanding of the LPP, within the context of CS and SE.

Table 4.1: Number of publications by sustainability focus

Sustainability focus	Frequency	Percentage (%)
Environmental Management	16	36
Economic and Governance	5	11
Social	5	11
Sustainability Embeddedness	19	42
Total	**45**	**100**

Source: Author's work

4.2.4 Global distribution of publications

The first stage of analysis considered the global distribution of the literature on the LPP in the context of CS and SE. This characteristic looked at the geographical contexts of the research publications, focusing specifically on the global north versus the global south. The descriptive analysis revealed that nearly half of the publications (22 or 49%) focused their research only in the northern hemisphere. There were only six publications (13%) that researched countries within the southern hemisphere. Three publications (7%) conducted research on countries in both the northern and southern hemisphere. Lastly, 14 out of the 45 publications (31%) did not research a specific context. These publications are typically the review articles and conceptual papers.

The publications included in this review have studied a total of 28 countries. The LPP, within CS literature, has largely been studied in the northern hemisphere. Table 4.2 provides a summary of publications per country. The countries that have been the focus in the northern hemisphere are the United States of America and Ethiopia, both

with 3 publications (7% of publications) each. Seven countries were researched by two publications each (4%), namely, Germany, Canada, Romania, Transylvania, Portugal, Vietnam, and Ghana. The remaining northern hemisphere countries that have been studied by one publication each (2%) are Nigeria, Columbia, United Kingdom, Ukraine, and Iceland. The leading country with the most publications in the global south is Australia, with 3 publications (7%). Countries from the southern hemisphere that have been studied by one publication each (2%) include Brazil, Mexico, South Africa, Chile, and Vanatu. The fact that the LPP, within the context of CS and SE, has been studied the most in the northern hemisphere could mean that the southern hemisphere countries have not been introduced to the perspective or that they have not adopted the perspective. This focus on the global north suggests the need for further research that explores the LPP in the southern hemisphere.

Table 4.2: Number of publications per country

Studied countries	Frequency per country	Percentage per country (%)
Top studied countries in the northern hemisphere		
Ethiopia and United States of America	3	7
Germany, Canada, Romania, Transylvania, Portugal, Ghana, and Vietnam.	2	4
Top studied countries in the southern hemisphere		
Australia	3	7

Source: Author's work

4.2.5 Publications by research methodology

The next characteristics that were examined during the descriptive analysis were the type of research methodology designs used by the publications to study the LPP within the context of CS and SE. This section discusses the most predominant research approaches, designs, and data collection methods, as well as how the LPP was utilised in research, and the outcomes of publications with regards to the LPP.

4.2.5.1 Research approaches and designs

A summary of the research approaches and designs applied by the research publications is included in Table 4.3. The publications were grouped based on the four research approaches, namely, qualitative, quantitative, mixed-methods, or non-empirical (conceptual). The most frequently applied research approach was qualitative research (31 publications or 69%). A mixed-methods approach was applied by seven papers (16%), non-empirical or conceptual research by five publications (11%), and the quantitative research approach was utilised by two papers (4%). Qualitative research is most often used to explore this topic. This indicates that qualitative research is the most preferred approach for exploring or utilising the LPP within the context of CS and SE. However, more researchers became interested in the mixed-methods approach from 2019 onwards, which could indicate that qualitative approaches can be supported by quantitative methods.

Table 4.3: Research approaches and designs

Research approach or design	Frequency	Percentage (%)
Research approaches		
Qualitative	31	69
Quantitative	2	4
Mixed-methods	7	16
Non-empirical / conceptual	5	11
Most predominant research designs		
Case Studies	15	33
Systematic Reviews	9	20
Participatory Modelling	5	11

Source: Author's work

As can be seen in Table 4.3, the most predominant research design was case studies (15 publications or 33%), applied by one third of the publications included in this review. These case studies range from longitudinal, comparative, and multiple case studies to the vignette approach. Review methodological designs were the second

most often utilised research design. Review designs were used by nine publications (20%) which mostly took a qualitative approach (seven publications), but also included the quantitative and mixed-methods approaches (one publication each). Participatory modelling was the third most often utilised research design (five publications or 11%).

It is important to note that while there were a number of systematic review papers conducted during the period 1999 to 2023, none of them focused specifically on the LPP within the broader CS literature. The review papers focused on topics within or closely related to SE, such as interventions in energy and food systems (Dorninger *et al.,* 2020), proposed methods for reducing corporate short-terminism (Fusso, 2013), effectiveness revolution in environmental management (Keene & Pullin, 2011), artificial intelligence (Camarena, 2020), social dimension of the circular economy (Mies & Gold, 2021), well-being economy (Sebastian, 2023), and inner transformations (Woiwode *et al.,* 2021). There were also two systematic reviews that adopted the LPP on indigenous and local knowledge for environmental management (Burgos-Ayala *et al.,* 2020), and arctic indigenous food systems research (Zimmerman *et al.,* 2023). The systematic review papers and the outcomes thereof were included in this integrative review since they highlight evidence-based interventions. As opposed to a traditional systematic review, the use of an integrative review allowed for the inclusion of other systematic review papers in this study, which facilitated deeper insight into literature on LPP within the context of CS and SE.

4.2.5.2 Data collection and analysis methods

Table 4.4 provides an overview of the most frequently applied data collection and analysis methods of the publications included in this review. The descriptive analysis revealed that the most frequently applied data collection method was interviews (eight publications or 18%). Interviews were often utilised in publications with case study and modelling designs, which suggest the need to engage with participants to understand the LPP within the context of a system of interest that is being studied, such as an organisation. Mapping was utilised in seven publications (16%), including studies employing case study, modelling, and systematic review research designs. Four publications (9%) used focus groups, three publications (7%) used questionnaires, and two publications (4%) used surveys as data collection methods. As shown in Table

4.4, the most frequently applied data analysis methods include content analysis (four publications or 9%), thematic analysis (three publications or 7%), and social network analysis (three publications or 7%). Network analysis (two publications or 4%), leverage points analysis (two publications or 4%), and document analysis were utilised by two publications (4%) each.

Table 4.4: Most predominant data collection and analysis methods

Data collection or analysis method	Frequency	Percentage (%)
Data collection methods		
Interviews	8	18
Mapping	7	16
Focus Groups	4	9
Questionnaires	3	7
Surveys	2	4
Data analysis methods		
Content analysis	4	9
Modelling	4	9
Thematic analysis	3	7
Social network analysis	3	7
Network analysis	2	4
Leverage points analysis	2	4
Document analysis (1) and report analysis (1)	2	4

Source: Author's work

The descriptive analysis revealed that qualitative research was the most prevalent research methodology within the literature. This finding suggests that qualitative research is the most preferred method for research on the LPP within the context of CS and SE. The most predominant research designs include case studies, systematic reviews, and modelling. Whilst the most frequently applied data collection methods were interviews, mapping, and focus groups, the most prominent data analysis methods were content analysis, modelling (causal loop diagramming), thematic analysis, and social network analysis. These findings highlight the most preferred methodologies for exploring the LPP within the field of CS and suggest potential

research designs, approaches, data collection methods, and data analysis strategies for researchers to consider in future research on the LPP.

4.2.6 Application of the leverage points perspective and research outcomes

This section of the descriptive analysis will discuss how the LPP was applied in the CS literature and the research outcomes of the publications with regards to the LPP, as shown by Table 4.4. Firstly, it was made evident during analysis of the publications that the LPP was often used as a framework in the research. The LPP was most frequently used as an analytical framework (14 publications or 31%) in the research process. The LPP was also applied as a theoretical framework in eight publications (18%) and as a conceptual framework in four publications (9%). Secondly, the descriptive analysis considered the research outcomes of the publications with regards to the LPP. Thirty-five publications (78%) identified evidence-based interventions, often the form of LPs and system characteristics, which were the most frequent outcomes of the research publications. There were only six publications (13%) that contributed to the LPP theory and three publications (7%) that developed a framework that integrated the LPP.

Table 4.5: Application of the leverage points perspective and research outcomes

Application or outcome	Frequency	Percentage (%)
Application of the leverage points perspective		
Analytical framework	14	31
Theoretical framework	8	18
Conceptual framework	4	9
Research outcome in relation to the leverage points perspective		
Evidence-based interventions	35	78
Contributed to the leverage points perspective theory	6	13
Framework that integrated the leverage points perspective	3	7

Source: Author's work

As part of the analysis, the researcher was able to provide insight into how the publications identified evidence-based interventions. Eleven publications (24%) identified practical interventions in conjunction with using the LPP as an analytical framework, while four publications (9%) did so by using it as a theoretical framework. The three most predominant research designs closely associated with the identification of LPs were case studies, systematic reviews, and participatory modelling. This reveals that using the LPP as an analytical framework, facilitated by qualitative research approaches and designs, was the preferred approach when looking to identify evidence-based interventions in the form of LPs and system characteristics. This is important for scholars seeking to explore the LPP within the context of CS and SE.

4.3 FINDINGS FROM STAGE 2: THE THEMATIC CONTENT ANALYSIS

The purpose of this thematic content analysis was to explore the LPP literature within CS literature to answer research questions and identify evidence-based interventions within the publications included in this review. The term “evidence-based interventions” is used to include any evidence-based strategies, actions, practices, policies, and initiatives identified within the literature. Table 5.2 in Chapter 5 (section 5.3.2.1) provides a synthesis of the 42 evidence-based interventions that were identified during this stage. By building on the LPP framework, as conceptualised by Meadows (1999) and Abson *et al.* (2017), a practical navigational framework was developed for organisations and practitioners seeking to leverage organisational change towards embedding CS. By doing so, this study makes a practical contribution to organisations seeking transformational change towards SE. The systematic integrative review and analysis also allowed the researcher to identify directions for future research. The thematic content analysis addressed the second research sub-questions of this study, as shown in Figure 4.4. After conducting the thematic content analysis, the following three themes were identified when referring to evidence-based interventions and were categorised as (1) leverage point interventions; (2) system characteristic interventions; and (3) holistic interventions. A summary of the codes (evidence-based interventions) and illustrative quotes for each theme can be found in Tables 16, 17, and 18 in Appendix D.

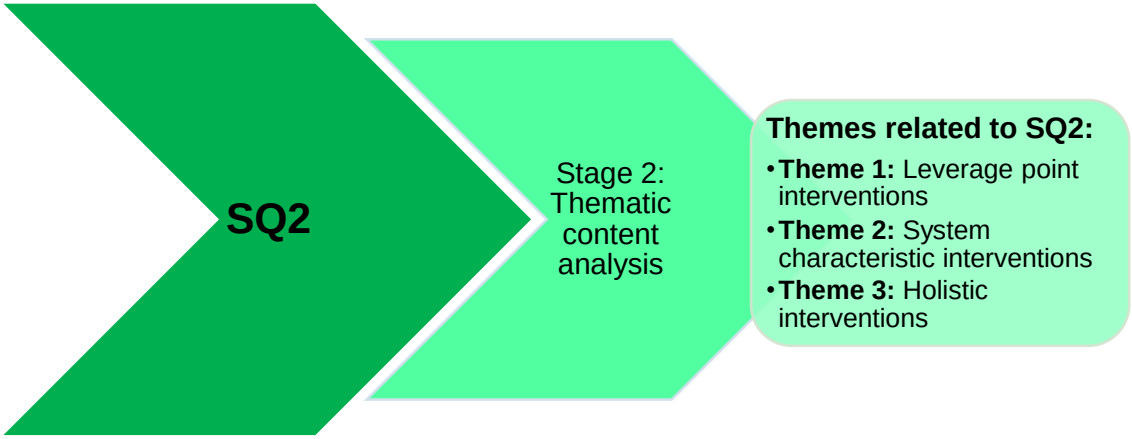

Figure 4.4: Overview of themes related to research sub-question two
Source: Author's compilation

4.3.1 Theme 1: Leverage point interventions

The first theme refers to evidence-based interventions that are applicable at individual LPs. The seminal author, Meadows (1999), conceptualised 12 LPs with the potential for transformative change within a system of interest, as explained in Chapter 2. Table 4.6 provides a summary of the 20 evidence-based interventions that were coded during the thematic analysis, which can be implemented at specific, individual LPs. These interventions are discussed from deep to shallow (LP1 – 12) regarding the specific LPs they affect. Table 16 in Appendix D provides a summary of the LPs and associated intervention with illustrative quotes from the literature.

Table 4.6: Summary of codes and sub-themes related to theme 1

Theme 1	Sub-themes	Codes (evidence-based interventions)
Leverage Point interventions	LP1	• No intervention.
	LP2	• Diversity through hiring and recruitment.
	LP3	• Systemic goal alignment and individual goal alignment. • Redefining system goals. • Developing a conservation strategy.
	LP4	• System resilience.

		• Innovation platforms. • Gender equality.
	LP5	• Changing executive incentive structures.
	LP6	• Access to information. • Knowledge dissemination. • Peer-to-peer learning. • Conservation planning. • Sharing knowledge, experiences, and ideas.
	LP7	• No intervention
	LP8	• Systems monitoring • Recycling scheme.
	LP9	• Real time information on energy use.
	LP10	• Organising resources for optimal flow. • Water storage and reuse.
	LP11	• Capital savings for sustainability initiative.
	LP12	• Green building standards.

Source: Author's work

LP2: The second LP refers to the mindset or paradigm out of which the system arises. As is explained by Berl *et al.* (2021), creating diversity through hiring and recruitment is a practical intervention at LP2 that can influence the organisational culture (intent) and promote change. Diversity through hiring and recruitment can also facilitate gender equality, which is situated at LP4 (Rosengren *et al.,* 2020; Rosengren *et al.,* 2023).

LP3: Three evidence-based interventions were identified at LP3 (the goals of the system), namely systemic goal alignment and individual goal alignment, redefining system goals, and developing a conservation strategy. According to Posner and Stuart (2013), it is critical that organisations redefine their organisational goals to ensure that they are aligned with the shared vision for CS (Posner & Stuart, 2013). The literature also revealed that aligning the systemic goals with individual goals will further bolster organisational change efforts towards SE (Dahlmann & Stubbs, 2023; Winkler *et al.,* 2021). Furthermore, developing and implementing a conservation strategy can start

to shift the organisational goals and purpose towards environmental management (Burgos-Ayala, 2020).

LP4: Evidence-based interventions identified at LP4 (the power to add, change, evolve, or self-organise system structure) were systems resilience, innovation platforms, and gender equality. System resilience refers to the ability of an organisation to adapt in the face of changes or realisations, which are rooted in systems thinking (Posner & Stuart, 2013:272; Shumi *et al.,* 2023:1). Since SE is a process of continuous and emergent change, as explained in Chapter 2 (Lozano, Ceulemans & Seatter, 2015; Vermeulen & Witjes, 2016; Nunhes, Bernardo, & de Oliveira, 2020; van der Genugten *et al.*, 2022), creating system resilience within an organisation is a deep evidence-based intervention for SE. Furthermore, Rosengren *et al.* (2023) identified innovation platforms and gender equality as evidence-based interventions that can be implemented at LP4. Innovation platforms are concerned with "self-organised social platforms that build trust and social cohesion and provide a platform for collective learning" (Rosengren *et al.,* 2023:4). Innovation platforms and gender equality can foster greater social cohesion and trust amongst employees within an organisation with regards to CS.

LP5: This LP refers to the rules of the system (incentives, punishments, constraints), which requires deep interventions to alter. As mentioned in Chapter 2, an obsession with short-term performance and profits, referred to as short-termism, may compromise CS efforts (Dyllick & Hockerts, 2002; Costa *et al.*, 2022). Fusso (2013) corroborates the literature and identified an evidence-based intervention for overcoming short-terminism. The authors suggest basing executive compensation structures on long-term metrics rather than on short-term performance, which will impact LP5.

LP6: The thematic content analysis revealed five interventions regarding LP6 (structure of information flows). The literature highlighted access to information, knowledge dissemination, peer-to-peer learning, conservation planning, as well as sharing knowledge, experiences and ideas as interventions that can change the

structure of information flows within organisations (Rosengren *et al.,* 2023; Arponen & Salomaa, 2023).

LP8: Seadon (2010) and Arponen and Salomaa (2023) identified evidence-based interventions for LP8 (strength of negative feedback loops, relative to impacts they are trying to correct). Negative feedback loops refer to feedback loops that reduce the output of a system rather than augment it. While the implementation of a recycling scheme can strengthen negative feedback loops (Seadon, 2010), status monitoring can be utilised to track and monitor the strength of negative feedback loops (LP8) (Arponen & Salomaa, 2023:17).

LP9: An evidence-based intervention that was identified at LP9 (lengths of delays, relative to the state of system change) is real-time information on energy use. Reducing the delay of information on energy use by providing managers with real-time feedback can significantly increase their understanding of resource use and reduce energy use (Posner & Stuart, 2013). This is important for organisations dealing with high energy usage, such as manufacturing, production, or mining organisations.

LP10: Water storage and reuse, as well as organising resources for optimal flow are two practical, evidence-based interventions that can be implemented to change the structure of an organisation's material stocks and flows (Egerer *et al.,* 2020; Posner & Stuart, 2013). These shallow interventions can contribute to the deeper LPs in the transformation towards SE.

LP11: Posner and Stuart (2013) identified an evidence-based intervention for LP11 (the size of buffers and other stabilizing stocks). To act on LP11, organisations can increase capital savings as an intervention for aspects such as sustainability initiatives or building maintenance (Posner & Stuart, 2013). This evidence-based intervention is directed towards the economic dimension of CS.

LP12: The authors also identified an intervention for LP12 (constants, parameters, and numbers). Green building standards was identified as a shallow intervention that can be used to reduce energy (Posner & Stuart, 2013). This can ensure that organisations

adhere to the minimum environmental standards with regards to energy usage to address the environmental dimension of CS.

The LP for which the most interventions were identified was LP6 (five interventions). The literature shows that this LP has been studied the most often within the context of CS and SE. The LPs for which the second most evidence-based interventions have been identified were LP3 (three interventions) and LP4 (three interventions). As shown in Table 4.6, the thematic content analysis revealed that none of the studies identified evidence-based interventions for LP1 (the power to transcend paradigms) and LP7 (the gain around driving positive feedback loops). The lack of evidence-based interventions for these LPs highlights an omission of the current literature on the LPP within the context of CS and SE.

4.3.2 Theme 2: System characteristic interventions

The second theme that emerged during the thematic content analysis refers to evidence-based interventions that impact individual system characteristics and their LPs. As illustrated by Table 2.1 in Chapter 2, Abson *et al.* (2017) further developed the LPP by conceptualising four system characteristics across the 12 LPs, namely parameters, feedbacks, design, and intent. These evidence-based interventions can be implemented at one of the four system characteristics, and has an impact on all three LPs situated within a system characteristic. By means of a thematic content analysis of the LPP literature in the context of CS and SE, 13 evidence-based interventions were identified that refer to the system characteristic, as shown in Table 4.7. The table provides a summary of the interventions that will be discussed in relation to each system characteristic. During the thematic analysis, the system characteristics, originally identified by Abson *et al.* (2017), were used as the sub-themes and further coded to identify the specific evidence-based interventions mentioned per system characteristic. Table 17 in Appendix D summarises the system characteristic interventions alongside illustrative quotes from the literature.

Table 4.7: Summary of codes and sub-themes related to theme 2

Theme 2	Sub-theme	Codes (evidence-based interventions)
System Characteristic interventions	Parameters	• Better products and management practices. • Internal organisation management and administration. • Efficient technology (e.g. water and electricity efficiency, and waste reduction).
	Feedbacks	• Consumer awareness and publicity. • Socio-ecological monitoring.
	Design	• New organisational structure or sustainability department. • Changing organisational policies.
	Intent	• Organisational culture. • Adopting a long-term perspective (overcoming short-terminism). • Leadership. • Refining governance strategy. • Framing of organisational purpose. • Inner transformations.

Source: Author's work

4.3.2.1 Parameters

The thematic content analysis revealed three evidence-based interventions that practitioners can implement at the parameter level system characteristic to augment organisational change towards SE. Arponen and Salomaa (2023) identified two evidence-based interventions, namely implementing better products and management practices, as well as internal management and administration. The authors reveal that these evidence-based interventions impact LP10-12. Furthermore, the use of efficient and clean technology and systems was identified as an evidence-based intervention regarding the parameters system characteristic. Efficient and clean technology and systems can address multiple interventions that have been highlighted by the literature, including energy efficiency, reduced emissions, reduced water consumption, and waste reduction. Therefore these codes were merged (Seadon, 2010). The following quotations illustrate these findings:

> “Adopting Better products and management practices (5.2) influences parameters (LP10-12). Seal-friendly fishing gear, greening of supply chains of corporations, or swapping for low water-use crops do not aim at any deeper change in the society, just a less damaging way of proceeding with business-as-usual.” (Arponen & Salomaa, 2023:15)

> “The quantities of wastes being generated and how much is being diverted are certainly important parameters to have … the changes that do occur through parameter collection are normally aimed at increasing the efficiency of the system under study and are often achieved through a technological change (e.g. greater compaction, concentrating or diluting a discharge or removing contaminants from air emissions).” (Seadon, 2010:1647)

These interventions can be implemented by practitioners at the parameter level LPs to initiate changes within an organisation. However, these interventions are located at the shallow LPs which, according to the LPP literature, are unlikely to lead to transformational change and SE (Abson *et al.,* 2017; Fischer & Riechers, 2019)

4.3.2.2 Feedbacks

According to the thematic content analysis, publicity and consumer awareness can be utilised as interventions at the feedback level system characteristic (Adebiyi & Olabisi, 2022; Rolfer *et al.,* 2022:12). Consumers deliver feedback to organisations, providing important information regarding the effectiveness of desired outcomes. Through publicity, an organisation can directly influence consumer awareness. Furthermore, Burgos-Ayala *et al.* (2020) identified the social and ecological monitoring of systems outside of an organisation as an additional evidence-based intervention regarding the feedback system characteristics. The following illustrative quotes provide evidence:

> “Also, consumer awareness connects directly with feedback loops … This implicates publicity and consumer awareness as cause variables with multiple effects and therefore as potential leverage points in the unified Elekuru CLD (Laurenti et al. 2016; Roxas et al. 2019). Given that consumer awareness is driven by publicity (see Fig. 4), it appears reasonable to zero in on publicity as a leverage

> point in the system (Strelkovskii and Rovenskaya 2021).” (Adebiyi and Olabisi, 2022:419-420)

> “These leverage points include improving … public awareness and understanding of climate change.” (Rolfer *et al.,* 2022:12)

> “In our study, they [feedbacks] refer to the social or ecological monitoring systems implemented by the projects …” (Burgos-Ayala *et al.,* 2020:298)

The system characteristics parameters and feedbacks typically deal with interventions at the shallow LPs of the LPP framework. In Chapter 2, the organisational change for CS literature refers to these shallow, incremental changes in an organisation as transitional changes towards CS (Eccles, Perkins & Serafeim, 2012; Lozano, Ceulemans & Seatter, 2015; Vermeulen & Witjes, 2016; Landrum, 2017). Although these evidence-based interventions are not sufficient for transformational change towards SE (Abson *et al.,* 2017; Fischer & Riechers, 2019), the literature suggests that these changes should not be neglected as they may support organisational change at the deeper LPs and system characteristics that are more impactful (Hahn *et al.,* 2018).

4.3.2.3 Design

The thematic content analysis revealed two interventions that organisations and practitioners can utilise at the design level characteristic, namely changes in policies and developing a new organisational structure or sustainability department. Firstly, organisations can create a new organisational structure that supports CS and intent-level interventions, such as changes in the organisational culture (Burgos-Ayala *et al.*, 2020; Berl *et al.,* 2021). In addition, establishing a sustainability department with agency to support SE can aid in managing the interventions at the shallow LPs, as illustrated below:

> “’Design’ relates to new organizational structures and institutions with the agency to manage shallower LP.” (Burgos-Ayala *et al.*, 2020:298)

> "Changes in the structure of an agency and its policies, including hiring and incentive systems, will feed back to internal cultural changes (Figure 2.2)." (Berl *et al.,* 2021:10)

Secondly, changing organisational policies is an evidence-based intervention that acts on the LPs within the design system characteristic. Adapting an organisation's policies to be in line with its sustainability initiatives, goals, and vision is a necessary organisational change for embedding CS (Lam *et al.,* 2021). This can also stimulate further action and integration with regards to CS. Moreover, Williams *et al.* (2020) highlight transparency as a policy measure for CS, for example in sustainable resource management. Transparency involves providing employees, managers, and stakeholders with access to information in a timely fashion, as well as developing standards to compare disclosed information against the determined benchmark (Williams *et al.* 2020; Lam *et al.,* 2021). The change in policies, specifically transparency as a policy measure, is illustrated by the following quotes:

> "When different local actors jointly try to change policies, they target the design of a system … To amplify impact, initiatives can intervene in different leverage points. For instance, to protect biodiversity, a conservation initiative might aim to change policies at higher institutional level (i.e., amplifying beyond), which is an intervention in the design of a system" (Lam *et al.,* 2021:813-804)

> "Transparency measures in resource management involve access to inform on different aspects of the resource value chain, such as ownership, the way in which the resources are managed and revenue management." And "Our findings suggest that transparency can serve as a leverage point for sustainable resource management if it meets certain criteria. Transparency measures need to be complemented by clear legal standards for resource management and accountability mechanisms." (Williams *et al.,* 2020:12)

Evidence-based interventions that are located at the design system characteristic supports both deep (intent) and shallow (parameters and feedbacks) level interventions at the LPs. This corroborates with the LPs literature and the notion of a

‘chain of leverage’, where interventions at an LP often lead to changes at other LPs and system characteristics (Fischer & Riechers, 2019).

4.3.2.4 Intent

The integrative review of the literature shed light on six deep evidence-based interventions at the intent level system characteristic. The literature on the LPP within the context of CS and SE emphasises organisational culture as a critical LP in the organisational change towards SE, since it determines the norms, values, and behaviours that are embodied in an organisation. This change in the organisational culture should include a shift towards adopting a long-term perspective in order to overcome short-terminism (Dyllick & Hockerts, 2002; Fusso, 2013; Costa *et al.*, 2022). These findings are consistent with the SE literature, which also highlighted a sustainability-oriented culture and a long-term perspective, as a critical element of SE, as is explained in Chapter 2 (Wijethilake *et al.*, 2021; Valente, 2012; Lozano, 2013; Nunhes, Bernardo, & de Oliveira, 2020; Derqui, 2020; Barreiro-Gen *et al.*, 2022). The following excerpts from the literature demonstrate the importance of organisational culture and adopting a long-term perspective:

> “There was broad agreement in our group that agency culture (Figure 2.2) is the most critical piece for driving and maintaining systems change within an agency. The internal culture of an organization is “the way we do things around here”; it is a system that embodies the organization’s norms, values, and assumptions and continually signals to employees which kinds of behavior and which kinds of people are welcome, and which are not (Martin, 2006).” (Berl *et al.,* 2021:8)

> “Finally, this analysis suggests conquering short-termism will take time. Changing culture demands stakeholder engagement, thoughtful discussion, and other change management tactics.” (Fusso, 2013:820)

> “The three strongest levers focus on beliefs and culture. These levers are strong because they focus on the values, cultures, and beliefs of those within a system, rather than the structures of the system.” (Fusso, 2013:818)

The thematic content analysis also identified leadership as an important intent level intervention for organisational change towards SE (Bryant & Thompson, 2020; Berl *et al.,* 2021). Managers in an organisation who assume formal leadership positions play a central role in shaping the organisational culture and driving organisational change. Leaders can shift the organisational culture by overcoming short-terminism and focusing on the long-term benefits rather than on short-term gains (Sebastian, 2015). Bryant and Thompson (2020) note that leadership can include the appointment of a formal sustainability position, such as a sustainability facilitator, to facilitate SE across management levels and departments within an organisation. The following illustrative quotes support leadership as a deep intervention:

> "We concluded that agency leadership in particular takes a central role in shaping the fabric of the agency by managing its staff and priorities and in setting the tone of its culture … strong leadership from the top of the organization can drive changes in norms and systems of governance that lead to expanded accessibility and participation (Decker et al., 2016)." (Berl *et al.,* 2021:8-10)

> "The appointment of the Sustainability Facilitator by a supportive CEO resourced a boundary spanner (Bögel et al. 2019) to work vertically across hierarchical levels of the organisation (i.e. engaging with the CEO, Elected members, department managers, officers and workers), and horizontally across departmental silos to generate interest within the organisation, and finally coach, empower and educate others to become Boundary Spanners." (Bryant and Thompson, 2020:801)

The fourth intent level evidence-based intervention, framing of the organisational purpose, can also be utilised by practitioners to intervene at the intent LPs of an organisation to embed sustainability. Framing broadly refers to how individuals and groups within an organisation communicate, connect, and interact to make sense of their common interest, identity formation, and collective action through language and emotions (Dahlmann & Stubbs, 2023). The intent of an organisation can be changed through purpose framing, by influencing the goals and norms of an organisation. Purpose framing can be implemented by calling attention to the role and purpose of an organisation in addressing sustainability issues and contributing to sustainable development (Dahlmann & Stubbs, 2013). Therefore, purpose framing can be used as

an informal governance approach to change the existing norms, goals, and intent to drive organisational change to SE, as highlighted by the following illustrative quotes. However, Dahlmann and Stubbs (2013) warn against the risk of purpose-washing, whereby organisations pay lip service to CS ideals without implementing the necessary organisational changes associated with SE.

> "The framing of purpose thus aligns with more informal governance approaches based on norms, ethics, and values (Patterson *et al*., 2017; Stirling, 2014) Moreover, by focusing on changing the norms (Kanda et al., 2020) regarding the purpose of business (i.e., moving from a purely profit orientation towards achieving broader positive socio-ecological impact), the use of purpose framing also represents a deliberate attempt to focus on changing the goal or intent of the overall (economic) system as a critical leverage point as part of a wider sustainability transformation (Abson et al., 2017). The focus on purpose as defined by our respondents is quite literally an attempt to initiate systems change by revising key higher-level goals (i.e. the purpose of individual businesses and business in general), if not even a challenge to the 'mindset or paradigm out of which these goals arise' (Meadows, 1999: 3)." (Dahlmann and Stubbs, 2023:7-8)

> In this framing, individuals were inspired to align their personal goals with an organisational purpose that provides them and their work with meaning and the opportunity to contribute beyond routine effort. The notion of a worthwhile job was an example of how respondents perceived purpose-driven businesses to provide an emotional sense of fulfilment, where empathy and humanistic approaches to life were viewed as clear underpinnings that help connecting individual emotional needs with wider systemic change.

Another evidence-based intent level intervention highlighted by the thematic content analysis was the refinement of an organisation's governance strategy. Governance broadly refers to a system of procedures and practices that governs how responsibilities are exercised and how decisions are made and implemented (Berl *et al.,* 2021; Decker *et al.,* 2016). Supporting the strategic vision of an organisation with an appropriate governance strategy can aid in overcoming short-terminism. Large shareholders can play a key role in this intent intervention by influencing the

governance of an organisation. The following quote illustrates the refinement of governance strategy:

> Study findings revealed that the refinement of governance strategy is a clear leverage point to achieve this [circular economy adoption] end goal. Bolstering strategic vision can have downstream effects that ameliorate financial barriers (i.e., high capital and production costs and a lack of incentives) that exacerbate the desire for short-term profitability of companies and stakeholders." (Veliz *et al.,* 2023:9)

Lastly, Woiwode *et al.* (2021) identified inner transformations as an intent level intervention. Inner transformations as an intervention is relevant to the intent system characteristic because it encompasses various aspects, such as mindsets, values, worldviews, and beliefs. This intervention explores and addresses these personal dimensions in relation to sustainability. According to Woiwode *et al.* (2021), inner transformations can support organisational change by playing an important role in sustainable behaviour change and facilitating organisational learning as a driver of SE. These authors also suggest that SE can be facilitated through transformation processes that address inner dimensions at personal and collective levels, as expressed in the following:

> "Whilst different definitions exist, a common denominator is that inner transformation relates to exploring and addressing people's inner dimensions and their relation to sustainability to support individual, collective and systems change. Based on their professional and academic work, several session participants argued that fundamental change towards sustainability can only succeed through transformation processes that also address inner dimensions at personal and collective levels." (Woiwode *et al.,* 2021:844)

It is clear from the thematic content analysis that evidence-based interventions at the intent level system characteristics were the most frequently explored in the literature on the LPP within the context of CS and SE. The least number of interventions were identified at the feedbacks and design system characteristic. A strength of the literature is that the discourse has explored all four system

characteristics. However, more research is required on interventions at the four system characteristics and how they interact.

4.3.3 Theme 3: Holistic interventions

The third theme identified during thematic content analysis was categorised as holistic intervention. Holistic interventions refer to evidence-based interventions that influence more than one system characteristic and multiple LPs simultaneously. Within the holistic interventions theme, the content analysis revealed nine evidence-based interventions that were grouped into four sub-themes, as shown in Table 4.8. A summary of the holistic interventions with supporting illustrative quotes can be found in Table 18, Appendix D.

Table 4.8: Summary of codes and sub-themes related to theme 3

Theme 3	Sub-theme	Codes (evidence-based interventions)
Holistic interventions	Knowledge and skills development	• Education • Training • Learning
	Alliances, Partnerships and Collaborations	• Create alliances and partnerships. • External collaboration with stakeholders. • Internal collaboration
	Capacity Development	• Internal capacity development • External organisational development and support
	Artificial Intelligence	• AI

Source: Author's work

The first sub-theme, knowledge, and skills development, include three interventions, namely education, training, and learning. It is clear from the thematic content analysis that education, training, and learning are mutually reinforcing, therefore, these interventions were grouped under the sub-theme knowledge and skills development,

within the theme holistic interventions. Education was the most often cited evidence-based intervention within the literature on the LPP within the context of CS and SE (Bryant & Thomson, 2021; Mies & Gold, 2021; Arponen & Salomaa, 2023). The literature called attention to the importance of education in supporting organisational change towards SE. Education has the potential to impact all of the system characteristics and numerous LPs, including paradigms and organisational culture (LP2), organisational structure (LP4), and the structure of information flows (LP6). Therefore, as highlighted by numerous studies in this review, educating employees and managers on CS can create a positive cascading effect throughout the organisation by changing organisational culture (Bryant & Thomson, 2021) and system structure (Arponen & Salomaa, 2023), addressing inner transformations (Woiwode *et al.,* 2021), improving cross-sectoral cooperation, increasing information flows, and by supporting sustainability initiatives that impact parameter level LPs (Loehr & Becken, 2021). Education can also foster a shared understanding and language regarding CS that will support employees in working and communicating across traditional departmental and disciplinary boundaries (Bryant & Thomson, 2021).

The second evidence-based intervention that was identified within the sub-theme knowledge and skills development was training. Training with regards to CS as an intervention supports SE by informing practitioners on solutions to change and change management (Berl *et al*., 2021). Training programmes are strongly linked to learning and leadership, specifically agency champions or change agents (Nguyen & Bosch, 2012). Training of practitioners (employees, managers, and leaders) can help to create shared understanding and knowledge, and help to build a coordinated network of agency champions (Bryant & Thomson, 2021).

Through the thematic content analysis, learning was also identified as an evidence-based intervention in several studies included in this review (Rosengren *et al.,* 2020; Winkler *et al.,* 2021; Woiwode *et al.,* 2021). Learning was categorised as a holistic intervention within the sub-theme for knowledge and skills development, since learning has a direct impact on all four system characteristics and multiple LPs. The implementation of organisational learning in the context of CS supports SE by encouraging change in organisational structures and objectives. Learning

interventions, such as educational sustainability videos, can build a culture of support and normalise sustainability across business objectives. This finding is consistent with the SE literature in Chapter 2, since organisational learning is considered a strong internal driver of sustainable transformations to SE (Witjes *et al.*, 2017; Hahn *et al.*, 2018; Kiesnere & Baumgartner, 2019a; Iqbal & Ahmad, 2021).

These evidence-based interventions were categorised under the theme holistic interventions, because the literature revealed that they can simultaneously act on multiple LPs and system characteristics within the LPP. As discussed in Chapter 1 and 2, there is a lack of understanding regarding SE in practice. Notably, implementing education, training, and learning based interventions can address this lack of understanding in practice by providing organisations and practitioners with an improved understanding of SE to better interpret and integrate CS. The following illustrative quotations provide brief excerpts for each of the aforementioned evidence-based interventions within the sub-theme knowledge and skills development, namely education, training, and learning:

> "In this case study, embedding organisational sustainability was a co-ordinated process that had the education of individuals within the bureaucracy at its heart … Investment in an education program to shift culture was a powerful leverage point that has had, and continues to exert, considerable positive sustainability impact within this large municipality." (Bryant and Thomson, 2021:805-806)

> "A few initiatives have tried to change institutional structures and objectives but have thus far met limited success. To overcome this situation, organizational learning could be encouraged. This includes creating opportunities to reflect on norms, values, and one's own activities (Siebenhüner and Arnold, 2007). Such learning could be promoted with events that encourage reflection on one's own norms and values and how they align with the objectives …" (Winkler *et al.,* 2021:18)

The second sub-theme was alliances, partnerships, and collaborations. This holistic intervention consists of three evidence-based interventions, namely creating alliances and partnerships, external collaboration with stakeholders, and internal collaboration.

Several studies in this review identified alliances and partnerships as an import evidence-based intervention for leveraging change (Atwell, 2010; Mies & Gold, 2021; Arponen & Salomaa, 2023). Creating alliances and partnerships with stakeholders and other non-governmental organisations can impact the structure of information flow (LP6) and capacity development of an organisation. Collaborations, both external and internal, were also identified as an evidence-based intervention during the thematic content analysis (Berl *et al.,* 2021; Mies & Gold, 2021; Arponen & Salomaa, 2023). External collaboration is concerned with collaborative efforts between an organisation and stakeholders outside of the organisation, such as suppliers, local communities, non-governmental organizations, and governmental organisation. Sebastian (2015) reveals that organisations can collaborate with stakeholders to co-create a sustainability oriented organisational purpose (Sebastian, 2015). Engaging with stakeholders in co-creation can facilitate new decisions and knowledge that lead to more impactful actions with regards to CS. Internal collaboration refers to collaborative efforts between different groups within an organisation, such as functions or departments that work on sustainability. Collaboration among groups within an organisation that are active in sustainability can help foster a sustainability-oriented culture, facilitate the development of sustainability activities, engage with organisational values, and align the values with sustainability objectives. Conversely, the literature highlights that a low frequency or a lack of collaboration can hinder organisational change and SE (Lam *et al.,* 2021; Winkler *et al.,* 2021; Arponen & Salomaa, 2023; Veliz *et al.,* 2023). The following quotes illustrate the theme alliance, partnerships, and collaboration development:

> “Finally, the creation of collaborative relationships and partnerships with other organizations can increase an agency's capacity by leveraging the influence and resources of organizations and individuals that share common goals with agencies in preserving wildlife and improving quality of life for people.” (Berl *et al.,* 2021:10)

> “Another part of the organizational culture, the weak intensity of collaboration between different groups working on sustainability, is reflected in … In addition, already active sustainability groups should collaborate to not only prepare the ground with well-intended, tangible sustainability activities but also to create possibilities to engage with values and align them with sustainability objectives.

> These interactions will require time and resources but are necessary for a sustainability transformation." (Winkler *et al.,* 2021:31)

The third sub-theme within the theme holistic interventions is capacity development. During the thematic content analysis, this sub-theme was divided into two codes: internal capacity development, and external organisational development and support. Internal capacity development is concerned with whether executives and managers possess the appropriate capabilities for CS. The publications revealed that internal capacity development can influence multiple deep system characteristics and LPs, specifically information flow (LP6), system structure (LP4), paradigms and organisational culture (LP2) (Berl *et al.,* 2021; Winkler *et al.,* 2021; Arponen & Salomaa, 2023). Hence, internal capacity development was categorised under holistic interventions. External organisation development and support is also categorised as a holistic intervention since it has can impact several LPs and system characteristics. External organisation development and support can directly influence the strength of negative feedback loops (LP8), information flow (LP6), and the structure of the system (LP4) (Arponen & Salomaa, 2023). An example of external organisational support is consulting services that creates a new channel of information flow. The following quotations illustrate the aforementioned findings:

> "Agency capacity is another important leverage point within agency culture that can be addressed directly through changes to hiring, funding, and partnerships with other organizations. Hiring staff with a broader base of skills than strictly wildlife biology—skills in areas such as public communication, social science, leadership, business, and marketing—is a crucial part of building a staff with expertise in the problems that they typically encounter in the modern day-to-day performance of their duties, and for tackling new issues that arise from social change." (Berl *et al.,* 2021:10)

> "A third concern is whether executives currently have the capabilities needed to create long term value." (Fusso, 2013:812)

> "External Organizational Development & Support (10.2) will strengthen organizations ensuring continuity in the regulatory role they have (LP8). External support to an organization can include for example consulting services, forming a

> new channel of information flow (LP6). Creation of new environmental organizations changes system structure (LP4).” (Arponen & Salomaa, 2023:17)

Lastly, Camarena (2020) identified Artificial Intelligence (AI) as an evidence-based intervention for bolstering change towards SE. AI can be considered a holistic intervention in light of its widespread impact on numerous LPs, specifically the length of delays (LP9), negative feedback loops (LP8), the structure of information flows (LP5), and system structure (LP4) (Camarena, 2020). Notably, only one study focused on AI, possibly due to the novelty of this technology. Subsequently, AI has the potential to impact several system characteristics, as illustrated by the following quotes.

> “Technology-enabled sustainability initiatives are regarded as the way forward to large socio-economic system changes (National Research Council, 2012; Schwab, 2017) which influence behaviour towards new sustainable forms … AI and machine learning in particular can improve data mining methods (Griffin et al., 2018; Lehmann et al., 2012), enhance decision-support systems (Gardas et al., 2019; Perrot et al., 2016) and automate (Lehmann et al., 2012; Leone, 2017) or optimise production (Griffin et al., 2018).” (Camarena, 2020:5)

> “The domain of negative feedback loops (Point 8 in Meadows,1999) is already transformed by Big Data and the ability for AI-powered tools to create monitoring and reporting on a scale never-seen before. The ability for AI to conduct systemic analysis, or “paint the picture” capability, provides an opportunity to link different realms of research, a multi-level, multi-stakeholder, meta approach needed for the development and monitoring of sustainable food systems.” (Camarena, 2020:11)

Three sub-themes were uncovered within the theme holistic interventions, namely knowledge and skills development, capacity development, AI, and alliance, partnerships, and collaboration. The thematic content analysis revealed that these evidence-based interventions can also be regarded as deep interventions since they act on multiple system characteristics and LPs simultaneously. The importance of the holistic interventions is highlighted by their potential for bolstering organisational change towards SE, as these evidence-based interventions can impact more LPs than the LP interventions and system characteristic interventions.

4.4 CHAPTER CONCLUSION

This chapter discussed the findings from the two stages of analysis. The descriptive analysis presented key characteristics from the literature, providing insight into the development of literature on the LPP within the context of CS and SE from the period 1999 to 2023. It also assisted in answering the first research sub-question. The thematic content analysis identified 42 evidence-based interventions across the literature on the LPP within the context of CS and SE. Three main themes, or types of interventions, were unveiled during the thematic content analysis, namely LP interventions, system characteristic interventions, and holistic interventions. The next chapter will provide a summary of the main findings and synthesis of the evidence-based interventions into a practical framework for organisations and practitioners. Thereafter, the chapter will discuss the managerial and theoretical implications, as well as the directions for future research.

CHAPTER 5: RESEARCH CONCLUSION, INTERPRETATION AND RECOMMENDATIONS

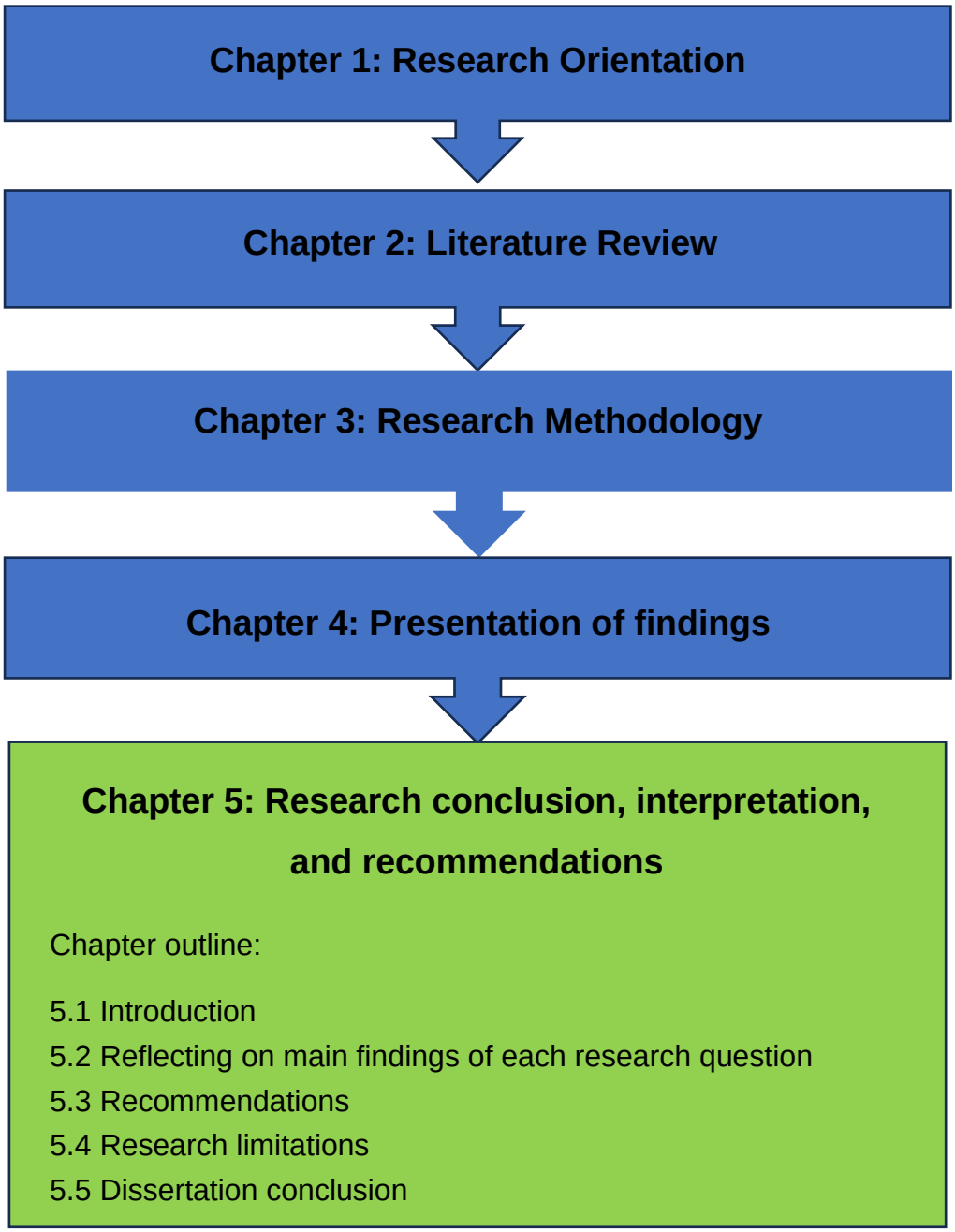

Figure 5.1: Overview of Chapter 5

Source: Author's work

5.1 INTRODUCTION

The current study set out to explore how literature on the leverage points perspective (LPP) within the context of corporate sustainability (CS) and sustainability embeddedness (SE) has developed from 1999 to 2023. This study explicated the state of the literature through six main characteristics in the hope of making a theoretical contribution to LPP and CS discourse. The study further set out to identify evidence-based interventions across the literature with the aim to synthesise the evidence-based interventions into an actionable framework to support organisations and practitioners in the transformational change towards SE. The intention was to contribute to CS and SE discourse and practice by building on Meadows' (1999) LPP framework to answer the research questions. The use of an integrative review allowed the researcher to provide a coherent account of the state of the literature, unveil and synthesise evidence-based interventions, and to identify the literature's strengths, deficiencies, and omissions. By explicating the state of the literature and revealing the evidence-based interventions that have been researched, the researcher was able to answer the main research question through review-driven insights into development of literature on the LPP within the context of CS and SE from 1999 to 2023.

Chapter 4 discussed the findings that emanated from the descriptive and thematic content analysis stages of the data analysis process. These findings provided insight into the development of literature on the LPP within the context of CS and SE. The findings also identified evidence-based interventions from across the literature.

Chapter 5 focuses on the interpretation of the findings related to the research questions and presents a synthesised and practical framework of evidence-based interventions for organisations and practitioners. The chapter further provides recommendations for theory and practice, and directions for future research. Finally, the chapter ends with the dissertation conclusion.

The study was guided by a main research question and three sub-questions. The research questions are depicted in Table 5.1 below:

Table 5.1: Main research question and sub-questions

Main research question		
How has leverage points perspective literature within the context of corporate sustainability and sustainability embeddedness developed over the period 1999 to 2023?		
Sub-question 1	**Sub-question 2**	**Sub-question 3**
What is the current state of literature on the leverage points perspective within the context of corporate sustainability and sustainability embeddedness?	What evidence-based interventions have been identified by the leverage points perspective literature that are relevant for practice?	In what way can these evidence-based interventions be synthesised into a practical framework for organisations and practitioners?
Contribution 1	**Contribution 2**	**Contribution 3**
The state of the field relating to six main characteristics of literature on the leverage points perspective within the field of corporate sustainability.	42 evidence-based interventions and three main themes.	A practical navigational framework for organisations and practitioners to leverage change in the transformational towards sustainability embeddedness.

Source: Author's work

5.2 REFLECTING ON MAIN FINDINGS OF EACH RESEARCH QUESTION

This systematic integrative review included a total number of 45 publications on the LPP within the broader CS literature. The use of an integrative review was appropriate since the topic under investigation is a novel topic situated within a interdisciplinary field (Snyder, 2019; Cronin & George, 2023), and the study responds to calls for more integrative reviews in business and management discourse (Torraco, 2016b; Snyder, 2019; Dwertmann & van Knippenberg, 2021). Furthermore, this research design allowed for a diverse sampling frame, which facilitated a more nuanced and comprehensive review of diverse literature on the LPP within the field of CS (Whittemore & Knafl, 2005; Elsbach & van Knippenberg, 2020; Klein et al., 2020; Oermann & Knafl, 2021). The systematic integrative review provided insight into the development of the literature on the LPP and allowed the researcher to identify the

literature's strengths, deficiencies, and omissions. To answer this study's research questions, these publications were analysed in two stages, namely the descriptive analysis and thematic content analysis. The main findings from each stage are discussed in the following sections.

5.2.1 Main findings of research sub-question 1

The descriptive analysis provided insights into the state of the literature on the LPP within the context of CS and SE from 1999 to 2023. These insights aided in addressing both the main research question and sub-question 1 of this study. As shown in Table 5.1, sub-question 1 posed the question, "What is the current state of literature on the leverage points perspective within the context of corporate sustainability and sustainability embeddedness?" The six characteristics utilised in the first stage of analysis revealed some of the key strengths, deficiencies, and omissions of the literature on the LPP within the broader CS literature. The following discussion highlights these key findings and the implications of these findings:

Firstly, academic interest in the LPP within the broader CS literature has increased considerably from 1999 to 2023. Although there were stagnant periods between 1999 and 2009, and again from 2014 to 2016, the last seven years have seen a signigicant rise in the number of publications, indicating a promising upward trajectory. Clearly, the LPP within the context of CS and SE is an emerging topic that is growing rapidly.

Secondly, in terms of publications per journal, *Sustainability Science*, *Ecosystems and People*, *Sustainability,* and the *Journal of Cleaner Production* have emerged as the leading journals publishing on the LPP within the field of CS and SE. These prominent journals account for more than one-third of the publications and are evidently central to the growth and increased academic interest in the topic. This suggests that any scholar seeking to locate or publish literature on the LPP within the field of CS and SE should consider consulting these journals.

Thirdly, concerning the publications categorised by sustainability focus, the majority of studies focus on environmental management discourse, with far fewer studies focusing on the social and economic dimensions of CS. It is well-recognised that CS

is a tri-dimensional construct requiring holistic and equitable consideration of social, environmental, and economic dimensions, as discussed in Chapter 2 (Hahn *et al.*, 2015; Derqui, 2020; Costa *et al.*, 2022). Further research is required on the social and economic dimensions for CS to converge as a tri-dimensional construct within the LPP literature.

Fourthly, regarding the global distribution of publications, the descriptive analysis revealed that the LPP within the field of CS has been researched most extensively in northern hemisphere contexts, particularly in Ethiopia and the United States of America. Interestingly, Australia was the most researched country within the southern hemisphere. However, the LPP within the context of CS and SE appears to be underexplored in southern hemisphere contexts. This suggests that further research is required to explore or utilise the LPP in southern hemisphere contexts, which can be compared with findings from the global north to determine similarities or differences.

In terms of research methods per publications, qualitative research was the preferred method for research on the LPP within the field of CS. The most predominant research designs include case studies, systematic reviews, and participatory modelling. Whilst the most frequently applied data collection methods were interviews, mapping, and focus groups, the most prominent data analysis methods were content analysis, systems modelling, thematic analysis, and social network analysis. These findings highlight the most preferred methodologies for exploring the LPP and suggest potential research designs, approaches, data collection methods, and data analysis strategies for the researcher to consider in future research on the LPP within the context of CS and SE. Lastly, the descriptive analysis considered how the LPP was applied in the research, as well as the research outcomes of the publications with regard to the LPP. The findings revealed that an analytical framework was the preferred way of applying the LPP in the research process. The LPP was also applied as a theoretical lens and conceptual framework. Regarding the research outcomes of the publications, the most frequent outcome was the identification of evidence-based interventions, often in the form of LPs and system characteristics, while fewer publications contributed to the LPP theory or developed a framework that integrated the perspective. Further analysis

revealed that the LPP can be applied as an analytical framework alongside qualitative research methods such as systems modelling, case studies, and systematic reviews to identify evidence-based interventions (practices, strategies, actions, policies, and initiatives) within practice that act on the LPs and system characteristics within the LPP.

5.2.2 Main findings of research sub-question 2

The second stage of analysis involved thematic content analysis of the 45 publications that were included in this systematic integrative review. Integrative reviews allow for a more nuanced and comprehensive understanding of complex topics (Whittemore & Knafl, 2005; Elsbach & van Knippenberg, 2020; Klein, Ramos & Deutz, 2020; Oermann & Knafl, 2021). This aided the researcher in answering the second and third sub-questions by identifying and synthesising a total number of 42 evidence-based interventions from across the literature on the LPP within the context of CS and SE. The term “evidence-based interventions” is used to include any evidence-based strategies, actions, practices, policies, and initiatives identified and researched by the publications. Considering the gap in the adoption of SE in practice, these evidence-based interventions provide organisations and practitioners with practical actions that they can adopt to leverage change towards SE. As discussed in Chapter 4, three main themes were identified during the coding process, namely (1) LP interventions, (2) system characteristic interventions, and (3) holistic interventions, which provide for a synthesised and integrated view of the interventions that can be implemented to embed CS.

Figure 5.2 provides a typology for the evidence-based interventions for SE. The figure presents the three themes and the scope of leverage of the evidence-based interventions within each theme. The scope of leverage refers to the number of LPs and system characteristics that an intervention can act on, which relates to the degree of organisational change that the interventions can create. Similar to the hierarchy of increasingly influential LPs that ranges from shallow to deep (LP12 – 1), as explained in Chapter 2, the three types of interventions are also increasingly more influential. The LP interventions only impact individual LPs. The system characteristic interventions impact individual system characteristics and the LPs associated with

each characteristic. The holistic interventions can influence multiple system characteristics and their LPs simultaneously. Subsequently, since the holistic interventions can influence more LPs than the LP and system characteristic interventions, these evidence-based interventions have more potential to bolster transformational change towards SE. Therefore, these interventions are specifically important for organisations and practitioners seeking to embed CS.

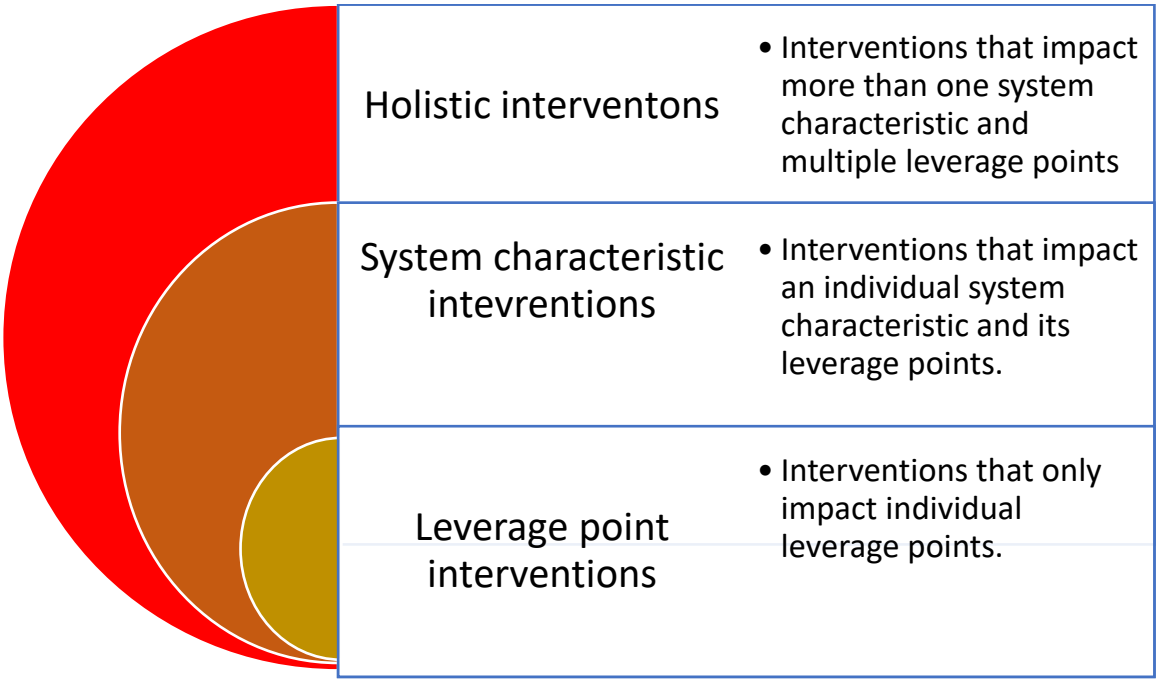

Figure 5.2: A typology of evidence-based interventions for sustainability embeddedness

Source: Author's conceptualisation

As depicted in Figure 5.2 above, the first theme, namely "leverage point interventions", refers to the 20 evidence-based interventions that can only impact a single LP of the 12 LPs, as conceptualised by Meadows (1999). These include real-time information on energy use, organising resources for optimal flow, water storage and reuse, systems monitoring, peer-to-peer learning, changing executive incentive structures, and redefining system goals.

The second theme, "system characteristic interventions", included 13 evidence-based interventions across the four system characteristics, as conceptualised by Abson *et al.* (2017). The system characteristic interventions include the following interventions:

parameters (better products and management practices; internal management and administration; efficient and clean technology and systems); feedbacks (consumer awareness and publicity; socio-ecological systems monitoring); design (new organisational structure or sustainability department; changing organisational policies); and intent (changing the organisational culture; adopting a long-term perspective; leadership; refining governance strategy; purpose framing; and inner transformations). The system characteristic interventions can impact one of the four system characteristics and its LPs.

The third theme, “holistic interventions”, consists of four sub-themes and nine evidence-based interventions that were identified. The sub-themes and evidence-based interventions are knowledge and skills development (education, training, and learning); alliances, partnerships, and collaboration (create alliances and partnerships, external collaboration with stakeholders, and internal collaboration); capacity development (internal capacity development and external organisational development and support); and artificial intelligence. These interventions can simultaneously impact more than one system characteristic and their LPs.

The findings from the thematic content analysis shows that no evidence-based interventions were identified for LP1 and LP7, as depicted in Table 4.6 of Chapter 4, however, for LP3, 4, and 6, several evidence-based interventions were identified. While only a few evidence-based interventions were identified at the feedback and design system characteristic, the most interventions were identified at the intent system characteristic. Overall, evidence-based interventions spanned mostly amongst the deep LPs. Abson *et al.* (2017:33) emphasise the importance of deep LPs and argued that previous sustainability research has “ … primarily addressed relatively shallow leverage points.” The findings show that current sustainability discourse on the LPP, specifically within the field of CS, has developed towards addressing more interventions at deep LPs. The deep evidence-based interventions are especially important for organisations seeking to embed sustainability, since interventions at shallow LPs are unlikely to lead to transformational change (Abson *et al.,* 2017; Fischer & Riechers, 2019). Evidence-based interventions at the deep LPs can better

facilitate transformational change towards SE and aid organisations to overcome the gap in the adoption of SE.

Several of the evidence-based interventions that were identified during the systematic integrative review corroborate the SE and CS literature, as discussed in Chapter 2, by highlighting similar practical actions that organisations should implement to embed CS. These interventions include changing the organisational culture so that it becomes sustainability oriented (Wijethilake *et al.*, 2021; Valente, 2012; Lozano, 2013; Nunhes, Bernardo, & de Oliveira, 2020; Derqui, 2020; Barreiro-Gen *et al.*, 2022); creating a new organisational structure or sustainability department (Laszlo & Zhexembayeva, 2011; Perrott, 2014); basing executive compensation structures on long term metrics to overcome short-terminism and support a sustainability oriented culture (Dyllick & Hockerts, 2002; Fusso, 2013; Costa *et al.*, 2022); and supporting organisational learning, which is considered a strong internal driver of organisational change to SE (Witjes *et al.*, 2017; Hahn *et al.*, 2018; Kiesnere & Baumgartner, 2019a; Iqbal & Ahmad, 2021). Notably, interventions from the knowledge and skills development sub-theme (education, learning, and training) can be used by organisations to directly address the lack of knowledge regarding SE in practice, as highlighted in Chapter 1 and 2. As part of this study's main contribution, the following section presents an actionable framework that extends the LPP by providing a synthesised and integrated view of evidence-based interventions that organisations can take to leverage change toward SE.

5.2.2.1 Synthesis of evidence-based interventions

An integrative review does not only require the researcher to analyse the literature, but also to synthesise the findings (Whittemore & Knafl, 2005; Toracco, 2016a, b). "Synthesis brings together existing ideas with new ideas to create fresh, new ways of thinking about the topic" (Toracco, 2016b: 66). This creative exercise arises from the analysis and is informed by the researcher's intimate knowledge of the topic (Toracco, 2005). While the data analysis deconstructed the literature to identify evidence-based interventions and uncover themes, the synthesis involved integrating the interventions into the LPP framework to build on Meadows' (1999) original framework, as presented in Table 5.2, and answer this study's third research sub-question.

The developed framework presents a synthesised and integrated view of all 42 evidence-based interventions and the three main themes that emerged during the thematic content analysis stage. The framework includes the 12 LPs and four system characteristics, as conceptualised by the seminal authors Meadows (1999) and Abson *et al*. (2017). This framework, depicted in Table 5.2, extends Meadows' (1999) and Abson ***et al****'*s (2017) LPP by including practical and actionable evidence-based interventions that organisations can adopt to bolster organisational change in the transformation towards SE, by acting on the LPs and system characteristics. The current study also introduces "holistic interventions" that can act on multiple system characteristics and LPs simultaneously. Subsequently, the current study intends that this practical navigational framework depicted in Table 5.2 can be used as a tool or approach for organisations and practitioners who are working towards embedding sustainability throughout their businesses.

In Table 5.2, the original LPP framework is depicted in shades of grey. Where the researcher builds onto the original framework, and the contributions made by this study, are depicted in green. Each intervention within the framework is cross-referenced to the section in Chapter 4 where they are discussed. The LP interventions (theme 1 in section 4.3.1) are populated within the LP column, under each applicable LP. These interventions only affect the LP within which they are situated. The system characteristics interventions (theme 2 in section 4.3.2) are populated within the system characteristics column under each applicable system characteristic. These evidence-based interventions affect the system characteristic within which they are situated, as well as the LPs associated with each system characteristic. Lastly, the holistic interventions theme (theme 3 in section 4.3.3) extends the existing literature and framework by providing a category for interventions that affect more than one system characteristic and their LPs simultaneously, encompassing both system characteristics and LPs.

Table 5.2: Framework for leveraging organisational change towards sustainability embeddedness

<table>
<tr><th rowspan="2">Holistic Interventions (Theme 3)</th><th colspan="3" rowspan="2">System Characteristics (Theme 2)
Abson et al. (2017)</th><th colspan="2">Leverage Points (Theme 1)
Meadows, D. (1999)</th></tr>
<tr><th>Leverage Points</th><th>Evidence-based interventions (section 4.1.2):</th></tr>
<tr><td rowspan="7">Evidence-based interventions (section 4.2.3):
● Education
● Training
● Learning
● Create alliance and partnerships
● External collaboration with stakeholders
● Internal collab-oration
● Internal capacity development
● External organisation-al development and support</td><td rowspan="7">Deep</td><td rowspan="3">Intent</td><td rowspan="3">Evidence-based Interventions (section 4.2.2.4):
• Changing the organisational culture
• Adopting long-term perspective.
• Leadership
• Refining organisational governance strategy.
• Framing of organisational purpose
• Inner transformations</td><td>LP1. The power to transcend paradigms.</td><td>• No intervention</td></tr>
<tr><td>LP2. The mindset or paradigm out of which the system arises.</td><td>• Diversity through hiring and recruitment</td></tr>
<tr><td>LP3. The goal of the system.</td><td>• Systemic goal alignment and individual goal alignment.
• Redefining system goals.
• Developing a conservation strategy.</td></tr>
<tr><td rowspan="4">Design</td><td rowspan="4">Evidence-based Interventions (section 4.2.2.3):
• New organisational structure or sustainability department.
• Changing organisational policies.</td><td>LP4. The power to add, change, evolve, or self-organise system structure .</td><td>• System resilience.
• Innovation platforms.
• Gender equality.</td></tr>
<tr><td>LP5. The rules of the system (incentives, punishments, constraints).</td><td>• Changing executive incentive structures .</td></tr>
<tr><td>LP6. The structure of information flows.</td><td>• Increase access to information.</td></tr>
</table>

● Artificial Intelligence					• Knowledge dissemination. • Peer-to-peer learning. • Conservation planning . • Sharing knowledge, experiences, and ideas.
	Shallow	**Feedbacks**	**Evidence-based interventions (section 4.2.2.2):** • Consumer awareness and publicity. • Socio-ecological monitoring	LP7. The gain around driving positive feedback loops.	• No intervention
				LP8. The strength of negative feedback loops, relative to impacts they are trying to correct.	• Systems monitoring. • Recycling schemes.
				LP9. The lengths of delays, relative to the state of system change.	• Real time information on energy use.
		Parameters	**Evidence-based interventions (section 4.2.2.1):** Better products and management practices. Internal management and administration. Efficient technology and systems (e.g. water and electricity efficiency, lower emissions, waste reduction).	LP10. The structure of material stocks and flows.	• Organising resources for optimal flow. • Water storage and reuse.
				LP11. The size of buffers and other stabilizing stocks, relative to their flows.	• Capital savings for sustainability initiative.
				LP12. Constants, parameters, numbers (such as subsidies, taxes, standards).	• Green building standards.

Source: Author's compilation

5.3 RECOMMENDATIONS

This section of the dissertation will discuss the key recommendations for theory, practice, and future research based on the research methodology, findings, synthesis, and conclusion of the research.

5.3.1 Theoretical implications

By conducting a systematic integrative review of literature on the LPP within the context of CS and SE, the findings from this study have theoretical implications for CS, SE, and LPP literature. The current study provides review-driven insights into the development of literature on the underexplored LPP within the field of CS from 1999 to 2023, as well as highlights the strengths, deficiencies, and omissions of the literature (Whittemore & Knafl, 2005; Toracco, 2016a,b). Therefore, this systematic integrated review presents an integrated and coherent account of literature on a novel topic that is growing rapidly and is situated within a interdisciplinary field (Snyder, 2019; Cronin & George, 2023). Researchers looking to explore the LPP within the context of SE can make informed methodological decisions by considering the six characteristics covered in the currenty study, namely the most predominant journals on this topic, sustainability focus, geographical contexts, research methodologies, and how the LPP can be applied. Furthermore, the study set out to identify evidence-based interventions from across the literature. The findings revealed that sustainability discourse, specifically within the context of CS and SE, has shifted from focusing primarily on shallow LPs towards focusing more on deep LPs (Abson *et al.,* 2017; Fischer & Riechers, 2019). The evidence-based interventions were synthesised into the LPP framework to build on the original LPP framework, as conceptualised by Meadows (1999) and Abson *et al.* (2017). This non-linear framework provides a novel approach for organisational change towards sustainability that facilitates the transformational and paradigmatic changes required by SE, as opposed to traditional linear frameworks and models (Valente, 2012; Lozano, Ceulemans & Seatter, 2015; Vermeulen & Witjes, 2016; Nunhes, Bernardo, & de Oliveira, 2020; van der Genugten *et al.*, 2022). Lastly, as shown in Figure 5.1, the current study also conceptualised a typology for the three main themes of evidence-based interventions, namely (1) LP interventions, (2) system characteristic interventions, and (3) holistic interventions.

The evidence-based interventions are applicable to CS and SE practice, which will be discussed in the following section.

5.3.2 Managerial recommendations

This section discusses recommendations for business practitioners (managers, decision-makers, employees, and leaders) given the outcomes of the current study. This systematic integrative review hopes to contribute to CS and SE practice by building on the original LPP framework and shedding light on the underexplored LPP as a potentially valuable framework for transformational change towards SE. The LPP is a hierarchy of 12 LPs across four system characteristics that serve as areas within a complex system, ranging from shallow to deep, where small interventions may lead to paradigmatic and transformational changes in a system, such as an organisation (Meadows, 1999; Abson *et al.*, 2017; Fischer & Riechers, 2019). The basic premise is that interventions at the shallow LPs are easy to implement, yet limited in their potential for bolstering transformative change, whilst interventions at the deep LPs are difficult to implement, yet have considerable potential to bring about transformational and paradigmatic change (Abson *et al.*, 2017; Fischer & Riechers, 2019). Any system of interest, such as an organisation, can be characterised by the four system characteristics and 12 LPs as system properties (Leventon, Abson & Lang, 2021).

The current study set out to develop a non-linear framework that builds on the LPP framework by presenting a synthesised and integrated view of all 42 evidence-based interventions and the three main themes, as presented in Table 5.2. The framework provides evidence-based interventions (strategies, actions, practices, policies, and initiatives) that organisations and practitioners can implement to leverage change for adoption of SE. Holistic interventions are also included in the framework, which was introduced in this study to conceptualise evidence-based interventions that simultaneously act on multiple LPs and system characteristics. The framework explicitly recognises deep evidence-based interventions, such as the holistic interventions, which are significant for CS and SE practice since interventions at deep LPs and system characteristics are more likely to lead to transformational change (Abson *et al.,* 2017; Fischer & Riechers, 2019). Organisations that find it difficult to embed sustainability, or that are stuck in the proactive phase of sustainability adoption,

can utilise the framework and evidence-based interventions to leverage change and progress to SE. Fischer and Riechers (2019:117-119) contends that a LPP has "considerable appeal to non-academic audiences." Therefore, this framework hopes to provide organisations and practitioners with a practical approach or tool that will illuminate the necessary and available interventions to facilitate transformational change towards SE.

5.3.3 Directions for future research

An integrative review can be a catalyst for further research on a topic (Whittemore & Knafl, 2005; Torraco, 2016b). The current study provides various avenues for further research that were identified during this systematic integrative review. The following directions for future research were informed by the deficiencies and omissions of the literature that were revealed by the analysis and findings of this study. The LPP should be further explored within the context of the social and economic dimensions of CS. The LPP can be used as a theoretical lens or analytical framework to further study the social and economic dimensions. Future research on the LPP within the context of CS and SE can consider conducting research within the southern hemisphere, since most research on the topic has been focused on the northern hemisphere. Findings from the global north and south can also be compared to determine whether similarities or differences exist. Additionally, whilst this review has provided a comprehensive account of evidence-based interventions for LP2 - 6 and LP8 - 12, evidence-based interventions are still lacking for LP1 and LP7. Future research could consider identifying additional evidence-based interventions, especially ones that can strengthen positive feedback loops (LP7) and allow organisations and practitioners to transcend paradigms (LP1). Future research can also delve further into the feedback and design characteristics, as they have been the least investigated system characteristics in the literature.

Furthermore, the "holistic interventions" theme, in particular, requires further investigation to identify additional interventions that can simultaneously impact multiple system characteristics and LPs, since these interventions have greater scope of leverage and potential for transformational change towards SE. This includes the artificial intelligence intervention, which is a novel approach within the context of CS

and SE. Future research can also empirically test the framework developed in this study. This can include a longitudinal case study to determine how the interventions bolster change towards SE over time. To address the limitations of this study, future research can include grey literature as an additional data source to provide an even more comprehensive and exhaustive search of the literature. Researchers are also encouraged to replicate this study, either partially or in full, to validate the discovered findings.

5.4 RESEARCH LIMITATIONS

Although this systematic integrative review aimed to be comprehensive and thorough, this study was subject to the following research limitations: Firstly**,** this study faced time and resource constraints, which are common challenges in academic research. The time and resource constraints did not allow for the inclusion of grey literature, which was a methodological limitation of the integrative review (Kutcher & LeBaron, 2022). Subsequently, the data evaluation of grey literature was not necessary for conducting this integrative review and was thus excluded from this study. Secondly, the integrative review only included literature between 1 January 1999 and 30 June 2023. Literature published or written outside of this time frame would not have been included in this review, which is an acceptable practice in review methodologies to limit the literature search (Al-Tabbaa, Ankrah & Zahoor, 2019). Thirdly, the framework provides evidence-based interventions for organisations and practitioners. However, empirically verifying the framework falls outside the scope of this study. Lastly, the findings from this qualitative study cannot be generalised to every organisation, but rather provides insight into the LPP literature within the context of CS and SE, and provides practitioners with an array of evidence-based interventions that have the potential to leverage change within an organisation towards SE.

5.5. DISSERTATION CONCLUSION

This chapter built on the findings discussed in Chapter 4 by presenting a summary of, and interpreting the key findings and outcomes regarding the research questions. The current study set out to review literature on the underexplored LPP and to build on Meadows' (1999) LPP framework to contribute to CS, SE, and the LPP discourse and

practice, since the LPP “deserves greater attention, because it holds substantial promise to inspire new directions in sustainability science and practice.” (Fischer & Riechers, 2019:117). This study presented the state of literature by explicating six characteristics from the publications to address the first sub-question, and identified evidence-based interventions and themes from across the literature to answer the second sub-question. A total of 42 evidence-based interventions were identified that organisations and practitioners, who are seeking SE, can implement to leverage change in the transformation towards SE. By explicating the state of the literature and revealing the evidence-based interventions, the researcher was able to answer the main research question through review-driven insights into development of literature on the LPP within the context of CS and SE from 1999 to 2023. The systematic integrative review provided a comprehensive understanding and nuanced account of an emerging topic that is growing rapidly (Whittemore & Knafl, 2005; Torraco, 2005, 2016a, b; Oermann & Knafl, 2021; Cronin & George, 2023). By conducting a systematic integrative review of the literature, this study also addressed the methodological gap and need for more integrative reviews in business and management discourse (Snyder, 2019; Dwertmann & van Knippenberg, 2021).

Valente (2012:586) contends that management scholars will, to a larger extent, need to incorporate frameworks and tools that leverage the inherent complexity of organisational situations to understand how organisations are able to embed sustainability in practice. The developed non-linear framework presents a synthesised and integrated view of all 42 evidence-based interventions and the three main themes, as shown in Table 5.2. Literature and practice revealed that organisations are facing a gap in the adoption of SE that has left many organisations stuck in the proactive phase of sustainability adoption, as explained in Chapter 1 (Chofreh & Goni, 2017; Dyllick & Muff, 2015; Hahn *et al.*, 2015). Progressing along the journey of sustainability adoption to SE remains uncertain and ambiguous for many organisations and practitioners (Le Roux & Pretorius, 2016; Valente, 2012). Therefore, the study offers a navigational framework can be used as a tool or approach for organisations and practitioners who are finding it difficult to progress on the journey of sustainability adoption to SE. This framework extends the LPP to CS and SE practice by providing the evidence-based interventions that organisations can adopt to leverage

organisational change in the transformation towards SE. From the findings and research outcomes of the current study, the chapter concluded by providing recommendations and implications for theory and practice, as well as directions for future research before the concluding personal reflection.

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APPENDIX A

- TURNITIN DIGITAL RECEIPT -

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EXPLORING THE LEVERAGE POINTS PERSPECTIVE, SUSTAINABILITY EMBEDDEDNESS AND CORPORATE SUSTAINABILITY: A SYSTEMATIC INTEGRATIVE REVIEW

by

GIDEON LOURENS STORM

submitted in accordance with the requirements for the degree of

MASTER OF COMMERCE BUSINESS MANAGEMENT

in the subject

Business Management: Corporate Sustainability

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: Dr. C. le Roux

CO-SUPERVISOR: Dr. N. de Metz

2024

APPENDIX B

- ETHICAL CLEARANCE CERTIFICATE -

UNISA college of economic and management sciences

COLLEGE OF ECONOMIC AND MANAGEMENT SCIENCE RESEARCH ETHICS REVIEW COMMITTEE

23 March 2022

NHREC Registration # : (if applicable)
ERC Reference # : 2022_CRERC_018 (FA)
Name #: Gideon Lourens Storm
Student No#: 14687917

Dear Mr Gideon Lourens Storm

Decision: Ethics Approval from 2022 to 2025

Researcher(s): Mr Gideon Lourens Storm; 14687917@mylife.unisa.ac.za ; 082 8899 213
College of Economic and Management Sciences
Department of Business Management
University of South Africa

"Pursuing Sustainability Embeddedness using the Leverage Points perspective: A navigational framework for organisations and practitioners"

Qualification: MCOM

Thank you for the application for research ethics clearance by the Unisa College of Economic and management Sciences Research Ethics Review Committee for the above-mentioned research. Ethics approval is granted for 3 years (**23 March 2022 until 22 March 2025**).

*The **low risk application** was **reviewed** by the College of Economic and management Sciences Research Ethics Review Committee on **14 March 2022** in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.*

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the College of Economic and management Sciences Research Ethics Review Committee.

3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
7. No field work activities may continue after the expiry date **(22 March 2025)** Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.
8. Permission is to be obtained from the university from which the participants are to be drawn (the Unisa Senate Research, Innovation and Higher Degrees Committee) to ensure that the relevant authorities are aware of the scope of the research, and all conditions and procedures regarding access to staff/students for research purposes that may be required by the institution must be met.
9. If further counselling is required in some cases, the participants will be referred to appropriate support services.

Note:

*The reference number **2022_CRERC_018 (FA)** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Prof Nisha Sewdass
Chairperson, CRERC
E-mail: sewdan@unisa.ac.za
Tel: 012 429 2795

Prof RT Mpofu
Deputy Executive Dean: CEMS
E-mail: mpofurt@unisa.ac.za
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APPENDIX C

- CONFIRMATION OF EDITING -

Marianne Kapp Language Services – *marscaro@gmail.com*

Cape Town
28 Feb. 2024

To whom it may concern,

This letter confirms that the manuscript detailed below was edited for proper English language grammar, punctuation, spelling, and overall style by a qualified and highly experienced native English-speaking editor:

Manuscript title: **Exploring the leverage points perspective, sustainability embeddedness and corporate sustainability: a systematic integrative review**

Author: **Gideon Lourens Storm**

Neither the research content nor the author's intentions were altered in any way during the editing process. The editor makes no claim as to the accuracy of the research content or objectives of the author. The document above as edited is grammatically correct and ready for publication; however, the author has the ability to accept or reject the editor's suggestions and changes after the editing process is complete, and prior to submission to any journal or examining body.

Marianne Kapp
+27824813300

APPENDIX D

- TABLES FROM DATA COLLECTION AND ANALYSIS -

Table 15: Final sample and descriptive analysis

Author(s)	Year	Title	Journal	Methodology	Role of LPP	Sustainability focus
Adebiyi, J.A., Olabisi, L.S.	2022	Participatory Causal Loop Mapping of the Adoption of Organic Farming in Nigeria	*Environmental Management*	Modelling (participatory causal loop diagramming) + loop and network analysis (qual.)	Outcome (LPs)	Environmental Management
Arponen, A., Salomaa, A.	2023	Transformative potential of conservation actions	*Biodiversity and Conservation*	Conceptual	Analytical Framework + Outcome (Framework)	Environment Management
Atwell, R.C., Schulte, L.A., and Westphal, L.M.	2010	How to build multifunctional agricultural landscapes in the U.S. Corn Belt: Add perennials and partnerships	*Land Use Policy*	Participatory workshop and follow-up interviews + qual. analysis	Outcome (LPs)	Environmental Management
Berl *et al.*	2022	Building a systems framework to facilitate adaptive organizational change in state fish and wildlife agencies.	*Conservation Science & Practice*	Research group and collaborative research (qual.)	Outcome (LPs)	Sustainability Embeddedness (organisational change)
Bieling, C., Eser, U., Plieninger, T.	2020	Towards a better understanding of values in sustainability transformations: ethical perspectives on landscape stewardship	*Ecosystems and People*	Case Study – vignette approach (qual.)	Theoretical framework + Outcome (LPP theory)	Environmental Management
Braz, A.C., Marotti de Mello, A.	2022	Circular economy supply network management: A complex adaptive system	*International Journal of Production Economics*	Multiple case study + within- and cross-case analysis (qual.)	Outcome (LPs)	Sustainability Embeddedness (supply chain management)
Bryant, Jayne; Thomson, Giles	2021	Learning as a key leverage point for sustainability transformations: a case study of a local government in Perth, Western Australia	*Sustainability Science*	Longitudinal Case Study	Theoretical Framework	Sustainability Embeddedness

					+ Outcome (LPs)	(sustainability transformations)
Burgos-Ayala *et al.*	2020	Indigenous and local knowledge in environmental management for human-nature connectedness: a leverage points perspective	*Ecosystems and People*	Review + Content and cluster analysis (qual.)	Analytical Framework + Outcome (LPs)	Environmental Management
Camaréna, S.	2020	Artificial intelligence in the design of the transitions to sustainable food systems	*Journal of Cleaner Production*	Literature Review (qual.)	Analytical Framework + Outcome (LPs)	Sustainability Embeddedness (artificial intelligence)
Dahlmann and Stubbs	2023	Purpose framing as an informal governance approach to sustainability transformations in the private sector	*Earth System Governance*	Interviews and thematic analysis (qual.)	Outcome (LPs)	Economic and Governance
Dorninger *et al*.	2020	Leverage points for sustainability transformation: a review on interventions in food and energy systems	*Ecological Economics*	Quantitative systematic review	Analytical framework	Sustainability Embeddedness (sustainable transformations)
Duran-encalada, J A; Paucar-caceres, A.	2012	A system dynamics sustainable business model for Petroleos Mexicanos (Pemex): case based on the Global Reporting Initiative	*The Journal of the Operational Research Society*	Modelling + report analysis (qual.)	Outcome (LPs)	Sustainability Embeddedness
Egerer, S., Cotera, R.V., Celliers, L., Costa, M.M.	2021	A leverage points analysis of a qualitative system dynamics model for climate change adaptation in agriculture	*Agricultural Systems*	Participatory modelling + interviews + leverage points analysis (mixed-methods)	Analytica; framework + Outcome (LPs)	Environmental Management
Farhad *et al.*	2023	Exploring the Potential of Internal Information Flows in Large Organizations as Leverage Points for Environmental Stewardship	*Society & Natural Resources*	Case study + questionnaires + social network analysis (qual.)	Theoretical framework	Environmental Management
Fischer *et al.*	2022	Using a leverage points perspective to compare social-ecological systems: a case study on rural landscapes.	*Ecosystems and People*	Multiple Case Study	Analytical framework and	Environmental Management

					Outcome (LPs)	
Fusso, N.	2013	A systems thinking review for solving short-termism	*Management Research Review*	Literature Review (qual.)	Analytical framework + Outcome (LPs)	Sustainability Embeddedness (short-terminism)
Gisladottir *et al*.	2022	Transparency and Leverage Points for Sustainable Resource Management	*Sustainability*	Comparative qualitative case study	Analytical framework + Outcome (LPs)	Sustainability Embeddedness (sustainable resource management)
Jiren, T. S.; Riechers, M.; Bergsten, A.; Fischer, J	2021	A leverage points perspective on institutions for food security in a smallholder-dominated landscape in southwestern Ethiopia.	*Sustainability Science*	Mixed methods (surveys and document analysis)	Analytical framework + Outcome (LPs)	Social
Jouffray, J. B.; Crona, B.; Wassénius, E.; Bebbington, J.; Scholtens, B.	2019	Leverage points in the financial sector for seafood sustainability	*Science Advances*	Mixed-methods	Outcome (LPs)	Economic and Governance
Keene and Pullin	2011	Realizing an effectiveness revolution in environmental management	*Journal of Environmental Management*	Systematic Review	Outcome (LPs)	Environmental Management
Lam *et al.*	2021	A leverage points perspective on social networks to understand sustainability transformations: evidence from Southern Transylvania.	*Sustainability Science*	Case study + survey and social network analysis (qual.)	Analytical and conceptual framework + Outcome (LPs + Theory)	Sustainability Embeddedness (sustainability transformations)
Lam *et al.*	2020	Three principles for co-designing sustainability intervention strategies: Experiences from Southern Transylvania	*Ambio*	Case Study	Outcome (LPs)	Sustainability Embeddedness (sustainability transformations)

Loehr, J. and Becken, S.	2023	Leverage points to address climate change risk in destinations	*Tourism Geographies*	Case Study + Critical reflection on research process	Theoretical framework + Outcome (LPs)	Environment Management
Lopes, R. and Videira, N.	2017	Modelling feedback processes underpinning management of ecosystem services: The role of participatory systems mapping	*Ecosystem Services*	Participatory systems mapping + Case study (qual.)	Outcome (LPs)	Environmental Management
Maher, Ray; Mann, Samuel; McAlpine, Clive A.	2022	MetaMAP: a graphical tool for designing initiatives to support multiple sustainability goals	*Sustainability Science*	Conceptual	Outcome (framework)	Sustainability Embeddedness
Mies and Gold	2021	Mapping the social dimension of the circular economy	*Journal of Cleaner Production*	Systematic literature review + mapping (qual.)	Outcome (LPs)	Social
Nguyen, N.C. and Bosch, O.J.H	2013	A Systems Thinking Approach to identify Leverage Points for Sustainability: A Case Study in the Cat Ba Biosphere Reserve, Vietnam	*Systems Research and Behavioral Science*	Case Study + systems Mapping	Outcome (LPs)	Sustainability Embeddedness
Nguyen, T.V., Nguyen, N.C., Bosch, O.J.H.	2017	Identifying key success factors in supply chain management for increasing the competitive advantages of Vietnamese coffee	*Competitiveness Review*	Workshop and interviews + modelling techniques e.g. causal loop diagram (qual.)	Outcome (LPs)	Sustainability Embeddedness (supply chain management)
Posner, Stephen M; Stuart, Ralph	2013	Understanding and advancing campus sustainability using a systems framework	*International Journal of Sustainability in Higher Education*	Conceptual	Conceptual and Analytical Framework + Outcome (LPs)	Sustainability Embeddedness
Rolfer al.	2022	Leveraging Governance Performance to Enhance Climate Resilience	*Earth's Future*	Capital approach	Analytical Framework	Economic and Governance

				framework, fuzzy cognitive mapping, and LPs analysis (qual.)	+ Outcome (LPs + Theory)	
Rosengren *et al.*	2023	Interlinkages between leverage points for strengthening adaptive capacity to climate change	*Sustainability Science*	Case study with Interviews and focus groups + thematic analysis (qual.)	Theoretical framework + Outcome (LPs)	Environmental Management
Rosengren, L. M.; Raymond, C. M.; Sell, M.; Vihinen, H.	2020	Identifying leverage points for strengthening adaptive capacity to climate change.	*Ecosystems and People*	Case study with interviews and focus groups (qual.)	Outcome (LPs)	Environmental Management
Seadon, J.K.	2010	Sustainable waste management systems	*Journal of Cleaner Production*	Systems approach and modelling (qual.)	Outcome (LPs)	Environmental Management
Sebastian, I.	2023	Doing business in a well-being economy	Building Sustainable Legacies The New Frontier Of Societal Value Co-Creation	Literature review + Interviews (qual.)	Theoretical framework + Outcome (LPs)	Social
Shrivastava, Paul *et al.*	2019	Finance and Management for the Anthropocene	*Organization & Environment*	Non-empirical / Conceptual	Outcome (LPs)	Economic and Governance
Shumi *et al.*	2023	Resilience principles and a leverage points perspective for sustainable woody vegetation management in a social-ecological system of southwestern Ethiopia	*Ecology & Society*	Case study with focus groups + quantitative content and descriptive analysis (mixed-methods)	Conceptual and Analytical framework + Outcome (LPs)	Environmental Management

Tajima, H.; Takemura, S.; Hori, J.; Makino, M.; Sato, T.	2022	Autonomous innovations in rural communities in developing countries III-leverage points of innovations and enablers of social-ecological transformation.	*Sustainability*	Narrative research and network analysis (qual.)	Conceptual framework + Outcome (LPP theory)	Social
Uehara, T., Sakurai, R., Hidaka, T.	2022	The importance of relational values in gaining people's support and promoting their involvement in social-ecological system management: A comparative analysis	*Frontiers in Marine Science*	Case study with questionnaires and comparative analysis (quant.)	Outcome (LPs)	Sustainability Embeddedness
Véliz, K.D., Walters, J.P., Busco, C., Vargas, M.	2023	Modeling barriers to a circular economy for construction demolition waste in the Aysén region of Chile	*Resource Conservation and Recycling Advances*	Mixed-methods (systems modelling)	Outcome (LPs)	Sustainability Embeddedness
Videira, N., Lopes, R., Antunes, P., Santos, R., Casanova, J.L.	2012	Mapping Maritime Sustainability Issues with Stakeholder Groups	*Systems Research and Behavioral Science*	Case study with interviews, participatory modelling workshops, mapping, questionnaires, and stakeholder analysis (qual.)	Outcome (LPs)	Environmental Management
Wigboldus, S; Jochemsen, H.	2021	Towards an integral perspective on leveraging sustainability transformations using the theory of modal aspects	*Sustainability Science*	Non-empirical / Conceptual	Conceptual / theoretical framework + Outcome (LPP theory)	Sustainability Embeddedness (sustainability transformations)
Williams *et al.*	2020	A Method for Enhancing Capacity of Local Governance for Climate Change Adaptation	*Earth's Future*	Capital approach framework + fuzzy cognitive mapping	Outcome (modelling approach)	Economic and Governance
Winkler *et al.*	2021	Mapping social structures for sustainability transformation at McGill 2 University, Canada	*International Journal of Sustainability in*	Case study with interviews and social network	Outcome (LPs)	Sustainability Embeddedness

			Higher Education	analysis (mixed-methods)		(sustainability transformations)
Woiwode *et al.*	2021	Inner transformation to sustainability as a deep leverage point: fostering new avenues for change through dialogue and reflection.	*Sustainability Science*	Literature review and insights from a series of dialogue and refection workshops	Theoretical framework + Outcome (LPP theory)	Sustainability Embeddedness (sustainability transformations)
Zimmermann *et al*.	2023	A leverage points perspective on arctic indigenous food systems research: a systematic review	*Sustainability*	Systematic Review (mixed-methods)	Analytical framework	Social

Source: Author's compilation

Table 16: Leverage point interventions

Leverage Point	**Evidence-based interventions**	**Illustrative Quote(s)**
LP12: Constants, parameters, numbers (such as subsidies, taxes, standards).	Green building standards	• "Examples of such parameters that can be expected to impact UVM's ecological footprint include … green building standards for specific energy use reductions in new construction … " (Posner and Stuart, 2013:268)
LP11: The size of buffers and other stabilizing stocks, relative to their flows.	Capital savings for building maintenance	• "Buffers are places within the system where material or energy stocks are stored thereby providing organizational stability by mitigating the impact of changing flow rates. Examples include … capital savings accrued for building maintenance. Increasing the size of these buffers can produce more system stability, but since this change usually involves significant short-term costs or requires time to accumulate enough money to impact building maintenance practices, it is not a strong leverage point." (Posner and Stuart, 2013:268)

LP10: The structure of material stocks and flows.	Water storage and reuse, and organising resources for optimal flow.	• "LP 3: Water storage and reuse … One approach to future water deficits is to increase the volume of available water in the system." (Egerer *et al.,* 2020:5) • "The organization of resources and how they flow between storage points and use points are central to how a university operates, but changing the physical aspects of this structure can be slow and expensive – often, desired conditions will evolve before changes in connections can be put into place" (Posner and Stuart, 2013:269)
LP9: The lengths of delays, relative to the state of system change.	Real time information on energy use	• "Real-time information about energy use is another example of how adjusting a time delay can provide a leverage point for changing the university system … Shortening the delay to provide real-time feedback allows for greater impact on energy use, and increased understanding of how behavior choices impact resource use and associated generation of pollution (Petersen et al., 2007)" (Posner and Stuart, 2013:270)
LP8: The strength of negative feedback loops, relative to impacts they are trying to correct	Status monitoring and recycling scheme	• "Basic Research and Status Monitoring (8.1) inevitably affect the structure of information flows (LP6). Meadows lists monitoring systems as an example of a controlling feedback loop (LP8)." (Arponen and Salomaa, 2023:17) • "Positive feedback loops reinforce actions on a system (Meadows, 2009). The ultimate conclusion of an unchecked positive loop is the destruction of the system and hence, wherever there are positive feedback loops there also need to be predominant negative feedback loops to provide balance. An example of this is the implementation of a glass recycling scheme in New Zealand to divert waste from landfill." (Seadon, 2010:1648)
LP6: The structure of information flows.	(1) Access to information, (2) knowledge dissemination, (3) peer-to-peer learning, (4) conservation planning, and (5) sharing knowledge, experiences, and ideas.	• "The enabling interlinkages associated with social learning as well as the barriers related to the access and use of information and knowledge … affected the system in an intermediately deep way and related to "The structure of information flows". In discussions regarding agricultural extension services, two enabling interlinkages related to social learning were identified: "Knowledge dissemination" and "Peer-to-peer learning", both of which can be related back to "The structure of information flows"." and "Meanwhile, "Sharing knowledge, experiences and ideas" could be related to "The structure of information flows"." (Rosengren *et al.,* 2023:12) • "Conservation planning (6.4) deals with designing and planning actions, but not with their implementation, therefore its direct impact manifests at The structure of information flows (LP6) independently of how/whether the information will flow into practice. When used in combination with another action, it increases their quality of implementation and thus leverage." (Arponen and Salomaa, 2023:16)

LP5: The rules of the system (incentives, punishments, constraints).	Changing executive compensation structures	• “Executive compensation structures are a second issue cited as a cause of short-termism. • The Aspen Principles imply that current compensation structures are based on short term metrics and incentivize short term executive behavior (Aspen, 2007).” (Fusso, 2013:810)
LP4: The power to add, change, evolve, or self-organise system structure	(1) System resilience, (2) innovation platforms, and (3) gender equality.	• “Self-organization leads to system resilience – the ability to adapt in the face of changing conditions or new realizations. Self-organization can be an unpopular intervention point for both individuals in authority and the group because it involves variability, diversity, and experimentation that may produce threatening levels of uncertainty or perceived lack of control about what is next.” (Posner and Stuart, 2013:272) • “Within systems thinking, two complementary perspectives have emerged that can help to facilitate better and more sustainable management of SES. First, a resilience perspective is interested in how systems can cope with shocks and continue to develop (Folke et al. 2010). More specifically, this perspective emphasizes human-nature relations and adaptive management … The resilience of SES can be enhanced by applying established principles that are widely recognized to foster social-ecological resilience (Biggs et al. 2012; see Table 1).” (Shumi *et al.,* 2023:1) • “In discussions regarding innovation platforms, three intermediately deep enabling interlinkages were identified: “Sharing knowledge, experiences and ideas”, “Build networks”, “Women more empowered”. Of these, the latter two could be related to strengthen the ability to “Add, change and self-organise system structure” …” and “The enabling interlinkages associated with gender equality (Create unity, Empowerment, Create commitment, Support during hardship and Create independence) improved social cohesion and could be related back to “The power to add, change and self-organise system structure”.” (Rosengren *et al.,* 2023:12)
LP3: The goal of the system	(1) Systemic goal alignment and individual goal alignment, (2) redefining system	• "We summarise them in our proposed framework: *systemic goal alignment and individual goal alignment* (Fig. 2). The two frames are not mutually exclusive but are instead frequently employed together as part of intermediaries’ efforts to drive organizational change” and “What matters is that both frames ultimately support organizational changes so that both systemic and individual goals are better recognised and integrated into business models and operations (Burch and Di Bella, 2021).” (Dahlmann and Stubbs, 2023:7)

	goals, and (3) conservation strategy	• "It is typical for large organizations to experience fragmentation since objectives are not aligned between individuals, subgroups, and the organization (Greenwood et al. 2011). These multiple reasonings foster the identity of individual domains, but also hamper organizational change Kraatz and Block 2008). In order to implement fundamental change, the current fragmentation would need to be overcome by aligning objectives (Hoffman et al. 2011)." (Winkler *et al.,*2021:19) • "The goal of a system will influence the arrangement of everything further down the list – physical stocks and flows, information and feedback loops, and self-organizing behaviors … The goals may be stated or may lie deeper below the surface of openly acknowledged purposes. An example is when a leader comes in and describes a new goal that swings an organization into a different direction. For example, a college president could inspire a shared vision for sustainability or set new university goals …" (Posner and Stuart, 2013:272-273) • "Finally, almost half of the intent-related LP targeted by the projects focused on changing the goals of the system (20/48; 42%), namely, developing and implementing conservation strategies that engage with the well-being agendas of the indigenous communities (Q3)" (Burgos-Ayala, 2020:298)
LP2: The mindset or paradigm out of which the system arises	Change in organisational culture, and diversity through hiring and recruitment.	• "Firstly, lack of diversity is a primary contributor to many present issues with agency culture and the prospects for instituting change … An agency's staff is the product of its hiring process and the priorities and values involved in that process, as well as the available pool of recruits from university programs, all of which are affected by perceptions of the current culture within agencies and in turn determine the diversity of the agency." (Berl *et al.,* 2021:9)

Source: Author's compilation

Table 17: System characteristic interventions

System Characteristics	Evidence-based interventions	Illustrative Quote(s)
Parameters	• Better products and management practices through internal	• "Adopting Better products and management practices (5.2) influences parameters (LP10- 12). Seal-friendly fishing gear, greening of supply chains of corporations, or swapping for low water-use crops do not aim at any deeper change in the society, just a less damaging way of proceeding with business-as-usual." and "Internal Organizational Management & Administration

	organisational management and administration. • Clean and efficient technology and systems for lower emissions and waste reduction.	(10.1) handles both human and material resources for conservation organizations (LP10-12) …" (Aarponen and Salomaa, 2023:15) • "With regards to the interventions' proposed (or observed) outcomes, efficient technology, lower emissions, and new business and income largely stemmed from interventions on the system's parameter level." (Dorninger *et al.,* 2020:7) • "To create an effective and sustainable response in tourism, tourism and climate change policies must be integrated and consider all aspects of climate risk. Such integration would also ensure that tourism development objectives do not contradict adaptation capacities and emission reduction targets." (Loehr and Becken, 2021:828) • "The quantities of wastes being generated and how much is being diverted are certainly important parameters to have … the changes that do occur through parameter collection are normally aimed at increasing the efficiency of the system under study and are often achieved through a technological change (e.g. greater compaction, concentrating or diluting a discharge or removing contaminants from air emissions)." (Seadon, 2010:1647)
Feedbacks	• Publicity and consumer awareness • Social or ecological monitoring systems	• "Also, consumer awareness connects directly with feedback loops … This implicates publicity and consumer awareness as cause variables with multiple effects and therefore as potential leverage points in the unified Elekuru CLD (Laurenti et al. 2016; Roxas et al. 2019). Given that consumer awareness is driven by publicity (see Fig. 4), it appears reasonable to zero in on publicity as a leverage point in the system (Strelkovskii and Rovenskaya 2021)." (Adebiyi and Olabisi, 2022:419-420) • "These leverage points include improving … public awareness and understanding of climate change." (Rolfer *et al.,* 2022:12) • "In our study, they [feedbacks] refer to the social or ecological monitoring systems implemented by the projects …" (Burgos-Ayala *et al.,* 2020:298)
Design	• New organisational structure or sustainability department • Changing policies: Transparency as policy measure	• "Transparency measures in resource management involve access to inform on different aspects of the resource value chain, such as ownership, the way in which the resources are managed and revenue management." and "Our findings suggest that transparency can serve as a leverage point for sustainable resource management if it meets certain criteria. Transparency measures need to be complemented by clear legal standards for resource management and accountability mechanisms." (Williams *et al.,* 2020:12) • "'Design' relates to new organizational structures and institutions with the agency to manage shallower LP." (Burgos-Ayala *et al.*, 2020:298) • "When different local actors jointly try to change policies, they target the design of a system … To amplify impact, initiatives can intervene in different leverage points. For instance, to protect biodiversity, a conservation initiative might aim to change policies at higher institutional level (i.e., amplifying beyond), which is an intervention in the design of a system" (Lam *et al.,* 2021:813-804)

		• "Changes in the structure of an agency and its policies, including hiring and incentive systems, will feed back to internal cultural changes (Figure 2.2)." (Berl *et al.,* 2021:10)
Intent	• Changing organisational culture • Adopting a long-term perspective and overcoming short-terminism) • Leadership • Purpose framing • Refinement of governance strategy • Inner transformations	• "There was broad agreement in our group that agency culture (Figure 2.2) is the most critical piece for driving and maintaining systems change within an agency. The internal culture of an organization is "the way we do things around here"; it is a system that embodies the organization's norms, values, and assumptions and continually signals to employees which kinds of behavior and which kinds of people are welcome, and which are not (Martin, 2006)." (Berl *et al.,* 2021:8) • "The three strongest levers focus on beliefs and culture. These levers are strong because they focus on the values, cultures, and beliefs of those within a system, rather than the structures of the system … Finally, this analysis suggests conquering short-termism will take time. Changing culture demands stakeholder engagement, thoughtful discussion, and other change management tactics." (Fusso, 2013:818-820) • "Often financial returns are only assessed from a short-term view … Using longer term predictions or scenarios, however, will help financial markets assess long-term risks and will help them avoid being exposed to these risks in the future." and "The underlying institutional logics of what constitutes the stakeholder theory of the firm should be reframed so managers envision the goals and purpose of the organization to be about long-term value creation for human and nonhuman entities." (Shrivasta *et al.,* 2019:32-36) • "We concluded that agency leadership in particular takes a central role in shaping the fabric of the agency by managing its staff and priorities and in setting the tone of its culture … strong leadership from the top of the organization can drive changes in norms and systems of governance that lead to expanded accessibility and participation (Decker et al., 2016)." (Berl *et al.,* 2021:8-10) • "The appointment of the Sustainability Facilitator by a supportive CEO resourced a boundary spanner (Bögel et al. 2019) to work vertically across hierarchical levels of the organisation (i.e. engaging with the CEO, Elected members, department managers, officers and workers), and horizontally across departmental silos to generate interest within the organisation, and finally coach, empower and educate others to become Boundary Spanners." (Bryant and Thompson, 2020:801) • "The framing of purpose thus aligns with more informal governance approaches based on norms, ethics, and values (Patterson *et al*., 2017; Stirling, 2014) … Moreover, by focusing on changing the norms (Kanda et al., 2020) regarding the purpose of business (i.e., moving from a purely profit orientation towards achieving broader positive socio-ecological impact), the use of purpose framing also represents a deliberate attempt to focus on changing the goal or intent of the overall (economic) system as a critical leverage point as part of a wider sustainability transformation (Abson et al., 2017). The focus on purpose as defined by our respondents is quite literally an

		attempt to initiate systems change by revising key higher-level goals (i.e. the purpose of individual businesses and business in general), if not even a challenge to the 'mindset or paradigm out of which these goals arise' (Meadows, 1999: 3)." (Dahlmann and Stubbs, 2023:7-8) • "Local actors address the intent of a system when they jointly reflect on their missions and goals, or engage in activities that help to reconcile differences in values and worldviews (Table 1)." (Lam *et al.,* 2021:813) • "Study findings revealed that the refinement of governance strategy is a clear leverage point to achieve this [circular economy adoption] end goal. Bolstering strategic vision can have downstream effects that ameliorate financial barriers (i.e., high capital and production costs and a lack of incentives) that exacerbate the desire for short-term profitability of companies and stakeholders." (Veliz *et al.,* 2023:9) • "Whilst different definitions exist, a common denominator is that inner transformation relates to exploring and addressing people's inner dimensions and their relation to sustainability to support individual, collective and systems change. Based on their professional and academic work, several session participants argued that fundamental change towards sustainability can only succeed through transformation processes that also address inner dimensions at personal and collective levels." (Woiwode *et al.,* 2021:844)

Source: Author's compilation

Table 18: Holistic interventions

Holistic intervention	Evidence-based interventions	Illustrative Quote(s)
Knowledge and skills development	Education	• "Education can provide empowerment and promote agency, which enables system structure change (LP4, Linnér and Wibeck 2021; Sidiropoulos 2022). Conservation education that teaches about different alternative philosophical perspectives can impact even paradigms (LP2) or enable transcending them (LP1) (Moon and Blackman 2014; Pascual et al. 2022) … education and training are the actions that have the potential to operate at the deepest level of leverage, at the level of intent." (Arponen and Salomaa, 2023:17) • "Education provided an opportunity to 'talk the same language' when addressing sustainability—people could see how it relates to their work and how they can change— empowered people to act and share the sustainability beyond their group." This shared language and

		understanding helped create an environment where people could work across traditional disciplinary boundaries." (Bryant and Thomson, 2021:801) • "In this case study, embedding organisational sustainability was a co-ordinated process that had the education of individuals within the bureaucracy at its heart. The focus of this social and organisational learning intervention was on "facilitating and moderating learning processes rather than teaching" (Barth and Michelsen 2013, p. 112). The staff's existing positions provided the agency to act on this knowledge. Investment in an education program to shift culture was a powerful leverage point that has had, and continues to exert, considerable positive sustainability impact within this large municipality." (Bryant and Thomson, 2021:805-806) • "Increasing decision-makers' access to climate change information and education is relevant for all destinations, as this has several positive flow-on effects for system governance. Scenarios, for example, would inform long term planning by key actors to meet international climate targets and adapt to climate change (Gössling & Scott, 2018) … Education and awareness programs may also enhance cross-sectoral cooperation, which generate further relevant knowledge, improve information flows and foster integrated initiatives, such as helping tourism businesses to measure and reduce their emissions (Loehr & Becken, 2021)." (Loehr and Becken, 2021:803) • "Ethical arguments suggest that the most legitimate ways to address inner dimensions and transformation may come through transformative education and voluntary changes by individuals or groups interested in expanding their agency ..." (Woiwode *et al.,* 2021:853) • "The myriad of educational programs and awareness raising interventions aimed to create an environment conducive to action for sustainability." (Bryant and Thomson, 2021:803) • "In summary, it can be discerned that changes in organisational and societal mindsets, accompanied by both internal and external education and awareness campaigns and including various stakeholders in the entire transformation process, are central elements for successfully implementing a circular economy (Inigo & Blok, 2019; Petry et al., 2011; Rashid et al., 2013)" (Mies and Gold, 2021:25)
	Training	• "… education and training are the actions that have the potential to operate at the deepest level of leverage, at the level of intent." (Arponen and Salomaa, 2023:17) • "Communication between agency leaders on innovative solutions to change, change management, and the effective use of leverage points—as well as the development of education and training programs that address these needs—will be critical to ensure widespread adoption and success." (Berl *et al.,* 2021:11)

		• "To this extent, the training set the foundations upon which to build a co-ordinated network of change agents within the organisation who could mutually support each other and learn together." (Bryant and Thomson, 2021:801) • "Through the Strategic Sustainability training the Sustainability Champions were also able to function as translators speaking their disciplinary language (e.g. engineering, environmental science, public health, etc.), as well as sustainability. The shared language and sustainability frame of reference helped them navigate cross-organisational spaces, share knowledge and co-create solutions." (Bryant and Thomson, 2021:803) • "The leverage points identified from the 'shifting the burden' systems archetype have been addressed by the training programme conducted for a group of professionals and managers responsible for the management of CBBR (Nguyen et al., 2012), and these people have now trained their colleagues at their workplace (train the trainers)." (Nguyen and Bosch, 2012:113)
	Learning	• "The sustainability program provided multiple learning interventions (see Table 2) to build a culture of support and normalise sustainability across organisational business objectives. A key example of this is the educational sustainability video which as well as being available online was introduced to all new employees as part of an induction program … " (Bryant and Thomson, 2021:803) • "A broad definition by Ensor and Harvey (2015) defines social learning to facilitate knowledge sharing, joint learning, and co-creation of experiences between stakeholders around a shared purpose in ways that: 1) take learning and change beyond the individual to communities, networks or systems, and 2) enable new, shared ways of knowing that lead to changes in practice … Social learning not only addresses gaps in knowledge but also builds social capital including trust, enhancing reciprocity and exchanges (bonding capital), and improving connectedness to networks and groups (Pretty and Buck 2002)." (Rosengren *et al.,* 2020:438) • "A few initiatives have tried to change institutional structures and objectives but have thus far met limited success. To overcome this situation, organizational learning could be encouraged. This includes creating opportunities to reflect on norms, values, and one's own activities (Siebenhüner and Arnold, 2007). Such learning could be promoted with events that encourage reflection on one's own norms and values and how they align with the objectives …" (Winkler *et al.,* 2021:18) • "In sum, results show that the inner transformation–sustainability nexus includes the following interrelated elements: … Sustainability-oriented social learning and innovation (including integration of different ways of knowing) …" (Woiwode *et al.,* 2021:848) • "It [inner transformations] involves the facilitation of social learning and innovation as a key driver of transformation. Social learning leads to new understandings of the rules and structures underlying persistent problems and how to change these ´root causes´ …

		Additionally, it relates to recognizing and improving the performance of existing structures … Last, it includes to collectively understand and open up sense making and purpose development, thereby creating formerly unimagined possibilities to resolve problems …" (Woiwode *et al.,* 2021:850) • "Sustainability oriented innovations include the ideation of new structures and rules, orienting the reorganization of systems towards sustainability (cf. Schot and Steinmueller 2018; Avelino et al. 2019). In this context, learning and innovation benefit from groups of actors holding deliberate, adaptive and flexible attitudes easing information exchange, refection and ideation. On the individual level, these processes catalyze and beneft from competencies of ideation, experimentation and system and design thinking (cf. Wamsler et al. 2020)." (Woiwode *et al.,* 2021:850)
Alliance, Partnership and Collaboration	Create alliances and partnerships	• "Alliance and Partnership Development (10.3) depends largely on the context and who is involved and what is done in the partnership, but all kinds of collaborations would be expected to influence the structure of information flows (LP6), and especially so when the collaboration is about knowledge creation (Keene and Pullin 2011)." (Arponen and Salomaa, 2023:17) • "These partnerships were both horizontal (among entities operating at similar scales and power structures) and vertical (among entities at different scales or different levels of power) in character." (Atwell *et al.*, 2010:1087) • "Finally, the creation of collaborative relationships and partnerships with other organizations can increase an agency's capacity by leveraging the influence and resources of organizations and individuals that share common goals with agencies in preserving wildlife and improving quality of life for people." (Berl *et al.,* 2021:10) • "Identifying the relevant partners for interventions in particular system characteristics is crucial for successful collaborations that foster sustainability transformations." (Lam *et al.,* 2021:822)
	External collaboration with stakeholders	• "Additionally, the influence map (Fig. 4) reveals how improving collaboration between stakeholders and legitimacy of CE implementation, through improved strategic planning, can impact CE-CDW implementation success further downstream." (Veliz *et al.,* 2023:7) • "Among barriers perceived at local level, the lack of collaboration between local organisations was named as a reason for the low impact of organisations (Nieto-Romero et al. 2016)." (Lam *et al.,* 2020:1458) • "Engaging stakeholders to implement restoration actions could reach deeper leverage points than the same actions implemented by public authorities, but even more so if they were engaged in a co-creation process that results in new knowledge, decisions and consequently more impactful actions (Davila et al. 2021; Pascual et al. 2022). The notion of cross-sectorality of transformative change applies beyond the context of knowledge production (Pascual et al.

		2022) — for example, cross-sectoral Alliance and partnership development (10.3) could be a much more powerful action than collaboration among different conservation NGOs (Hartel et al. 2019). These are all issues that should be considered when assessing the transformative potential of conservation actions." (Arponen and Salomaa, 2023:19) • "Engaging with all business stakeholders to co-create business purpose and intentions …" (Sebastian, 2015:18)
	Internal Collaboration	• "Another part of the organizational culture, the weak intensity of collaboration between different groups working on sustainability, is reflected in … In addition, already active sustainability groups should collaborate to not only prepare the ground with well-intended, tangible sustainability activities but also to create possibilities to engage with values and align them with sustainability objectives. These interactions will require time and resources but are necessary for a sustainability transformation." (Winkler *et al.,* 2021:31)
Capacity Development	Internal capacity development	• "Similarly, Training & Individual Capacity Development (9.2) addresses information flows (LP6). Both can include capacity building which affect the power to change system structure (LP4) and in some cases even paradigms and transcending them (LP2 and LP1) … education and training are the actions that have the potential to operate at the deepest level of leverage, at the level of intent." (Arponen and Salomaa, 2023:17) • "Agency capacity is another important leverage point within agency culture that can be addressed directly through changes to hiring, funding, and partnerships with other organizations. Hiring staff with a broader base of skills than strictly wildlife biology—skills in areas such as public communication, social science, leadership, business, and marketing—is a crucial part of building a staff with expertise in the problems that they typically encounter in the modern day-to-day performance of their duties, and for tackling new issues that arise from social change." (Berl *et al.,* 2021:10) • "A third concern is whether executives currently have the capabilities needed to create long term value." (Fusso, 2013:812)
	External organisational development and support	• "External Organizational Development & Support (10.2) will strengthen organizations ensuring continuity in the regulatory role they have (LP8). External support to an organization can include for example consulting services, forming a new channel of information flow (LP6). Creation of new environmental organizations changes system structure (LP4)." (Arponen and Salomaa, 2023:17)

Artificial Intelligence		• "Technology-enabled sustainability initiatives are regarded as the way forward to large socio-economic system changes (National Research Council, 2012; Schwab, 2017) which influence behaviour towards new sustainable forms … AI and machine learning in particular can improve data mining methods (Griffin et al., 2018; Lehmann et al., 2012), enhance decision-support systems (Gardas et al., 2019; Perrot et al., 2016) and automate (Lehmann et al., 2012; Leone, 2017) or optimise production (Griffin et al., 2018)." (Camarena, 2020:5) • "Social networks, powered by AI, can bring traceability, transparency and sustainability closer to consumer-demand by providing them with a way of supporting local food sourcing … In a case study relevant to transportation, Shu et al. (2017) review the use of AI to reduce resource consumption during the use phase of products. Techniques can either provide feedback to truck drivers (information and feedback) for them to modify their behaviour, or take control of some aspects of the driving (automation)." (Camarena, 2020:7) • "In light of the twelve places to intervene proposed by Meadows, we examined how the power of AI across the food supply chain can have a deep impact on a number of system critical mechanisms. For example, let's consider the length of delays relative to the rate of system change (Point 9 in Meadows, 1999). These delays in feedback loops could mean overshooting or undershooting food production." (Camarena, 2020:11) • "The domain of negative feedback loops (Point 8 in Meadows,1999) is already transformed by Big Data and the ability for AI-powered tools to create monitoring and reporting on a scale never-seen before. The ability for AI to conduct systemic analysis, or "paint the picture" capability, provides an opportunity to link different realms of research, a multi-level, multi-stakeholder, meta approach needed for the development and monitoring of sustainable food systems." (Camarena, 2020:11) • "In a similar domain, the ability to add or restore missing feedback to the structure of information flow (Point 5 in Meadows, 1999) is an area AI disciplines are already transforming. Feedback to regulate the system as a whole means increasing accountability in the different parts." (Camarena, 2020:11) • "AI, especially deep, reinforcement and unsupervised learning as well as other areas using neural networks, is intrinsically a self-organised system structure (Point 4 in Meadows, 1999) to the degree that once set, it has the power to add, change and evolve independently." (Camarena, 2020:11) • "To resolve the complex issues of sustainable food systems transition using AI, we need to think in systems of smart things which go beyond a device or service and addresses dynamic structural and behavioural complexities." (Camarena, 2020:12)

		• "Design thinking, tools, methods and frameworks not only help us to think about the impact of AI as a system in the transition to sustainable food systems but to also balance the creation of artefacts (be it digital, physical or social) with the needs of the environment and of people." (Camarena, 2020:12)

Source: Author's compilation