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"Analysis of the Doughnut Economic Model: Integrating sustainability within existing organizations and identifying strategies and challenges"

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Abstract

In an era where sustainability is critical for business longevity and social responsibility, this thesis examines the integration of the Doughnut Economic Model (DE) within existing organizations, particularly focusing on strategies and challenges. The research explores the DE model's potential to balance ecological boundaries with social foundations, aiming to foster sustainability in business practices. Using a case study method by examining Green Digital, a medium-sized company based in the Netherlands, through in-depth interviews with important figures and statistical information from corporate documents. This approach gives a thorough understanding of the implementation of digitalization and sustainability initiatives at Green Digital. Quantitative and Qualitative methods of questionnaires of employee perceptions about the company as well as a comprehensive data report, helps to understand how Green Digital is carrying out its digitalization and sustainability efforts. The findings reveal that while DE can enhance operational resilience, innovation, and employee engagement, it also faces obstacles such as resource limitations, knowledge gaps, and the need for more extensive educational support for employees. Additionally, the study highlights the importance of leadership commitment and strategic alignment in successfully adopting the DE framework. This study contributes to the field by providing empirical evidence on the applicability of DE in a business context, offering practical insights and recommendations for SMEs aiming to adopt sustainable practices. The study emphasizes the importance of continually adapting and the potential of distance education to create positive changes in business sustainability. This information can guide future research and policy-making in this field.

Introduction

The topic of sustainability is gaining increasing attention worldwide, as the urgency to address environmental and social challenges becomes more apparent. For businesses, integrating sustainable practices is no longer a choice but a necessity, driven by the need to contribute to a sustainable future while maintaining competitiveness and resilience. As evidenced by a recent Forbes article, although 90% of executives acknowledge the importance of sustainability, merely 60% of companies worldwide have a dedicated sustainability strategy (Rafi, 2024). This glaring disparity underscores a significant gap in the business landscape, necessitating further exploration and intervention (Rafi, 2021). This is especially shocking because sustainability in businesses is not only beneficial for the environment and society, but also for the businesses itself. As stated by the Harvard Business School, initiatives towards sustainability not only catalyze social and environmental change but also significantly contribute to organizational success of businesses. This includes positive effects such as Enhanced Employee Engagement and Retention, Improved Brand Loyalty and Consumer Trust, Attractiveness to Investors, Revenue Growth and Operational Resilience, and lastly Strategic and Societal Benefits[1]. Contrary to conventional wisdom, investing in sustainable business practices not only aligns with ethical imperatives but also yields substantial long-term profitability. Studies, such as those referenced by McKinsey (Benini & Swartz, 2014), consistently demonstrate that companies with high Environmental, Social, and Governance (ESG) ratings outperform the market in both the medium and long term, underscoring the intrinsic link between sustainability and financial performance (Chladek, 2019).

[1] Those effects will be explained in detail in the literature section

Given the significance of this topic, this study seeks to widen the discussion of sustainability and business by addressing the following research question: *"How can the Doughnut Economic Model be integrated within existing organizations, and what strategies and challenges are associated with its implementation?"*. The study explores Kate Raworth's Doughnut Economics Model (DE) in order to do this. This relatively new and in general under-researched framework- especially in the business context- provides a modern approach, finding a balance between environmental and social sustainability. The goal of the study is to determine the advantages and disadvantages of the DE model through an analysis of a case study of Green Digital, a medium-sized Dutch company located in the North of the Netherlands. Therefore, a high focus lies on medium-sized enterprises (SMEs) to contribute to the understanding of sustainable business practices. The World Bank (2019) states that SMEs play a crucial role in global economies, but face significant challenges in implementing sustainability measures due to limited resources. This research aims to address the unique challenges that SMEs face when incorporating sustainability, making it essential to promote sustainable business practices. Dutch company located in the North of the Netherlands. Furthermore, empirical data showing a link between profitability and sustainability emphasizes the necessity for a deeper comprehension of this relationship (Cladek, 2019). Therefore, investigating new models such as the DE framework is important for promoting more sustainable businesses and operations.

The paper will begin with a literature review discussing the importance of sustainability in business. It will then explore current sustainability theories such as the Triple Bottom Line (TBL) and the Three Pillar Model (TPM), as well as the role of SMEs in economic systems. The next section will focus on the Doughnut economic model, examining its implications for businesses and providing real-life examples. Following this, the paper will analyze the case of

Green Digital within the framework of the Doughnut Model. Finally, the discussion section will cover interpretations and applications of the Doughnut economic model to the case study, as well as any limitations and recommendations that arise. For the research design and methodology, this study adopts a case study analysis approach, incorporating an extensive literature review of existing papers and studies about sustainable business models, a data comprehension and report of the company, and elements of quantitative research to examine the company's environment regarding social aspects. By employing a combination of qualitative interviews and quantitative data analysis and using the case of Green Digital as a research lens, this study aims to provide a comprehensive understanding of the strategies and challenges associated with integrating sustainability into business models within existing organizations.

The main contribution of this work is to demonstrate the practical application and benefits of the DE model for leading businesses toward sustainability. The study found that DE can effectively balance ecological and social components, promoting long-term resilience and efficiency. The Green Digital case study is a realistic example that demonstrates both the possibilities and the problems of integrating DE framework in a real-world business situation.

Literature review

The literature review will provide insights into the roles of SMEs and the importance of sustainability since this research aims to address the unique challenges that SMEs face when incorporating sustainability, making it essential to promote sustainable business practices. After that, current sustainability theories such as the Triple Bottom Line and the Three Pillar Model will be discussed and later compared to the DE framework, in order to identify strengths and weaknesses. To conduct the content analysis about existing studies and papers about

sustainability and business practices I used platforms like Google Scholar and other open sources/ libraries.

The need for sustainability in businesses

There are several questions that arise if we think about sustainability in the business world, for example: 'What is sustainability?', 'Can sustainability make profit?', 'Why do recognized companies want to become sustainable?', and 'What are the positive effects of sustainability for businesses, if any?'. In the following, I will try to answer these questions.

I will start with the first question: 'What is sustainability?'. Definitions of the term have varied with literature, context, and time. An often-used, general, definition of sustainability is "meeting the needs of the present without compromising the ability of future generations to meet their own needs" by the United Nations Brundtland Commission in 1987 (United Nations, n.d.). Related to business, the Harvard Business School (HBS) describes sustainability as "the effect companies have on the environment or society" (Chladek, 2019). Examples of those effects include Climate change, Income inequality, Depletion of natural resources, Human rights issues, Fair working conditions, Pollution, Racial injustice, Gender inequality.

There are several effects of sustainability on business performance. Sustainability initiatives within businesses yield profound benefits, resonating across multiple dimensions of organizational success as shown by research of the International Business Machines (IBM, 2021)[2] including a variety of countries globally.

[2] The IBM survey included more than 14,000 adults from 9 countries (Brazil, Canada, China, Germany, India, Mexico, Spain, United Kingdom, and United States) (IBM, 2021)

First, a commitment to sustainability fosters employee engagement and retention, as evidenced by the growing preference for mission-driven, purpose-led employers among job seekers. Studies indicate that environmentally sustainable companies are perceived as more attractive employers, with 71% of employees and employment seekers expressing a preference for such organizations (IBM, 2021). Moreover, sustainability initiatives play a pivotal role in talent acquisition and retention, as employees increasingly seek purpose-driven employment with socially responsible companies. Building a reputation as a sustainable employer enables organizations to attract and retain top-tier talent, fostering a culture of innovation and collaboration that drives long-term success (Diab et. Adams, 2023).

Second, sustainability enhances brand loyalty and consumer trust, with 80% of consumers indicating that environmental responsibility is a significant factor in their purchasing decisions (Haller et. al., 2020). This consumer sentiment underscores the competitive advantage that sustainable businesses enjoy, as they can leverage their reputation for environmental stewardship to attract and retain customers. Additionally, the alignment of sustainability practices with regulatory requirements not only ensures compliance but also mitigates operational risks and enhances long-term viability. Governments, investors, employees, and customers are increasingly demanding higher levels of enterprise accountability, particularly concerning climate change mitigation efforts and environmental impact disclosure (Drolet et. al., 2021). Companies and organizations using the Environmental, Social, and Governance (ESG) criteria and having positive results, show a significant shift of investors which shows that sustainable businesses are inherently more attractive to investors. Beyond regulatory compliance and investor appeal, sustainability initiatives drive revenue growth and operational resilience. The COVID-19 pandemic has underscored the importance of resilient, sustainable business

models, emphasizing the longevity of transformation investments in ensuring organizational agility and adaptability to evolving market dynamics. This can be achieved by implementing sustainable practices that optimize resource consumption and operational efficiencies.

In essence, the benefits of sustainability on businesses are manifold, encompassing strategic, operational, and societal dimensions, and positioning sustainable enterprises as leaders in the transition towards a more equitable and resilient future.

Small and medium-sized enterprises (SMEs)

In an era of growing environmental consciousness and the need for sustainable development, small and medium-sized businesses' critical role in promoting economic growth while reducing environmental damage has become apparent. This section will explore the complex connection between sustainability and SMEs.

Understanding the diverse characteristics of SMEs lays a critical foundation for investigating their multifaceted roles in both the economy and the environment. Small and medium-sized enterprises (SMEs) are the engines of private sector growth in both developing and developed economies, and they are critical to achieving the global goals of growth, stable wealth, and environmental protection. Although their per capita contribution is less than that of larger firms, SMEs have a significant cumulative impact (United Nations Global Compact, 2022). According to the World Bank, 90% of businesses worldwide are SMEs, accounting for 50% of employment. Formal SMEs contribute up to 40% of national income (GDP) in emerging economies (The World Bank, 2019). SMEs have an important role in international trade dynamics, acting as integral players within global and regional value chains by providing essential goods and services. Because of their broad footprint, they are important stakeholders in

the advancements and setbacks of national and regional sustainability frameworks (United Nations Global Compact, 2022).

The European Commission has identified two factors determining whether an enterprise is an SME. Those factors have to do with a company's (1) staff headcount and (2) either its turnover or its balance sheet total in a year. According to those two factors companies are then classified as micro-, small-, or medium-sized (*see Table 1)* (European Commission, 2023).

Table 1

Definition of SMEs according to the European Commission

Company category	Staff headcount	Turnover	or	Balance sheet total
Medium-sized	< 250	≤ € 50 m		≤ € 43 m
Small	< 50	≤ € 10 m		≤ € 10 m
Micro	< 10	≤ € 2 m		≤ € 2 m

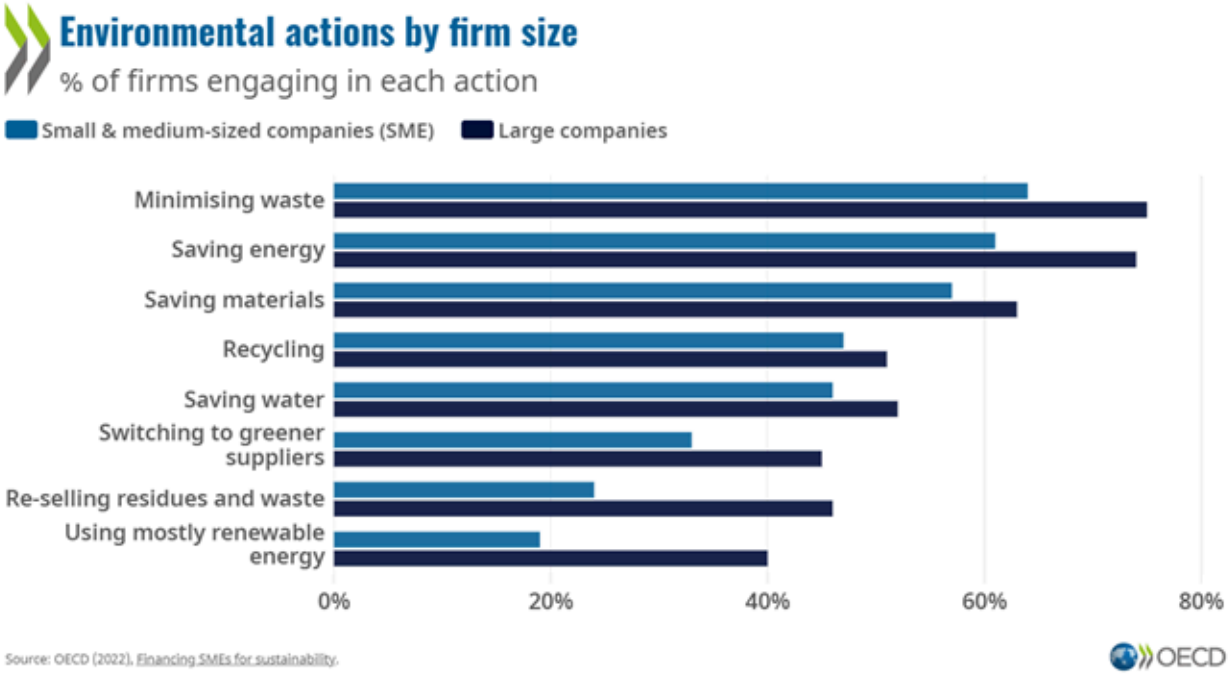
Note. From the European Commission "*Internal Market, Industry, Entrepreneurship and SMEs*" by the European Commission, 2023, (https://single-market-economy.ec.europa.eu/smes/sme-definition_en)

While SMEs undeniably hold significant economic influence, their environmental footprint, which is frequently negative, highlights the urgent need for a transition to greener and more sustainable practices. As reported by OECD, at least 50% of greenhouse gas (GHG) emissions of the business sector are attributed to SMEs. This number could be higher since only 10% of SMEs currently measure their GHG emissions according to OECD's survey (OECD, 2023). One of the leading issues is the lack of full engagement on ESG issues by most SMEs, which includes the highly tied relation of reporting and engaging in sustainability. The UN global

compact survey (United Nations Global Compact, 2022) shows that less than 50% of companies with a turnover under $25 million, so small and micro-sized enterprises report on their sustainability performance whereas 94% of companies with a $1 billion turnover do. This means that larger companies report on sustainability more than SMEs, but why is this the case? There are several reasons why SMEs are less likely to report on ESG issues despite their interest in ecological matters. As pointed out by Ojimbo (2023), SMEs are primarily constrained by a lack of resources such as financial capital, time availability, and knowledge, which limits their ability to address challenges such as climate change mitigation or diversity and inclusion. SMEs frequently view environmental, social, and governance (ESG) initiatives as optional expenditures and want to avoid any extra spending. Those circumstances are nicely illustrated in *Figure 1*, where one can see that SMEs take fewer environmental actions (e.g. minimizing waste, using greener options) than large companies. This supports the theory of a connection between fewer sustainability initiatives by SMEs due to their limited resources, with financial reasons being the most dominant.

Figure 1

Environmental actions by firm size



Note. Adapted from "Financing SMEs for Sustainability," by OECD, 2022, OECD SME and Entrepreneurship Papers. https://doi.org/10.1787/a5e94d92-en.

In conclusion, SMEs and sustainability have a symbiotic relationship that goes beyond simple economic considerations: SMEs are essential players in the shift to more sustainable development and greener economies but limited by resources. They have a huge impact on global goals despite facing obstacles like low resources and the belief that sustainability programs are extravagant behavior. This is especially true when it comes to encouraging sustainable growth, employment, and innovation. SMEs must respond to the call for greener practices as vital players in the dynamics of international trade and regional sustainability frameworks, both for their own benefit and for the advancement of society as a whole towards a more sustainable future.

Main Theories of sustainability

In this section the most common sustainability models and their evolution will be introduced. I will focus on two theories that are currently most used, which are the Triple bottom line (TBL) and the Three Pillar Model and are highly recognized and often used to measure and apply sustainability. Nevertheless, relevant theory and robust empirical work on business models in sustainability contexts is rare (Lüdeke-Freund, 2012), limiting the presentation of sustainable business models.

The Triple bottom line

The Triple bottom line (TBL) is a sustainability-related construct coined by John Elkington in 1997, an American author and opinion leader in sustainable economic development, to measure the performance of sustainability of an organization (Alhaddi, 2015). It is often classified as a classic or more traditional model (Stopper et. al., 2016) and integrates social, economic, and environmental lines which brings more balanced, comprehensive, and coherence into the construct (Alhaddi, 2015). Therefore, the TBL dimensions are also commonly called the three Ps: people, planet and profits (Slaper et. Hall, 2011).

The effect of an organization's business practices on the economy is referred to as the economic line in the TBL framework. It has been associated with the economy's capacity to endure and change in the future as one of the sustainability subsystems in order to provide for the needs of future generations. The economic line connects the organization's expansion to the expansion of the economy and the degree to which it supports it (Alhaddi, 2015). Examples include earnings or expenses, taxes, employment, business diversity factors, and business climate factors (Slaper et. Hall, 2011). According to Elkington (1998). The social line of TBL refers to

using ethical and beneficial business practices with regard to labor, human capital, and the community. The belief is that these activities “give back" to the community and add value to society. Metrics related to education, equity and access to social resources, health and well-being, quality of life, and social capital are a few examples of these practices. The TBL's environmental line of business refers to actions taken that do not jeopardize the environment's resources for coming generations. It concerns, among other things, the economical use of energy resources, the decrease of greenhouse gas emissions, and the reduction of the ecological footprint. Environmental initiatives have an impact on the organizations' ability to sustain their business, much like the social aspect of TBL (Alhaddi, 2015). However, an issue of the TBL concept is that there are no specific measurement units or an index on how to calculate the indicators, so how to measure sustainability in your company. However, some professionals see this as a benefit and an opportunity. It enables the user to modify the general framework to suit the requirements of various organizations (businesses or nonprofits), projects or policies (educational programs or infrastructure investment), or geographic boundaries (a city, region, or nation).

Overall, the TBL sustainability framework has been embraced by numerous companies and nonprofits as a means of assessing their operations, and federal (e.g. the EU), state[3], and local governments are beginning to implement a similar strategy (Slaper et. Hall, 2011).

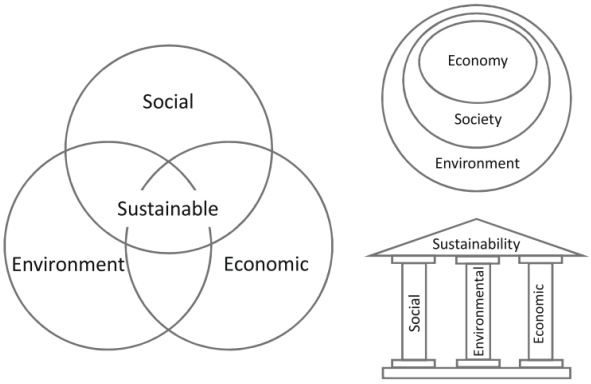
[3] State examples are Maryland, Minnesota, Vermont, Utah, the San Francisco Bay Area and Northeast Ohio (Slaper et. Hall, 2011)

Three Pillar Model

The Three Pillar Model can be connected to the first United Nations Conference on Environment and Development in Rio de Janeiro back in 1992 where the concept of sustainability was formally adopted as the guiding principle of politics. Based on that, the three basic dimensions of sustainability were developed which are now ecology, economy and social affairs. The German Bundestag introduced the "Three Pillar Model" in 1995 which emphasizes the interdisciplinary nature of sustainability by including the above three dimensions which are nicely illustrated in *Figure 2*. According to this model, the three pillars hold equal importance and are equivalent to each other, providing "a three-dimensional perspective" for a sustainable social policy (Stopper et. al., 2016). Together, these three intertwined forms of sustainability enable businesses to take proactive, solutions-oriented approaches to complicated supply chain and procurement processes (GEP, 2023).

Figure 2

Typical representation of sustainability as three intersecting circles (left) and alternative depictions



Note. Adapted from "Three pillars of sustainability: In Search of Conceptual Origins" by B. Purvis et al., 2018, *Sustainability Science*, 14(3), pp. 681–695. (https://doi.org/10.1007/s11625-018-0627-5)

The environmental pillar comprises a commitment to safeguard the environment and the assessment of a business's carbon footprint. Prioritizing the environmental pillar also has economic benefits. For example, reducing packaging materials and transportation distances reduces material and fuel expenses. Businesses need to establish targets to enhance their performance on environmental issues, as these goals are a fundamental aspect of Corporate Social and Environmental Responsibility (CSER). The social pillar of a business's sustainable development endeavors encompasses a focus on equality and respect for individuals' rights. The principles of the social pillar are varied. (1) Recognizing social issues: Acknowledge current societal challenges and integrate values into operations. For instance, advocating for racial and gender equality, reducing the gender pay gap, providing training to stakeholders, promoting dialogue, and more. (2) Promoting Solidarity: Assisting in mitigating social inequalities by partnering with local and international associations and projects, and prioritizing fair trade products that ensure a suitable income for farmers and support sustainable agriculture. (3) Cultivating a safe workplace: Establish a work environment that ensures all employees and stakeholders are treated and compensated fairly. For instance, ensuring premises are accessible to individuals with limited mobility. The model lacks a detailed framework for measuring those social aspects. Lastly, the Economic Pillar aims to preserve capital sustainable. While social sustainability focuses on enhancing social equality and environmental sustainability concentrates on reducing a business's carbon footprint, the economic dimension seeks to improve the standard

of living of all employees and stakeholders associated with the business. It also pertains to the efficient utilization of company assets to ensure the company's profitability over time. Unfortunately, the model lacks detailed metrics or specific guidelines.

In conclusion, the Three Pillar Model provides a comprehensive framework that highlights the interdependence of ecological, economic, and social aspects. It is based on the sustainability principles established by the United Nations. Businesses can adopt proactive strategies to address environmental impacts, promote social equity, and ensure economic stability by acknowledging the equal importance of these pillars. However, in order to effectively measure and guide progress in each dimension, more detailed metrics and guidelines will be required.

The Doughnut Economic Model[4]

In the following section, the Doughnut Economic model -also referred to as the DE framework- as well as its founder Kate Raworth will be introduced. Following this, the review will focus on the implications for businesses and providing real-life examples to illustrate its application.

In 2017, the English economist Kate Raworth published her bestselling book ‘Doughnut Economics’ describing the core of the DE framework. The female economist has been sharing her newest concepts on the stage of TED talks and encouraging people to join her journey of designing an economic system made for the 21st century. In 2019, Raworth co-founded the Doughnut Economics Action Lab (DEAL), a community and platform that aims to mobilize people to take local action by putting the framework into practice and inspiring actors to shift

[4] One of the main sources used in this section is the Doughnut Economics Action Lab (DEAL).

their perspectives from the common linear economic model focused on growth and wealth, to an economic system motivated by sustainable economic practices doing good for society (DEAL, 2020). The platform consistently releases guides, instruments and articles, and offers workshops to assist participants in transforming and bringing the new economic principles to life (ibid).

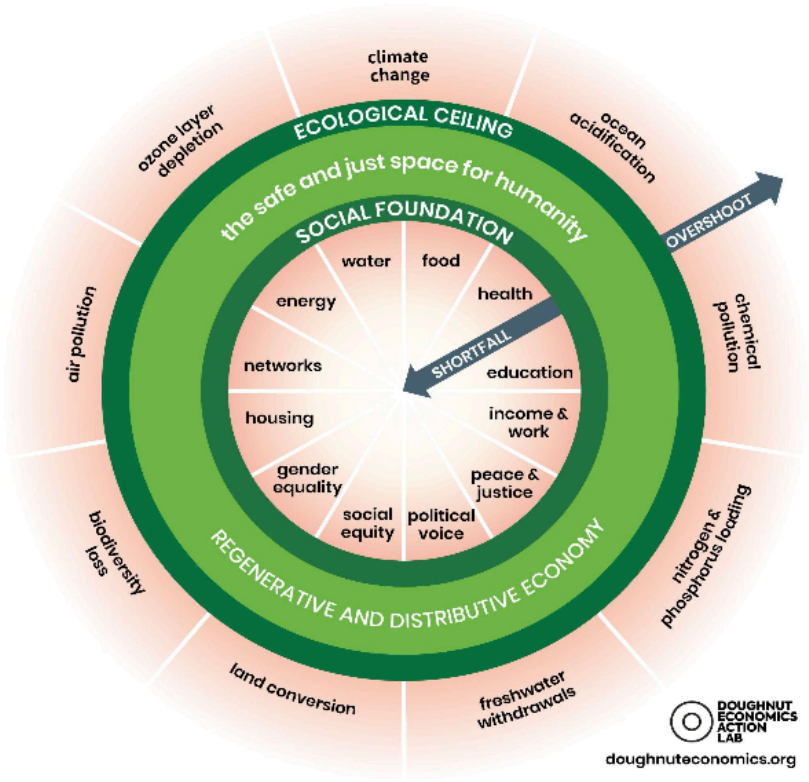
Introduction to the Doughnut Economic Model

A completely new approach to economics is required, according to Raworth (2017), in order to lead the way for sustainable development that is both environmentally and socially just. Raworth acknowledges the pressing issues of the day and makes an effort to develop a framework that can be applied in a variety of global contexts to tackle many challenges of the 21st century. Her vision and DE framework originate from her aim "to analyze the mechanisms that have brought humanity in the present situation, and the institutional changes that are necessary in order to bring us on a better development" (Schokkaert, 2017). This aim can also be directed onto the general public, as we are all part of the economic system and included in this process.

The doughnut model is made up of a visual framework shaped like a doughnut, with an inner and outer limit (see Figure 3). The framework represents a paradigm shift in how we should approach sustainable development. Figure 3 depicts the inner circle as the foundation, which contains twelve different social dimensions that are essential to human life (e.g., food, water, health etc.). People suffer in the middle of the doughnut, for example, due to a lack of adequate health care and housing. The main goal should be to get into the space between the circles, where balanced development occurs (Raworth, 2017) and where the safe and just space is for humanity (Schokkaert, 2017).

Figure 3

The doughnut's social and planetary boundaries (Raworth, 2017).



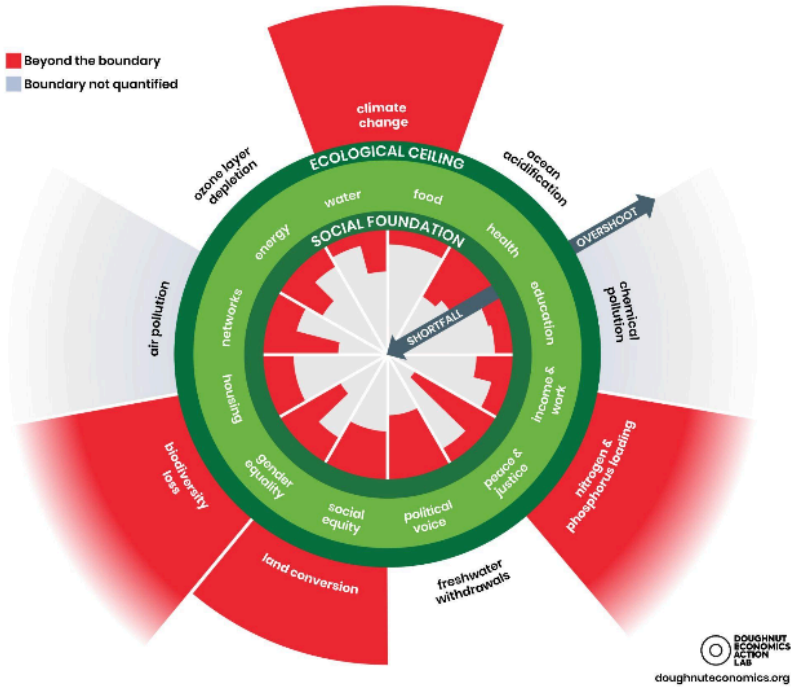
Note. Adapted from Doughnut economics: Seven ways to think like a 21st-century economist by Kate Raworth, 2017, Random House Business Books.

We must, however, avoid crossing both the inner (social ceiling) and outer circles (ecological ceiling) to enter or stay in this safe and just space, so ensuring no one falls short of life's essentials and preventing humanity from overshooting planetary boundaries that protect Earth's life-supporting systems. Raworth builds on the work of Rockström et al. (2009), who identified several critical boundaries that need to be respected to avoid catastrophic environmental consequences (see Figure 3). By placing human well-being at the forefront,

Raworth's doughnut begins at the opposite end of the spectrum compared to traditional economic models such as the traditional TBL and ESG metrics. By prioritizing ecological and social aspects, her model aims to shift away from the heavy emphasis on GDP that characterizes modern capitalism. A balanced development is required instead, where no circle can be crossed in any way. Humanity's aim should be to build a social base of well-being that ensures nobody falls below it and an ecological limit of planetary pressure that no economy should exceed (Schokkaert, 2017). According to Raworth (2017), it is feasible to protect the environment and still give everyone access to the resources they need while achieving economic growth and wealth. She contends that since these problems cannot be resolved by a single actor, this kind of approach to economics needs to be applied globally. To further illustrate the urgent need for change, the author provides another figure (Figure 4) and exhorts everyone to consider how their choices influence the emergence of flaws and overshoots in the framework. In one of her speeches, Raworth (2018) refers to Figure 4 as a "snapshot" of the 21st century, depicting the double crisis of shortfalls in the social ceiling but also overshooting the boundaries of the ecological ceiling. The red colored areas show the effects that can be measured, for instance the biodiversity loss we have experienced in this century. Whereas the gray areas are boundaries that cannot be quantified, in other words not yet possible to measure and knowing how many people will be affected by the change. The globe still has a long way to go before it can enter the green area of the framework, as the above figure illustrates.

Figure 4

Overshoot doughnut (Raworth, 2017).



Note. Adapted from Doughnut economics: Seven ways to think like a 21st-century economist by Kate Raworth, 2017, Random House Business Books.

In summary, Raworth's Doughnut Economic model offers a new way to achieve sustainable development that is fair to society and respects the environment. It emphasizes the need for balanced growth within defined social and ecological limits, which is a big change from traditional economic models. The next section will focus on the implications of the DE model for businesses, exploring how it can be practically implemented to foster sustainability.

The DE model in comparison

All three models address social dimensions within their frameworks with the aim to enhance social equity and community well-being but do this in different ways. Nevertheless, all

three recognize the importance of social sustainability in business practices. The DE model specifically focuses on community well-being and social equity through its social and ecological ceiling and by promoting social foundations like food, water, health, and equity, which is one of the main differences. In contrast, the TBL incorporates the social factors through ethical business practices, labor, and community impact and uses specific metrics such as education, equity, health, and social capital to measure social sustainability. It therefore has a greater focus on business practices than the DE. Even though the Three Pillar Model focuses on social equity and promotes fair labor practices and community engagement, similar to TBL, it lacks a detailed framework for measuring these aspects and is less specific. There are some similarities regarding the ecological factors. All models integrate ecological considerations into their sustainability frameworks and the need for businesses to operate within ecological limits by aiming to reduce negative environmental impacts and promote sustainable resource management. The DE models stand out by the balance of the social and ecological ceiling to prevent overshooting planetary boundaries. Furthermore, it advocates for a regenerative circular economy to maintain ecological health while promoting social well-being but lacks specific measurements. Whereas the TBL focuses on specific metrics like greenhouse gas emissions and energy sustainability and wants actions for sustainable resource use and reducing ecological footprint. According to the DE framework, these are only short-term solutions and the deep design of the businesses is required. Lastly, the Three Pillar Model emphasizes protection and sustainable management of natural resources and is similar to TBL. All three generally lack specific metrics or structured guidelines for implementation. All models aim to promote long-term economic growth that does not compromise social and ecological factors and recognize the interplay of economic stability with social and ecological health. In the business context, the DE framework does not give specific

instructions on the economic dimension, whereas the TBL focuses on financial performance and the business's impact on the economy by including metrics such as earnings, expenses, taxes, employment, and business climate factors. Consequently, the TBL is more specific in the economic dimension which might be more suitable as a model for businesses.

The comparison reveals that while all three models aim to integrate social, ecological, and economic sustainability, they show differences. The Doughnut Economic Model is holistic and visionary but lacks specific economic metrics. The Triple Bottom Line offers detailed, pragmatic metrics for businesses, especially economically. The Three Pillar Model is conceptually sound but less actionable. Ultimately, the DE provides a strong foundation for long-term sustainability, while the TBL is more immediately applicable for businesses.

Application of the Doughnut Model to Business:

The following section explains the actual application of the DE framework to businesses. The previous section covered the general meaning of the Doughnut model and in which ways global economic systems need to be reformed. Thus, the following section proposes a closer picture to the context and the scope of the topic of how to integrate sustainability within existing businesses. According to the author, the business transformation begins by analyzing (1) if the business is regenerative and distributive and (2) to inspect the five layers of a business: Purpose, Networks, Governance, Ownership, and Finance.

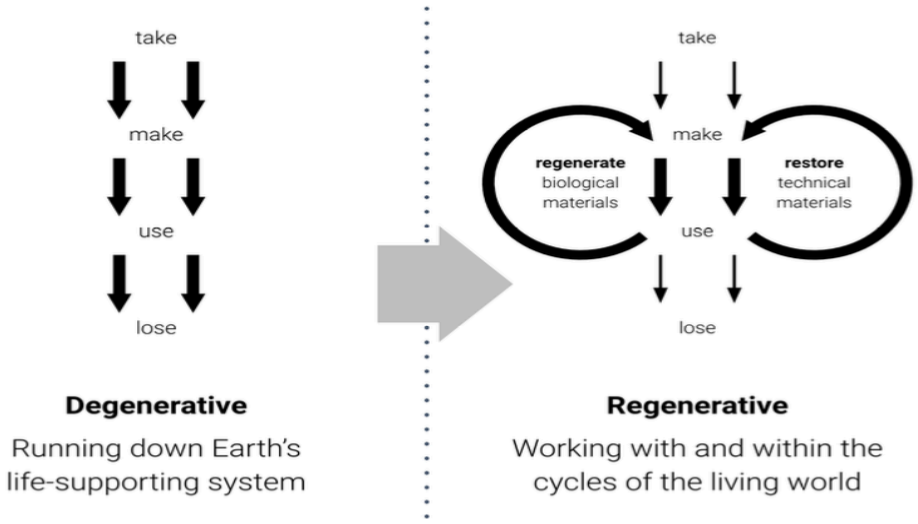
The regenerative and distributive design

According to the authors of DEAL, many companies believe that they need to start their business transformation by redesigning their products in order to be sustainable, for example,

eliminate single-use plastics and built-in obsolescence or by paying living wages to their supply-chain workers (Sahan et. al, 2022). However important that might be, the aim is not only to become more sustainable and inclusive, but to also have a regeneratively and distributively business design according to Raworth. This requires businesses to transform not just their product, but calls for a redesign of businesses that changes their core. In the following, I will explain the regenerative and distributive business dynamics which entail a successful transition of the businesses design. The majority of current business practices typically follow the so-called linear *'take, make, use, lose'* model which one can see on the left side of Figure 5. This basically means that businesses are using the Earth's resources to make a product, the product breaks or demolishes, and then the consumers throw it away. Eventually, this process can be illustrated as a linear line and is degenerative. On the contrary, a regenerative business design means trying to reuse Earth's resources and maximizing their utilization over an extended period, as in the right side of the Figure 5. (Sahan et. al, 2022). One interrupts the degenerative design by reusing resources and adding a cycle of use. An example is the 'Fairphone' which is a sustainably designed and ethically produced smartphone. The company aimed at promoting social and environmental responsibility in the electronics industry, contributing to regenerative practices through its emphasis on modular design and repairability to extend the lifespan of the device and minimize electronic waste (Fairphone, 2016).

Figure 5

From degenerative to regenerative design (Sahan et. al, 2022).



Note. Adapted from "What doughnut economics means for business: Creating enterprises that are regenerative and distributive by design" by E. Sahan et al., 2022, November 8. HvA Research Database. (https://research.hva.nl/en/publications/what-doughnut-economics-means-for-business-creating-enterprises-t)

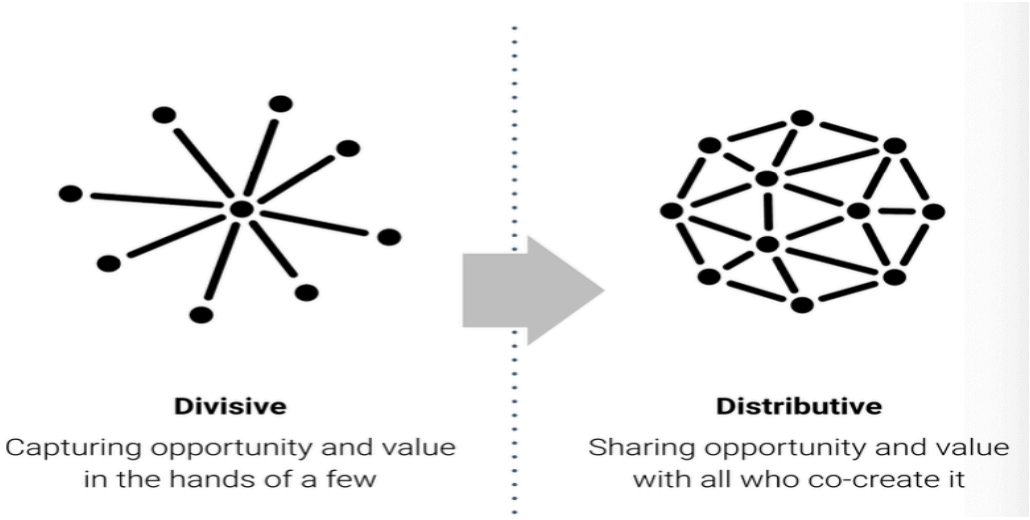
Additionally, modular design[5] and other sustainability-driven models, including the repair-use-refurbish-recycle models[6], are excellent additions to the DE framework as part of the circular economy (Braeckman, 2021). As the Circular Economy is defined as a model including careful management of materials in the total process by sustainable product design, reverse logistics, business model innovation, and cross-sectoral collaboration, it is a powerful extension to enhance regenerative design (Semplonius, 2021). By capturing value at each stage of

[5] Modular design is a design theory and practice that subdivides a system into smaller parts called *modules*, which can be independently created, modified, replaced or exchanged between different systems (Friedman, 2020)
[6] Circular Economy focuses on production and consumption but includes reusing, repairing, refurbishing, and recycling of the involved materials and products and keeping the materials within the economy (Semplonius, 2021)

decomposition, companies can create new, regenerative value chains. Another step includes the transformation from a concentrated to a distributive design. The current models of business, finance, and trade tend to concentrate wealth and opportunities in the hands of a few: the world's richest 1% of people now own almost half of the global wealth, leading to a continuous increase in economic inequality (Sahan et. al, 2022). This results in health and social problems such as reduced life expectancy, higher infant mortality, poor educational attainment, lower social mobility, and increased levels of violence and mental illness. The goal is to transform the core of businesses to share value and opportunity more equitably, thereby reducing the extremes of inequity and marginalization (see Figure 6). Some businesses are already taking steps in this direction, such as entertainment retailer Richer Sounds, German food and homewares importer El Puente, and Manos del Uruguay (Sahan et. al, 2022).

Figure 6

From divisive to distribute design (Sahan et. al., 2022)



Note. Adapted from "What doughnut economics means for business: Creating enterprises that are regenerative and distributive by design" by E. Sahan et al., 2022, November 8. HvA Research

Database.
(https://research.hva.nl/en/publications/what-doughnut-economics-means-for-business-creating-enterprises-t)

In essence, moving towards regenerative and distributive business models requires a fundamental shift from linear to circular practices. This ensures sustainable resource use and equitable wealth distribution. By doing so, businesses not only contribute to environmental preservation and social equity but also foster innovation and resilience in the face of global challenges.

The Five principles of business

As briefly mentioned in the introduction of the section, the second step of the DE implementation are the five principles of the business, also classified as the deep design of the business. Those five principles of business design include the *purpose, network, governance, ownership, and finance* of the business. The previous section greatly focused on the importance of the design as a key element to transform into a more sustainable business and economic system. According to the creators of the framework and DEAL Lab, the business redesign is not just an alternative to other strategies, rather it complements, empowers, and profoundly reinforces them. This happens based on two key respects: Number one being that business design either enables or limits transformative actions. The business design sets the framework for implementing transformative ideas, influencing the organizational changes needed to adopt innovative practices for long-term sustainability and social impact. Characteristics of the design of the business having a significant impact are supply chain management, pricing strategies, and

investment allocation (see Appendix A). Eventually, in order to be more inclusive and offer a sustainable business environment, it is essential to understand the relationship between business design and transformative potential.

Secondly, the redesign of businesses can play a crucial role in supporting and empowering a broader transformation of the economic system. By prioritizing the deep design of businesses, we can create companies that not only comply with progressive regulations, but also ambitiously pursue impact targets, foster enlightened leaders, align with sustainable finance, and enable collective action by workers. By aligning the deep design of businesses with the goals of other transformative strategies like the TBL, three pillar model or circular business models (Hutchinson et. al., 2023), we can create a regenerative and distributive future. This will enable businesses to not only create value for their shareholders, but also contribute to the greater good and be a part of a sustainable and equitable economic system (Sahan et. al., 2022). But how would the redesign of a business look like? As an entrepreneur one has to question your deep design and, see under which design category, according to the DE framework, your business falls - so is it regenerative and distributive by design?

The DEAL Lab has published some practical questions to (1) determine the status of your business and (2) as a guideline to transform the business and deep design of business which are required to get humanity into the Doughnut. This framework (see Appendix B) invites a holistic perspective on the deep design of business, helping businesses identify possible substantive changes across the five layers of design and consequently entering the Doughnut.

The conventional economic thinking encourages centralization to generate maximum profits for the company's shareholders. This approach has been in practice for decades and has resulted in significant inequality worldwide (see previous section). While the primary goal of a

company is to stimulate economic growth, it should also prioritize ensuring a fair distribution of goods or resources within its operational structure. In other words, alongside its economic objectives, the company should actively address issues of fairness and equality in how goods or benefits are distributed among its stakeholders. To enable distributive design, business owners need to adopt renewable energy, embrace network usage, and adopt distributed communication methods by offering open communication between board and employees. The company's ownership model must also be radically rethought. By following open design principles[7], a shared value for the commons can be created instead of creating closed systems through patents. While designing a business model, one must adhere to the following principles to determine and equalize who owns the company and who owns the returns: employee ownership, open design, living wages, ethical purchasing (ethical supply chain), and a commitment to fair tax practices. In conclusion, a company that operates on extractive principles aims to extract maximum financial value from its operations, while a regenerative company seeks to create benefits for every actor of the company through its business practices (Braeckman, 2021).

Examples of businesses or organizations implementing the Doughnut model principles

The following section discusses one example that represents the DE model outside of the businesses content. The diverse cases of two metropolitan cities like Amsterdam and Copenhagen show the adaptability of the model and the goal of the author to achieve sustainability in all settings.

Cities like Amsterdam and Copenhagen have joined the DE movement shortly after Rathworth published her book and exchanged ideas and implementation strategies with the

[7] Design Principles are value statements that frame design decisions and support consistency in decision making across teams working on the same product or service (Rosala, 2024)

Doughnut Economics Action Lab in how to pursue circular and climate-neutral cities. The DEAL works very closely with Biomimicry 3.8 which “is the world’s leading bio-inspired consultancy offering biological consulting, training, and speaking” (Biomimicry 3.8, 2023), Circular Economy and C40 Cities -”a global network of mayors of the world’s leading cities that are united in action to confront the climate crisis” (C40 Cities, 2024)- to develop the first City Doughnut and create a holistic framework for circular economies. In the case of cities, the DE framework provides insights into the intricate dynamics between material flows, social and environmental aspects. For example, a policy that aims to reduce carbon emissions may lead to job losses in certain industries. The process of implying the DE model involved a participatory approach that brought together various stakeholders, including city officials and representatives from value chains. The outcome of this collaboration resulted in a set of seventeen directions that chart the way forward for embracing circularity within three key value chains in Amsterdam: Construction, Biomass and Food, and Consumer Goods. These three key value chains were strategically chosen based on their potential to generate positive environmental and economic impacts, which is outlined in the "Amsterdam Circular: Evaluation and Action Perspectives" report. The seventeen directions serve as the foundational pillars for fostering inclusivity and prosperity in Amsterdam. These seventeen directions go beyond environmental considerations and address crucial social aspects such as equality and employment opportunities, embodying a holistic approach to urban sustainability (Benhrouz, 2024). A similar approach for the city of Copenhagen has been used as well.

Other various cases also exist in the sectors of the commerce industry such as the outdoor clothing and gear company Patagonia (Erskine, 2022 and Patagonia, 2023) and the cosmetic company ‘Faith in Nature’ (Kaminski, 2022). Patagonia's founder, Yvon Chouinard, and CEO,

Ryan Gellert, have both emphasized the company's dedication to prioritizing the planet's well-being over short-term financial gains. The Edinburgh-based company selling soap, hair care, household cleaners, and dog shampoo claims to be the first in the world to give nature a formal vote on corporate decisions (Kaminski, 2022). Their commitment to environmental stewardship reflects the values of the Doughnut model and underscores their holistic approach to business, which prioritizes both planetary and societal well-being.

Case Study

Procedure

For research methods about the case, I did qualitative research with key stakeholders within Green Digital, including employees, managers, and executives. Therefore, I used anonymous questionnaires (see Appendix C) which served to understand the workplace environment by asking questions about the factors that are in the social ceiling of the DE framework e.g. social equity, education etc.. For the questionnaires, I used Google Forms since it is easily accessible to everyone and easy to understand, and DeepL to translate the questions from English to Dutch to slim the chances of confusion, misunderstanding or so. The questionnaires were distributed by a contact person/ supervisor in Green Digital and 10 out of possible 20 employees have participated in the questionnaire. The responses involve a wide range of employees with diverse employment characteristics (e.g. age, employment time, job positions) which will not be explained in detail due to the obligation of anonymity. To receive the most realistic insights of the social aspects, the questions included scales (1-10) with clear instructions of the meaning/indication of each number as well as open questions when relevant.

For instance, there was a question if individuals experienced any form of discrimination and if so, the respondents could classify and/or indicate the experience. Additionally, data was collected from the company's report, in order to conduct a descriptive, quantitative analysis. This data encompasses various economic and ecological factors e.g. CO2 emissions, profitability, etc. as well as the business model and mission of Green Digital, aligning with the questions to analyze the five layers of deep design (Appendix B).

The company Green Digital

The company used as a case study in order to analyze how to integrate sustainability and identify strategies and challenges in the context of the DE framework, is a small sized company called Green Digital. It was established in 2017 by three founders and is headquartered in Heerenveen, in the northern part of the Netherlands. The company works together with organizations to maximize the reuse of surplus Infocomm Technology (ICT) Equipment[8], which includes power supplies, power cords, cables and related components and electronics, by following the circular business philosophy. The following information emerged from the company report provided to the author and the evaluation of the employees' responses to questionnaires.

Currently, the company has 20 employees and is in the phase of expansion, doing so they focus especially on operational efficiency to sustain functionality and growth. Their mission is to work against waste and depletion of natural resources, which they are doing by generating maximum residual value[9] from extra ICT equipment through their reuse programs to finally sell it to organizations, institutions or individuals. This aligns with their vision to escape the current

[8]ICTs are "electronic devices like smart mobile phones, laptops, tablets, desktops. Consumers and corporate entities find it difficult to dispose of ICT devices due to the information contained within, and that is why we exist" (EWR2, n.d.)

[9] The estimated value of a fixed asset at the end of its lease term or useful life (Tuovila, 2024)

linear economic model and enter an economic model valuing sustainability. Their business model is sourcing ICT waste from diverse companies from the Netherlands and Belgium in cooperation with their partner Recyclebox, a company based in Leeuwarden which oversees around 4000 ICT collection boxes across Belgium and the Netherlands. Their reuse program starts by the direct retrieval of waste from the ICTs, characterized by the principles of the R-ladder, prioritizing reuse, repair, refurbishment, and eventually recycling wherever feasible to reduce associated CO2 emissions. Certificates such as WEEELabex[10] and ISO 27001[11] verifies the quality and security of their products as well as guaranteeing their integrity (concerning the inclusion of sensitive data of customers). Since 2020, the company has continuously grown its sales by 25% each year, indicating increased demand and market expansion. The company prioritizes liquidity and makes investment decisions on projections. This conservative approach ensures sufficient cash reserves for short-term demands and capitalizes on opportunities. Sales are expected to reach €1,000,000 in 2024, indicating steady growth and consistency with previous patterns. The company operates with zero debt, relying on stock or internal cash to reduce financial risk and interest expenses. The corporation aims for a 10% profit margin on investments and prioritizes growth. Earnings are reinvested for future expansion. There was no data on specific details on funders, margin expectations, and profit allocation.

[10] WEEELabex's aim is to develop and supply quality, service, and tools to promote the use of superior Waste from Electrical and Electronic Equipment (WEEE) facilities in the market (Weelabex, n.d.)

[11] ISO/IEC 27001 is an international standard to manage information security published by the International Organization for Standardization and the International Electrotechnical Commission (ISO, 2022)

Analysis of the results

In what follows, I discuss the responses of Green Digital's employees to the questionnaires, in combination with the company's shared report. The questionnaire covers DE's social ceiling and includes questions about energy, networks, social equity, peace & justice, education, health, and political voice which also lays the structure of the following analysis. Factors such as housing, food, and water have not been examined since they do not apply to the case of businesses/SMEs. Furthermore, there was no data available based on the questionnaires or the company report, to explore the factors of gender equality and income & work. The report Green Digital shared with the author encompasses information on various economic, social and ecological factors as well as the business model and mission of the company which are used to analyze the five layers of design according to the DEAL Lab questions (Appendix C).

In 2023, Green Digital had an electricity consumption of 15,000 kWh which positions the entity well within the typical range for small businesses (11-50 employees), according to Pinnington (2023) where such businesses generally consume between 15,000-25,000 kWh for electricity. In the same year, the CO2 emissions amounted to 750,000,000 KG and the company has plans to introduce solar panels in order to achieve energy neutrality in the upcoming years. From the company's report and responses of employees, the company's engagement with the local community and stakeholders was positively perceived by 66% of respondents. Initiatives include partnerships with organizations like the Stichting Leergeld Foundation[12], collaborations with local partners, and providing employment opportunities for individuals distanced from the

[12] A Dutch foundation committed to children whose parents do not have enough money to be able to make certain contributions (Ministerie van Onderwijs, Cultuur en Wetenschap, 2021)

labor market such as high school and university students. The respondents highlighted good communication and a wide network with the local community and across various markets. Furthermore, Green Digital collaborates and partners with educational institutions such as the Samenwerkingsorganisatie Beroepsonderwijs Bedrijfsleven (SBB, n.d.), which forms agreements between education and the labor market, offering internships to nurture young talent. Lastly, together with Recycleboy they allocate remaining equipment to charitable causes such as KiKa[13] or Stichting Leergeld. Lastly, positive perceptions of stakeholder engagement were prevalent among respondents, with 90% expressing satisfaction with the company's diversity and inclusion efforts such as fostering an inclusive workplace culture. The aspect of Political Voice is assessed by looking at the governance of the company. This includes the company's communication of its goals and performance to employees, where the majority perceive it as "quite transparent" (7), with 20% rating it as "somewhat to moderately transparent" (5-6), and the remaining 40% as "highly to almost fully transparent" (8-9). In terms of board diversity, employees have mixed perceptions, with ratings ranging from 6 to 9. The majority (40%) rate it as an 8, indicating a high level of perceived diversity. Additionally, results indicated minimal occurrences of discrimination because one person experienced discrimination about their appearance. The positive opinions of the other 90% underlines the company's commitment to a respectful work environment. In the case of social equity[14], 90% of employees rate the company's efforts to promote diversity and inclusion in the workplace between 7 (somewhat satisfied) and 9 (very satisfied), with the majority (40%) being overall satisfied (8). Similarly, employees assess the company's commitment to providing equal opportunities for career growth,

[13] A Dutch charity foundation that brings in fundings solely for research into childhood cancers (KiKa, n.d.)

[14] Social Equity focuses on social justice and fairness, accepting that each person is exposed to different conditions due to race, gender, income, sexual orientation, religion, or ability (UrbanFootprint, n.d.)

regardless of gender, race, or other demographics, within the same range and the majority (40%) also rating it as an 8. Regarding education and training programs for employees, 70% reported taking part in various programs such as truckers training, data security, emergency response, forklift training, internal training, ICT knowledge course, and general training initiatives. The effectiveness of these programs varied, with 25% of responses distributed across each level from 6 to 9 on a 10-point scale. Employee perceptions of workplace safety was overall positive with 80% expressing high levels of comfort.

The topic of stakeholder engagement and circular business practices were significant themes where the majority of individual responses highlighted collaborative efforts with various stakeholders, including customers, suppliers, and communities. Noteworthy partnerships with organizations like Wecycle and Recyclebox were emphasized. The company's culture was characterized by a close-knit environment and a hands-on approach, as reflected in the overall positive employee feedback. However, details regarding decision-making processes (Governance factors DEAL Guideline) were limited as the company's report did not reveal any data here. The layer of ownership was underlined by the presence of three individual owners. Owners' interests aligned with sustainability and knowledge-sharing objectives.

In summary, the quantitative analysis revealed insights into operational metrics, while qualitative themes emphasized the company's commitment to sustainability, stakeholder engagement, and a conducive work environment. The analysis of the company's report and responses to questionnaires revealed the company's commitment to sustainability, evident in its purpose-driven approach to ICT equipment reuse and reduction of environmental impact.

Discussion

This discussion section delves into several key areas stemming from the analysis. First, the findings are interpreted, revealing what they mean for the company's alignment with the Doughnut Economics (DE) framework. A comparison between the theoretical aspects discussed in the literature review and the actual case results is made, highlighting overlaps and discrepancies. Furthermore, the connections between the company's practices and the DE framework are explored, identifying missing elements, challenges, and potential improvements required for the company to achieve greater sustainability. The implications of the results are assessed, questioning the suitability and accessibility of the DE framework for small and medium-sized enterprises (SMEs). The limitations of the study are addressed, acknowledging what the results cannot tell.

Interpretations

In order to understand the company's alignment with the Doughnut Economics (DE) framework, one needs to answer the following questions: (1) is the design of Green Digital regenerative and distributive and (2) does Green Digital and its business design fall into the just and safe space of the Doughnut?

Based on the analysis of the company's report and the employees' responses to the questionnaires, I can say that Green Digital is regenerative and distributive which according to Raworth entails a successful transition to a sustainable business design. Green Digital is regenerative because instead of using the conservative and linear *'take, make, use, lose'* model (degenerative), they aim to recycle, and reuse old ICT products and integrate the circular economy in their business model which is a clear characteristic of a regenerative design.

Additionally, Green Digital follows the R-ladder approach, prioritizing reuse, repair, refurbishment, and recycling, thus minimizing waste and reducing CO2 emissions. Notably, its core business achieved an impressive 70% reuse rate in 2023, showcasing its commitment to extending the lifespan of ICT equipment and minimizing environmental impact.

Beyond that, Green Digital's extensive and varied network demonstrates its commitment to a distributive design, effectively sharing opportunities and values with its stakeholders, fostering robust relationships across multiple sectors and continuously seeking to expand its positive impact. The company serves an extensive network that includes customers, suppliers, governments, communities, and partners such as any citizens interested in ICT devices, as well as various companies, organizations, and institutions seeking hardware and software for office use. Additionally, notable partners include Wecycle, which manages the recycling of all e-waste generated by Dutch manufacturers, and Recyclebox, which oversees around 4000 collection boxes across Belgium and the Netherlands. The collaboration with Recyclebox also supports charitable causes. In terms of communities, the company has several community-focused initiatives such as with Firda[15] to offer internships and supporting charitable organizations like Stichting KiKa and Stichting Leergeld, and engagement with Verhoeve Groen[16], the local to promote biodiversity around company premises.

Analyzing the questionnaire and report in the context of the DE Framework and DEAL guideline (Appendix B), Green Digital is inside the safe and just space for humanity. Employees' responses in regards to the factors: networks, social equity, peace & justice, education, health, and political voice, indicate that there is an overall positive perception. Employees give the

[15] Firda is a Training Centre for secondary vocational education and adult education in the region of Friesland and northern Flevoland to provide students with the knowledge, attitude and skills that match the needs of the labor market (Firda, n.d.)
[16] Verhoeve Groen is a local company focused on terrain design and green spaces (Beheer, 2024)

company a score of 7.7, which can be classified as "Good" or "Above Average." This indicates that the employees generally view the social aspects of Green Digital—such as social equity, discrimination, etc.—favorably, though there may still be room for improvement. Overall, Green Digital does not fall short on life's essentials including the factors inside the social ceiling, in this case looking at a workplace, and therefore stays inside the doughnut's social boundaries.

Nevertheless, the analysis reveals several areas for improvement. The company should aim for at least a rating of 7 in each category of the social ceiling and the five layers of design, as it is classified as "Good" or "Above Average" which can be seen as the desired outcome one is aiming for. For job satisfaction, one person seems to be slightly unsatisfied with the job by giving a 6. Diversity and inclusion efforts are another area needing enhancement, with one employee rating these efforts a 6 and one employee experiencing discrimination based on appearance. Such experiences can negatively impact employees' mental health, as feelings of unsafety and unwelcomeness arise from discrimination and a lack of diversity and inclusion. The diversity of board members indicates improvement, as two out of ten employees rated it lowest with a 6, showing a desire for greater diversity among board members. Health and safety measures received mixed reviews, with ratings of 5 and 6, indicating a need for better protocols and practices. Education and training programs were also criticized because three out of ten employees reported no available training programs, while two were unaware of them. Among those who did participate, the effectiveness of these programs varied widely, with ratings ranging from 6 to 9. Lastly, the communication from the company's board to its employees about goals was not rated highly, with scores of 5 (neutral) and 6 (slightly satisfied). This is consistent with the overall assessment of communication to stakeholders, highlighting the necessity for more transparent and effective communication strategies. These findings suggest that while Green

Digital is already at a high status of sustainability, there is a need for significant improvements in order to meet the standards outlined in the Doughnut Economics framework. These improvements are especially necessary in the areas within the social ceiling, as well as to enhance overall employee satisfaction and well-being.

Strategies and Challenges

In the following, the strategies in the case of Green Digital to integrate sustainability are displayed followed by general challenges and critiques businesses might face by implying the DE model. Doing so, the suitability and accessibility of the Doughnut Model for integrating sustainability within existing organizations can be assessed.

There are some strategies that Green Digital can adapt to integrate sustainability. Many of the improvements are crossovers between the factors of the social ceiling and the five layers of design such as lack of transparency, inclusion and diversity, and job satisfaction.

A higher transparency about governance structures is needed according to employees and the analysis of the layers of design.Firstly, there was no data regarding decision making processes which aligns with the perception and feelings of employees towards transparency. It benefits as it builds trust, enhances credibility, and encourages innovation and growth (Fung, 2014). To improve the feeling of inclusion and diversity, the DEAL Lab asks for an open design and sharing the value created with all who co-created it to improve equity amongst stakeholders. This can also be done by always asking whose voice is left out and balancing openness with integrity. Eventually share back learning and innovation to unleash the power of peer-to-peer inspiration. The company should promote diversity, participation, collaboration and reciprocity. Care for the wellbeing of the team and work with a spirit of high trust. Some practical and easy strategies are

the adaptation of education programmes across all sectors so every employee can improve their knowledge and skills, if wished. Eventually, those strategies can lead to a higher job satisfaction which emerged during the questionnaire.

Even though Green Digital has a good network system, they could expand their collaboration with educational institutions such as University to take in and sell ICT equipment. Doing so, they would achieve sustainable growth and extend their network going from local to national. Moreover, collaboration with Heerenveen, Leeuwarden or Frsyian waste processor Omrin to generate collect boxes for ICT waste/equipment would benefit as well.

Several challenges occurred when I used the DE framework to implement more sustainability within Green Digital, which might also apply to other businesses that aim to integrate sustainability using the DE Model. One of the main challenges is the lack of specific, quantifiable metrics within the DE framework, making it difficult for SMEs to measure progress, demonstrate accountability, and seek clear guidelines on especially the financial performance but also the sustainability level of their social and ecological metrics. The missing economical components in the DE framework are important for understanding the economic performance, which are crucial for SMEs to balance sustainability with economic viability. This aligns with other challenges, such as the need for more practical tools, case studies, and resources that can help SMEs translate the DE framework into concrete business practices. Despite this, its emphasis on long-term sustainability and regenerative practices offers a visionary path for SMEs willing to innovate and adapt. Therefore, the DE framework is in need of some improvements to make it more accessible for SMEs and businesses in general to integrate sustainability. To enhance its practicality for SMEs, the DE framework could benefit from integrating detailed economic metrics. This would provide clearer guidance on achieving financial sustainability

alongside social and ecological goals. The second improvement involves creating step-by-step guidelines and best practices tailored for SMEs, which can help bridge the gap between the DE's broad principles and actionable business strategies. Even though the DEAL Lab exists and offers presentations and workshops, I found it hard to find any specific guidelines on how to specifically improve the business. The information I found focuses merely on the evaluation of your business and analyzing the current status of your business design. Several challenges were identified.

In summary, while the DE framework is conceptually strong and well-suited for promoting sustainability in SMEs, addressing these improvements, challenges, and gaps will enhance its accessibility and practical application in the business world.

Limitations

During the research process, some limitations occurred. One limitation was the focus on a single SME that already has a quite sustainable business model. More diverse cases would probably have generated a greater variety of insights in identifying the challenges and gaps for integrating sustainability within an organization and on the actual implementation of the DE model. Also the rather small sample size of 10/20 employees and the possibility of potential biases in the responses show limitations.

There are some limitations that restrict the application of the DE framework to the case. The factors *housing*, *food,* and *water* could not be examined since they do not apply to the case of Green Digital and no data was available. Additionally, based on the cases of SMEs and their resources, it is questionable how and in which way they are able to imply the factor of housing also because the term housing is undefined by the DE model. Furthermore, there was no data

available to explore the factors of *gender equality* and *income & work.* This can limit the implementation of the Doughnut Model and its core philosophy to the case of Green Digital. Moreover, it was not feasible to examine the rather difficult factors of the ecological ceiling. Factors such as *ozone layer depletion*, *chemical pollution*, and *land conversion* are hard to study in an (medium) SME. Relatedly, there is no data of the long-term or current effects of the company Green Digital on the environment (e.g. *air pollution, biodiversity loss, nitrogen & phosphorus loading,* etc.).

Conclusion

The Doughnut Economic (DE) framework is suitable and accessible for Small and Medium-sized Enterprises (SMEs) to integrate sustainability within their company. The comprehensive approach of the framework addresses both social foundations and ecological ceilings, making it a holistic model that encourages businesses to operate within planetary boundaries while ensuring social equity. This is particularly relevant for SMEs, which often have closer ties to their communities and can more readily adopt practices that promote local well-being and environmental health. The research process included an intensive literature review to build a picture and connection between the need of sustainability in business and the importance of SMEs, followed by traditional sustainability models (TBL & TPM) and the introduction and comparison of a newer approach, the DE framework. A case study of Green Digital, a medium-sized Dutch company, was conducted to analyze the practical application of the DE model. Data was gathered through qualitative interviews and quantitative analysis of company reports. Lastly, strategies and challenges if businesses aim to integrate sustainability

using the DE Model were identified and limitations explained. This thesis contributes to the area by implementing the relatively new DE model in a business context and offering a practical example of its application. The study provides actual evidence on the benefits and challenges of the DE model for small and medium-sized firms (SMEs), especially in the Dutch business environment. Furthermore, it improves our understanding of how sustainable business models, such as the DE framework, can help organizations achieve long-term profitability while also addressing environmental and social sustainability. The study offers a positive outlook on the Doughnut Economic Model for organizations looking to integrate sustainability into their operations. By exploring the Green Digital case study, it sheds light on both the practical benefits and challenges of implementing this approach, providing significant insights for other small and medium-sized enterprises. Furthermore, it emphasizes the need for more guidelines and support for businesses to successfully implement sustainable practices.

For further research, there is a need for more studies and reports on sustainable business models. After the evaluation of the dimensions of the organization, the DE model lacks specific guidelines and input on how to reform the business to make it more sustainable, after the business design has been accordingly analyzed with the DE framework. Further research should explore the long-term impacts of DE implementation across different industries and regions. This ties to the general research gap that exists between sustainability models and the actual implication. For instance, all three models (TBL, TPM, DE) lack specific metrics to measure the three dimensions (social, ecological, economic) of the organizations one wants to investigate. There are several studies explaining the meaning and purpose of sustainability business models but none are explicit about the actual implication to an enterprise etc., even though many studies urgently call for more sustainable business practices.

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Appendixes

Appendix A:

Figure 1

Example of how business design can limit transformative ideas (Sahan et. al., 2022)

Appendix B:

DEAL Lab Guideline (DEAL, 2020):

- **Purpose:**
  - What is the goal of your company?
  - Who do you serve?
  - What is the impact you're making?
- **Networks (customers, industry ecosystem, suppliers):**
  - Which networks are you part of?

    - Who are the main customers you serve?
    - Who are your suppliers?
- **Governance:**
    - How is your company governed?
    - What principles do you follow?
    - Have you built in employee ownership and democratic decision-making from the get-go?
    - How would you describe your company culture?
    - How do you measure the impact you make?
    - Are you a B Corp or an equivalent in your country?
- **Ownership:**
    - Who owns the company?
    - Is the ownership structure fairly representative of who creates the actual value?
- **Finance:**
    - How is your business financed?
    - Who are your main funders?

Appendix C:

The Questionnaire:

Introduction:

The following survey is completely anonymous and no personal information will be distributed or disclosed. Neither in the undergraduate thesis nor any information will be passed on to the company/employer. Thank you for your cooperation and hope for honesty.

There will be two different types of questions: (1) open-ended questions where you can fill in your own answers, (2) questions with a scale of 1-10, where 1 means “not satisfied” and 10 means “very satisfied.

General Information:

1) How old are you?

2) Your position in the company
3) How long have you worked at the company?

Social Aspects:

The following questions are designed to get a general impression of how social GreenDigital is. This includes factors such as employee satisfaction, diversity and inclusion, health measures and training opportunities.

1) On a scale of 1 to 10, how satisfied are you with your current role within the company?
2) Please rate your overall job satisfaction on a scale of 1 to 10.
3) On a scale of 1 to 10, how would you rate the company's efforts to promote diversity and inclusion in the workplace?
4) Have you ever witnessed any form of discrimination within the company? If so, what kind?
5) How would you rate the company's commitment to providing equal opportunities for career advancement (regardless of gender, race or other demographics) from 1 to 10?
6) On a scale of 1 to 10, please indicate the extent to which you feel comfortable with regard to workplace safety.
7) Workplace safety refers to the work environment in a company and includes all factors that affect employee safety, health and well-being.
8) Are there any concerns regarding health and safety measures in the workplace? Please specify:
9) Are there employee training/education programs in place?
10) If yes, please rate from 1 to 10 the effectiveness of training programs in improving your skills and knowledge

Assessment of business practices and relationships:

This section assesses various aspects of the company's operations, governance and external relations. It covers how the company interacts with the local community, how it communicates its goals and achievements to employees, how it ensures diversity and independence within the

board, and how it deals with stakeholders. The responses collected here provide insight into the company's organizational practices and relationships with external entities.

1) Does the company actively engage with the local community through initiatives or partnerships?
2) If yes, how would you rate the company's commitment to the local community on a scale of 1 to 10?
3) On a scale of 1 to 10, how transparent do you find the company's communication of its goals and achievements to employees?
4) Rate on a scale of 1 to 10 the degree of diversity among the company's board members. Diverse boards with individuals of different backgrounds, ethnicities, skills and experiences contribute to good corporate governance.
5) How would you rate the company's efforts to engage with various stakeholders (e.g., customers, suppliers, local authorities)?
6) If you can, please rate from 1 to 10 the effectiveness of the company's communication and engagement with stakeholders.