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Master's thesis

**Sustainability Report in the context of pandemic from
legitimacy theory and stakeholder theory perspective**

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A case study of Nordic Region Pharmaceutical companies

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Abstract

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Key words: Sustainability Reporting, pharmaceutical industry, non-financial information disclosure, stakeholder theory, legitimacy theory

Purpose: This study aims to determine how a company uses sustainability reporting to engage its stakeholders, with a view toward analysing legitimacy theory and stakeholder theory. Sustainability disclosure is a key source for determining whether a stakeholder will keep a relationship with a company. Focusing on pharmaceuticals in the Nordic region yields more conclusive results because the Nordic countries place a high priority on sustainability.

Methodology: Qualitative approach using Content Analysis method

Theoretical perspective: This study is based on the sustainability reporting theory and previous research results on its impact on the sustainability practices of pharmaceutical companies.

Empirical Foundation: The qualitative study is based on a sample of the top ten Nordic pharmaceutical companies for the years 2019 - 2021.

Conclusion: Through content analysis, this study discusses the legitimacy and stakeholder theory perspective of Nordic pharmaceutical companies' disclosure of Sustainability Reports in the context of a pandemic. The analysis shows that most pharmaceutical companies improved the overall sustainable disclosure level during the pandemic, especially in the aspect of social sustainability, and paid more attention to drug access, employee health and safety, and human rights, but lacked in the aspect of environmental sustainability. The research shows that Nordic pharmaceutical companies create reports according to EU directives and regional rules such as GRI and SASB standards, and the preparation of enterprise sustainability reports during the pandemic is consistent with the legitimacy theory and stakeholder theory. The study emphasised the possible impact of pandemic on sustainable reporting of pharmaceutical companies, and revealed the internal relationship between sustainable reporting and related theories.

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List of abbreviations

CERES	Coalition for Environmentally Responsive Economies
CSR	Corporate Social Responsibility
CSRD	Corporate Sustainability Reporting Directive
EU	European Union
GCI	Global Competitiveness Index
GRI	Global Reporting Initiative
GSCI	Global Sustainable Development Competitiveness Index
IFRS	International Financial Reporting Standards
IISD	International Institute for Sustainable Development
IMF	International Monetary Fund
OECD	Organisation for Economic Co-operation and Development
R & D	Research and Development
SASB	Sustainable Development Accounting Standards Board Foundation
SRG	Standard Review Guide
UN	United Nations
UNICEF	United Nations International Children's Emergency Fund
UNWCED	United Nation World Commission on Environment and Development

1. Introduction

The coronavirus was declared a global pandemic by the World Health Organisation in March 2020, with the result that many countries were forced to completely shut down to reduce the spread of the virus. The pandemic caused unprecedented global economic disruption, resulting in a decline in economic activity (Baker et al., 2020). According to the World Economic Outlook, the global economy will contract by -3% in 2020, which would be worse than the 2008–2009 financial crisis (IMF, 2020). The Nordic countries had a less stringent approach to combating the COVID-19 pandemic in comparison to other countries. Despite this, the pandemic had an impact on their economies, particularly Denmark, which fared the worst of the Nordic countries (Scope Ratings, 2020).

The coronavirus has impacted several economies, forcing businesses to make strategic decisions affecting their policies and services to remain profitable. The pharmaceutical industry was not left behind, as the coronavirus disruptions had also put tremendous pressure on the global production of medicines, increasing the likelihood of shortfalls. These shortfalls were made worse by the widespread dissemination of inaccurate information, which has resulted in a tendency for pharmaceutical hoarding and supply chain interruptions (Sarkis, 2021). Pharmaceutical companies were under a lot of pressure to suggest possible COVID-19 vaccines and drugs. Based on research carried out by Gibb et al. (2020), there is a risk that more diseases originating in animals will infect humans due to changes in the ecosystem. This raised questions about the sustainability of companies should a similar outbreak occur in the future.

Sustainability Reporting (environmental and social reporting) has gained prominence in recent years as a result of changes in business and national contexts, debates about its drivers and motivations, and its potential role as a tool for social accountability (for example, Gray, 2010; Owen, 2008; Parker, 2005). Furthermore, sustainability has grown in importance following the

global financial crisis of 2008-2009 which placed a premium on sustainability practices (IMF, 2020). Also, the COVID-19 epidemic highlighted the relevance of environmental, social, and governance issues, hastening the move to more inclusive capitalism. Thus, the success of a company is determined by a wide collection of stakeholders all pursuing various economic, environmental, and social goals (Buchholz & Rosenthal, 2005).

Sustainability reporting, often referred to as Corporate Social Responsibility (CSR) reporting, helps integrate CSR into core business processes and improve stakeholder management (Wensen et al., 2011). Sustainability reporting is one essential avenue through which organisations attempt to achieve these obligations therefore, sustainable business initiatives and corporate performance are revealed to the public through sustainability reports (Jones, Comfort & Hillier, 2015). Sustainability reports help companies convey their sustainability performance, promote transparency, improve brand value, reputation, legitimacy, reducing material and economic risks, enable benchmarking against competitors, indicate competitiveness and encourage employees (Amran, Lee & Devi, 2014; Herzig & Schaltegger, 2006; Jones et al., 2015; Ioannou & Serafeim, 2011).

Sustainability Reports are widely recognised as an important instrument of corporate accountability as well as indicators of company's commitment to sustainability (Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez, 2013; Martínez-Ferrero, Garcia-Sanchez & Cuadrado-Ballesteros, 2015). According to KPMG (2015) sustainability reporting is now a common practice and its growth has accelerated and businesses are becoming increasingly aware of the significance of sustainability, just as companies' contribution are crucial to sustainable development. Therefore, the demand for sustainability reporting is increasingly compelled by social or governmental beliefs and administrative improvements in addition to the demand of stakeholders (Schaltegger, Bennett & Burritt, 2006). Furthermore, sustainability reporting is becoming more widely regarded as a critical aspect in ensuring a company's long-term viability

(Lozano & Huisingh, 2011). As a result, it is no surprise that the topic is gaining traction in industry and academia.

Milne and Gray (2013) asserts that current sustainability reporting practices, which include more social and environmental performance measurements, are a continuation of earlier corporate voluntary reporting practices from the 1990s, which tended to disclose narrative information on selected environmental, community, and employee issues as part of annual reports. In terms of scope, some proponents of both legitimacy and stakeholder theories of sustainability report that CSR refers only to business activities that are beyond the direct economic or technical interests of a company and that are voluntary (Davies, 2003).

Furthermore, pharmaceutical companies have become increasingly concerned about their presence in the environment in recent years, as the materials from pharmaceutical products can end up in groundwater and soil once consumed and excreted, potentially endangering aquatic organisms. Some pharmaceutical products, which are widely used in human medicine, are metabolised and excreted unchanged or at high concentrations, which end up in domestic wastewater (Pereira et al., 2015). Therefore, sustainability and its impact on the pharmaceutical industry have led to the consideration of sustainable green principles and practices for sustainable development in the pharmaceutical sector. These sustainable practices are now being incorporated into pharmaceutical companies' strategies and mission statements.

Purpose

The purpose of this study is to analyze and discuss the relevant adjustments made by pharmaceutical companies to the sustainability report during the pandemic based on the legitimacy theory and stakeholder theory, find the relevant evidence that enterprises maintain the legitimacy and stakeholder support through the sustainability report, and explore other internal factors supporting their behavior.

Research Question

This article will explore the following research questions: whether and how do pharmaceutical companies respond consistently in sustainability reporting during a pandemic? How well do the legitimacy theory and stakeholder theory apply to the sustainability report disclosure of Nordic pharmaceutical companies?

Therefore, following this introduction, a detailed literature review will be conducted, discussing the rationale for sustainability reporting from the stakeholder and legitimacy theory perspectives, as well as reviewing relevant standards governing sustainability reporting. The third chapter will introduce the methods used in the analysis, the selection of data, and the data source. The fourth chapter will present the findings and these will be analysed in light of the selected theoretical perspectives. In conclusion, we will discuss their contributions, limitations and future research directions.

2. Literature review

Several theoretical frameworks have been used to explain the motivations, trends, and nature of sustainability reporting in developed countries, developing countries, and the pharmaceutical industry (Deegan, 2002; Schneider, Wilson & Rosenbeck, 2010; Arena, Bozzolan & Michelon, 2015). These studies provide valuable information on the progress of the sustainability reporting approach and the importance of firms' sustainability practices. Most analyse sustainability reporting as a response to a stakeholder or societal pressures and do so to legitimise their actions to society, manage stakeholder perceptions, and boost profit.

2.1 Sustainability and the role of sustainability reporting

The concept of sustainability dates back to the early 19th century (IISD, 2012). However, the present-day debate on sustainability is drawn from the Brundtland Report of 1987, titled "Our Common Future," which depicts sustainable development as the type of development that considers the future while meeting the needs of the present (UNWCED, 1987). The United Nations General Assembly adopted the 2030 Agenda for Sustainable Development on September 25, 2015, emphasising the critical importance of transforming our companies, businesses, and lives into more sustainable ones (UN, 2015). Additionally, Arvidsson (2019a) discovered that corporations began to disclose sustainability information to external stakeholders (i.e., sustainability reporting) due to recent corporate scandals involving Environmental, Social, and Governance (ESG) issues, which appear to have been undermined in corporate activities.

According to Thiele (2016), many people believe that sustainability is simply an attempt to use natural resources more efficiently, but in reality, sustainability includes more than just recycling and energy conservation. Sustainability instils a sense of responsibility for the environmental, social, and economic systems that sustain us and encourage healthy living.

This can only be accomplished by seeking economic expansion, environmental protection, and equity concurrently.

The term "sustainable reporting" usually refers to the distribution of external reports in the form of printed brochures or online electronic versions (Schaltegger et al., 2006). Additionally, sustainability reports present the values and governance model of an organisation. One of the critical effects of sustainability reporting, according to them, is that it involves management and employees in developing corporate sustainability goals, gathering data, and presenting sustainability information. As a result, external sustainability reporting should be designed in conjunction with internal communication and reporting procedures. Sustainability reporting serves as an effective tool for stakeholders to track a company's activities and assess how they adhere to societal expectations that promote sustainable business practices. As a result, it is expected that management will employ a sustainability report to improve the company's image (Arvidsson, 2019b).

Sustainability reporting ensures that organisations consider the effects of their activities on these issues and are open about the risks and opportunities they face (KPMG, 2015). This demonstrates its commitment to creating a sustainable global economy (Singhal & Dev, 2016). Furthermore, Hahn and Kühnen (2013) showed in their research on sustainability reporting that differences between countries could affect sustainability reporting due to political and legal system differences, economic and financial differences, and education and labour system differences. Currently, there is an ever-greater demand for informative and credible sustainability information due to stakeholders' increased awareness and interest, including financial institutions. To support this trend, the development of corporate sustainability disclosure has shifted from primarily voluntary to legislative and normative initiatives (Arvidsson, 2019b).

According to Azim and Azam (2013), researchers have analysed several conceptual frameworks (such as political economy, legitimacy, and stakeholder theory) to explain sustainability reporting's drives, tendencies, and nature. In their study, researchers observed that both legitimacy theory and stakeholder theory had been used to create themes for disclosure measurement and analyse the way companies include this information in their reports.

2.2 Legitimacy Theory

The legitimacy theory is the most commonly used theory to explain social reporting. In legitimacy theory, organisations constantly strive to ensure that their activities are viewed as legitimate by others within the boundaries and norms of their respective societies (Suchman, 1995; Tilling & Tilt, 2010). These boundaries and norms are not intended to be perpetual, but vary over time, necessitating organisations' responsiveness to the ethical (or moral) environment in which they operate (Islam & Deegan, 2008).

According to Suchman (1995, p. 574) *“Legitimacy is a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions”*. Legitimacy is viewed as an operational resource similar to an intangible asset, whose worth must be maintained to secure continuing societal support (Suchman, 1995; Tilling & Tilt, 2010). Legitimacy theory suggests that organisations will continue to strive to build positive perceptions about themselves by making sure that their behaviour is perceived as being consistent with the norms and bonds of the society in which they operate (Deegan, 2009). However, if there is a perceived misalignment between organisational operations and public ideals, a legitimacy gap will emerge (Haniffa & Cooke, 2005), which could jeopardise the organisation's place in the larger social structure.

Additionally, the legitimacy theory asserts that companies convince society of the legitimacy of their organisational activities by revealing information such as community participation and environmental impacts (Hahn & Kühnen, 2013). As a result of the increased demand for social media and stakeholder attention, companies are increasingly publishing ESG data to promote awareness, motivate employees, strengthen their brand, and avoid market stigmas associated with environmental irresponsibility (Hahn & Kühnen, 2013).

Further, the legitimacy theory claims that corporations' disclosures are influenced by external forces (political, economic and social), and disclosures legitimise their activities (Lehman, 1999; Lindblom, 1994). The legitimacy theory postulates that organisations function in society according to a social contract that allows them to accomplish a variety of socially desirable objectives in exchange for societal approval of their goals and vision, and eventually, their survival. As a result, it must provide sufficient social data for society to determine if it is a decent corporate citizen. The corporations attempt to justify their continued existence by legitimising their activities through disclosures (Lehman, 1999).

Deegan (2002) asserts that the legitimacy theory indicates that organisations do not possess an inherent right to resources or exist; rather, they exist according to society's extent to which they are considered legitimate. In light of this, he advised organisations that they need to consider community expectations if they want to succeed and that failing to do so could result in sanctions for the organisation.

Several academics adopt a legitimacy viewpoint (Deegan, 2002; Deegan, Rankin & Tobin, 2002), which implies that organisations need legitimacy to operate, and that companies report on their CSR activities to legitimise their relationships with society and diverse stakeholders. In addition, a number of empirical studies based on this legitimacy perspective have produced conflicting results. Some (Campbell, 2004, Deegan et al., 2002) claim that a legitimacy

approach is necessary to explain levels of corporate social disclosure and non-disclosure, but others (Guthrie & Parker, 1989; O'Dwyer, 2002) maintain that it did not explicitly explain the disclosure levels.

2.3 Stakeholder Theory

Stakeholder theory is another theory often used by researchers to explain why organisations disclose social and environmental information. Stakeholder theory originates with Freeman's seminal work of 1984. According to Freeman, stakeholder theory was concerned with the issue of value creation and trade. (Freeman et al., 2010). According to Gray, Adams and Owen (2017), the more significant a stakeholder is to a company, the greater the effort needed to manage their relationship in order to advance the company's interests. According to this theory, providing sustainability information is an effective communication approach used by companies to manage stakeholders and enhance their reputation.

According to Deegan (2006), there are two main perspectives of the stakeholder theory: ethical and managerial. According to him, the ethical perspective of stakeholder theory suggests that an organisation might be required to treat all stakeholders fairly, regardless of the stakeholder power. The ethical perspective suggests that businesses should be managed to maximise the benefits of all stakeholders, regardless of whether they improve their financial results. However, this argument fails as a description or explanation in a social accounting context (Gray et al., 2010).

On the other hand, the managerial perspective suggests that managers of an organisation should strive to satisfy stakeholders who control important resources needed by the organisation. In the managerial perspective, the focus is on controlling stakeholders deemed to have a more direct impact on the organisation. This perspective, according to Gray (2010), can be used in an "organisation-centered" manner. Additionally, the focus organisation

identifies stakeholders based on "the extent to which the organisation believes the interplay with each group needs to be managed in order to further the organisation's interests" stakeholders deemed to have a more direct impact on the organisation. This perspective, according to Gray et al. (1996). As a result, stakeholder theory takes on a managerial perspective that concerns managing an organisation's interaction with its essential stakeholders. As opposed to the ethical perspective, the managerial perspective is often examined empirically (Deegan, 2009).

Nowadays, the Sustainability Report has been widely regarded by society. Herremans, Nazari and Mahmoudian (2016) believe that the concept of sustainable development itself stems from the enterprises' catering to the needs of stakeholders, and one of the effective ways to attract stakeholders is the disclosure of Sustainability Report. Amran and Ooi (2014) found that under the influence of meeting the expectations of relevant stakeholders, enterprises tend to prove their governance transparency and effectiveness through sustainable disclosure. Therefore, the significant impact of stakeholders on sustainability reporting is self-evident. Stakeholder participation can have a positive impact on sustainable development performance in the short term, and may promote the company to move towards more sustainable business behavior in the long term (Manning, Braam & Reimsbach, 2019), this study also supports the legitimacy theory.

However, with the passage of time, the relationship between sustainable disclosure of enterprises and stakeholders seems to begin to undergo subtle changes. As Amran and Ooi (2014) pointed out, under the influence of stakeholders, many companies have gradually changed sustainable disclosure from passive to active, and adjusted their business planning and decision-making through active participation and understanding of the needs of stakeholders. This means that there are more complex influences and connections between the sustainable disclosure of enterprises and stakeholders. There is a relationship of reciprocity,

interdependence and power between stakeholders and organisations, which is used in the form of benign two-way communication (Bellucci et al., 2019)

2.4 Sustainability Reporting in the Pharmaceutical Industry

Based on a study by Schneider et al. (2010), pharmaceutical industry sustainability efforts have grown due to an increase in related activities. In their view, this can be explained by the growing participation of pharmaceutical companies in related voluntary standards. However, specific sustainability-related activities within the pharmaceutical sector still vary widely in number and form from company to company, and those activities do not always reflect comprehensive industry efforts.

Additionally, they found that the pharmaceutical sector utilises sustainability to protect its corporate reputation while adding value since the shift provides a way to exhibit various initiatives that meet society's expectations and that are most pertinent to their business. Furthermore, pharmaceutical companies are increasingly participating in related voluntary standards to demonstrate their commitment toward sustainability, and sustainability-related activities still differ significantly in terms of number and form from one company to another within the industry and are not always representative of an industry-wide initiative. This trend necessitated the creation of unified standards, which resulted in the introduction of reporting-based standards, such as the Global Reporting Initiative (GRI) and other sustainability reporting standards (GRI, 2021).

2.5 GRI standards and the application of GRI in Sustainability Report

2.5.1 GRI Standards

The GRI Standards are intended to provide organisations with comparable and credible tools for understanding and reporting their impacts on economic, environmental, and social factors, thereby increasing transparency on the company's contribution to sustainable development

(GRI, 2011).

The Coalition for Environmentally Responsive Economies (CERES) and the United Nations Environment Programme (UNEP) created the Global Reporting Initiative (GRI) in 1997, and it is today the most frequently used and trusted standard for sustainability reporting (KPMG, 2022). The GRI issued its first guidelines in a 1999 exposure draft, which was first published in 2000. Its mission is to help businesses create sustainability reports that include their operations' social, environmental, and economic impacts. The GRI intends to enhance its guidelines as a globally recognised framework for comparative sustainability reporting. It examines the impact businesses have on economic systems locally and internationally and defines economic sustainability as an organisation's effects on its stakeholders and economic systems (GRI, 2011). It has been embraced by the world's major corporations and is mentioned in international policy instruments and stock exchanges (GRI, 2021). A recent survey by KPMG (KPMG, 2020) found that 96% of the world's largest 250 companies (the G250) report on sustainability performance, highlighting the widespread adoption of the GRI Standards globally.

Since its inception, the GRI standards have been updated, and the most recent, Universal Standard 2021, will take effect for the information reported after January 1, 2023. The revised GRI Universal Standards 2021 will assist businesses in their transparency journey and position them to meet emerging regulatory disclosure requirements such as the EU Corporate Sustainability Reporting Directive (CSRD) and the International Financial Reporting Standards (IFRS) Enterprise Value Standards (KPMG, 2022). Besides developing the GRI Standards, GRI also facilitates their use and implementation among various stakeholders (GRI, 2021).

According to the GRI standards, businesses must disclose the sustainability effects of their

activities to improve their operations' efficiency and build stakeholder relationships. Without transparency, there is no trust. Without trust, doing business becomes hard, markets cannot function efficiently, and institutions lose their legitimacy (GRI, 2021). Corporate accountability is becoming increasingly important in a rapidly changing environment. As a result, it is critical to measure and report following internationally recognised standards such as the GRI Standards, thus providing access to information that facilitates better decisions while ensuring data quality and comparability (GRI, 2021).

The GRI principle, as stated previously, is designed to bring together stakeholders from around the world and ensure that reporting firms can remain open and honest. As a result, stakeholders must remain diverse and benefit from discoveries as sustainability is developed. The voluntary nature of GRI reporting poses a problem in quantifying its tangible and intangible effects in the implementation of sustainable solutions (GRI, 2021). Thus, concerns about the limitations and possible negative consequences of GRI reporting are expressed.

2.5.2 GRI application in Sustainability Reporting

Gray and Milne (2002) argued that understanding and then trying to change a system as complex as humankind's interactions with the natural environment is a challenge and, at the very least, requires the cooperation of every sector of society. For them, among the various groups of societal actors concerned with how sustainability can affect future well-being and development, the international business community may indeed be the most influential and organised. They are concerned that reporting on an organisation's sustainability is problematic since it is difficult, if not impossible, to articulate in precise words what a sustainable organisation would look like. If uniformity is to be achieved, there should be substantive legislation requiring it for all large organisations.

Turcsanyi and Sisaye (2013) note that organisations that use GRI's Standard Review Guide

(SRG) for their report are also required to notify GRI if their report has been released and to provide the GRI with a copy of it; register their report on GRI's online database of reports, and request that GRI check their self-declared application level. For them, these guidelines provide organisations with valuable organisational-process information that can be used for continuous performance improvement over time. Even though they are voluntary, these guidelines can be an effective method to communicate with stakeholders.

According to them, the implementation of the GRI guidelines of reporting follows the legalistic approach to CSR which suggests that businesses conform to laws and regulatory requirements of sustainability through CSR reporting, in which voluntary compliance with these requirements is self-reported. Moreover, CSR can be an essential means of documenting an organisation's compliance with social contracts and legalistic requirements by publishing a report on the declining or decreasing number of fines paid for implementing or maintaining sustainable practices. (Turcsanyi & Sisaye, 2013).

However, there is currently no widely accepted approach to ensuring sustainability information, resulting in a wide range of formats and approaches (Perego & Kolk, 2012). Therefore, due to the voluntary nature of sustainability reporting, corporations, including pharmaceutical companies, have no consistent global method of standardising their sustainability reports.

2.6 The European Union (EU) Directive on Sustainability Reporting

The concept of sustainability reporting has been strongly supported by the EU (Yıldız & Özerim, 2013). For the European Union (EU) region, the Directive 2014/95/EU on Disclosure of Non-financial and Diversity Information by Large Companies and Groups went into effect on October 22, 2014. The directive stated that, from the 2017 fiscal year, all EU member states must implement these provisions into domestic laws, thus requiring large companies

(those with more than 500 employees) to display information related to the environment, social, multiculturalism, human rights, bribery, and anti-corruption policies (European Directive, 2014). While the EU Directive has laid out some guidelines for disclosure of non-financial information, it has not established any standards for the disclosure of that information (European Commission, 2017). Furthermore, organisations such as the Global Reporting Initiative, the International Integrated Reporting Council, and the Sustainability Accounting Standards Board (SASB) have created voluntary standard frameworks for unification, transparency, and comparability of reports to address this problem.

3. Methodology

In order to objectively and systematically compare the sustainability reports of sample pharmaceutical companies, this paper uses the content analysis framework to analyse the sustainability reports. This research method is objective and precise for the analysis of specific communication content, it is helpful to draw scientific, complete, and factual conclusions from the analysis of sustainability reports (Bonsón et al., 2012) and it is widely used to study information published by public entities (Ettredge, Richardson & Scholz, 2001).

3.1 Content Analysis procedures

In order to quantify and classify the Sustainability Reporting information, we adopted the use of content analysis technique because it offers researchers a systematic approach to handling large, unstructured datasets (Hackston & Milne, 1996; Krippendorff, 2012).

The specific method of this content analysis needs to meet the following conditions:

1. At present, there are many disclosures in the form of pictures and tables in many companies' Sustainability Reports. In addition, comparing the figures of the company's indicators in previous years is also an essential standard for the content analysis and scoring of Sustainability Reports. Therefore, this method needs to realise the function of figure comparison and have the ability to analyse the information in pictures and tables.
2. Unlike most analysis standards at the vocabulary or phrase level, content analysis is completed at the "topic" level. This is because compared with the analysis of words or phrases, the analysis at the "topic" level is more conducive to our analysis and comparison of enterprise Sustainability Reports, which helps to more accurately capture the integrity of relevant statements distributed in multiple sentences and pages in the report (Demir & Min, 2019).

Considering the above conditions, this paper chooses the manual scoring method to analyse the content of the sustainability report of the sample companies and a volumetric word count is used to determine the quantity of disclosure (per theme and per company). Word counts have been found to be highly connected to other indicators, such as sentences or percentage of pages, and are viewed as a suitable indication of the priority that corporations attach to specific sustainability reporting themes (Gray et al., 1995a). Furthermore, as Hackston and Milne (1996) suggested, the disclosures can be evaluated qualitatively. First, we use the classification methodologies described in Gray et al. (1995b) and Hackston and Milne (1996) to see if the disclosures per theme reflect the company neutrally, favorably, or adversely.

Also, we examine companies' sustainability reports to determine the number of times non-economic stakeholders are mentioned directly. Finally, we classify the nature of social or environmental activities disclosed in sustainability reports into Environmental and Social Sustainability indicators.

3.2 Selection of sample companies

The selection of sustainability report samples focuses on pharmaceutical companies in Nordic countries. The selection of pharmaceutical companies in the Nordic region is mainly based on two considerations. First of all, the awareness and level of sustainable development in Nordic countries are generally considered the leading position in the world. Strand et al. (2015) mentioned that Scandinavia is often regarded as a global leader in CSR and sustainable development. In addition, the sustainable development adjusted Global Competitiveness Index (GCI) released by the world economic forum aims to "assess a set of systems, policies, and factors that enable a country to ensure social and environmental sustainability while maintaining productivity in the long term." Among the 137 economies in the latest report of the World Economic Forum (2017-2018), Sweden, Finland, Norway and Denmark ranked 7th, 10th, 11th, and 12th, respectively.

Solability, a Swiss-Korean joint venture founded in 2005, is a sustainable management consulting firm for corporations and policymakers and the publisher of the Global Sustainable Competitiveness Index (GSCI), which has been measuring green growth since 2012 (Datanyze, 2022). The GSCI released annually by Solability measures national competitiveness based on 131 measurable quantitative index information from many trusted institutions, including the world bank, the International Monetary Fund, and United Nations agencies (solability, 2021). In the GSCI rating, Nordic countries firmly occupy the top five positions; see GSCI extract at Appendix A. Therefore, Nordic pharmaceutical companies' extension of sustainable development content during the pandemic is representative and has reference value.

For the selection of sample companies, the top ten (10) pharmaceutical companies with total assets in Nordic countries were selected through the ORBIS database. ORBIS is a powerful entity data resource library with information about 400 million companies and entities worldwide, of which 41 million have detailed financial information. Matej et al. (2020) pointed out that the ORBIS database can provide essential insights into global economic trends, and the database is more suitable for analysing the best-performing companies.

Table 1: Selected sample of Nordic pharmaceutical companies	
S/No.	Company
1	ASTRAZENECA AB
2	NOVO NORDISK A/S
3	SWEDISH ORPHAN BIOVITRUM
4	H. LUNDBECK A/S
5	BAYER NORDIC SE
6	NOVOZYMES A/S
7	LEO PHARMA A/S
8	BAVARIAN NORDIC A/S
9	TERVEYSTALO OYJ
10	ORION OYJ

3.3 Representative year of the sample

The World Health Organisation declared the epidemic as a public health emergency of international concern on January 30, 2020 and a pandemic on March 11, 2020. 2019 is the last complete financial year before the pandemic, and the sustainability report of this year reflects the normality of enterprises before the pandemic. At the same time, the United Nations Statistics Division (2021) pointed out that in the second year of COVID-19 pandemic, the progress of several years or even decades have stopped or reversed. 2021 will determine whether the world can make the necessary changes. As the impact of COVID-19 is continuous, 2021 is the last complete financial year after COVID-19. The sustainability report of this year is the report that can best reflect the changes of enterprises' attitude towards sustainable development during COVID-19. Therefore, this paper takes the sustainable development reports of 2019 and 2021 as the main years to show the expression of enterprises' sustainable level before and after the pandemic.

On this basis, since 2020, as the initial fiscal year affected by the pandemic, is closely connected with the two main expression years, this paper adds the score of the 2020 sustainability report as a transition and reference.

3.4 Formulation of indicators

At present, many international organisations and enterprises have provided disclosure frameworks and standards for sustainability reports. Chen and Bouvain (2009) pointed out that the GRI model is the most influential, widely covered, and internationally recognised standard information guide for the sustainability of public institutions in the world. Dumay, Guthrie and Farneti (2010) found that the number of public institutions using the GRI model increased year by year. The credibility of the GRI model shows an increasing trend. Therefore, this paper uses the disclosure guidelines provided by the GRI as the basic reference index for the content analysis of sustainability reports.

In addition, due to the particularity of the pharmaceutical industry, reference is made to the nine (9) sustainable development disclosure standards specific to the pharmaceutical industry in the Sustainable Development Accounting Standards Board Foundation (SASB). SASB is a non-profit organisation located in the United States. It is committed to developing a series of ESG disclosure indicators for specific industries. Each industry has its own unique set of sustainability accounting standards in the SASB system. The organisation believes that enterprises must manage environmental and social capital for specific industries if they want to create value. At the same time, the organisation pointed out that sustainability accounting should reflect enterprises' social and environmental impact on their production and services. This paper contends that compared with GRI, SASB is more targeted for formulating specific industry disclosure indicators, which can be used as an effective supplement to GRI's sustainability reporting standards.

3.5 Scoring system of Sustainability Report

According to the standards proposed by GRI and SASB, 18 environmental and 21 social sustainability indicators related to sustainability reports are compiled (Appendix C). There are 39 indicators in total, and each indicator was scored manually. The highest score for each standard is 3, and the lowest score is 0. Therefore, the scores were assigned as follows:

- When there is no mention of an indicator in the report, 0 point was assigned;
- When the report simply mentions an indicator but does not mention any specific methods and data, 1 point was assigned;
- If there is no specific digital disclosure or the data is not comprehensive, or the relevant figures show that the indicator level has decreased, 2 points were assigned; and
- Based on mentioning an indicator, if the report describes in detail the specific practices and achievements of realising and improving the indicator, discloses the specific figures, and

compares the figures of previous years, the indicator will receive 3 points.

Furthermore, Table 2 shows an example of the scoring system used.

Table 2: Application of scoring system		
Score	Scoring level	Example
0	No Mention	No relevant information provided in the report
1	Generic statement	"Our company pays great attention to combating counterfeit drugs."
2	More detailed information	"The carbon emission in 2018 is 2,000 tonnes and this year it is 2,500 tonnes."
3	Full and systematic coverage	"As of 2020, the company's total CO2 emissions will amount to 800,000 tonnes. In 2019, the company produced 500,000 tonnes. This represents a 5% reduction from last year's emissions. We have committed to reducing our CO2 emissions by a percentage of 10% by the end of 2030."

4. Findings and Discussion

4.1 Extent of Sustainability Report Disclosures

The research on the factors affecting the adoption of sustainability reporting mainly addresses the decision or likelihood to adopt sustainability reporting, while the research on the extent of reporting focuses on the quantity or amount of information disclosed (the number of keywords, sentences, or pages used as ways of identifying major themes discussed in sustainability reports). Among the aspects that determine the quality of disclosures, research examines, for example, the way information is provided (i.e., the provision of narratives and descriptions), the provision of qualitative data (i.e., “soft” information such as claims about strategies), and the provision of quantitative data (i.e., quantitative performance indicators), and seeks to determine the type of information conveyed.

Table 3 and 4 detail sustainability disclosures and changes over time based on sustainability (Social and Environmental) scores and word counts. Table 3 and 4 show that information about their social activities was more readily available and increased in the year 2022, indicating a greater emphasis on their commitment to social reporting. According to the two tables, social activities were also more widely publicised than environmental activities. Furthermore, Table 4 shows that the aggregate word count increased as all of the companies raised the scope of their sustainability reports' disclosures. For example, the average word count for both social and environmental sustainability indicators nearly doubled in 2021 compared to 2019, which could be ascribed to the pandemic and employers' increased focus on employee welfare, health and safety.

Table 3: Social and Environmental scores for 2019 - 2021

Ranking	Company	Sustainability report 2019	Sustainability report 2020	Sustainability report 2021	Sustainability report 2019	Sustainability report 2020	Sustainability report 2021
		Environmental Score	Environmental Score	Environmental Score	Social Score	Social Score	Social Score
1	ASTRAZENECA AB	40	30	38	48	45	43
2	NOVO NORDISK A/S	30	20	21	44	40	38
3	SWEDISH ORPHAN BIOVITRUM	29	28	28	35	37	39
4	H. LUNDBECK A/S	33	34	36	24	30	39
5	BAYER NORDIC SE	31	40	37	43	45	46
6	NOVOZYMES A/S	34	33	30	25	27	23
7	LEO PHARMA A/S	21	16	18	29	32	33
8	BAVARIAN NORDIC A/S	21	17	24	21	24	26
9	TERVEYSTALO OYJ	22	21	26	25	30	32
10	ORION OYJ	34	30	36	39	49	47
	Total	295	269	294	333	359	366
	Average	30	27	29	33	36	37
	Average (%)	30%	27%	29%	33%	36%	37%

Table 4: Sustainability Reporting (Social and Environmental sustainability indicators) word count for 2019 - 2021

Ranking	Company	Sustainability report 2019	Sustainability report 2020	Sustainability report 2021	Sustainability report 2019	Sustainability report 2020	Sustainability report 2021
		Environmental Score	Environmental Score	Environmental Score	Social Score	Social Score	Social Score
1	ASTRAZENECA AB	95	96	100	189	192	105
2	NOVO NORDISK A/S	12	22	25	24	30	27
3	SWEDISH ORPHAN BIOVITRUM	15	33	36	30	66	72
4	H. LUNDBECK A/S	33	48	63	66	96	126
5	BAYER NORDIC SE	108	144	189	216	288	378
6	NOVOZYMES A/S	29	17	29	50	63	57
7	LEO PHARMA A/S	53	21	42	105	42	84
8	BAVARIAN NORDIC A/S	30	27	36	60	90	126
9	TERVEYSTALO OYJ	32	33	75	63	75	150
10	ORION OYJ	89	108	116	177	216	231
	Total word count	494	549	710	980	1 158	1 356
	Average word count	49	55	71	98	116	136

In addition, the number of document analyses has grown significantly over the years. This is attributed to an increase in published sustainability reports (GRI, 2011), which provide easy access to a large amount of data, explaining the popularity of this research method from a practical standpoint. Appendix D depicts the total number of pages in the sustainability reports examined. The growing use of stand-alone sustainability reports, as well as the renaming of CSR reports to Sustainability Reports, is consistent with the EU Directive (EU Directive, 2014), and it is now the dominant form of sustainability-related reporting.

By analysing and scoring the Sustainability Reports of 10 Nordic pharmaceutical companies in 2019 - 2021, the scoring results are shown in Table 3. The pharmaceutical companies' sustainability reports showed a decline in the environmental sustainability indicators scores and an increase in the social sustainability indicators score during the years under review. As a whole, this shows that pharmaceutical companies still maintain a positive focus on sustainable development and the level of sustainable disclosure is on the rise.

In Europe, unlike other industries, the pharmaceutical industry has hardly been hit by the pandemic, and the market demand for non-patented drugs is relatively stable. At the same time, the production of innovative drugs has expanded due to the testing and development of new vaccines and the study of 2019 coronavirus disease treatment (De Vet et al., 2021). The pharmaceutical industry showed a unique superiority and importance during the pandemic compared with other industries. In the face of the disaster brought by disease, the society hopes that pharmaceutical companies and researchers will save people's health. Whether the functions of pharmaceutical companies can be completed, whether the speed of research and development of drugs to deal with diseases is fast and effective, whether the reserves of drugs are sufficient, whether the quality of drugs can be guaranteed, and whether the price of drugs can be affordable by the people have a decisive impact on whether and when the society can

resume regular operation.

Therefore, during the pandemic, pharmaceutical companies received more attention than ever before, which was reflected in both economic and social aspects. Furthermore, the economic impact of the embargo on most other industries, coupled with the longest bull market in biotechnology history before the pandemic, has prompted growth-seeking generalist investors to flock to biotechnology and health technologies in a record number. In addition to large capital inflows, the public has generated widespread calls for equitable access to drugs. Silverman and Lusiani (2020) called for that in order to prevent the covid pandemic from becoming an unequal pandemic, any drug or vaccine developed by pharmaceutical companies must be provided to all people free of charge and must be provided to all the people most in need in the world fairly and equitably. Facing the world's attention, pharmaceutical companies need to respond positively. As McCabe (2020) said, public trust in the pharmaceutical industry has been weakened, but large-scale behaviour provides an opportunity for pharmaceutical manufacturers to start rebuilding their reputation - provided that they give priority to socially responsible practices. Therefore, as an effective way for enterprises to demonstrate their social responsibility and sustainable level, it is wise and reasonable for pharmaceutical companies to strengthen the disclosure of sustainable content generally.

4.2 Comparison of environmental sustainability score and social sustainability score

The sustainability score is divided into two aspects: environmental sustainability indicators and social sustainability indicators. Table 3 clearly shows the changes in the indicators of the sample pharmaceutical companies.

Overall, compared with 2019, the decline of the company's sustainability score in 2021 is concentrated in environmental indicators. Swedish Orphan Biovitrum and Leo Pharma A / S,

the two companies, still reduced their performance in environmental sustainability based on no decline in the total score. In other words, while the score on environmental sustainability decreased, they made relatively substantial progress in social sustainability.

For a long time, the sustainability of the pharmaceutical industry has been a concern by society, especially about the environmental level (Milanesi, Runfola, & Guercini, 2020). Belkhir and Elmeligi (2019) conducted an industry-specific comparative analysis of major pharmaceutical companies in the world and found that the emission intensity of the pharmaceutical industry is even higher than that of the automotive industry.

4.2.1 Environmental sustainability indicators disclosures

We found that the majority of the pharmaceutical companies' disclosures failed to adequately communicate their environmental performance. In 2019, the average score for this category of performance measures was 30%, followed by 27% in 2020 and 29% in 2021 (Table 3). 2020 had the lowest average score, which can be ascribed to the pandemic. According to the sample companies' sustainability reports, poor performance of power consumption, water consumption, carbon emission, waste reduction, and energy was due to an increase in vaccines and medicine production to mitigate the impact of the pandemic or a likely supply chain interruption. Energy and water usage, carbon dioxide (CO₂) emissions, Greenhouse Gas Emissions, biodiversity, waste treatment, and material recycling were the most often mentioned environmental indicators. Our analysis found that among the sample companies' sustainability reports, AstraZeneca and Bayer Nordic led the way in environmental performance disclosure. All the companies did not, however, explicitly identify the enormous environmental consequences of their activities.

4.2.2 Social Sustainability indicators disclosures

In evaluating social performance disclosures, we discovered more positive findings. The Nordic pharmaceutical businesses exhibited a rise in social sustainability reporting, with an average overall score of 33% in 2019, 36% in 2020, and 37% in 2021 on social performance parameters. Employee health, welfare, and safety, gender distribution, working conditions (the rapid shift to remote and hybrid working), and employee involvement were all covered in greater detail in the reports than broader social issues related to their company' economic operations. The majority of the reports conducted contained analyses of the company's workforce by gender and age and they attempted to analyse the makeup of their workforce using parameters like those proposed by GRI.

Mert Demir and Maung Min (2019) believe that the reason for pharmaceutical companies to improve the level of such disclosure comes from the legitimacy of disclosure. This paper agrees with this analysis result to a certain extent. Obviously, for pharmaceutical companies, the financial level, environmental and social sustainability have attracted the attention of all sectors of society and have a more far-reaching impact on relevant stakeholders. However, there are many regulations and restrictions on financial reports and environmental sustainability reports, such as audit intervention and the evaluation of resource utilisation and emission level by relevant departments. Therefore, the disclosure of financial data and environmental sustainability levels lacks space for rendering. Compared with these two aspects, social sustainability disclosure has no clear restrictions and regulations to a great extent. For example, standards such as "commitment to employees," "accountability and fair pricing" are challenging to measure with specific figures. Therefore, pharmaceutical companies are given greater freedom in disclosure. Enterprises can obtain higher scores by lengthening the disclosure length of such standards, adding relevant regulations and strategies to the system, and other low-cost ways.

In addition, the social sustainability standard includes 9 standards formulated by SASB for pharmaceutical companies. It is worth noting that 6 of the 10 sample companies strengthened the overall disclosure of these 9 standards during the pandemic, which is reflected in the improvement of the score of SASB standards. On average, the score of the sample companies in the SASB standard in 2021 increased by 6.3% compared with that in 2020 which increased by 4.3% (Appendix E). This means that pharmaceutical companies pay more attention to the special responsibilities of the pharmaceutical industry than the social sustainability standards applicable to all industries.

As mentioned earlier, society pays attention to whether pharmaceutical companies can distribute drug resources fairly and reasonably during the pandemic and whether everyone is deprived of the equal right to health for profit. Therefore, when we take "access to medicine" one of the most eye-catching indicators, as an example. In the comparison of sustainability report scores in 2019 and 2021, it can be found that the scores of 2 of the 10 companies on 'access to medicine' remained unchanged, and the scores of six companies showed that the disclosure and investment level of "access to medicine" had been improved during the pandemic. Among them, the scores of Bayer Nordic SE, Swedish Orphan Biovitrum, H. Lundbeck A / S and Orion Oyj on this index jumped to full marks. This can prove that pharmaceutical companies have paid more attention to the direction of social sustainability during the pandemic, especially the special responsibility of sustainable development in the pharmaceutical field. This conclusion also confirms Mert Demir and Maung Min (2019) that the reason for pharmaceutical companies to improve such disclosure levels comes from the pressure of relevant stakeholders.

During the pandemic, pharmaceutical companies obtained more investment funds and had stronger R & D needs, which could have a vital impact on more people's lives. Therefore, for

the relevant stakeholders such as investors, developers and consumers, the social sustainable disclosure has the strongest correlation with their interests. This is because these social sustainability standards, especially the nine sustainability standards for the pharmaceutical industry established by SASB, focus on human rights, the protection of patients and employees and the safety of drugs.

However, during the pandemic, the performance of pharmaceutical companies is still unsatisfactory. First, for the issue of counterfeit drugs, which is crucial to pharmaceutical companies, 6 of the 10 sample companies did not implement any changes in the disclosure of sustainability reports during the pandemic. Only Orion Oyj and Bayer Nordic SE have increased the score of counterfeit drug disclosure, and H. Lundbeck A / S is the only company whose score of counterfeit drug disclosure has decreased after the pandemic. Disappointingly, 4 of the 10 sample companies completely ignored the concern about counterfeit drugs.

In addition, three companies did not pay any attention to the safety of clinical trial participants before and after the pandemic. Valmorri et al. (2021) indicated that during the COVID-19 pandemic, clinicians participating in clinical trials were self-isolated because of the risk of infection transmission, and the clinical research staff also had to perform crucial virus containment tasks. In this context, it is necessary to maintain a high standard of clinical trials. Although Leo Pharma A / S, Bavarian Nordic A / S and Terveystalo Oyj scored 0 in the safety of clinical trial participants before the pandemic, they improved their scores after the pandemic. In contrast, AstraZeneca AB and Orion Oyj reduced their disclosure in the project after the pandemic. On the whole, pharmaceutical companies' disclosure of the safety of clinical trial participants has not attracted enough attention. During the pandemic, the demand for drug research and development and clinical trials increased, but the number of clinical trial participants was affected by the pandemic. Unger et al. (2021) found that during the

COVID-19 pandemic in early 2020, the number of registrations participating in cancer experiments decreased sharply. The challenge of recruiting patients for clinical trials during a pandemic should be recognised. Park et al. (2021) also pointed out that a large number of COVID-19 clinical trials were conducted without strict methods and adequate planning. If the clinical trial during the pandemic cannot be carried out under the full plan to ensure the safety of patients, it will not only fail to ensure the scientific preciseness and credibility of the experiment but also cause incalculable harm to the clinical trial participants. Therefore, for pharmaceutical companies, the safety of clinical trial participants should be paid more attention.

Issues related to accessibility and fair pricing are also more concerned during the pandemic. During this period, the pricing of drugs by pharmaceutical companies determines people's ability to obtain drugs at the economic level. According to the scoring results, only Orion Oyj, H. Lundbeck A / S and Swedish Orphan Biovitrum improved the disclosure level of sustainability and fair pricing in the sustainability report in 2021, while three of the remaining companies did not disclose it at all, and the disclosure level of the other four remained unchanged. It is worth noting that none of the companies reduced the disclosure level of accessibility and fair pricing after the pandemic. Therefore, it can be considered that the disclosure of this standard by the sample companies is generally on the rise.

4.3 Sustainability Reporting and Legitimacy Theory

The empirical analysis supports the legitimacy theory, where it highlights the fact that the companies search for the consensus within the context of reference by publishing information which goes beyond regulatory requirements. Given the research question, it is evident that the companies attempt to publish sustainability reports in compliance with the GRI standards, SASB standards and EU Directives.

Such findings are mainly supported by changes in sustainability reporting scores. As mentioned in Chapter 3, the sustainability report score of this paper is evaluated according to the relevant standards of GRI and SASB, so the score of sustainability report is directly related to whether its disclosure content conforms to the relevant standards. When the disclosure content of the sustainability report of the sample company is more consistent with the relevant standards, its score will increase. As shown in table 3, the sustainability report scores of the 10 sample companies in 2019-2021 are generally on the rise, which means that the sample companies pay more and more attention to the reference of internationally recognised standards such as GRI and SASB in the process of preparing the sustainability report. In addition, the relationship between the length and score of the sustainability report can also prove that the sample companies tend to strengthen the disclosure of relevant standards, which is a proof that the sustainability report of Nordic pharmaceutical companies conforms to the legitimacy theory.

For the sake of rigor, this paper records and summarises the Sustainability Reports of 10 pharmaceutical companies and the data disclosed by relevant figures, as shown in table 3.

We note that the seven companies that have improved their sustainable scores in 2021 have increased their disclosure contents and pages to varying degrees. In the observation of companies with lower scores, the length and content of their disclosure have been reduced to varying degrees. For example, the sustainability report of AstraZeneca in 2019 was 63 pages, and this number dropped sharply to 35 in 2021. Novo Nordisk's sustainability related content is disclosed together with the annual report, and the length has not changed significantly. However, it is not difficult to find out from the comparison of the company's ESG specific data disclosure tables that 140 items were disclosed in 2019, while this figure only reached 79 in 2021. Novozymes A/S got a lower sustainability score in 2021 than in 2019 on the premise

that the number of pages in the sustainability report was not reduced. This is because the decrease in the company's score did not come from the reduction in the disclosed items and contents, but from the poor performance in the sustainability related figures disclosed in 2021, such as the increase in indicators such as electricity, water and carbon dioxide emissions.

Based on the discussion of the relationship between the sustainability report score and the consistency of relevant standards, this paper concludes that the length of the report reflects the consistency between the sustainability report and relevant international standards to a certain extent. In other words, the longer the sustainability report and the more content it discloses, the more likely its disclosure items will cover relevant international disclosure standards, thus helping the company get a higher sustainability score. In combination with the conclusion drawn by Dilling and Caykoğlu (2019) that longer comprehensive reports have higher quality on average, this paper believes that pharmaceutical companies generally strengthen the quality of sustainable reports by increasing the length of sustainable reports, which also proves that the preparation of sustainable reports by enterprises conforms to the legitimacy theory.

In addition, some companies also demonstrated the legitimacy theory by adding specific relevant standard disclosure reports. For example, Bayer Nordic SE added the SASB index sustainable accounting disclosure report to the original sustainability report in the 2021 disclosure. Obviously, the increase in this report helped the enterprise's sustainability report score significantly jump from 74 to 83.

Lindblom (1994) asserts that legitimacy theory also takes into account the increased external pressures, since these external pressures have both positive and negative impacts on the overall environmental and social significance. As a result, sustainability reporting is a critical component of the legitimacy process as it contributes to increased transparency, credibility

and trust between stakeholders and communities (Deegan, 2002). Hence, sustainability reporting aims to bridge the legitimacy gap until the desired level is reached (Lindblom, 1994), so that stakeholders can act more effectively within the socioeconomic context in which they operate by gaining, maintaining and restoring consensus. A stakeholder's consensus is essential for realising the objectives of the social and economic sector in which they operate.

Furthermore, it is theorised that the industry's statistical insignificance compared to other dimensions of sustainability reporting (introduction, economic and social factors) is due to the increasing importance of voluntary disclosure, as it encourages firms to communicate about sustainability challenges regardless of their own commitments and activities, thus reducing context hostility even when it is not industry-specific (Milne & Gray, 2013). Thus, Gray et al. (1996) assert that communication is a key factor in establishing legitimacy in the reference environment and for stakeholder approval. Having social responsibility is not enough to be justified. Communicating the objectives, the actions, as well as the results obtained to the stakeholders is equally important (Deegan, 2002; De Villiers & Van Staden, 2006).

In addition, Lindblom (1994) defines four major strategies firms can use to generate legitimacy:

- The company can notify the public about changes in its performance and activities.
- The company can attempt to change the public's perception of its behaviour without actually changing it.
- The company can try to divert attention away from contentious issues by increasing the visibility of related activities.
- The company can attempt to alter the public's perception of its performance.

In the analysis of the companies' sustainability reports, it appears that all of them engage in all four of the sustainability strategies. The comparably length of the companies' sustainability reports reflects the fact they all operate in a politically vibrant industry and have a comparatively large workforce.

4.4 Sustainability Reporting and Stakeholder Theory

Manetti G. (2011) believes that stakeholder participation is one of the foundations of the sustainability report. This theory participates in the company's decision-making through mutual commitment. Katamba, Nkiko and Ademson (2016) pointed out that for pharmaceutical companies / enterprises / industries, stakeholders include employees, managers and patients, instruct / prepare doctors, nurses and suppliers who provide input / logistics to regulatory agencies. In this study, we found that the relationship with stakeholders indeed runs through the Sustainability Reports of the sample companies. Due to the special attributes of the pharmaceutical industry, its stakeholders are more closely related to COVID-19 than those in other industries.

The pandemic has had a negative impact on the psychology of people from all walks of life. Watkins-Martin et al. (2021) found that the incidence rate of depression increased after the pandemic in the form of questionnaires, including adults and adolescents. Zhou et al. (2021) pointed out that people's mental health problems have increased since the outbreak of COVID-19, which has become one of the main public health problems during this serious health crisis. The results also show that people become more depressed after the outbreak of the pandemic, and the relevant measures implemented by the government and the blockade of the environment have also increased the level of anxiety and depression.

In fact, the work at home, school at home, unemployment, the reduction of social interaction

and the potential risk of infectious diseases brought about by the pandemic will put pressure on people's psychology, and the changes of lifestyle and social interaction also need time to adapt.

As a direct impact of the pandemic, the pharmaceutical industry, in which a large number of medical workers cannot avoid contact with viruses and patients, suffers more psychological pressure. Patel et al. (2021) found that health workers reported more depression during the pandemic. Among them, front-line work, often watching COVID-19 news and excessive fear of COVID-19 have become statistically significant variables related to major depression. On this premise, it is very necessary for pharmaceutical companies to pay attention to employees' mental health from the perspective of sustainable development. As Correia Da Silva et al. (2022) found, the depression of medical workers in the pandemic is related to the lack of personal protection methods and equipment, because it may expose medical workers to the lack of support from their families and discrimination from others in the community.

Another interesting aspect is the patient's access to medication. Salahuddin et al. (2022) through searching the media reports on the websites of drug regulatory agencies in public and Republic countries, it is found that there are relevant reports of drug shortage in both developed and developing countries during the pandemic. Reported drug shortages range from simple essential drugs to drugs needed in intensive care. Awucha et al. (2020) taking Nigeria as an example, pointed out that during the COVID-19 blockade, 35.2% of patients with chronic diseases had difficulty in obtaining essential drugs, and 84.0% had chronic health deterioration due to difficulty in obtaining drugs. 77.7% of participants observed an increase in drug costs, and 73.9% of respondents with chronic diseases confirmed that their income had been negatively affected by the pandemic. Bookwalter (2021) also pointed out that COVID-19 led to an unacceptable shortage of drug supply in the United States. When the

news of drug shortage ferments, panic, fear and depression begin to appear. All this shows that the pandemic has brought difficulties to people's access to drugs.

Based on the above considerations, in order to more accurately explore the relationship between the sustainable disclosure of pharmaceutical companies and relevant stakeholders during the pandemic, this paper makes a deeper analysis on the changes in the disclosure contents of the Sustainability Reports of 10 sample companies.

We note that companies' sustainability reports have both identity and diversity in their responses to the pandemic. AstraZeneca AB has taken various sustainability actions in combination with COVID-19 in 2021. For example, in terms of "employee health and safety", AstraZeneca AB advocates the implementation of pandemic control measures, and sets up sites to vaccinate employees, strengthen hygiene and cleaning, and welcome employees back to work under the premise of caution and control. In addition, AstraZeneca AB proposes to strengthen the investment and reform of the health system, and believes that the strengthening of the health system can effectively combat the crisis caused by COVID-19 and other pandemics, solve the problems such as service interruption caused by COVID-19, and meet the basic needs of the population served. The specific measures proposed by the company are mainly reflected in increasing investment, establishing strategic partners with more stakeholders, and strengthening the training of health care providers. At the same time, AstraZeneca AB emphasised in the sustainability report that during the pandemic, the company's operation was carried out in a highly regulated environment to ensure the trust of relevant stakeholder groups in the company.

In terms of social sustainability, Novo Nordisk A / S included the unemployed affected by COVID-19 into the patient assistance plan and provided 90 days of free insulin for such patients. At the same time, the company also pointed out that in response to its "cities

changing diabetes" plan, some activities participated by the city included the response to COVID-19. This paper argues that this means that COVID-19 promotes the pharmaceutical company to achieve the goal of "access to medicines" to a certain extent, and increases the interaction with community patients through COVID-19, which is expected to improve the company's level in "implementation community activities".

In addition, Novo Nordisk A / S pointed out that COVID-19 stimulated the innovation of the medical industry and emphasised the necessity of breakthrough innovation, whether for infectious or non-infectious diseases. This is because COVID-19 substantially increases the social, economic and human burden of severe chronic diseases affecting hundreds of millions of people. In addition, the urgency of drug delivery also increased due to COVID-19.

Similar to AstraZeneca AB, H. Lundbeck A / S also pointed out the importance of the establishment of the health system. At the same time, the company also invested to enhance the organisational capacity of the company and conduct online training for employees on the basis of ensuring that employees are protected from the threat of COVID-19 transmission to the greatest extent. Since COVID-19 has brought great pressure to the company's operation activities, the company has also paid more attention to the psychological state of employees during this period. They hold recreational activities to enable employees to obtain a relaxed and healthy working state. In addition, H. Lundbeck A / S disclosed that the frequency of physical audit during the pandemic was affected and reduced, which may lead to the hidden danger of "business ethics".

In its 2021 Sustainability Report, Swedish Orphan Biovitrum proposed that the impact of the pandemic has exacerbated the isolation and difficult access of many people to treatment, and called on European policymakers to consider supporting the environment for promoting innovation in rare diseases in Europe. At the same time, they believe that the research and

development of rare disease treatment drugs should not be ignored because of the high risk of research and development. This paper argues that this is also the performance of enterprises to improve the level of "access to medicines" during the pandemic. During the pandemic, Swedish Orphan Biovitrum performed well in the research and development of Hematology and immunology. In addition, they also provide information tools and materials to COVID-19 related patients and health care personnel in the form of community participation. In order to ensure the safety of employees during the pandemic, the company encourages working from home, improves the workload of employees, and formulates flexible working hours and cautious protective measures for necessary travel.

Bayer Nordic SE strengthened the disclosure of "employee health and safety" in 2021 and reported in detail the data and situation of industrial accidents related to COVID-19. For example, one American employee died after being infected with COVID-19, which does not rule out that he was infected with the disease during working hours. In response to the pressure of the pandemic on global medical services, Bayer Nordic SE said that the company is actively expanding the use of products and services in the field of prescription and over-the-counter drugs. It is worth mentioning that Bayer Nordic SE pays special attention to the health crisis brought by the pandemic to farmers and the possible negative impact on food production. The company provided seeds and crop protection products to 230,000 small farmers in many countries, thus encouraging the increase of food production. In addition, the company has expanded the capacity of the health care sector through product and currency donations.

During the pandemic, Bayer Nordic SE participated in an alliance of pharmaceutical companies to combat crimes related to counterfeit products, and cracked down on illegal quotation and counterfeiting through a joint COVID-19 initiative. It can be seen that the

pandemic has strengthened the alliance of pharmaceutical companies in ensuring drug safety to a certain extent. In the audit of suppliers, Bayer Nordic SE encountered problems similar to H. Lundbeck A / S. Due to the impact of the pandemic, the audit of suppliers was affected and could not be completed as planned. In the report of Bayer Nordic SE, the impact of COVID-19 on human rights is reflected in the increase in the number of child workers. Due to travel restrictions, the company is unable to conduct sampling survey and timely supervision in some areas, so the number of child labour has increased or there is a lack of real figures in some areas. The report also mentioned the flexible office measures taken to ensure the safety of employees during the pandemic, as well as the concern for employees' mental health.

Novozymes A / S also emphasised its good handling of COVID-19 related changes in its 2021 report, especially in the survey related to "employee health and safety". In addition, the company specifically mentioned support for communities affected by COVID-19 and provided free COVID-19 vaccines to middle-income and low-income countries through UNICEF. In 2021, the employee turnover rate of the company increased from 8.7% in 2020 to 11.8%. Novozymes A / S believes that this is the low turnover rate in 2020 caused by the pandemic and the performance of economic recovery in 2021.

Leo Pharma, like AstraZeneca, understood the necessity of a secure health system and expressed concern about how the covid may affect and modify dermatology patients' access to treatment and care as well as their employees. They continued to take the essential safeguards to protect their employees' health and ensured the uninterrupted supply of drugs to patients at affordable rates by implementing a flexible working policy such as remote/hybrid working and also providing financial assistance to help them improve their home workstation.

They supported their employees by providing on-site COVID-19 testing, while other industrial locations conducted temperature screenings of employees prior to their arrival. All

these were put in place to demonstrate that they were willing to change policies to accommodate the new normal. They also promoted social learning by finding new ways to engage with colleagues and share knowledge across business units and boundaries. Furthermore, the LEO Pharma Academy promoted a collaborative social learning culture by holding virtual social learning sessions where internal and external experts shared best practices and case studies on significant projects and strategic subjects. This was done to keep employees engaged and allow them to connect online in order to safeguard their mental health while also increasing productivity.

The importance of sustainability was realised by Bavarian Nordic, which began to pay more attention to the social impact of its production. This is evident in their report, which shows that they are concerned about the environmental impact of their products, especially since they are currently working on the development of a new vaccine that will serve as a universal booster vaccine for SARS-CoV2 that will provide longer-lasting immunity without requiring adaptation to new virus mutations. Additionally, through enhanced manufacturing efficiency and the implementation of GRI-compliant procedures, the company hopes to drastically cut carbon footprints and greenhouse gas emissions while increasing renewable energy usage.

Furthermore, in response to the company's transformative shift to become a fully-fledged and global vaccination player in 2021, they updated their culture and values and improved employee involvement to demonstrate a degree of awareness and dedication to the company's purpose and plan. Similarly, they also embraced a flexible work strategy, allowing their leaders and employees to create unique agreements about how to plan and execute their work based on their respective roles. The company improved its digital attitude as well by utilising digital technology and solutions to improve productivity.

In response to the needs arising from COVID-19, Terveystalo responded quickly by

launching entirely new service solutions that provided risk assessment, testing and tracing. As part of their vaccination efforts, the company participated in the COVID-19 vaccination campaign by making the vaccine available to residents in the community they operate and to employees whose employers have partnered up with them for vaccinations.

Also, due to the increase in mental health problems resulting from the pandemic, Terveystalo created the Fokus special unit which provides psychological and psychotherapy services to occupational health service consumers and private customers through both physical and virtual channels, which has resulted in a 30% reduction in sickness absence and associated costs due to mental health problems.

Terveystalo introduced a consumer-oriented version of a new kind of health-care service based on Nightingale Health blood evaluations, a health index based on the blood evaluations, and digital health-care content. The technology of blood analysis has been utilised for over a million blood samples already, making it one of the most widely used medical research tools in the world today.

Additionally, they demonstrated their willingness to change by updating their operating model, tools, and indicators related to work ability management in 2021 in response to the pandemic. The operating model provides information to support employee work ability management, enables them to anticipate risks, assist in enhancing individual work ability and enable cooperation among employees to create a work environment that enhances the professional performance of individuals and the social and economic well-being of communities.

Despite the fact that the COVID-19 pandemic disrupted the supply chain and affected logistics and raw material prices, Orion was able to meet market demand for medicines and

ensure a reliable supply. The organisation closely monitored the evolution of COVID-19 and quickly adapted operations to address the pandemic, securing production operations and quality assurance through a variety of measures, including extensive remote work and minimal external visits to the production sites, as well as maintaining good hygiene.

They also identified risks throughout the supply chain and developed collaborative relationships with suppliers to reduce risks throughout the supply chain. Production and Quality Management were able to operate at full capacity and achieve a high level of service for the year thanks to these preventive measures. This was evidenced by the analysis we conducted on their sustainability report.

Among other things, Orion and other companies helped to ensure a safe transition to hybrid work (i.e. a mix of onsite and offsite work) by suggesting employees use face masks and providing them with staggered lunch times. A similar effort to Terveystalo was the implementation of a professional health care system for their employees that allowed them to ensure that production and laboratory operations continued as smoothly as possible. The occupational health care services, whose goal is to support employees' abilities to cope at work, has been shown to be helpful for employees working remotely, including the help of occupational psychologists. Managers also promoted employee well-being by hosting webinars on hybrid work leadership and encouraging teams to develop their own hybrid work principles. Their new e-learning programs, such as Business Understanding, were designed to enhance a feedback culture and lead to hybrid learning.

Based on the above analysis, we can confirm the impact of stakeholder theory on the sustainable reporting of pharmaceutical companies during the pandemic. The adjustment of the 10 sample pharmaceutical companies' Sustainability Reports to the pandemic revolved around the stakeholders in the industry. Most of the sample companies mentioned in the

sustainability report that through donation, improving R & D efficiency, organizing community activities and strengthening supply chain management. It is considered as a timely, accurate and effective means to improve the drug availability of patients in these ways, which is conducive to strengthening the relationship between pharmaceutical companies and relevant stakeholders from the perspective of patients. In addition, advocating online training for employees, setting flexible working hours and more comprehensive protective measures for medical workers are all wise actions to maintain the relationship between employees, managers, doctors, nurses and other stakeholders. A few companies propose to establish cooperative relationship with suppliers as a means to support the association between companies and suppliers by reducing the risk of the whole supply chain. On the other hand, this paper believes that compared with creating more benefits, the pandemic has promoted the pharmaceutical companies to emphasize and pay attention to the life and health of relevant stakeholders from the perspective of their own work, and raised the industry's attention to human rights. This is because the pharmaceutical industry has the particularity that other industries do not have. In addition, although the restrictions brought about by the pandemic on transportation and liquidity have objectively brought difficulties to the audit work of enterprises, 10 sample companies have emphasised in the sustainability report that they will resolutely carry out anti-corruption and other strategies during the pandemic, and the anti-corruption of enterprises will also affect the views of stakeholders from the perspective of social reputation (Álvarez Etxeberria & Aldaz Odriozola, 2018).

4.5 Nordic pharmaceutical companies' sustainability reports in relation to regulations and standards

The analysis' findings (environmental and social sustainability indicators) reveal that the level of application and implementation of the GRI guidelines and SASB standards has a significant and positive relationship with the level of application of these standards in the

preparation of sustainability reports. Furthermore, the data reveals that the Nordic pharmaceutical companies followed EU Directives by issuing sustainability reports in addition to annual reports (European Directive, 2014). Previous research (Turcsanyi & Sisaye, 2013; Gray & Milne, 2002) has looked into the function and effects of applying the GRI Standards guiding principles, but no consensus has been reached and this can be attributed to voluntary disclosure.

Furthermore, the GRI principles continue to play an important role in shaping specific strategic decisions and reporting processes (GRI, 2021). Companies can issue high-quality, well-detailed reports that are easily comparative because of a high level of implementation of these international rules. However, it is important to note that following GRI Standards is not only enough to provide high-quality reporting; it also takes into account the depth and level of detail with which these standards are followed (GRI, 2021). Furthermore, as companies participate in more widespread and broad stakeholder involvement, this significant feature of reporting principles may influence and drive the same standard setter to further integrate this important aspect in reporting principles over time. It is therefore evident from this analysis that GRI guidelines and local laws significantly and positively influence the preparation and publication of a social and environmental report.

5. Conclusions

COVID-19 has rapidly brought great impact to the world in a short time, which leads to more and more people's awareness of the importance of sustainability for survival. As an industry directly related to COVID-19, the sustainable development of the pharmaceutical industry will undoubtedly play an important role in the well-being of human society. However, the arrival of COVID-19 is a coexistence of challenges and opportunities for the pharmaceutical industry. Under the background of the attention of all walks of life and a large amount of capital injection, how pharmaceutical companies should make corresponding countermeasures and adjustments on the sustainability report to adapt to this huge change is a difficult problem faced by all pharmaceutical enterprises. Therefore, it is necessary to pay attention to the trend of sustainable reporting by pharmaceutical companies during the pandemic. We try to analyse the sustainability changes of pharmaceutical companies and the performance of the industry in the field of sustainability during this period, and analyse and verify the sustainability report from the perspective of legitimacy theory and stakeholder theory.

5.1 Conclusions and contributions

According to legitimacy theory, legitimacy is the relationship between an organisation's actions and values and the values of a broader society. Legitimation is the means by which institutional legitimacy is attained. Further acknowledging that legitimacy is evaluated subjectively rather than in accordance with societal values is the stakeholder theory. Similarly, Freeman et al. (2010) highlights that if stakeholders are open to talking and making concessions, they are more likely to support and approve of initiatives. This research demonstrates that these theories share comparable aims despite having different points of view, levels of precision, and resolutions. They seek to clarify how businesses ensure their continued existence and expansion. They all emphasise, however, that efficiency and financial

performance alone are insufficient to guarantee long-term existence.

The content analysis was structured so that it provided an overview of the quality of information in addition to analysing the quantity of information. The results of the content analysis provide a good picture of the current best sustainability reporting practices in Nordic pharmaceutical companies. Companies implement voluntary disclosure methods based on the legitimacy theory in order to maintain and expand consensus among the communities in which they operate. According to this viewpoint, businesses undertake communicative decisions and activities in order to bridge the legitimacy gap until they achieve the amount of legitimacy they desire. In circumstances where companies seek consensus through the publishing of information about not just financial but also social and environmental issues, the empirical analysis supports the legitimacy theory and stakeholder theory.

Sustainability reporting is becoming increasingly crucial in legitimacy processes, as it contributes to increased credibility and confidence with the local community and stakeholders. However, due to the social settings in which companies operate, legitimacy processes vary from firm to firm.

In addition, the mandatory reporting legislation introduced by the EU Directive in 2017 has provided companies with a framework used as a checklist to develop their sustainability reports. This approach has led to a more comprehensive evaluation of sustainability data and this is evident in the sustainability reports we analysed as we found that the change of its sustainable report length for a single pharmaceutical company is positively related to its sustainable disclosure level to a certain extent. In other words, when the length of sustainability reports of most enterprises increases compared with previous years, the probability of sustainable disclosure score increases compared with previous years.

In addition, from the two aspects of environmental sustainability indicators and social

sustainability indicators, the environmental sustainability level of pharmaceutical companies generally has a downward trend during the pandemic. This paper believes that the rise of medical demand and a large amount of capital injection during the pandemic led to the poor performance of environmentally sustainable development of pharmaceutical companies during this period, which is reflected explicitly in the increase in carbon emission, waste, and energy consumption. In contrast, pharmaceutical companies' social sustainable disclosure levels have been improved during the pandemic, which is more prominent in the nine standards for the pharmaceutical industry formulated by SASB. This paper believes that this is affected by the industrial characteristics of the pharmaceutical industry.

In this study, we contribute to the literature by discussing the relevance of stakeholder theory and legitimacy theory to sustainability reporting. Another contribution is our analysis of the motivation, extent, and quality of corporate sustainability reports in the Nordic context. Nevertheless, we found overlap in the application of both theories. This overlap can be investigated further by researchers. According to Gray et al. (1995a), the legitimacy theory and stakeholder theory are overlapping theories that differ in their levels of perception and resolution rather than competing theories. They state that treating them as two separate theories would be incorrect since they are different in their levels of perception and resolution as well as their levels of resolution. Thus, both stakeholder theory and legitimacy theory study organisations and social interactions, however, their methods for understanding these complex social phenomena are different.

Furthermore, our study contributes to existing literature by providing evidence of the possibility of analysing sustainability data through the adoption of a mixed structure of content analysis. This method aids researchers in overcoming the limitations associated with content analysis in determining disclosure quality.

5.2 Limitations

It is necessary for us to put forward the limitations in this study. Due to time constraints, only 10 Nordic pharmaceutical companies were considered in this study. Although these pharmaceutical companies occupy an important position in the Nordic pharmaceutical market, and as the world leader in the field of sustainable disclosure, Nordic companies are representative in the research of sustainable reporting, there are still many large-scale and regional pharmaceutical companies playing an important role in the pharmaceutical industry. Therefore, this study is lack of universality. If time is enough, the research scope can be extended to pharmaceutical companies in the whole Nordic region or in other regions, and even to companies in other industries, so as to explore the particularity of sustainable reporting in various industries. In addition, questionnaires and interviews can also be used as a method to collect changes in the sustainable development of enterprises. However, due to the time limit and the moral consideration of issuing questions without a complete moral review procedure, this method can be tried in the follow-up study according to the actual situation.

In the research, we analysed the specific contents and scores of the sustainability report based on the legitimacy theory and stakeholder theory, which is conducive to exploring the specific adjustment direction of pharmaceutical companies for the sustainability report during the pandemic. We found the evidence of the application of legitimacy theory and stakeholder theory in the sustainable reporting of pharmaceutical companies, but did not verify the necessity of this application for pharmaceutical companies. In other words, this study does not prove whether or how the theory brings benefits to pharmaceutical companies.

In this paper, the research on the particularity of sustainability reporting in the pharmaceutical industry is limited, which is partly due to the lack of comparison. COVID-19 has had an impact on all industries in the world, and such impact will be sustained. However, there are

few relevant studies on the impact of COVID-19 on the sustainability of other industries, so whether the pharmaceutical industry really shows some characteristics different from other industries in terms of sustainability under the influence of the pandemic only exists in theory, but lacks empirical evidence. Therefore, this paper only based on the existing theory to understand and analyse the adjustment made by the pharmaceutical industry in the sustainability report.

5.3 Further Research

It will take more time to understand the significance of COVID-19 to society, and the impact of a pandemic on all walks of life will become more specific and clearer over time. Therefore, in future research, the selection of analysis samples for sustainability report needs to be expanded to more years after the pandemic, so as to more comprehensively analyse and define the impact of the crisis on sustainability report.

Horizontal comparison of sustainability reports of different industries during this period will help to study the particularity of the industry. At present, the existing studies focus more on the impact of the pandemic on the economic situation of the industry, but do not conduct enough in-depth data analysis and discussion on the changes found in the sustainability of various industries during this period.

In addition, it is feasible to explain the enterprise sustainability report in a way consistent with the legitimacy theory and stakeholder theory. On this basis, whether or how these two theories create benefits for enterprises during the pandemic is also crucial for future sustainable development report research.

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Appendices

Appendix A

Rank	Country	Score
1	Sweden	61.2
2	Finland	60.7
3	Switzerland	60.4
4	Denmark	60.2
5	Norway	59.8
6	Iceland	59.8
7	Ireland	57.6
8	France	56.8
9	Austria	56.6
10	Germany	56.6
11	Estonia	56.1
12	Liechtenstein	56.0
13	Japan	55.3
14	Croatia	55.1
15	New Zealand	54.9

Excerpt from the global sustainable development competitiveness index (GSCI) ranking released by SolAbility in 2021.

Source: SolAbility (2021). Global sustainable competitiveness index. Available online: <https://solability.com/the-global-sustainable-competitiveness-index/the-index/> [Accessed 01 April 2022]

Appendix B

The top ten pharmaceutical companies with total assets in Nordic countries screened by ORBIS database		
Ranking	Company	Country
1	ASTRAZENECA AB	SE
2	NOVO NORDISK A/S	DK
3	SWEDISH ORPHAN BIOVITRUM	SE
4	H. LUNDBECK A/S	DK
5	BAYER NORDIC SE	FI
6	NOVOZYMES A/S	DK
7	LEO PHARMA A/S	DK
8	BAVARIAN NORDIC A/S	DK
9	TERVEYSTALO OYJ	FI
10	ORION OYJ	FI

Key:	SE - Sweden
	DK - Denmark
	FI - Finland

Appendix C

The indicators used for sustainability report scoring	
Environmental sustainability indicators	Reduce power consumption
	Energy intensity
	Conduct product lifecycle Assessment (LCA)
	Recycled materials
	Reduce water use
	Renewable energy
	Sewage discharge
	Biodiversity
	Harmful gas emission
	Reduce carbon footprint
	Greenhouse gas emissions
	Tree planting
	Supplier Environmental Assessment
	Reduce packaging
	Waste To Energy
	Reduce waste generation
Product environmental management	
Environmental protection investment	
Social sustainability indicators	Access to medicines
	Drug safety and side effects
	Safety of clinical trial participants
	Affordability and fair pricing
	Counterfeit drugs
	Ethical marketing
	Business Ethics (Corruption and bribery)
	Employee recruitment, development and retention (Employment)
	Engage employees (welfare)
	Diversity for employees
	Commit to employees
	Train and educate employees
	Employee health and safety
	Child Labour
	Forced or Compulsory Labour
	Public Policy
	Non-discrimination
	Customer Privacy
	Implement community activities
	Manufacturing and supply chain quality management
Engage employees	

Source 1: Global Reporting Initiative. (2012).

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Source 2: SASB Standards(2018). Biotechnology & Pharmaceuticals Sustainability Accounting Standard.

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Appendix D

Table showing the total number of pages for each year's Sustainability Report			
Company	Pages of Sustainability Report 2019	Pages of Sustainability Report 2020	Pages of Sustainability Report 2021
ASTRAZENECA AB	63	64	35
NOVO NORDISK A/S	8	9	9
SWEDISH ORPHAN BIOVITRUM	10	22	24
H. LUNDBECK A/S	22	32	42
BAYER NORDIC SE	72	96	126
NOVOZYMES A/S	19	11	19
LEO PHARMA A/S	35	14	28
BAVARIAN NORDIC A/S	20	20	42
TERVEYSTALO OYJ	21	22	50
ORION OYJ	59	72	77

Appendix E

Table showing the total Social and SASB scores for years 2019 - 2021							
Ranking	Company	Sustainability report 2019	Sustainability report 2020	Sustainability report 2021	SASB related standard score 2019	SASB related standard score 2021	SASB related standard score 2021
		Total Social Score			SASB Score		
1	ASTRAZENECA AB	48	45	43	21	20	19
2	NOVO NORDISK A/S	44	40	38	20	19	20
3	SWEDISH ORPHAN BIOVITRUM	35	37	39	12	14	15
4	H. LUNDBECK A/S	24	30	39	10	13	15
5	BAYER NORDIC SE	43	45	46	17	18	18
6	NOVOZYMES A/S	25	27	23	12	12	11
7	LEO PHARMA A/S	29	32	33	13	11	13
8	BAVARIAN NORDIC A/S	21	24	26	9	8	10
9	TERVEYSTALO OYJ	25	30	32	7	9	10
10	ORION OYJ	39	49	47	15	18	20
Total Score		333	359	366	136	142	151
Growth (year-on-year) % of Total Social Score		7,8%	1,9%				
Growth (year-on-year) % of SASB Score		4,4%	6,3%				