The United Nations Sustainable Development Goals as an Operationalized Framework for the Global Food and Beverage Industry and the Subsequent Financial and ESG Impacts

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

In 2015, the United Nations (UN) created Sustainable Development Goals [SDGs], a framework for better addressing sustainable development (Stafford-Smith et al., 2017). While these goals were originally intended for use by government, the urgency for global sustainable development has prompted business and others to utilize these goals. Within the context of this thesis, this poses the problem of how to effectively operationalize the SDGs within business, specifically the food and beverage sector. The primary problems addressed within this thesis are how to better integrate the SDGs within the food and beverage sector and the impacts on financial gains and ESG ratings.

The literature review reviewed the background of sustainable development and the SDGs. It then explored the global food and beverage sector, specifically, the significance to society and the economy, the environmental impacts in connection to operations, and how sustainability is currently being operationalized within the sector. It also looked at how the sector compares with other sectors with regards to sustainability and specifically the SDGs. Connections between finance and ESG relate to the food and beverage sector were also explored. Finally, Dynamic Capabilities is discussed and argued as appropriate theory to help explain the degree to which the SDGs are implemented by businesses within the sector.

Following a mixed method approach, data were collected from 62 companies, representing three food and beverage sectors and eight sub-subsectors. Data for this sample included corporate reports from 2016-2019, as reports prior to 2016 did not include reference to the SDGs and up to 2019 (the most recent year of corporate reports being available). Financial and ESG data were retrieved through Compustat.

The results of the regression analysis showed that SDG integration yielded an increase to financial gains as well as a slight increase in ESG ratings. This furthers the academic conversation surrounding SDG operationalization in business and provides evidence in support of the business case for doing so. By explicitly showing that SDG integration can improve food and beverage companies' financial gains and ESG ratings, the contribution to practice is shown though these tangible incentives.

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Table of Contents

List of Tables

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List of Abbreviations

SDG – Sustainable Development Goals
GRI – Global Reporting Index
EMS – Environmental Management System
CSR – Corporate Social Responsibility
EBITDA – Earnings Before Interest, Taxes, Depreciation, and Amortization
UN – United Nations
ESG – Environmental Social Governance
WRDS – Wharton Research Data Services
CUSIP – Committee on Uniform Securities Identification Procedures
MSCI - Morgan Stanley Capital International
SPSS - Statistical Package for the Social Sciences

Introduction

Since their introduction of the SDGs in 2015, many companies, along with many governments, have slowly introduced these goals into an operational framework. While these frameworks implementation has been more closely studied at the government level, and, additionally, within specific industries and sub-industries, operationalization has been less studied within the context of the global food and beverage industry, creating a significant research gap and a problem within the industry. Despite this research gap, however, many companies within the industry are starting to implement the SDG framework. But without significant, credible academic research supporting implementation, some companies may be hesitant to implement the SDGs, as the benefits are not as clearly seen. This research addressed this problem, aiming to fill the knowledge gap and ultimately giving companies within the global food and beverage industry an academically supported incentive to pursue further integrating of the SDGs into an operational framework. A greater understanding of SDG implementation in the food and beverage industries can address a sustainability problem within the industry and allow for further sustainable development, ultimately setting a foundation for a more sustainable landscape for the global food and beverage industry.

This research poses four main questions:

1. *Are the UN SDGs are being incorporated into the corporate strategic plan of global food and beverage companies?*

2. *To what degree are the UN SDGs being incorporated into the corporate strategic plan of global food and beverage companies?*

3. *Is there a causal link between integrating the UN SDGs and overall financial gains in the global food and beverage industry?*

4. *Is SDG integration in the global food and beverage industry reflected in overall ESG ratings?*

In answering these questions, this research contributes to a better understanding of the effect of SDG integration on the overall performance of firms within the food and beverage industry.

The following section reviews the relevant literature to contextualize this research.

Literature Review

The literature review is laid out as follows. First, this review presents background on sustainable development, the SDGs, and their applications to the global food and beverage industry. It then provides a brief background of the global food and beverage industry, its environmental impacts, and the application of sustainable development in the industry. The chapter also discusses the supporting conceptual theory to help conceptualize the research and methodology, the correlations between sustainability and financial returns within the literature. and last, the research gaps and significance of this research.

Background of Sustainable Development

Initially developed for nation-states as a pathway for economic growth that simultaneously encouraged positive social and environmental outcomes (Brundtland, 1987), *Sustainable development* is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, pg. 43, 1987). One of the most common frameworks for sustainable development, heavily discussed throughout the literature, is the United Nations SDGs. The SDGs are comprise of 17 goals and 169 targets to increase sustainable development by 2030 (Pradhan et al., 2017). The SDGs will be discussed in further detail in the following sections.

After the emergence of sustainable development as an organizing principle the concept of corporate social responsibility (CSR) became a way for organizations to realize economic growth and positive social and environmental outcomes. Currently defined as. . .the concept had been developing since the early 1950s (Carroll, 2009), following the general timeline of sustainable

development as a whole. Since its creation, the theory of CSR has heavily evolved. One core

concept is the triple bottom line (Carroll, 2009), referring to goals for environmental, social, and

economic sustainability (Jackson et al., 2011). This concept creates a framework of best practices

that organizations, both private and public, can follow. Similar to other sustainability concepts

and frameworks, the concept of CSR is commonly used in conjunction with other sustainability

concepts discussed in the literature to create stronger sustainable development practices. It is thus

important to understand CSR in relationship to other frameworks, such as the SDGs.

Another well-known sustainable development framework for corporations is the Global

Reporting Index (GRI), which focuses explicitly on sustainability reporting (Fernandez-Feijoo et

al., 2014). With its focus on communication and transparency with stakeholders, the GRI

framework aligns with CSR principles (Fernandez-Feijoo et al., 2014). While these two primary

frameworks can be used to implement sustainability in corporations, they are not universally

applied. Many companies use individually tailored frameworks, perhaps along the lines of a

personalized Environmental Management System [EMS] (discussed below), or a combination of

other frameworks.

Another key management practice that companies use to track, report, and implement

their sustainability is an EMS. An EMS is a framework that enables firms to internalize their

environmental sustainability by tracking, recording, implementing, and auditing their actions

(Merli et al., 2016). These internal checks allow firms to better align with their stakeholder's

values and to be actionable and transparent about these values (Merli et al., 2016). Specifically,

EMS is an internal environmental management system designed within companies specifically

tailored to their needs, although this generally leaves the degree to which sustainability practices

are being implemented. The downfall of EMS is it is generally not standardized within

industries; therefore, the effectiveness of this framework differs across individual companies as well as between industries. As a result, a push for EMS standardization, the International Organization for Standardization (ISO) 14001 was created in order to grant firms third-party certification for their environmental management (Merli et al., 2016), which can add legitimacy to a firm's EMS as well as provide standardized guidelines for further improvement of a firm's environmental sustainability. While the use of EMS is not the primary focus of this research, understanding its role can provide clarity about sustainable development's applicability for industries and individual firms.

Another important sustainability concept commonly used within the workplace is Environment, Social, and Governance (ESG). ESG is commonly used in conjunction with other concepts such as CRS, EMS or GRI. ESG criteria are a set of standards generally used in financial and corporate contexts to describe the degree of environmental and social sustainability pertaining specifically to decision-making and reporting (MSCI, 2020b). ESG implementation can vary depending on the context, and can include a varietyof different metrics for measuring ESG that correlate with industry-specific key issues such as climate change, human capital and labour management, corporate governance, gender diversity, privacy, and data security (MSCI, 2020b). The evolution of ESG as a concept has followed the general history of sustainable development, as described previously, with ESG use being traced back to the 1970s (Friede et al., 2015). Throughout the literature, the importance of ESG performance in firms is discussed, with many scholars arguing the business case of ESG implementation and the resulting financial gains (Friede et al., 2015). There is evidence of ESG implementation into mainstream business. Friede et al. (2015) observed, for example, that 50% of the total global institutional assets base— are currently managed by Principles for Responsible Investment (PRI) signatories", an extension

of ESG specifically for sustainable financial investing (p. 210). While this shows a level of corporate commitment to ESG implementation in the financial world, many scholars argue that this level of commitment is not sufficient (Friede et al., 2015). Within the literature, many studies commonly link ESG to financial firms and investing, with many sources showing the positive links between ESG, responsible investment, and overall financial gains (Eccles & Viviers, 2011). That being said, there is evidence from other literature that ESG can be applied in other corporate contexts. For example, ESG is commonly used in conjunction with other sustainability frameworks, such as the SDGs and GRI described previously, to be more applicable and actionable in other industries (Wilburn & Wilburn, 2020). ESG will be discussed further throughout the literature review with more specific applications to the food and beverage industry.

Background of UN SDGs

Although operationalizing frameworks such as CSR, EMS, and GRI is an important element of creating sustainability within an industry, these structures can fall short when implemented on their own. SDGs can serve as a response to these shortcomings, incorporating elements of each of the previous frameworks into incorporate elements of each of the previous frameworks into a more comprehensive sustainability framework. Using the SDGs as a framework for sustainable development within industries allows for a more streamlined approach, making sustainability implementation easier to understand, follow and operationalize. Furthermore, utilizing the SDGs is seen as furthering CSR and the research and practices around it (ElAlfy et al., 2020). As sustainable development progresses and the research and tangible operationalization of the sustainable development concept evolves, frameworks such as CSR are

6

being developed to fit into a wider scope. The SDGs can help fill gaps in these frameworks. The SDGs are a powerful tool that can be used to create frameworks for base sustainability and ESG initiatives at both the government and private industry levels.

Despite the potential of the SDGs, critiques of this tool exist in the literature, including its flaws. One broader objective of the SDGs, global economic development, has come under particular scrutiny, with critics pointing to the variances in economic development in different countries and how these differences can potentially contradict other SDGs (Death & Gabay, 2015). To this end, a theme seen within the literature is that economic growth and poverty eradication in developing parts of the world may come at a sacrifice of other goals, such as climate change, based on the current resources, consumption, and opportunities in these regions (Death & Gabay, 2015). Depending on their current opportunities, not all countries and governments may be able to align with each SDG and the entire sustainable development framework. Similar ideas are discussed by other scholars in the literature, highlighting that global economic growth is dependent on resources, which can contradict the aims of other SDGs (Hoffmann & Paulsen, 2020).

A second critique is the lack of understanding and research of the SDGs and their operationalization within industries. A second critique is the lack of understanding and research of the SDGs and their operationalization within industries. In order for the SDGs to be successful at a government level, the global economy cannot operate business-as-usual (Spaiser et al., 2017). Industries must implement the SDGs in order to achieve global sustainability (Spaiser et al., 2017). Thus, governments and businesses must work together in utilizing this framework to achieve the common goal of sustainability. This synergy between governments and industries is heavily outlined within the literature. By outlining the deficiencies of implementing the SDGs

only at the government level, such critiques further emphasize the knowledge gap and speak to the need for more research on SDGs implementation in industry, like this work Current research on the adaptation of the SDGs into industry has not been fully expanded to many industries, including the food and beverage industry. Taking a broader scope on implementing sustainability in industry would suggest that additional frameworks like the CSR and ESG principles can support the implementation of the SDGs. CSR and ESG are more directly focused on sustainability within business. As such, they are useful tools for integrating the SDGs as a sustainable development framework into businesses. CSR and ESG principles allow the SDGs to be tangibly introduced into business plans and decision making.

The SDGs are applicable at many levels of the food and beverage industry, including in the corporate space including "planning, implementing, measuring, and communicating [a business's] SDG efforts" (Rosati & Faria, 2019, p. 588). Using the SDGs as a framework for corporate sustainability provides a stronger sense of legitimacy and gives direction to how and why sustainability initiatives are conducted (Rosati & Faria, 2019). The application of SDGs in industries can also be used in conjunction with other frameworks such as GRI, for example. These applications are important to understand when analyzing the financial impacts of SDG integration.

Applications to the Global Food and Beverage Industry

When looking at and how the SDGs can be directly applied to the food and beverage industry and the sub-industries within it, it is important to note how the SDGs have been previously applied to other industries and to assess which industries are leaders in their operationalization. Framing industry integration of the SDGs across many industries helps to give further context for the food and beverage industry's operationalization of the SDGs as part

of its sustainable development. An example of an industry leader is industrial manufacturing (United Nations Development Programme, 2017). Other examples of leading industries and sub-industries include banking, specifically with regards to sustainable finance, and electrical equipment and engineering, specifically in terms of renewable energy sources (Todd, 2020). Included in the literature is the food and beverage industry. Although this industry is not necessarily a top leader, it is also not lagging in its efforts towards sustainable development, specifically in its use of the SDGs.

Many of the SDGs apply directly and indirectly to the food industry. In fact, the SDGs specifically include sustainable food landscapes as a critical element of global sustainable development. For example, food sustainability is specified in SDG 2 – Zero Hunger (United Nations Development Programme, 2016), which the utilization of this goal speaks to the significance of the food industry in sustainable development. Some examples of other SDGs that may correspond more regularly to the food and beverage industry are 6 – clean water and sanitation; 8 – decent work and economic growth; 9 – industry, innovation, and infrastructure; 12 – responsible consumption and production; 13 – climate action; 14 – life below water; and 15 – life on land. However, other SDGs may apply (United Nations Development Programme, 2016).

Background of the Food and Beverage Industry

The food and beverage industry includes all production, manufacturing, and distribution of foods and drinks. This industry can range from agricultural production and food and drink processing and manufacturing companies to restaurants and fast-food chains (SANA, 2016). While it is hard to identify the size of this industry specifically, it is estimated that the global food and beverage industry will reach an estimated $20 to $25 trillion USD by CAD (Frost & Sullivan, 2015). In Canada, the food industry comprises a large percentage of economic activity,

9

accounting for 22% of the annual gross domestic product (GDP), or around $71.8 billion CAD annually (Statistics Canada, 2019). Thus, food has a significant presence in the Canadian economy. In addition, the Canadian food industry is socially significant as it provides sustenance and employment for Canadians. It is estimated that roughly 2.3 million Canadians are employed in a sector relating to the food industry, such as agriculture, food service, food processing, and food retail sectors (Statistics Canada, 2019).

Environmental Impacts of the Food and Beverage Industry

In the context of sustainability, it is important to understand the impacts of the food and beverage industry, more specifically, the environmental impacts. The food and beverage industry has many associated environmental impacts (Davies & Konisky, 2000), and throughout the literature, six primary points of impacts from the food industry are noted: end-of-life disposal, use, packaging, logistics, industrial processing, and agricultural practices (Notarnicola et al., 2017). For example, the fuel required to import and export food products is associated with high greenhouse gas emissions, as many fast-food chains do not solely use locally or domestically produced goods (Nemecek et al., 2016). In addition to transportation-related emissions, significant emissions are associated with the production of meat. For instance, cattle farms produce high quantities of potent greenhouse gases, such as methane (Nemecek et al., 2016). Furthermore, the food industry is the number one consumer of freshwater, specifically due to the large quantities of freshwater required to sustain the agricultural industry (Turral et al., 2011). Another negative environmental impact of the food industry is waste production, which can include organic food waste or waste associated with packaging and delivery (Nemecek et al., 2016). This waste production is exponentially more significant at the endpoint in the food

10

production cycle, where it is directly applicable to the fast-food industry. Much of this waste, whether it is organic food waste, single-use plastic packaging, or recyclable items, often is incorrectly disposed of and ends up in landfills. While many other negative environmental impacts are associated with the food industry, transportation, meat production, water use, and waste are the primary ones. Many studies have given concrete, actionable recommendations to reduce some of these negative environmental impacts in the fast-food industry (Sala et al., 2017). These recommendations often come in the form of best practices that can be used as indicators to assess the overall sustainability of the industry, practice, or company-specific operations (Sala et al., 2017).

Sustainable Development Implementation in the Food and Beverage Industry

In more recent years, the food and beverage industry has begun to implement sustainability and sustainable development in various ways, and the benefits from incorporating sustainable practices by the industry and the individual companies within it has been documented throughout the academic literature. Many food and beverage companies have begun to implement corporate sustainability actions to improve brand image and thus helped these companies gain a competitive advantage and increase their market value (Arcese et al., 2015). Aside from financial gains, sustainability in the food and beverage industry, specifically CSR practices, is also valuable because it provides a stronger basis for food safety and regulations and stakeholder governance, including ethical concerns, such as labour rights and animal welfare (Engida et al., 2018). Sustainability and CSR practices provide further value in the industry's supply chain management processes (Yakovleva et al., 2012).

Sustainability in the food industry is essential, but the overall sector tends to lag behind the general timeline of sustainable development. Despite the benefits of sustainable development, a few key barriers to implementation remain. Long et al. (2018) describes some of these barriers, specifically at the higher levels of management in companies. They include the lack of strong leadership for implementing sustainability, lack of motivation to change procedures within the company, unwillingness to change, and the inability to financially justify these changes in view of the long-term benefits (Long et al., 2018). Another barrier to incorporating sustainability into food and beverage companies is the technical aspects that need to be met. For example, in supply chain management, certain criteria need to be met before sustainability can be incorporated, and if new sustainable practices do not allow these criteria to be met, the overall sustainability practices will be unsuccessful (Bloemhof et al., 2015). Examples of these barriers could include limitations for local product procurement due to seasonality, requirements for conditioned transportation for products that need to be maintained at a specific temperature for food safety, and raw product availability due to variance in agricultural yields (Bloemhof et al., 2015). Bloemhof et al. (2015) argues that some of these limitations can be met by increased environmental management systems (EMS); however, some companies may still find these limitations to be significant barriers (Bloemhof et al., 2015).

Supporting Conceptual Theory – Dynamic Capability Theory

In order to contextualize the research and to help explain why the food and beverage industry is moving to include sustainable development into its corporate strategy and why the SDGs may be a good tool to use, it is important to understand the theories that explain the behaviours and trends that led to the corporate sustainability being studied. Doing so helps to

link the increasing calls for global corporate sustainability to individual firms' management behaviours. *Dynamic Capabilities* is an extension of resource-based theory, explaining why both internal and external shifts cause a company to adapt its strategy to gain a further competitive advantage (Teece et al., 1997). The push for firms to include more sustainable development practices within their strategies and operations—which can come from both internal and external pressures—are leading firms to incorporate these initiatives into their management. As a frame for this research, dynamic capabilities theory will help to explain these trends and changes, clarify the conclusions of previous scholarly work, and give further guidance as well as an evidential foundation for this research. The following sections will further explain dynamic capabilities theory, how this will be applied to the research, and clarify its significance to the overall research questions and research methodology.

As previously mentioned, dynamic capabilities theory describes how dynamic resources from a firm's external environment change its ability to adapt its capabilities to gain or further their competitive advantage (Teece et al., 1997). Dynamic capabilities theory is specifically an economic theory to help explain internal behaviours within firms as they adapt to changing environments and the availability of specific resources to further their financial success (Teece et al., 1997). A hallmark of dynamic capability theory is the notion that improved effectiveness can be developed through three primary mechanisms: tacit accumulation of experience, knowledge accumulation, and knowledge codification processes, allowing firms to be able to make sense of sustainability and codify it in a way that is operationalizable Zollo & Winter, 2002). This concept explains the evolution of a firm's internal strategies in response to changing market conditions and availability of resources (Teece et al., 1997). Examples of these strategy adaptations may include product development, decision-making changes, changes to

organizational behaviours, or updates in technology, and marketing (Eisenhardt & Martin, 2000). However, the value created from these strategic changes comes from the utilization and configuration of resources rather than directly from the capabilities themselves (Eisenhardt & Martin, 2000).

Although dynamic capabilities theory is a useful tool for explaining behaviours within firms, some criticism of the theory exists throughout the literature. One of the main criticisms of this theory is that it may not truly explain how firms gain—and sustain—a competitive advantage (Eisenhardt & Martin, 2000), since strategy changes may be easily imitable and substitutable in the long run. Furthermore, changing capabilities and resources may create very similar responses among competition firms, making the ability for a single firm to differentiate itself within a competitive industry challenging (Eisenhardt & Martin, 2000).

Theories can sometimes be abstract, so it is also important to see how they are applied in practice. Dynamic capabilities theory can be applied in various contexts, but for the current research topic, the theory will help to assess sustainability in the food and beverage industry. Dynamic capability theory appears in one of its primary arguments, which describes the evolving idea of sustainability as a dynamic capability itself: as changing external factors that firms must respond to in order to sustain their success (Amui et al., 2017). The idea of sustainability is a quickly changing paradigm in many societies across the globe, and its growth is fueling the necessity for changes from organizations. This understanding of sustainability fits within the definition of a dynamic capability, therefore implying that changes to organizational behaviours and strategies within firms are needed to adapt and sustain a firm's competitive advantage (Amui et al., 2017).

There are also examples throughout the literature that discuss dynamic capabilities and sustainability within the food and beverage industry specifically, furthering the idea that sustainability is itself a dynamic capability and that specific behaviours pertaining to the food and beverage industry can adapt. For example, in the context of supply chain management, integrating sustainability as a dynamic capability allows for food and beverage companies to gain a competitive advantage through increased market share (Beske et al., 2014). A good example of this adaptation is food and beverage companies' alteration of their supply chain management to procure fair trade and organic products (Beske et al., 2014). By enticing a new audience of consumers that prefer these more sustainable food options, these companies further their competitive advantage. If their competitors are not following suit, or perhaps not adapting as well, a firm can increase its competitive advantage by meeting the specific needs of new and growing demographics. The procurement of fair trade and organic products is only one example of how this theory can be used specifically within the food and beverage industry to help explain the changing strategic behaviours within a firm, but it creates a motivation for this specific research and gives deeper meaning to the larger phenomenon of corporate sustainability implementation seen within this research.

While numerous studies link the general concept of sustainability to the food and beverage industry, there are a limited number of articles directly relating the SDGs to the food and beverage industry. This lack of research further speaks to overall knowledge gap previously addressed in the introduction and why this knowledge gap exists and needs to be filled. That being said, a handful of sources have explored the problem, with many of these studies sharing similar conclusions A good example of an analysis of financial gains resulting from sustainability in the food and beverage industry is Weber and Saunders-Hogberg (2020), who

link the utilization of sustainability to the food and beverage industry, specifically in the context of water management. While this research speaks more directly to water management practices, some key takeaways relate to financial gains in the food and beverage industry. This research specifically shows how the SDGs can be directly applied to the food and beverage industry and speaks to the degree of financial success that the SDGs have. Insights like this, which show that the SDGs can have positive effects on sustainable development within the food and beverage industry, give an evidential basis for the current research.

Sustainability and Financial Returns

While the previous work of other scholars provides evidence of SDG adoption and financial gains, there are significant differences in the topical focus of each work. However, the methodologies used can be a key takeaway. In particular, research relating to SDG measurement and financial data offers an evidential background for a methodology to be built upon. Some scholars have assessed SDG adoption and integration by measuring SDGs by targets and indicators outlined by the UN (Fraisl et al., 2020). Other scholars have assessed sustainability implementation categorically with a matrix to measure the degree to which these actions are being implemented (Saunders-Hogberg, 2015). Learning previous scholars' approaches to methodology in the context of their topics is an important step for this research, as it provides a basis for the creation of new methodologies that can address and answer the proposed research questions. Such methodologies will ultimately create space for evidence that links the successful implementation of the SDGs in the food and beverage industry to the overall financial performance of firms.

Research Gaps and Significance

This analysis of previous literature on sustainability provides evidence for a research gap pertaining to sustainability-related financial gains within the international food and beverage industry. Few academic sources have analyzed the topic, with an even more glaring gap when investigating the implementation of the UN SDGs. While some previous research has touched on these topics, there is a gap in academic sources that link sustainability, financial gains, and the SDGs. This knowledge gap leaves room for the current research, ultimately giving further insights into the efficacy of the SDGs and financial gains within the food and beverage company. Additionally, the gap gives room for applied research in other industries, further expanding knowledge in this area.

In addition to the previously mentioned knowledge gap linking sustainability, financial gains, and the SDGs to business from its traditional use in government. Greater understanding is needed regarding the deficiencies of the SDGs' operationalization in this context and why previous frameworks have fallen short. Research into such operational deficiencies can be expanded to consider SDG implementation in the global food and beverage industry. There is room to create an outline of a framework to be used in this industry, which would better address these potential deficiencies in the operationalization of the SDGs, to allow for more meaningful sustainable development within the industry. Finally, filling this research gap can allow for a better understanding of financial and ESG incentives for food and beverage companies to integrate the SDGs into their corporate strategy and decision-making processes.

Research Questions

When proposing this research, a few key research questions were asked in order to address the topic and the knowledge gap. These research questions were formulated in the initial research proposal, but were pivoted throughout the research process, including both during the review of the literature and the development of the methodology. While many questions arose, they were condensed into four primary research questions:

1. *Are the UN SDGs are being incorporated into the corporate strategic plan of global food and beverage companies?*

2. *To what degree are the UN SDGs being incorporated into the corporate strategic plan of global food and beverage companies?*

3. *Is there a causal link between integrating the UN SDGs and overall financial gains in the global food and beverage industry?*

4. *Is SDG integration in the global food and beverage industry reflected in overall ESG ratings?*

In answering these questions, this study aims to link corporate sustainability initiatives directly to the SDGs and determine whether a correlation exists between SDG integration and financial growth or gains.

Methodology

To answer the proposed research questions, a robust methodology plan was needed. This methodology was primarily developed using evidence from previous studies on similar topics. The primary influence for this methodology was Saunders-Hogberg's work on sustainability in the food and beverage industry (Saunders-Hogberg, 2015). In order to create the methodology plan, a few key questions needed to be posed. First, what indicators--- including financial indicators, ESG indicators and SDG indicators-- should be used to measure sustainability integration and success? Second, what databases were needed. These parameters and metrics were decided based on previous, successful studies. Second, what databases were needed in order to access the data? Third, how will the data be collected, including what key search terms would be used in order to collect the data? Fourth, how will the data be recorded? This discussion about data recording includes questions about what the coding process would be, most specifically for the qualitative data recorded for the SDG data. Last, how will this data be analyzed? Each of these questions will be methodically described in detail in the following section.

The methodology used in this work was a mixed-methods research design and involved combining three categories of data: SDG, financial, and ESG data. This research method was based on the pragmatic worldview paradigm and directly relates to a mixed-method approach (Creswell, 2014). Using a mixed-method research approach allows for multiple categories of data, such as quantitative financial data and qualitative SDG data, to be synthesized and allows the researcher to make conclusions between and within different types of data (Saunders-Hogberg, 2015).

Sample Collection

To curate the sample size for this study, a rigorous methodology was implemented. First, MSCI databases, including Universe A, D, and E, were manually searched and then cross-referenced with other scholars' data (e.g., Saunders-Hogberg, 2015). This cross-referencing yielded a result of 124 companies. To obtain an accurate sample, this list was then cross-referenced with the Wharton Research Data Services (WRDS) database. This step involved running a database-wide search on WRDS Compustat IQ and looking for Global Industry Classification (GIC) codes. GIC codes were then used to refine and sort the data in Excel. Eight GIC codes corresponded to the food and beverage sector and the subsequent sub-sector GIC codes. These GIC codes corresponded to the following categories: packaged foods and meats; agricultural products; soft drinks; distillers and vintners; brewers, hypermarkets and super centers; food retail; and food distributors. These GIC codes were found using the MSCI global industry classification standard methodology (MSCI, 2020a) and corresponded with other scholars' standards for GIC codes relevant to the food and beverage industry (e.g., Saunders-Hogberg, 2015). Specifically, the tobacco sub-sectorwas not included. Although the sector is part of the food and beverage industry as outlined by MSCI, the category did not apply to this specific research. The GIC codes were then used to create a more extensive list of relevant food and beverage businesses. This list of food and beverage companies was then cross-referenced on MSCI data using the search feature in Excel. This last step provided a list of 62 companies that matched the desired criteria for the study.

Data Collection

The first goal of data collection was to acquire the financial data for each of the sample companies, as described in the previous step. The financial data was found on WRDS Compustat. Within Compustat, a majority of the companies, primarily the North American data, were collected under Compustat IQ North American annual updates, using company tickers. The remaining companies, primarily international companies, were searched under Compustat Global Daily using CUSIP codes and the company codes lookup function. The variables collected corresponded to those collected by other scholars.   The specific variable being used for financial metrics was Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) were used for a financial metric. ESG metrics included overall score, environmental score, social score, and economic score to fully encapsulate the ESG categories essential for the analysis. Several SDG metrics were also collected and used in the analysis, which will be more closely outlined in the following sections.

To gain further insights into each company's ESG performance, Refinitiv by WRDS Compustat was used. Within this data search, many metrics were pulled, with the primary metrics being overall ESG score, environmental score, social score, economic score, and governance score. The company scores are determined by Refinitiv and entered into the database to be publicly available. In order to access these results company tickers and Committee on Uniform Securities Identification Procedures (CUSIP) codes, along with the desired metrics, were entered into the database search, to pull each of the company's ESG ratings. Unfortunately, not all scores were available in Refinitiv; those that were unavailable were entered into the master excel spreadsheet as missing variables. For a few of the companies, environmental and/or social scores were missing. In addition, ESG ratings were not available for every company, with

five of the companies in the sample missing Refinitiv ESG scores. These missing scores were recorded as missing values in the data analysis.

Operationalizing the SDGs

The next step of the data collection was to collect SDG metrics. In order to collect the SDG data required, a variety of different sources were used, including publicly available sustainability reports, financial reports, integrated reports and information on company websites. These reports were collected for each year, from 2016–2020, stretching over a five-year period of time in order to see industry-wide trends on SDG implementation.

The SDG metrics used for analyzing company documents included the following information:

- company names;

- whether a sustainability report was available for that year;

- whether SDGs were mentioned in any of the documents from companies (SDG mentions);

- which specific SDGs they mentioned with metrics for each of the 17 SDGs

- the total count of SDGs that were included in the collected documents;

- whether sustainability goals mentioned in documents were linked to practice/actions (goals to practice);

- whether specific SDG indicators were linked to actions (indicator to practice).

The goal of these metrics was to assess whether or not a company was implementing the SDGs and to what degree they were implementing them. The data was recorded using a binary coding method, with 0 meaning "no" to a metric, and 1 meaning "yes" to a metric. It was decided

that it would be most accurate to record the data using a binary coding system in order to turn

qualitative data into quantitative data, which is commonly used in a mixed-methods approach

(Creswell, 2014). In order to assess the SDG data, a keyword search was conducted using the

search bar function within Adobe PDF reader. The keyword dictionary used was short and

consisted of the words "SDG" and "sustainable development goals." This search allowed for the

passages of texts containing information about the SDGs to be located. Once the text passages

containing these keywords were identified, the paragraphs and pages were manually analyzed to

better understand the context in which the keywords were being used and to ensure that they

were positive mentions. These paragraphs were then used to accurately document and code each

company and their reports in the data recording spreadsheet, as outlined above.

Analysis Framework

In accordance with a mixed-methods approach, the multiple types of data collected

needed to be recorded in a cohesive manner. As previously explained, all of the types of data,

specifically the SDG data, were converted into quantitative data, to allow for a cohesive analysis.

In order to combine each category of data—ESG, financial, and SDG—a master Excel

spreadsheet was created. This spreadsheet combined the financial data retrieved from WRDS

Compustat, ESG data from Refinitiv Compustat, and collected, binary SDG data. In addition to

these categories of data, the collected MSCI data was added to this master spreadsheet as control

variables in the data analysis. While a master copy of all of the data variables was collected, a

cleaned version was also created. This version included only the exact variables that would be

used in the final analysis. This cleaned version of the data was then used in the Statistical

Package for the Social Sciences (SPSS), by uploading the exact variables to be analyzed.

In addition to this file, a few categories were added. One goal of the analysis was to. look at independent variables, such as SDG integration, and dependant variables, such as EBITDA with a time lag, in order to see changes over time. Specifically, viewing these variables with a time lag would help to determine if and when SDG integration had a more profound and significant impact on financial gains. The time-lagged data was prepared in Excel by manually lagging the financial data, specifically the selected variable EBITDA, by one, two, three, and four years. The data was then uploaded directly to SPSS.

Data Analysis and Tests

To produce the desired results with this collected data, a statistical analysis was conducted using SPSS statistical software by IBM. The collected data and refined version of the data with the specific metrics to be used were uploaded into this software. The first step of this analysis was to create a series of tests that would produce the results needed to answer the proposed research questions. These tests generally focused on descriptive information of the variables, correlations between variables, and linear regressions between dependent and independent variables, specifically including time lags as well. Because the data were collected with dates ranging through a four-year period (2016–2020), dates were fixed in Excel in order to tie data to a specific year and thus show changes over time. The tests were completed using Excel's tool bar functions for descriptive statistics, bi-variate correlations, and linear regressions. Within all of the linear regressions, a control variable was used in order to ensure that the results were not skewed. The variable selected was "employees," in order to account for firm size.

The Sample

This section will include all of the companies in the final sample, along with the sub-sectors that they align with. From this initial sample of 124, there were 62 companies included in the final sample. Within the final sample there were three sectors (Food and Staples Retailing, Beverages and Food Products) and eight sub-sectors (Packaged Foods & Meats; Agricultural Products; Soft Drinks; Distillers & Vintners; Brewers; Hypermarkets & Super Centers; Food Retail and Food Distributors). These categories were defined by MSCI as industries and subindustries in the greater, global food and beverage industry (MSCI, 2020a). The breakdown of the number of companies in each category and sub-category can be seen below in Table 1. It is important to note that the MSCI categorization of the food and beverage industry includes tobacco products, but this industry was omitted, as it did not directly align with the desired research (Saunders-Hogberg, 2015). Table 1 shows the distribution of companies across GIC industries and sub-industries.

Table 1 Sample Distribution Across Sectors and Sub-Sectors

Sectors	Sub-Sectors	Count
Food Distributors	Packaged Foods & Meats	29
	Agricultural Products	3
Beverages	Soft Drinks	6
	Distillers & Vintners	4
	Brewers	4
Food and Staples Retailing	Hypermarkets & Super Centers	4
	Food Retail	6
	Food Distributors	6
Total		62

Included in the appendices is a full list of each company included in the study, along with their corresponding GIC and sub-GIC classifications.

Results

The following section outlines the results produced from the statistical analysis. First, the descriptive statistics for each variable were included. These statistics give a deeper understanding of the variables and provide context for the following tests. Second, a correlation matrix was created to show correlations between the variables. Developing a correlation matrix is essential as it can reveal which variables are more closely correlated and whether any potential collinearity issues exist. This matrix also allows for context for the regressions. Last, four different categories of regression tests were conducted. In total, 44 different regression tests were run and grouped into four categories. The following section presents the results found within the analysis, with tables synthesizing the results, followed by descriptions of the results and their significance.

Descriptive Statistics

Shown in Table 2 below are the descriptive statistics for the data collected. For each of the SDG metrics, the N value was 314. For the binary-coded SDG metrics, the range was 1, the minimum value was zero, and the maximum value was 1. For the SDG total, the minimum value was zero. The maximum value for the SDG total was 17, corresponding to the overall number of SDGs a firm could mention. Looking at the means, SDG mentions had the highest overall mean with 0.31, followed by mentions of goals to practice at 0.22, SDG total at 0.15 and last, indicator to practice at 0.04. These numbers suggest that it was more common for the companies in the sample to mention SDGs in their reports, and less likely for them to implement goals to practice, and even less for them to show indicators to practice.

For financial metrics, EBITDA was the primary metric and descriptive statistics include current EBITDA, EBITDA lagged by one year, and EBITDA lagged by two years. The objective of this lagging was to see changes over time, specifically when the SDG implementation had the strongest correlation shown in the following EBITDA values. For example, the SDGs variables from 2015, with a an EBITDA 2-yr lagged, means the EDBITDA was from 2017. It was imprtant to lag this perfromance variable as the impact of taking a strategic decision like the implementation of the SDGs might take time to manifest into financial returns. Specifically, this was done within excel, so the metrics could be inputted and analysed within SPSS.

Another key metric that was used in the analysis was ESG ratings. For these ratings, four different metrics were used—overall score, environmental score, economic score, and social score. The N value for the overall score was 266, 265 for economic score, 212 for environmental score, and 265 for social score. These N values varied because some metrics were unavailable for certain companies. For the overall score, the minimum was 0.063, the maximum was 0.979, the range was 0.916, the mean was 0.593, the standard deviation was 0.313, and the variance was 0.099. For the economic score, the minimum was 0.048, the maximum was 0.0814, the range was 0.933, the mean was 0.534, the standard deviation was 0.304, and the variance was 0.093. For the environmental score, the minimum was 0.098, the maximum was 0.9528, the range was 0.854770310, the mean was 0.561, the standard deviation was 0.308, and the variance was 0.095. Last, for the social score, the minimum was 0.032, the maximum was 0.959, the range was 0.927, the mean was 0.525, the standard deviation was 0.314, and the variance was 0.099.

Table 2 Descriptive Statistics of Variables

	N	Min.	Max.	Mean	Std. Deviation	Variance
SDG Mentions	314	0	1	0.310	0.463	0.214
SDG Goals to Practice	314	0	1	0.220	0.415	0.172
SDG Indicator to Practice	314	0	1	0.040	0.192	0.037
SDG Total	314	0	17	0.150	0.358	0.128
EBITDA (log)	300	2.100	6.570	3.737	0.834	0.696
EBITDA Lag 1 Year (log)	241	2.130	6.570	3.758	0.841	0.708
EBITDA Lag 2 Years (log)	183	2.150	6.570	3.792	0.852	0.727
Overall ESG Score	266	0.063	0.979	0.593	0.313	0.099
Economic ESG Score	265	0.048	0.981	0.534	0.304	0.093
Environmental ESG score	212	0.098	0.952	0.561	0.308	0.095
Social ESG Score	265	0.030	0.959	0.525	0.314	0.099

Correlation Matrix

Another important element of the analysis and results was to create a correlation matrix. Shown in Table 3 below, this matrix shows correlations between each of the variables utilized in the analysis. In Table 3, above, two asterisks indicate that the correlation was significant at the 0.01 level. One asterisk means the correlation was significant at the 0.05 level. For the financial metrics, the strongest correlation was between the SDG metrics as opposed to the ESG metrics. Specifically, EBITDA, EBITDA lagged one year, and EBITDA lagged two years seemed to be highly correlated with SDG mentions. The correlations decreased from there for financial metrics, SDG goals to practice, SGD indicator to practice, and SDG total mentions. For the financial metrics and ESG metrics, the correlation was lower but not entirely insignificant. In terms of each

of the ESG metrics and financial metrics, economic ESG scores were most closely correlated with financial metrics, specifically EBITDA, EBITDA lagged one year, and EBITDA lagged two years. Between SDG metrics and ESG metrics, the correlations were not as strong, with one correlation, mentions of SDGs and economic score, above the 0.05 significance level.

Table 3 Correlation Matrix between all Variables

	SDG Mentions	SGD Goals to Practice	SDG Indicator to Practice	SDG Total	EBITDA (log)	EBITDA Lag 1 Year (log)	EBITDA Lag 2 Years (log)	Overall ESG Score	Economic ESG Score	Environmental ESG Score	Social Score
SDG Mentions	1	0.794**	0.298**	0.739**	0.464**	0.486**	0.503**	0.110	0.133*	0.057	0.063
SGD Goals to Practice	0.794**	1	0.376**	0.840**	0.324**	0.329**	0.342**	0.091	0.114	0.025	0.46
SDG Indicator to Practice	0.298**	0.376**	1	0.367**	0.130*	0.133*	0.114	0.057	0.102	-0.025	0.066
SDG Total	0.739**	0.840**	0.367**	1	0.302**	0.312**	0.295**	0.000	0.053	-0.71	-0.43
EBITDA (log)	0.464**	0.324**	0.130*	0.302**	1	0.981**	0.990*	0.054	0.142*	0.040	0.045
EBITDA Lag 1 Year (log)	0.486**	0.329**	0.133*	0.312**	0.981**	1	0.985**	0.109	0.206**	0.092	0.099
EBITDA Lag 2 Years (log)	0.503**	0.342**	0.114	0.295**	0.990*	0.985**	1	0.135	0.221**	0.134	0.121
Overall ESG Score	0.110	0.091	0.057	0.000	0.054	0.109	0.135	1	0.685**	0.904**	0.934**
Economic ESG Score	0.133*	0.114	0.102	0.053	0.142*	0.206**	0.221**	0.685**	1	0.551**	0.572**
Environmental ESG Score	0.057	0.025	-0.025	-0.71	0.040	0.092	0.134	0.904**	0.551**	1	0.898**
Social ESG Score	0.063	0.460	0.066	-0.430	0.045	0.099	0.121	0.934**	0.572**	0.898**	1

** correlation is significant at the 0.01 level
* correlation is significant at the 0.05 level

Regression Tests

In order to answer the research questions, it was essential to run several sets of regression tests. These regression tests aimed to show the degree to which the SDGs were being implemented within these companies and to gauge the effect the SDG integration the SDG integration had on financial and ESG performance. The relationship between SDG integration and financial and ESG performance can be seen from the correlation matrix, but the set of regression tests showed these relationships in greater detail. Specifically, the set of regressions revealed the significance level, or how strongly the SDG integration affects financial and ESG gains. In addition, these regression tests showed the direction of the relationship between variables. More specifically, the tests clarified whether the SDG integration had a positive or negative impact on financial and ESG performance.

In order to better understand the correlation and causation between variables, it was important to run a set of regressions between each variable. Doing so would determine whether a variable, or set of variables, had an impact on other variables and to what degree and significance, both of which were primary goals of the research. For this section of the analysis, 44 individual regression analyses were run. In some situations, such as between SDG and ESG variables, the regression was run two different ways, with the independent variable (IV) and dependent variable (DV) switched to establish the causal direction. However, the financial variables were not switched, as the financial variables were previously lagged and thus causation direction was already determined.

The following regression tables indicate the particular test numbers with the correlating IV and DVs used for each specific test. The results included standardized co-efficient, R-squared, and significance level.

Table 4 (see below), which lists the results of tests 1 through 11, reports the regression tests between financial and ESG indicators and the SDG total. For tests 1 through 7, the SDG total was used for the IV, with the DV varying between different indicators. For tests 8 through 11, the SDG total was used for the DV, with ESG indicators representing the IV. Table 4 shows that tests 1, 2, and 3 revealed the lowest significance values, indicating that the IV and DV were closely related. This relationship suggests that the SDG total significantly impacted the financial indicators. However, this high level of significance was not seen as strongly in tests 4 through 11. Tests 1, 2, and 3 also had some of the highest R-squared values in this regression set, which again speaks to the significance of this correlation within the regression. Additionally, reviewing Table 4 results alongside the unstandardized co-efficient, which indicates whether the regression was positive or negatively correlated, shows that tests 1, 2, 3, 7, and 11 had positive co-efficent values. Alternatively, tests 4, 5, 6, 8, 9, and 10 had negative co-efficients, showing that the direction of these tests was negative within the regression, ultimately showing a negative correlation.

Table 4 Regression Tests 1-11 (SDG Total)

Test Number	DV	IV	Unstandardized Co-efficient	R Squared	Significance
1	EBITDA	SDG total	0.051	0.095	<0.001
2	EBITDA lag 1 Year	SDG total	0.052	0.098	<0.001
3	EBITDA lag 2 Years	SDG total	0.053	0.087	<0.001
4	Overall ESG Score	SDG total	-0.001	0.014	0.851
5	Environmental ESG Score	SDG total	-0.005	0.006	0.298
6	Social ESG Score	SDG total	-0.003	0.005	0.447
7	Economic ESG Score	SDG total	0.003	0.013	0.501
8	SDG Total	Overall ESG score	-0.230	0.034	0.851
9	SDG Total	Environmental ESG score	-1.108	0.048	0.298

10	SDG Total	Social ESG score	-0.747	0.036	0.447
11	SDG Total	Economic ESG score	0.686	0.035	0.501

*Note: for all tests above *dummy variables* for each year were included

Table 5 (see below) shows the results of tests 12 through 22. The findings for these tests closely followed the previous set from Table 4. The unstandardized co-efficient was an important metric, as described above. In this set of regressions, all of the tests had positive co-efficient values, showing a positive direction of correlation within these regressions. For tests 12 through 14, the SDG mentions indicator was used for the IV, and the DV represented financial indicators. In tests 15 through 18, the IV and DV represented SDG mentions and ESG metrics, respectively. For tests 19 through 22, the IV and DV are switched, where the IV became ESG metrics and the DV represented SDG mentions. As seen above, tests 12, 13, and 14 had the lowest significance values, showing a high level of significance for this regression. The significance values were higher in tests 15 through 22, where the regression appears to be less significant. This difference was also reflected in the R-squared values, where tests 12, 13, and 14 had higher R-squared values, showing a stronger correlation between the IV and DV. The difference can be attributed to these higher R-squared values.

Table 5 Regression Tests 12-22 (SDG Mentions)

Test Number	DV	IV	Unstandardized Co-efficient	R Squared	Significance
12	EBITDA	SDG Mentions	0.858	0.227	<0.001
13	EBITDA lag 1 Year	SDG Mentions	0.859	0.238	<0.001
14	EBITDA lag 2 Years	SDG Mentions	0.900	0.255	<0.001
15	Overall ESG Score	SDG Mentions	0.069	0.023	0.116

16	Environmental ESG Score	SDG Mentions	0.039	0.004	0.431
17	Social ESG score	SDG Mentions	0.041	0.006	0.361
18	Economic ESG Score	SDG Mentions	0.084	0.026	0.052
19	SDG Mentions	Overall ESG Score	0.143	0.023	0.116
20	SDG Mentions	Environmental ESG Score	0.080	0.020	0.431
21	SDG Mentions	Social ESG Score	0.082	0.018	0.361
22	SDG Mentions	Economic ESG Score	0.180	0.030	0.052

*Note: for all tests above *dummy variables* for each year were included

The findings for the next set of regression tests are seen below in Table 6. As with Table 5, the unstandardized co-efficient was an important metric, by which the positive co-efficient values in this set of regressions, showed a positive direction of correlation within these regressions. For tests 23 through 25, the IV and DV represented SDG goal to practice and financial indicators, respectively. In tests 26 through 29, the IV and DV represented SDG goals to practice and ESG metrics, respectively. For tests 30 through 33, IV and DV were switched, where the IV was ESG metrics and the DV was SDG goals to practice. As seen above, tests 23, 24, and 25 had the lowest significance values, showing a high level of significance for this regression. This was not as strongly reflected in tests 26 through 33, where the regression appeared to be less significant. This significance is also reflected in the R-squared values, where tests 23, 24, and 25 had higher R-squared values, showing a stronger correlation between the IV and DV.

Table 6 Regression Tests 23-35 (Goal to Practice)

Test Number	Test	IV	Unstandardized Co-efficient	R Squared	Significance

23	EBITDA	Goal to Practice	0.673	0.113	<0.001
24	EBITDA lag 1 Year	Goal to Practice	0.646	0.109	<0.001
25	EBITDA lag 2 Years	Goal to Practice	0.700	0.117	<0.001
26	Overall ESG Score	Goal to Practice	0.060	0.019	0.231
27	Environmental ESG score	Goal to Practice	0.019	0.001	0.738
28	Social ESG Score	Goal to Practice	0.032	0.005	0.526
29	Economic ESG Score	Goal to Practice	0.078	0.021	0.109
30	Goal to Practice	Overall ESG Score	0.096	0.033	0.231
31	Goal to Practice	Environmental ESG Score	0.030	0.031	0.738
32	Goal to Practice	Social ESG score	0.050	0.028	0.526
33	Goal to Practice	Economic ESG Score	0.132	0.037	0.109

*Note: for all tests above *dummy variables* for each year were included

The regression set in Table 7 (see below) follows the same model of regression results as discussed for Tables 4 and 5. For tests 34 through 36, the IV and DV represented SDG indicators to practice and financial metrics, respectively. For tests 37 through 40, the IV and DV represented SDG indicators to practice and ESG metrics, respectively. For tests 41 through 44, the IV and DV were switched, with the IV representing ESG metrics and the DV representing SDG indicators to practice. For test 34, the significance was less than 0.05, showing a level of significance in this regression. This was not seen in tests 35 through 44. In addition, the R-squared values for each of the tests within this set of regressions were all relatively low. For tests For tests 34–44 (excepting tests 38 and 42), the unstandardized co-efficient metrics were positive, whereas in tests 38 and 42, these metrics were negative.

Table 7 Regression Tests 34-44 (Indicators to Practice)

Test Number	DV	IV	Unstandardized Co-efficient	R Squared	Significance
34	EBITDA	Indicators to Practice	0.577	0.020	<0.05
35	EBITDA lag 1 Year	Indicators to Practice	0.629	0.019	0.052
36	EBITDA lag 2 Years	Indicators to Practice	0.709	0.014	0.147
37	Overall ESG Score	Indicators to Practice	0.080	0.016	0.420
38	Environmental ESG Score	Indicators to Practice	-0.040	0.001	0.744
39	Social ESG Score	Indicators to Practice	0.103	0.007	0.300
40	Economic ESG Score	Indicators to Practice	0.152	0.021	0.113
41	Indicators to Practice	Overall ESG Score	0.033	0.022	0.420
42	Indicators to Practice	Environmental ESG Score	-0.014	0.023	0.744
43	Indicators to Practice	Social ESG score	0.042	0.023	0.300
44	Indicators to Practice	Economic ESG Score	0.066	0.029	0.113

*Note: for all tests above *dummy variables* for each year were included

Discussion

The first question proposed in this research sought to explore whether or not there was evidence that the UN SDGs were being incorporated into the corporate strategic plan of global food and beverage companies. The research conducted throughout this thesis provides evidence that this is true. The data collection and subsequent statistical analysis show the following averages for companies mentioning SDGs within their reporting from the last five years: 31% have incorporated the SDGs to some degree, SDG goals to practice had a mean of 22% of companies had connected their specific sustainability goals to practice, and 4% of companies were linking specific SDG indicator to practice, speaking to the degree to which the SDGs are being incorporated into companies' reporting and overall corporate strategies. These results reveal that food and beverage companies are considering integration of the SDGs into their corporate strategy and taking some action towards integrating these goals.

In addition to exploring whether or not the UN SDGs were being incorporated into corporate strategic plans of global food and beverage companies, this research asked a second question: to what degree are these companies integrating the SDGs? This question was answered through an analysis of the metrics for SDG goals to practice and SDG indicator to practice. In contrast to using metrics that might mention the SDGs at a more surface level, the use of SDG goals to practice and SDG indicator to practice metrics allowed for a deeper look at what actions the individual company was taking to ensure criteria for the SDG was being met. While an average of 22% of companies met the criteria for goals to practice, only 4% of companies were actually connecting the SDG indicators to tangible actions within the company corporate strategy. These statistics show that, although some high-level action for the SDGs exists within the industry, operationalization is still relatively low, and a majority of the companies speaking

about the SDGs show little evidence of altering their actions and strategy to meet the criteria of SDGs specific to the food industry.

The third research question asked whether or not there was evidence to support a link or causation between integrating the UN SDGs and overall financial gains in the global food and beverage industry. A strong link can be seen in the regression sets shown in the results section. he key factors indicating this link are are the significance values and the R-squared values. As discussed previously, Tables 4-7 showed the strongest, R-squared and significance values were seen between SDG mentions, SDG total, and SDG goals to practice and the financial metrics EBITDA, EBITDA lagged 1 year, and EBITDA lagged two years. Specifically, the SDG mentions and financial metrics regression values had the highest R-squared values and lowest significance values, with EBITDA lagged two years showing these results most strongly. In other words, the greatest effect on financial gains was seen two years after SDG mentions were integrated into corporate strategy and company reports, suggesting that there is, in fact, evidence to support that mentioning the SDGs does have a positive impact on financial gains, particularly after two years . This positive impact on financial gains was also seen with SDG goals to practice, with an R-squared value of 0.117 after EBITDA was lagged by two years. While less significant than SDG mentions, the positive impact still offers evidence that SDG goals to practice has an effect on financial gains. However, the degree of positive impact was less significant with the SDG total and even less with the SDG indicator to practice. Yet. it still can be concluded that mentioning the SDGs and having linking actions to SDG goals has a positive and somewhat significant effect on financial gains. In addition, the effects of integrating the SDGs will appear most strongly two years after the initial integration.

The final research question explored whether or not evidence supported the notion that SDG integration in the global food and beverage industry was reflected in overall ESG ratings. Similar to the earlier analysis of financial gains, it was important to look at metrics such as R squared, significance values, and—additionally in this case— the unstandardized co-efficient. For each of the regression tests, the significance values showed low significance and the R-squared values reflected a lower significance than when correlated to financial metrics. This was true for both directions the regression was run, showing a low causation between these values in both directions. In addition, the co-efficients were both positive and negative for varying regressions, showing weaker evidence to support a strong correlation between the variables. For these reasons, these tests provided little evidence that SDG integration—whether SDG mentions, goals to practice, indicators to practice, or SDG total—have a significant effect on ESG ratings, such as overall rating, environmental rating, social rating, or economic rating.

In answering these key research questions, the proposed objectives were met. The primary research objective was to fill a gap in the literature and give deeper insights into the overarching theory of sustainability in the global food and beverage industry. The insights and conclusions found throughout the research furthers the knowledge needed to advance the overall sustainability in this industry and similar industries. The following sections of the discussion will address specifically how this research fills the knowledge gap in the academic literature and how this knowledge can be used to further overall sustainability in the global food and beverage industry.

Contributions to the Literature

A key point for discussion is to consider how the research fits into and aligns with the academic literature landscape. Ultimately, the primary question is whether or not this research

and its results can be supported by what was found within the literature, aligning it with what previous scholars have said. These comparisons will be further discussed and analysed in the following sections.

The literature on sustainability integration in the food and beverage industry suggests that there were significant environmental impact mitigation efforts required, specifically aiming for financial gains and competitive advantage (Arcese et al., 2015). Although the industry is lagging in its integration of sustainability, there are motivations to do so. This lag in sustainability implementation was primarily due to the significant barriers for companies, as outlined previously in the literature (Bloemhof et al., 2015). For example, these bariers include lack of strong leadership for implementing sustainability, lack of motivation to change procedures within the company, unwillingness to change, and the inability to financially justify these changes in view of the long-term benefits (Long et al., 2018). Such arguments align with this study's results in some ways but contradicts it in others. A majority of the companies in this study were not integrating sustainability (with many of these companies either not having sustainability reports or not discussing sustainability in any of their publicly available reports), reflecting the earlier evidence of a lag in the industry. However, a significant number of companies were integrating sustainable development, with many more companies engaging in sustainable development behaviours than originally projected. Thus, while the overall industry is lagging, there is change being seen. In this study, SDG integration was looked at over a five-year timeframe, and the research shows that, slowly, more companies are beginning to integrate overall sustainability and sustainable development.

More specifically, the literature review examined SDG integration within the food and beverage industry. Although there were knowledge gaps in this area, some scholars were

speaking to this, and the results of this study confirm the findings of those earlier studies. The previous academic research found that the global food and beverage industry was slowly starting to integrate the SDGs into its strategy, which is similar to the findings of this study (Saunders-Hogberg, 2015). Over time, specifically in the last decade, there has been a significant increase in overall SDG engagement across many industries, including the global food and beverage industry. A key takeaway from comparing the results of this study to previous academic work is that the SDGs are being integrated at a higher frequency and to a higher degree than in previous years, suggesting an overall shift in the industry.

A topic discussed within the literature review was the underlying theory that supports this research. In the literature review, the dynamic capabilities theory was discussed in order to better understand the motivations and decision-making process for companies to integrate sustainability—specifically the SGDs—into their corporate strategy to gain a competitive advantage over competitors within the industry (Teece et al., 1997). Dynamic capabilities theory proposes that corporations utilize external capabilities and resources in order to achieve a competitive advantage (Teece et al., 1997). This concept could be directly applied to integrating the SDGs, where the SDGs were an external resource and framework that increased companies' competitive advantage. While the outcomes of decision making within the firms, not the decision making itself, was the focus of this research, dynamic capability theory can help to explain why SDG integration was happening, and how the results recorded in this research help to gain a competitive advantage. In the results sections, it was shown that integrating the SDGs into corporate plans and reporting results in financial gains. With this understanding, it can be inferred that companies that have integrated the SDGs, particularly to a more significant degree, have attained this competitive advantage, shown by overall financial gains over time. These

findings ultimately support the theory proposed within the literature, as well as help to explain the motivations that have leading to a competitive advantage.

It is important to understand how this research fills the knowledge gap articulated in the literature review. Within that review, one notable gap was the lack of research concerning how the SDGs expand corporate sustainability generally, furthering CSR, EMS, and GRI and, specifically, how this question was understudied in the global food and beverage industry. Additionally, there was a lack of research on how SDGs impacted financial gains within the global food and beverage industry. This particular gap in research was significant since companies had no well-studied incentives to further integrate the SDGs into their corporate planning.

A critical element to discuss in this work are the contributions this research makes to academic practice and the literature. This research contributes to the literature in two primary ways. First, this research contributes to filling the research gap, in terms of implementing the SDGs and the motivations and benefits from doing so. In doing so, it gives room for future research to be conducted. By allowing room for future scholars to expand on this research topic, allowing for a deeper understanding of sustainable development, the SDGs, and ESG in the food and beverage industry. Thus, this research also offers an evidential background for similar concepts to be applied to a multitude of different industries and sub-industries.

The results of this study do support the argument that the food and beverage industry is furthering its use of the SDGs. The number of companies that have started using the SDGs in their sustainability reporting has increased. Furthermore, many of the company reports in this study supported SDG integration, specifically with goals to practice and indicators to practice through the use of concepts from the CSR and GRI frameworks. Many of the companies that

scored more highly on goals to practice and indicators to practice showed evidence of greater

integration by reporting on specific actions, which largely were supported by the other

frameworks mentioned within the literature review. That being said, many companies scored

higher on SDG mentions and lower on goals to practice and lowest on indicator to practice,

ultimately showing that, going forward, there is still significant room for improvement for this

industry. This research shows that there is still progress that needs to be made in terms of better

integrating the SDGs into the food and beverage industry. This leaves room for potential future

research on this topic as well as room for growth. This growth include btih within the overall

industry and in the companies themselves.

Contributions to Practice

This research contributes to practices within the food and beverage industry in two ways.

As previously mentioned, this research helps to better outline the incentives that will allow food

and beverage companies to better integrate sustainable development and the SDGs. Results from

this research reveal that many companies were mentioning the SDGs, but few were actually

tangibly linking individual targets and indicators to their operations. To that end, this research

gives companies more information about how to better integrate the SDGs into their operations,

as opposed to simply reporting on them. In practice, it can thus motivate these types of

companies and lead them towards meaningful engagement with the SDGs.

Secondly, it is important to consider the business case for this research and the

applications to practice. As mentioned, this research highlights the financial and ESG incentives

for companies to better integrate the SDGs. An increase in ESG rankings, especially in the

current socio-economic landscape and going forward could have significant impacts. The

companies focused on in this research were all publicly traded, and increasing their ESG ranking could potentially help to grow their market values and investors. This research reveals that integrating the SDGs can translate into financial gains; simply by mentioning SDGs, companies can improve their financial performance.

Research Limitations

While this research has significant findings, there are limitations. One key limitation is that all of the data collected was publicly available. While this was useful for creating the results, it is not known how the results would have been altered by what was not included in these reports. In solely using publicly available reports, essential or fully reported data may not have been disclosed. This possibility is less likely in terms of financial reports because the companies selected were public companies; therefore, their financial data would need to be accurately reported. However, SDG and sustainability data are not regulated. If all data and reports were collected from within a company, the results may have differed. A second limitation is the time frame for which the data was collected, from 2016 to 2020. Many companies were missing reports for 2020 and only included reporting until 2019. This leaves a time gap between the data collection and the current time in which this thesis is being written. As such, many important socio-economic events were unaccounted for. Specifically, the effects of the COVID-19 pandemic on the financial and sustainability standing of the companies were not included. If the years related to this pandemic, 2020 and 2021, were fully included, results may have been different.

As the world adapts to climate change and progresses further towards the need for global sustainable development, research like this work, along with future research, is critical. Taking

the limitations previously discussed into account, future research could continue to explore the research gap, specifically by examining how this topic is relevant from 2021 forward and by more closely including socio-economic issues, such as the repercussions of the global pandemic on the food and beverage industry. In addition, as food and beverage companies move towards disclosing and reporting more of their sustainability initiatives, this thesis will be able to frame future research on the operationalization of the SDGs in other industries, allowing for even more applications and incentives for other industries to further integrate sustainable development.

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Appendix

Company List with GIC Industry and Sub-Industry

Company Name	Industry	Sub-Industry
THE ANDERSONS, INC.	Food & Staples Retailing	Food Distributors
THE CHEFS' WAREHOUSE, INC.	Food & Staples Retailing	Food Distributors
PERFORMANCE FOOD GROUP COMPANY	Food & Staples Retailing	Food Distributors
SPARTANNASH COMPANY	Food & Staples Retailing	Food Distributors
SYSCO CORPORATION	Food & Staples Retailing	Food Distributors
UNITED NATURAL FOODS, INC.	Food & Staples Retailing	Food Distributors
CASEY'S GENERAL STORES, INC.	Food & Staples Retailing	Food Retail
THE KROGER CO.	Food & Staples Retailing	Food Retail
NATURAL GROCERS BY VITAMIN COTTAGE, INC.	Food & Staples Retailing	Food Retail
SPROUTS FARMERS MARKET, INC.	Food & Staples Retailing	Food Retail
WHOLE FOODS MARKET, INC.	Food & Staples Retailing	Food Retail
WEIS MARKETS, INC.	Food & Staples Retailing	Food Retail
CENCOSUD S.A.	Food & Staples Retailing	Hypermarkets & Super Centers
COSTCO WHOLESALE CORPORATION	Food & Staples Retailing	Hypermarkets & Super Centers
PRICESMART, INC.	Food & Staples Retailing	Hypermarkets & Super Centers
WAL-MART STORES, INC.	Food & Staples Retailing	Hypermarkets & Super Centers
AMBEV S. A.	Beverages	Brewers
ANHUESER-BUSCH INBEV SA/NV	Beverages	Brewers
THE BOSTON BEER COMPANY, INC.	Beverages	Brewers
MOLSON COORS BREWING COMPANY	Beverages	Brewers
DIAGEO PLC	Beverages	Distillers & Vintners

BROWN-FORMAN CORPORATION	Beverages	Distillers & Vintners
MGP INGREDIENTS, INC.	Beverages	Distillers & Vintners
CONSTELLATION BRANDS, INC.	Beverages	Distillers & Vintners
EMBOTELLADORA ANDINA S.A.	Beverages	Soft Drinks
NATIONAL BEVERAGE CORP.	Beverages	Soft Drinks
COCA-COLA FEMSA, S.A.B. DE C.V.	Beverages	Soft Drinks
MONSTER BEVERAGE 1990 CORPORATION	Beverages	Soft Drinks
THE COCA-COLA COMPANY	Beverages	Soft Drinks
PEPSICO, INC.	Beverages	Soft Drinks
ARCHER-DANIELS-MIDLAND COMPANY	Food Products	Agricultural Products
DARLING INGREDIENTS, INC.	Food Products	Agricultural Products
INGREDION INCORPORATED	Food Products	Agricultural Products
B&G FOODS, INC.	Food Products	Packaged Foods & Meats
BRF S.A.	Food Products	Packaged Foods & Meats
CONAGRA BRANDS, INC.	Food Products	Packaged Foods & Meats
CAL-MAINE FOODS, INC.	Food Products	Packaged Foods & Meats
CAMPBELL SOUP COMPANY	Food Products	Packaged Foods & Meats
CALAVO GROWERS, INC.	Food Products	Packaged Foods & Meats
FARMER BROS. CO.	Food Products	Packaged Foods & Meats
FLOWERS FOODS, INC.	Food Products	Packaged Foods & Meats
FRESHPET, INC.	Food Products	Packaged Foods & Meats
GENERAL MILLS, INC.	Food Products	Packaged Foods & Meats
THE HAIN CELESTIAL GROUP, INC.	Food Products	Packaged Foods & Meats
HORMEL FOODS CORPORATION	Food Products	Packaged Foods & Meats
THE HERSHEY COMPANY	Food Products	Packaged Foods & Meats

JOHN B. SANFILIPPO & SON, INC.	Food Products	Packaged Foods & Meats
J & J SNACK FOODS CORP.	Food Products	Packaged Foods & Meats
KELLOGG COMPANY	Food Products	Packaged Foods & Meats
THE KRAFT HEINZ COMPANY	Food Products	Packaged Foods & Meats
LANCASTER COLONY CORPORATION	Food Products	Packaged Foods & Meats
LANDEC CORPORATION	Food Products	Packaged Foods & Meats
MONDELEZ INTERNATIONAL, INC.	Food Products	Packaged Foods & Meats
MCCORMICK & COMPANY, INCORPORATED	Food Products	Packaged Foods & Meats
POST HOLDINGS, INC.	Food Products	Packaged Foods & Meats
SANDERSON FARMS, INC.	Food Products	Packaged Foods & Meats
SEABOARD CORPORATION	Food Products	Packaged Foods & Meats
SENECA FOODS CORPORATION	Food Products	Packaged Foods & Meats
THE J. M. SMUCKER COMPANY	Food Products	Packaged Foods & Meats
TREEHOUSE FOODS, INC.	Food Products	Packaged Foods & Meats
TOOTSIE ROLL INDUSTRIES, INC.	Food Products	Packaged Foods & Meats
TYSON FOODS, INC.	Food Products	Packaged Foods & Meats