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An Empirical Examination of Formal and Informal Institutional Factors' Influence on Global Food Industry Sustainability Engagement

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Doctor of Business Administration (DBA) Dissertation:
An Empirical Examination of Formal and Informal Institutional Factors' Influence
on Global Food Industry Sustainability Engagement

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Table of Contents

Abstract	1
Chapter One: Introduction and Background of the Study	3
Research Question	5
Theoretical Framework	6
Significance of the Study	10
Chapter Two: Review of the Sustainability Literature	12
Sustainability Engagement and Institutional Factors	12
Food Industry Sustainability Engagement and Comparative Institutional Factors	22
Institution-Based View (IBV) and Sustainability Engagement	28
Chapter Three: Research Design and Methodology	34
Sample	34
Descriptive Statistics of Sample	36
Variables	39
Hypotheses	52
Data Analysis and Methodology	63
Assumptions	64
Limitations	65
Chapter Four: Analysis and Results	67
Analysis of Individual Institutional Factors' Influence	67
Analysis of Combined Institutional Factors' Influence	70
Chapter Five: Discussion and Conclusion	75
Implications Relative to the Sustainability Literature	75
Future Research	89
Conclusion	95
References	97
Appendix A: Global Industry Classification Standard (GICS)	122
Appendix B: National Environmental Sustainability Formal Institutional Factor	124
Appendix C: National Food Sustainability Formal Institutional Factor	126
Appendix D: National Culture Informal Institutional Factor	127
Appendix E: Firm Sustainability Engagement Factor	128

List of Figures and Tables

Table 1:

Descriptive Statistics of the Four Food Industries by Global Industry Classification

Standards (GICS) and Firm Sustainability Engagement Levels 37

Figure 1: Isolated formal and informal institutional factors' (6 IVs) influence on global

food industry sustainability engagement (1DV) based on the institution-based view

(IBV) framework 54

Figure 2: Combined formal and informal institutional factors' (6 IVs) influence on global

food industry sustainability engagement (1DV) based on the institution-based view

(IBV) framework 55

Table 2:

Multiple Regression Statistics of Institutional Factors Influence on Food Firm

Sustainability Engagement Levels 72

Table 3:

ANOVA Statistics of the Four Food Industries by Global Industry Classification

Standards (GICS) and Firm Sustainability Engagement Levels 74

Abstract

This study contributes to the sustainability literature through empirical investigation on how both formal and informal institutional factors influence the level of global food industry's Corporate Social Responsibility (CSR) engagement (also known as sustainability engagement). This study proposed six hypotheses to be tested for formal and informal institutional factors' influence on sustainability engagement with simple and multiple linear regression analyses, correlation analysis to examine the relationship between sustainability engagement and individual countries' institutional factors. Six institutional factors the author studied include Yale's World Economic Forum's environmental performance index; the Barilla Center for Food and Nutrition (BCFN) Foundation's *food loss and food waste index*, *sustainable agriculture index*, and *nutrition challenge index*; and Hofstede's long-term orientation index and uncertainty avoidance index.

Furthermore, the study proposed an additional hypothesis to compare the mean sustainability engagement levels of the four GICS food industries (restaurants, food retailing, beverages, and food products) using one-way ANOVA and post-hoc analyses. This study utilized the Bloomberg archival environmental, social, and governance (ESG) data categorized by the nine global industry classification standard (GICS) food *sub*-industries that are the four GICS food industries, which represent the global food industry.

This study found statistically significant associations between three institutional factors (national sustainable agriculture policy implementation levels, national culture's long-term orientation levels, and national culture's uncertainty avoidance levels) and the food industry sustainability engagement levels with multiple regression analysis. The study additionally found statistically significant differences in the sustainability engagement levels among the four GICS food industries. Implications to management practice, the development of Institution-Based View (IBV) theory framework through this study, and future research suggestions are discussed. Sustainability engagement in the food industry was found to be relatively low. The study suggests management practices to increase sustainability efforts through various mechanisms.

Keywords: CSR engagement, environmental performance, food industry, formal institutions, Hofstede, informal institutions, multiple linear regression, national culture, one-way ANOVA, sustainable agriculture, sustainability engagement.

An Empirical Examination of Formal and Informal Institutional Factors' Influence
on Global Food Industry Sustainability Engagement

Chapter One: Introduction and Background of the Study

Chapter One offers an overview of this dissertation project. The research problem, significance, and contribution of this study are illustrated. The study's objective, research question, theoretical framework, and quantitative methods used are explained (Haigh, 2018).

To address the need for global food industry corporate social responsibility (CSR), this study investigates the sustainability engagement of the food industry. As reported by Hartman (2011), Heyder and Theuvsen (2009), Pullman, Maloni, and Carter (2009), and Roth, Tsay, Pullman, and Gray (2008), agricultural production and food processing are the chief sources of environmental damage originating from the food industry (Baldwin, 2015; Barilla Center for Food & Nutrition, 2018; Wilde, 2018). Furthermore, high food miles resulting from food distribution also impose negative externalities to global societies and the natural environment (Jones, 2001; Nestle, 2002; Pretty, Ball, Lang, & Morison, 2005; Pullman et al., 2009; Roth et al., 2008; Smith, 2008; Sustain, 2002). Changes in climate, pollution of land and water, and loss of biodiversity have led to long-term agriculture and food production concerns (Barilla Center for Food & Nutrition, 2018; Hartman, 2011; Nestle, 2002; Smith, 2008).

This global food industry CSR study focuses on the influence of both formal (government regulations and laws) and informal (national cultures) institutional factors on its level of CSR engagement. Agriculture production and food operation occur around the globe, involving institutional factors such as governments of various nations and national cultures (Baldwin, 2015; Barilla Center for Food & Nutrition, 2018; Hartman, 2011; Miras-Rodrigues et al., 2015; Peng, Dashdeleg, & Chih, 2012).

The world population is currently over seven billion, and is projected to reach 10 billion by 2050 (Roser & Ortiz-Ospina, 2013). Because of this rapid population growth, the demand for food supply is projected to increase by over 50 percent (Baldwin, 2015). Since multiple stakeholders need to consume food to survive, availability and quality of food is of high priority to global businesses and societies of the world (Barilla Center for Food & Nutrition, 2018; DEFRA, 2002; Miras-Rodrigues et al., 2015; Rueda, Garrett, & Lambin, 2017; Smith, 2008). Developed countries experience an overabundance of food, yet approximately 13 percent of the world suffers from undernutrition (Barilla Center for Food & Nutrition, 2018; Baldwin, 2015).

Recently in the sustainability literature, the CSR theory and the corporate sustainability (CS) theory merged to signify the triple bottom line (3BL) objectives of the firms—economic, social, and environmental goals—to be incorporated in strategic and operational corporate decision-making (Carroll & Shabna, 2010; Elkington, 1998; Faller & Knyphausen-Aufsef, 2018). Thus, in this study, CSR refers to these three types of corporate sustainability engagement goals in the global food industry.

Research Question

The study's goal is to investigate the influence of both formal and informal institutional factors on the level of global food industry CSR engagement. Specifically, the study investigates national government policies relating to agricultural, food and environmental sustainability (formal institutional factors), and national cultures' (informal institutional factors) influence on global food industry CSR engagement. These research objectives lead to the research question:

Research question. *How do formal and informal institutional factors influence the level of global food industry sustainability engagement?*

Research Problem

This study seeks to fill the gaps in the global food industry CSR literature with contributions as follows. There is a growing need to research the effects of national culture on CSR engagement levels with the institution-based view (IBV) theoretical framework (Cai, Jo, & Pan, 2012; Gomez, 2008; Hou, Liu, Fan, & Wei, 2016; Jamali, 2008; Jamali & Mirshak, 2006; Moon & Shen, 2010; Orlitzkey et al., 2003; Peng, Sun, Pinkham, & Chen, 2009; Peng et al., 2012; Scholtens & Kang, 2012; Wang & Juslin, 2009). The IBV is a strategic management theory used to understand corporate behavior and global strategy formulation (Peng et al., 2012, 2009).

Moreover, it is suggested that further inquiry is needed to globally analyze specific industries to examine the role of national culture (informal institutional factors) on their levels of sustainability engagement (Miras-Rodrigues et al.,

2015). Formal and informal institutional factors' influence on sustainability engagement levels in the global food industry is not adequately understood, and the global food industry sustainability literature needs more empirical testing of existing conceptual models (Baz, Laguir, Marais, & Staglianò, 2016; Chkonikova & Mont, 2015). Many studies conducted thus far on the food supply chain are conceptual, and empirical evidence is scarce (Hall, 2001; Jones et al., 2005; Piacentini, MacGadyen, & Eadie, 2000;). Few studies have looked at the food industry's engagement in sustainability through the lens of institutional factors. This study contributes toward filling that gap.

This study answers the research question by using quantitative methods. Simple and multiple regression analyses and one-way ANOVA are used to address the research question and the seven hypotheses. Hypotheses are explained in detail in Chapter Three.

Theoretical Framework

The strategic management literature has been dominated by two theoretical paradigms: the industrial view (Porter, 1980) in the 1980s and the resource-based view (RBV) (Barney, 1991; Peteraf, 1993; Wernerfelt, 1984) of the firm in the 1990s and beyond. In the last few decades, researchers using these two theories searched for the answers to the fundamental questions of strategic management (Hoskisson, Hitt, Wan, & Yiu, 1999). As a response to this collective inquiry, in recent years, a new theory emerged as a third leading strategic management paradigm: the institution-based view (IBV) (Garrido, Gomez, Maicas, & Orcos, 2014; Peng et al., 2012, 2009). The IBV theoretical framework has its foundations in both sociological institutional theory (DiMaggio & Powell, 1983; Scott, 1995) and institutional economics (North, 1990; Williamson, 1985, 1998).

The industrial view literature suggests that industry-specific effects such as industry characteristics, multiple stakeholder interactions, and context of processes and operations need to be carefully studied to understand each industry-specific effect (Cruz & Boehe, 2010; Decker, 2004; Ho, Wang, & Vitell, 2011). Baz et al. (2016) suggest the need for further exploration to address how sustainability practices are applied in the food industry as well as how food industry sustainability efforts differ from other industries. Chkanikova and Mont (2015) suggest the food supply chain management in various countries and contexts need to be studied to understand their complexities.

The RBV framework has been used to study how internal resources that are challenging to be imitated by competitors lead to a firm's long-term competitive advantage (Barney, 1991; Peteraf, 1993; Wernerfelt, 1984). Pullman et al. (2009) suggest applying Hart's (1995, 1997) *natural* RBV (NRBV) in food supply chain management research to understand the firm's competitive advantage in relationship to the natural environment. Additionally, the authors suggest applying the NRBV in this context in order to prevent pollution, minimize emissions and waste, and reduce environmental burden of firm development. From the standpoint of food industry supply chain sustainability, Pagell, Wu, and Wasserman (2008) state that firms have triple-bottom-line (3BL) objectives and should not solely focus on the economic objective.

Other food supply chain management studies (Pullman et al., 2009; Roth et al., 2008; Zaharia & Zaharia, 2013) have used the *industrial* view and the RBV, but this study uses the *institution*-based view (IBV) framework because food

industry sustainability engagement varies among different institutional factors, such as countries' laws and regulations and national cultures (Peng et al., 2009). Most sustainability research has been conducted in English-speaking countries, but more recently various developing and emerging economies globally have been considered (Aguilera & Jackson, 2003; Aoki, 2001; Becht, & Roel, 1999).

Aguilera and Jackson (2003) derived a theoretical model to assess differences in corporate governance approaches in advanced economies. Authors identified institutional and social interactions within organizations that influence corporations to address stakeholder interests. The authors also used three institutional factors in their comparative institutional analysis—management, capital, and labor—derived from institutional theory (Aguilera & Jackson, 2003; North, 1990). Traditionally, agency theory was used to analyze corporate governance interrelationships between risk-accepting shareholders and agent managers within corporations, which can cause agency problems due to differences in their interests (Aguilera & Jackson, 2003; Berle & Means, 1932; Eisenhardt, 1989; Fama & Jensen, 1983).

The paradigm of comparative corporate governance is developed as a response to minimize agency problems in various corporate governance structures in national economies (Aguilera & Jackson, 2003; Shleifer & Vishny, 1997). In the U.S. and the U.K., ownership typically involves corporate control, regulations, and contracts; in the E.U. and Japan, financial institutions and families control governance, thus, they operate in context rather than by explicit rules (Aguilera & Jackson, 2003; Shleifer & Vishny, 1997).

Aguilera and Jackson (2003) report that the comparative national institutional analysis model facilitates the understanding of diversity in corporate governance practices among nations. The authors argue that because financial systems established separately in different nations in the 1930s (for instance, in the U.S., market liquidity and diluted ownership were favored, whereas, in Germany and Italy, their ownership structure was maintained due to dense cooperative networks), national institutions are still diverse today (Aguilera & Jackson, 2003).

Aguilera and Jackson (2003) also suggest implications for global research. While agency theory is based on an Anglo-American model, and it was seen as the best practice to explain corporate governance interactions in the West, the institution-based view (IBV) suggests nations will continuously evolve relative to their dynamic institutional contexts around the globe (Garrido et al., 2014; Peng et al., 2012; Peng et al., 2009). Thus, the authors state that attempting to explain global phenomena with a national model is insufficient. For instance, hybridization illustrates the various organizational practices by nations. Because countries maintain individual profiles of governance structures while differences grow among organizations, Aguilera and Jackson (2003) suggest that more study is needed to understand the complex structures of institutions and their effects on corporate governance (Aguilera & Jackson, 2003).

Chkanikova and Mont (2015) suggest that a more comparative institutional analysis of food supply chain sustainability is needed. A number of authors argue that there are multiple sustainability issues in the food supply chain

deserving of further exploration, both within nations and across institutional contexts (Baldwin, 2015; Chkanikova & Mont, 2015; Pullman & Wikoff, 2017). There are many food supply chain sustainability issues that need further investigation as future exploration uncovers presently unknown research questions in the food industry (Baldwin, 2015; Chkanikova & Mont, 2015).

Thus, this study uses the IBV theoretical framework to study formal and informal institutional factors to empirically test their influence on global food industry CSR engagement. Formal (explicit rules in society) institutional factors are laws and regulations of economic markets and political discipline (Garrido et al., 2014; North, 1990; Peng et al., 2012; Peng et al., 2009). Informal (social customs and values) institutional factors are national cultures and norms (Garrido et al., 2014; Hofstede Insights, 2019; Peng et al., 2009).

Significance of the Study

This study proposes and empirically tests formal and informal institutional factors' measurement instruments (BCFN Foundation, 2019; Hofstede Insights, 2019; World Economic Forum, 2019) and global food industry CSR engagement measurements (Bloomberg Finance L.P., 2019) to address a gap in the global food industry CSR literature. Thus, the study's findings can assist agri-food policymakers to enhance existing food policies related to global food industry CSR performance to meet the demands of multiple stakeholders from diverse national cultures and to improve global food industry sustainability engagement to preserve natural environment, increase food security, and reduce food waste (Baldwin, 2015; Barilla Center for Food & Nutrition,

2018; Hartman, 2011; Jones, 2001; Smith, 2008; Nestle, 2002; Sustain, 2002; Pretty et al., 2005; Wade, 2001; World Economic Forum, 2019).

Recently, there has been increasing pressure on food industry firms to consider more carefully the environmental and social consequences of their processes and operations (Kleindorfer, Singhal, & Van Wassenhove, 2005; Pullman et al., 2009). Implementation of sustainability practices necessitates coordination among the numerous food supply chain players (Pullman et al., 2009). Pullman et al. (2009) state that consumers tend to expect the food industry firms to be accountable for all sustainability practices issues across their entire food supply chains. Previous research has focused largely on the environmental and social consequences of food industry operations and processes and examined them as one measurement variable (Pullman et al., 2009; Waddock & Graves, 1997). While most studies have examined isolated sustainability metrics and performance, they fail to connect both social and environmental practices to performance outcomes in specific industries (Pullman et al., 2009). Thus, this study adds to the theory-building of the IBV framework as well as to the food industry sustainability practices by looking at the institutional factors' influences relevant to this industry on its levels of sustainability engagement by filling the gaps discussed.

Chapter Two: Review of the Sustainability Literature

This chapter aims to outline and give a comprehensive overview of the sustainability literature relative to the research question and hypotheses of this study.

This literature review orients the research question and how the study attempts to contribute by filling the gaps. The review concludes with a summary of the interpretation of the literature to address the research question of this study (Haigh, 2018).

This study examines the influence of national government policies relating to environmental performance and food sustainability (formal institutional factors) and national cultures (informal institutional factors) on the level of global food industry corporate social responsibility (CSR) engagement. This chapter reviews three streams of literature to reveal the gaps to which this study can contribute: 1) sustainability engagement and institutional factors, 2) global food industry sustainability and institutional factors, and 3) the institution-based view (IBV) and firms' sustainability engagement.

Sustainability Engagement and Institutional Factors

This first section reviews, first, CSR engagement and national institutional factors; second, environmental CSR engagement and institutional factors; and third, sustainability engagement and cultural institutional factors.

CSR engagement, CSR motive, and comparative national institutional factors. CSR commitment has a noticeable influence on society. Many firms have communicated CSR commitment yet failed to act on said commitments (Dare, 2016;

Laufer, 2003). Depending on the motive for CSR, it can be used for the corporate benefit at the expense of the needs of stakeholders, or it can be used for multiple stakeholder accountability (Dare, 2016; Lerner & Tetlock, 1999). Typically, corporations can have reactionary, responsible, reputational, and collaborative motivations for CSR engagement (Schaltegger & Burritt, 2018).

Researchers have analyzed CSR and its financial rewards for nearly 50 years (Berea & Rubin, 2010). Still, the motivation for CSR engagement and why corporations commit to CSR initiatives have not been understood well (Dare, 2016). Some corporations have committed to CSR out of mutual benefit for the organizations, stakeholders, and society, and others have used CSR to increase reputation and public image (Dare, 2016; Doane, 2005; Jiraporn & Chintrakarn, 2013; Panwar, Paul, Nybakk, Hansen, & Thompson, 2014).

One of this study's goals is to understand why and how food industry firms engage more or less in sustainability. Pullman et al. (2009) show how difficult it is to comprehend the involvedness of sustainability practices of the food supply chains on the firm sustainability performance.

Nemetz (2014, 2015) found that when executive commitment to sustainability engagement is observed, higher levels of firm sustainability engagement are measured across industries. Nemetz (2014, 2015) report that when explicit support toward firm sustainability engagement by executive management exists, firms tend to show higher levels of sustainability engagement. Similarly, Jiraporn and Chintrakarn (2013) found that CEO pay has a significant influence on the level of CSR engagement. Increase in CEO pay leads to a growth

in CSR engagement to a point, yet once CEO pay surpasses a given threshold, CEOs decide to reduce CSR engagement. Authors hypothesized that corporations could engage in CSR either for their own singular benefit or mutually beneficial conflict resolution of multiple stakeholders. On one hand, managers may engage in CSR to increase their positive public reputation. On another hand, multiple stakeholders often have conflicting objectives, and CSR may be used to resolve conflicts.

Typically, researchers employ Bebchuk et al.'s (2011) CEO Pay Slice (CPS) to measure CEO power. The authors examined the relationship between the level of CSR engagement and the level of CEO power and concluded that the association between the level of CSR engagement and the level of CEO power is non-monotonic. This means that when CEOs have relatively reduced power, an increase in their CEO power leads to more firm CSR engagement. Conversely, as CEOs become increasingly powerful, CEOs become more accustomed to using their power, and tend to not invest as much in CSR engagement. When CEO power surpasses a given threshold, significantly powerful CEOs tend to lessen the level of CSR engagement. Thus, the authors concluded that CSR engagement is for CEOs' and managers' own singular benefit to build their positive reputation, which leads to a conclusion that resolving conflicts among stakeholders is not the primary motive for corporations to invest in CSR engagement (Bernea, & Rubin, 2010).

Also, Nemetz (2014, 2015) found that there appears to be an optimal level of government control to stimulate firm sustainability engagement. Nemetz (2014, 2015) reports that firm sustainability engagement levels increase with greater governmental mechanisms. However, firm sustainability engagement levels started to decrease once a

certain level of adherence to governmental policies was accomplished to influence more firm sustainability efforts to occur. Thus, Nemetz (2014, 2015) suggests that governmental mechanisms to increase firm sustainability engagement may not be useful beyond a certain point.

However, corporations need to focus on economic, social, and environmental goals for their survival (Carroll & Shabna, 2010; Elkington, 1998; Faller & Knyphausen-Aufsef, 2018). More exploration of how organizations incorporate long-term CSR strategies and practices is needed (Nason, Bacq, & Gras, 2018). Social performance of a firm is increasingly important for the firm, yet how firms integrate CSR to produce social and environmental performance is not understood (Nason et al., 2018). To address the above gaps discussed in the CSR literature, this study aims to understand how and why global food industry firms engage in CSR, and how CSR engagement differs for nations with dissimilar regulations and cultures.

Environmental CSR (ECSR) engagement and comparative institutional factors. ECSR is an essential part and a distinct concept of CSR (Rahman & Post, 2012). ECSR plays an important role in this study because stakeholders in both the global West and East express growing concern for the environmental ramification of the food industry as well as other industries' operations (Hartman, 2011; Heikkurinen & Forsman-Hugg, 2011; Lerro, Raimondo, Stanco, Nazzaro, & Marotta, 2019; Lim, Kang, & Kim, 2017; Kim, 2017; Michaud, Llerena, & Joly, 2012). High CSR engagement does not necessarily equate to high ECSR engagement (Rahman & Post, 2012). ECSR

represents environmentally sensitive corporate behavior beyond legal compliance (Lyon & Maxwell, 2008; Portney, 2008). ECSR aims to limit the adverse consequences on the environment by corporations (Rahman & Post, 2012).

ECSR emphasizes firm-specific CSR engagement—preventative and compliance—that will reduce harmful environmental effect by the corporations (Rahman, & Post, 2012). Kolk and Mauser (2002) report that ECSR has now evolved into measuring environmental performance involving complex quantitative analysis, which enables comparing firms across industries. However, Ilinitich, Soderstorm, and Thomas (1998) state that the criteria for measuring ECSR scores can be unclear (Caritte, Acha, & Shah, 2015; Mio & Venturelli, 2012). Scholars have expressed concerns regarding those proprietary ECSR databases such as CEP, Fortune, FRDC, and KLD, which have unclear data collection methods and often do not report reliability or validity (Rahman & Post, 2012). Transparency of these ECSR databases are also unclear (Rahman & Post, 2012). Thus, Rahman and Post (2012) suggest that ECSR measurements need to become more transparent, reliable, and valid since ECSR scores are used to determine environmental performance, governance, and credibility of corporations (Caritte et al., 2015; Mio & Venturelli, 2012).

Researchers have viewed ECSR in numerous ways. Previous studies define ECSR concepts as multifactorial and multidimensional and are open to multiple interpretations. Scholars have generally considered six factors of ECSR such as trustworthiness (Bansal & Roth, 2000; Christman, 2004; Gilley, Worrell, Davidson, & El-Jelly, 2000; Guenther, Hoppe, & Poser, 2007; Jose & Lee, 2007; Matthews, Christini, & Hendrikson, 2004; Rahman & Post, 2012), internal environmental initiatives (Gilley et al., 2000; Rahman &

Post, 2012), environmental mission and strategy (Chistmann, 2004; Cramer, 2005; Rahman & Post, 2012), environmental performance (Bansal & Roth, 2000; Gilley et al., 2000; Guenther et al., 2007; Henri & Journeault, 2008; Jose & Lee, 2007; Leon & Moon, 2007; Punte, Repinski, & Gabrielsson, 2006; Rahman & Post, 2012; Stanwick & Stanwick, 1998; Van Buren, 1995; Williamson, Lynch-Wood, & Ramsay, 2006; Youn & Welford, 1998), environmental investment spending (Guenther et al., 2007; Rahman & Post, 2012; Van Buren, 1995), and corporate governance (Jose & Lee, 2007; Marshall & Toffel, 2005; Matthews et al., 2004; Onkila, 2009; Rahman & Post, 2012; Williamson et al., 2006).

To address the above need to understand the complexity of ECSR reporting, integrity, and transparency, this study aims to fill the gap in the sustainability literature by investigating multiple formal institutional factors relevant to ECSR engagement of the global food industry firms (Hartman, 2011; Heyder & Theuvsen, 2009; Jones, 2001; Nestle, 2002; Pretty et al., 2005; Pullman et al., 2009; Roth et al., 2008; Smith, 2008; Sustain, 2002).

Sustainability reporting and its legitimacy. Recent studies show evidence that ESG (environmental, social, and governance) disclosure score data is associated with various economically beneficial effects (Lloyd, 2018). ESG reporting is associated with reduced capital constraints (Cheng, Ioannou, & Serafeim, 2014), reduced capital investment expenses (Dhaliwal, Li, Tsang, & Yang, 2011), and positive stock price movements around required ESG reporting rules and regulations (Khan et al., 2016). Furthermore, industry-specific categories of materiality recognize ESG data as predictive and relevant of a

company's future firm performance (Amel-Zadeh, & Serafeim, 2018; Khan et al., 2016). Bloomberg Finance L. P. (2019) began reporting ESG data from 2008. Lloyd (2018) reports that the primary criticism against using the Bloomberg ESG disclosure score to study sustainability engagement of corporations is attributed to Bloomberg Finance L.P. being a for-profit investment service. It can be argued that analysis and reporting of ESG data is for Bloomberg's profit-maximization objective (Lloyd, 2018). Such a commercial investment purpose for financial gain could threaten the integrity and accuracy of Bloomberg's ESG reporting (Lloyd, 2018). Dorfleitner, Halbritter, and Nguyen (2015) compared Bloomberg ESG data with other ESG vendors, such as Thomson Reuters' ASSET 4 and MSCI's KLD and Datastream, to assess the criticism against commercially analyzed ESG data. Dorfleitner et al. (2015) found variations in methodologies and reported no statistically significant variance among ESG data generated by various ESG vendors.

Lloyd (2018) reports that Bloomberg L. P. (2019) has made an effort to establish the legitimacy of their ESG data as an independent provider of ESG disclosure scores, and Park and Ravenel (2013) report that Bloomberg is a credible ESG data source for sustainable investment. Moreover, scholars have examined and confirmed the use of Bloomberg ESG data in sustainability studies (Lloyd, 2018). Lloyd (2018) states that Bloomberg ESG data is used in empirical testing to understand firms' sustainability engagement and its advantageous use in academic research. Bloomberg's ESG reporting is used to analyze firm sustainability performance, and weaknesses of ESG data generation is studied (Lloyd, 2018). Bloomberg ESG data is now accepted as a benchmark for sustainable investment by the financial community as well as by academia

(Doyle, Visser, & Bendell, 2011; Eccles, Serafeim, & Krzus, 2011; Fatemi, Glaum, & Kaiser, 2018; Husted & Sousa-Filho, 2016; Kotsantonis, Pinney, & Serafeim, 2016; Lai, Melloni, & Stacchezzini, 2016; Lloyd, 2018; Park & Ravenel, 2013).

Sustainability engagement and comparative institutional factors. The majority of CSR research has focused on firms in the global West, that is in the U.S. (United States) and the E.U. (European Union) (Chapple & Moon, 2005). However, with increasing globalization, CSR research focus has increasingly oriented toward understanding CSR efforts in Asia (Scholtens & Kang, 2012). Mixed results have been reported regarding CSR engagement and its effects in Asia with some studies reporting positive effects (Cole, Elliott, & Shimamoto, 2006; Cheung, Tan, Ahn, & Zhang, 2010; Choi Kwak, & Choe, 2010; Oh, Chang, & Martynow, 2011), negative effects (Li & Zhang, 2010), and no significant effects (Cao, 2011). CSR performance outcomes also have shown dependence on contextual factors (Aguinis & Glavas, 2012) and various performance indicators (Allouche & Laroche, 2005). Researchers speculate that inconclusive results may be due to failure to consider context, poor measurements, contingencies, and insufficient data (Dahlsrud, 2008; Lee, 2008). CSR measurement models are typically classified into two categories: self-reported and archival data (Dixon-Fowler, et al., 2012). Self-reported data are typically survey or interview data directly collected from study participants (Bhattacharjee, 2012; Northrup, 1996). Archival data analysis uses secondary data that has been already collected by research institutions, organizations, and agencies and are archived as records

(Bhattacharjee, 2012; SAMHSA, 2018). Researchers could also investigate whether the mode of measuring CSR in Asia influences the outcomes (Hou et al., 2016).

As stated earlier, previous research has been limited to CSR samples of mostly Western nations. More exploration of CSR research in the East is needed to understand how Asian CSR differs from the West (Hou et al., 2016). Strategy of the firms is bound by contextual contingencies, so the evolution and history of CSR in Asian countries needs more exploration (Hou et al., 2016). CSR is perceived as context-specific firm behaviors, guidelines, and policies, which take into consideration multiple stakeholders' needs and the triple bottom line aims of economic, social, and environmental goals (Aguinis & Glavas, 2012). Researchers in the global West started to use the term CSR in the 1960s after many firms formed the concept of internal, external, and environmental stakeholders who influence and are affected by the firms' decisions and behaviors (Freeman, 1984; Lou & Bhattacharya, 2006).

Most global sustainability studies focus on the context of the U.S. and the E.U. (Baughn, Bodie, & McIntosh, 2007). Asia refers to an extensive geographical area covering China, Japan, South Korea, Taiwan, and others. Asian CSR efforts differ from CSR efforts in the global West, and Asian countries engage in sustainability with their own unique practices (Scholtens & Kang, 2012). A cross-country comparative analysis revealed that philanthropy, one stream of CSR engagement, is prevalent in North America, lower in Europe, and significantly lower in Asia (Welford, 2005). Studies report that Asians focus on the CSR's economic objective, but some Asian countries appear to ignore workplace safety and human rights for employees, while other Asian firms expect employees to be more work-centric than some Western firms (Welford,

2005). For instance, Burton, Farh, and Hegarty (2000) illustrate that Westerners tend to focus on ethical and legal aspects of CSR, while Easterners cite economic objectives of CSR engagement. China's CSC9000T (China Social Compliance 9000 for Textile and Apparel industry) practices differ considerably from the Western CSR practices (Baughn et al, 2007).

Furthermore, Asians appear to view CSR differently than individuals in the global West because they are influenced by globalization differently (Roth et al., 2008) and are influenced by both Western concepts and Eastern values (Baughn et al, 2007). It is worthwhile to note that although many CEOs in Asian firms do not recognize the concept of Western CSR engagement, environmental preservation and humanitarian charity are widely expected and adopted firm behavior in Asia (Baughn et al, 2007).

Using the institution-based view (IBV) theoretical framework is appropriate to study comparative research on CSR engagement and its influence because global studies involve comparing differences among various formal and informal institutional factors of nations in the West, the East, and other parts of the world. The need to understand institutional and other contextual factors related to institutions and CSR engagement (Barnett & Salmon, 2012; McWilliams & Siegel, 2001; Margolis & Walsh, 2003) should be examined with variables such as the level of economic development, industry-level, firm-level, and measurement models.

Comparative country research on CSR engagement is needed because Easterners and Westerners view CSR differently (Hou et al., 2016; Lipsey &

Wilson, 2001). CSR is context specific (Jamali, 2008; Jamali & Mirshak, 2006). CSR practices may be known in other terms such as philanthropy in East Asia (Hou et al., 2016). Researchers suggest further investigation of the effects of institutional factors and country differences on CSR engagement (Cai et al., 2012; Gomez, 2008; Jamali, 2008; Jamali & Mirshak, 2006; Moon & Shen, 2010; Orlitzkey et al., 2003; Scholtens & Kang, 2012; Wang & Juslin, 2009). Thus, this study addresses the above gaps discussed in the CSR literature by investigating institutional factors' influence on the levels of CSR engagement with cultural and national policy measurements as a global study.

Food Industry Sustainability Engagement and Comparative Institutional Factors

This second section reviews the following three topics. First, sustainable global food supply chains, second, global food industry CSR engagement, and third, global food industry CSR and institutional factors are considered.

Sustainable food supply chains and comparative institutional factors. This section reviews sustainable food supply chain strategies relative to global food industry CSR engagement. Few industries receive as much constant criticism as the food industry due to food recalls, contamination, and unsafe working conditions for employees (Pullman et al., 2009; Roth et al., 2008). The global food supply chain is prone to unsafe and contaminated food products reaching unsuspecting consumers because of the many loopholes in regulatory supervision (Roth et al., 2008). More than ever, consumer advocates and even food producers themselves are asking for stricter regulation for food safety (Zhang, 2007).

Today, food supply chain entities such as manufacturers, vendors and suppliers, wholesalers, distributors, restaurants, and retailers in the U.S. are inspected by food

regulators such as the U.S. Department of Agriculture (USDA) and the Food and Drug Administration (FDA) (Wilde, 2018). However, Roth et al. (2008) suggest that without comprehensive research to uncover the fundamental cause of food process failures, increased regulation and inspection alone of food supply chain players will not lead to effective or sustainable food supply chain operations and management (Dillard & Pullman, 2017; Pullman et al., 2018; Pullman et al., 2009; Pullman & Wikoff, 2017).

Sustainable food supply chain management can be used as a competitive strategy (Dauvergene & Lister, 2012; Heikkurinen & Forsman-Hugg, 2011; Lambin & Meyfroidt, 2011). Global food industry corporations need to continuously innovate their sustainability engagement as part of strategic CSR (Porter and Kramer, 2006; Roth et al., 2008), which can be utilized to promote competitive advantage (Pullman et al., 2009; Rueda et al., 2017). Localized food supply chains are thought of as sustainable when they use practices such as biodynamic farming, permaculture, agroecology, hydroponics, aquaponics, and so on (Fernandez, Goodall, Olson, & Mendez, 2012; Levidow, Pimbert, & Vanloqueren, 2014; Roth et al., 2008; Wezel et al., 2009), and do not impose negative externalities like high food miles, which result from long-distance and global food distribution (Baldwin, 2015; Jones, 2001; Nestle, 2002; Smith, 2008; Sustain, 2002; Pretty et al., 2005).

As a response to heightened stakeholder awareness about the negative environmental consequences of agricultural production, multiple stakeholders have started to demand higher social and environmental standards (Roth et al.,

2008; Rueda et al., 2017) such as to produce healthy and safe food, support diversity of local economies and communities, support livable wages of farmers, and operate within the limits of biodiversity (DEFRA, 2002; Smith, 2008).

Illustrations of environmental concerns in food supply chain sustainability include inefficient water management, soil degradation, deforestation, chemical pollution, waste management, and industrialized agriculture practices (Baldwin, 2015; Boehlje, 1993; Fox, 1997; Pullman et al., 2009; Wade, 2001). Moreover, there are social sustainability concerns such as pay below livable wage and harsh work conditions (Jorgensen, Pruzan-Jorgensen, Jungk, & Cramer, 2003; Martin, 1991). Illegal child labor, human rights abuses, lack of collective bargaining rights of workers, and food safety concerns (Abbott & Monsen, 1979; Bardasi & Francesconi, 2003; Bromiley & Marcus, 1989; Maloni & Brown, 2006) are serious weaknesses in industrialized food supply chain operations (Pullman et al., 2009; Roth et al., 2008).

Sustainable food supply chain management research primarily emphasizes sustainable social and environmental practices (Pullman et al., 2009; Pullman, Longoni, & Luzzini, 2018; Pullman & Wikoff, 2017). Sustainable food production, processing, distribution, and retailing based on a more sustainable agri-food system calls for the commitment of global food industry corporations (Roth et al., 2008; Rueda et al., 2017; Smith, 2008). The food industry's commitment to sustainable practices extends to corporate social and environmental performance within their global food supply chain operations (Smith, 2008, 2007). However, there has been limited sustainability research to assess environmental, quality, and economic performance of food supply chain entities (Pullman et al., 2009). To address the need to develop more sustainable food supply

chains in the global food industry, this study contributes by investigating formal and informal institutional factors relevant to sustainability and their effects on global food industry CSR engagement in a specific national comparative context.

Food industry sustainability engagement and comparative

institutional factors. This section reviews the challenges of addressing this study's objectives in the global food industry. Hartman (2011), Roth et al. (2008), and Rueda et al. (2017) suggest the need for improved implementation of sustainability engagement in the global food industry. The global food industry is highly dependent on natural resources, and it has a complicated and substantial effect on society and the environment (Hartman, 2011; Pullman et al., 2009; Roth et al., 2008; Rueda et al., 2017). First, food supply chain structure is complex, diverse, and context-specific to cultures and regions (Hartman, 2011; UNCTAD, 2009). Second, the food industry involves the seasonality of agricultural production and climate changes (Rueda et al., 2017). Third, food products commonly involve multiple ingredients from various suppliers of different sizes and of diverse origins (Roth et al., 2008; Rueda et al., 2017). Fourth, the food industry imposes diverse regulations from human health to animal welfare (Heyder & Theuvsen, 2009). Fifth, ethical issues concerning agricultural production and procurement have been under public scrutiny due to the hazard of unfair practices and power abuse (CIAA, 2010; Fuchs, Kalfagianni, & Havinga, 2009; Hartman, 2011; Jones, Comfort, & Hillier, 2007; Maloni & Brown, 2006). Sixth, in recent years multiple stakeholders have demanded transparency beyond the legal requirements of the entire food supply chain (Poetz et al., 2013; Stohl,

Stohl, & Townskey, 2007). Seventh, CSR approaches by large food multinational companies (MNCs) are distinctively different from food small- and medium-sized food enterprises (SMEs) (Hartman, 2011).

Therefore, it can be challenging to monitor social and environmental behaviors of food businesses with numerous smaller food producers involved in the food supply chains (Roth et al, 2008; Rueda et al., 2017). Because of the difficulty in ensuring responsible social and environmental behavior in various global food supply chains, the global food industry poses concerns for activists, policymakers, and non-government organizations (NGOs) due to its significant effect on society and the environment around the world (Hartman, 2011; Roth et al, 2008; Rueda et al., 2017).

More sustainability food supply chain research and partnerships among various global food industry sectors such as food producers and processors, food retailers, food distributors, NGOs, and governments across countries are essential to developing sustainable food supply chains around the globe (Hartman, 2011; Pullman, 2009; Roth et al., 2008; Smith, 2008). Thus, to address these gaps discussed in the food industry sustainability literature, this study examines national and cultural factors' influence on global food industry CSR engagement levels.

Food industry sustainability engagement and comparative institutional factors. As Hartman (2011), Pullman et al. (2009), Roth et al. (2008), Rueda et al. (2017), and Smith (2008) state, global food industry CSR engagement is diverse and complex. There is a distinct difference between how large global food corporations and food SMEs practice CSR engagement depending on the country, regions, and cultures. Baz et al. (2016) and Chkanikova and Mont (2015) illustrate the need to study the

interactions of formal and informal institutional factors within the global food industry. Chkanikova and Mont (2015) studied drivers and barriers (regulatory, resource, and social) of CSR engagement in Swedish food SMEs and suggested more studies on institutional factors and other exploratory studies in the food industry to uncover research questions.

The authors also suggest further exploration to improve CSR engagement in the food supply chain, implementation of governmental initiatives, and development of standards by food policymakers to promote sustainable food practices (Chkanikova & Mont, 2015). Baz et al. (2016) studied how national institutional factors differ in France and Morocco's food SME's CSR engagement. They suggest future research on food CSR engagement in cultural and institutional contexts and as well as research to understand how food SME's CSR engagement differ across industries. Future studies should explore food SME's interactions with external institutional factors and stakeholders in comparative national institutional contexts.

Hartman (2011), Pullman et al. (2009), Roth et al. (2008), Rueda et al. (2017), and Smith (2008) suggest multiple stakeholder initiatives where global food industry firms work with farmers, scholars, national governments, and non-governmental organizations (NGOs) are essential in developing a more sustainable food system which partners with sustainable food supply chains globally. Thus, to aid in enhancing collaboration among diverse stakeholders within the global food system, and to improve global food industry CSR engagement, this study examines formal and informal institutional factors' influence on global food industry CSR engagement. To address the

gap in global food industry CSR literature relative to its institutional factors, this study creates new knowledge by examining both formal and informal institutional factors' influence on global food industry sustainability engagement in a specific national comparative context.

Institution-Based View (IBV) and Sustainability Engagement

This third section reviews the following three topics: First, the literature review explores the IBV and sustainability engagement; second, informal institutional factors (national culture) and sustainability engagement; and third, formal institutional factors (national governments or laws) and sustainability engagement.

Institution-based view (IBV) and sustainability engagement. The IBV framework has foundations in institutional economics (North, 1990; Williamson, 1985) and sociological institutional theory (DiMaggio & Powell, 1983; Scott, 1995) which explore the complex interrelationships among corporations and formal and informal institutional factors in the global business environment (Garrido et al., 2014). By studying the role of institutional factors concerning corporate behavior, this theory seeks to understand the reasons for firms' competitive advantage (Peng et al., 2012; Peng et al., 2009). The IBV seminal work by Peng et al. (2009) questioned how institutional factors influence strategic decisions and firm performance.

Based on the IBV framework, Garrido et al. (2014) suggest further formal and informal institutional measurement analysis for scholars to understand the role of institutional factors in international business. Contextual factors, such as various institutional elements, are increasingly gaining attention in global business research (Garrido et al., 2014), and the IBV framework adds to management strategy theory-

building by studying how formal and informal institutional factors influence organizations within nations, as well as in the global business environment.

The IBV framework contributes to strategy management research in diverse ways. For instance, the measurement of corporate social performance (CSP) is unclear and ambiguous. Future studies need to use institutional benchmarks to develop clearer CSP standards (Nason et al., 2018). Similar to the IBV framework, Aguilera and Jackson (2003) derived comparative institutional analysis from North's (1990) institutional theory to study institutional factors in CSR and corporate governance of advanced economies. The comparative corporate governance model is developed as a response to minimizing agency problems (Aguilera & Jackson, 2003; Shleifer & Vishney, 1997). The comparative institutional analysis model promotes understanding of diversity in CSR and corporate governance practices among nations (Aguilera & Jackson, 2003). Agency theory is based on an Anglo-American model, which was viewed as the best practice to explain corporate governance interaction in the global West; regarding their CSR engagement, however, the IBV framework suggests that national cultures will continuously evolve relative to their dynamic institutional contexts around the globe (Aguilera & Jackson, 2003; Garrido et al., 2014; Peng et al., 2009). This study uses the IBV as a theoretical framework to view how institutional factors influence global food industry CSR engagement to further the knowledge in the CSR literature.

Informal institutional factors (national culture) and CSR engagement.

This section reviews the relationship between informal institutional factors and

CSR. Nemetz (2014, 2015) suggests that even in a local community in Oregon, individuals are influenced by globalization and experience the interaction among various national cultures and national social norms. Nemetz (2014, 2015) reports that varying levels of sustainability engagement across industry sectors could be due to norms and expectations within each industry. Nemetz (2014, 2015) suggests further study to examine industry-specific factors that influence sustainability engagement levels. Nemetz (2014, 2015) suggests more investigation of each industry's public industry scandals, high-profile accidents, unique industry operation structures, and other industry-specific factors needs to understand how various industries engage in sustainability on differing levels, which can be influenced by social norms within industries.

Some past CSR studies have explored the influence of formal institutional factors such as national governments and laws (Campbell, 2007; Chih, Chih, & Chen, 2010; Moon, 2004; Peng et al., 2012), but close consideration has not been paid to the influence of informal institutional factors such as national culture on CSR (Maignan, 2001; Peng et al., 2012; Ringov & Zollo, 2007; Waldman et al., 2006). Peng et al. (2012) used Hofstede's national cultural factors to study the influence of national cultures on firms' sustainability engagement levels. Peng et al. (2012) report that uncertainty avoidance and individualism showed positive influence on firms' sustainability engagement levels when masculinity and power distance showed negative influence on firms' sustainability engagement levels. Ho et al. (2011), Peng et al. (2012), and Ringov and Zollo (2017)'s studies on national cultural influences on firms' sustainability engagement levels are partly consistent, yet three studies' findings show inconsistencies.

Few researchers have explored the influence of national cultural on sustainability engagement (Ho et al., 2011; Peng et al., 2012; Petruzzella, Salvi, & Giakoumelou, 2017; Ringov & Zollo, 2007) and the existing studies show mixed findings. Such mixed results are often due to heterogeneous cultural influences on sustainability engagement (Petruzzella et al., 2017). Mixed results in national culture influence on firm sustainability studies indicate that there is a need for further study to examine the association between national cultural factors and firm sustainability engagement levels (Peng et al., 2012). Further understanding of national cultural influences on CSR engagement should be of high interest to policymakers because sustainable investors can be evaluating possible foreign investment in another country based on the firm's sustainability engagement levels (Peng et al., 2012). Multinational companies' (MNCs') management need to pay attention to using culturally appropriate sustainability engagement strategies in each nation to yield positive outcomes (Peng et al., 2012). By addressing the need for future research in national cultural institutional contexts on a global scale, this study can contribute to filling the gap by investigating informal institutional factors' influence on global food industry CSR engagement in the CSR literature.

Formal institutional factors (national institutional factors) and CSR engagement. This section reviews the relationship between formal institutional factors and CSR.

Assessing the findings by Nemetz (2014, 2015), this study further examines the formal (national) institutional factor influence on sustainability

engagement levels specifically in the food industry. According to Nemetz (2014, 2015), businesses operate in the globalized environment. Nemetz (2014, 2015) observes that even small businesses in Oregon create a globalized community from various nations. Nemetz (2014, 2015) reports that global interest among scholars toward sustainability research increased due to social and environmental issues such as harsh employee treatment, social conflicts, and changes in climate. Nemetz (2014, 2015) suggests that such sustainability issues transcend national borders. However, Nemetz (2014, 2015) found that firms' sustainability engagement levels varied widely depending on the headquarter locations. Nemetz (2014, 2015) found that nation-specific factors are attributed to such country sustainability engagement level variations. Nemetz (2014, 2015) reports that firm sustainability engagement levels are significantly influenced by governmental effectiveness, social norms, levels of economic development, technological readiness, and fossil fuel energy use.

Additionally, evidence suggests that CSR is becoming institutionalized within the Western society (Bondy, Moom, & Matten, 2012). Mayer and Rowan (1977) suggest that institutionalization of CSR can be observed from public opinion, markets, and laws. Research suggests there is a link between CSR and institutions, which is developed by multiple stakeholders in Western society (Bondy et al., 2012). Matten and Moon (2008) and Brown et al. (2018) report that based on institutional theory, the U.S. uses explicit CSR, while European nations use implicit CSR. On the contrary, East Asian society does not appear to share the same institutionalized CSR concept within their countries, but East Asian corporations actively preserve the environment because East Asian stakeholders expect corporate commitment to ECSR (Hou et al., 2016). As reviewed

above, there are wide gaps in the global sustainability literature. Thus, this study addresses this gap by examining the formal institutional factors' influence on CSR engagement on a global scale with an empirical design.

The Sustainability Literature Review Summary

As illustrated in this chapter, examination of both formal and informal institutional factors' influences on global food industry sustainability engagement in a specific comparative context is needed (Cai et al., 2012; Gomez, 2008; Hou et al., 2016; Jamali, 2008; Jamali & Mirshak, 2006; Moon & Shen, 2010; Nemetz, 2014, 2015; Orlitzkey et al., 2003; Pullman et al., 2009; Roth et al., 2008; Scholtens & Kang, 2012; Wang & Juslin, 2009). This review suggests there are significant gaps in knowledge in the global food industry sustainability engagement literature and in its complex interactions and influence among context-specific national cultural and national governance factors (Baz et al., 2016; CIAA, 2010; Chkanikova & Mont, 2015; Fuchs et al., 2009; Hartman, 2011; Heyder & Theuvsen, 2009; Jones et al., 2007; Maloni & Brown, 2006; Poetz et al., 2013; Pullman et al., 2009; Roth et al., 2008; Rueda et al., 2017; Stohl et al., 2007). To fill the gaps in the global food industry sustainability literature and to contribute to the stream of research, this study investigates formal and informal institutional factors' influences on the global food industry sustainability engagement levels using the institution-based view (IBV) as the theoretical framework (Peng et al., 2012; Peng et al., 2009).

Chapter Three: Research Design and Methodology

Chapter Three explains the research procedures used to examine the research problem of this study. This chapter is organized as follows. It illustrates sample, sample size, data collection, theoretical constructs and propositions, and research methodology (Haigh, 2018). The chapter also proposes the study's seven hypotheses, measurement items, and sampling procedures. Further, how the seven hypotheses are tested is discussed. In addition, assumptions and limitations are explained.

This research question guides this study's hypotheses.

Research question. *How do formal and informal institutional factors influence the level of global food industry sustainability engagement?*

Sample

This study selects a sample of the four global industry classification standards (GICS) food industries (that are also the nine GICS food *sub*-industries) which represents a portion of the population pool. The sample of the four GICS food industries (the nine GICS food *sub*-industries) selected from the global food industry firms should match as closely as possible to the characteristics of the population represented so that this study is conducted with a sample that can be generalized to the global food industry firm population (Creswell & Creswell, 2018; Field, 2017; Roberts, 2010). Four GICS food industries are 1) restaurants, 2) food retailing, 3) beverages, and 4) food products. These four GICS food industries are further classified by GICS system into nine GICS food sub-industries as follows: 1) restaurants, 2) food retailing, 3) food distributions, 4)

hypermarkets and super centers, 5) brewers, 6) distillers and vintners, 7) soft drinks, 8) agricultural products, and 9) packaged foods and meats. Detailed GICS classification of the four GICS food industries and the nine GICS *sub*-industries are illustrated in Appendix A.

Data collection for this study is conducted through access to the Bloomberg environmental, social, and governance (ESG) archival database. This study uses ESG data and institutional measurement instruments to investigate global food industry sustainability engagement. As discussed in Chapter One, this study is motivated by Garrido et al.'s (2014) suggestion to incorporate institutional factors into empirical studies using Peng et al.'s (2012, 2009) institution-based view (IBV) theoretical framework. Based on Chapter Two's extensive literature review, six institutional factors (four formal and two informal) are selected in order to test their influence on global food industry sustainability engagement.

Bloomberg L. P. analyzes and reports public multinational corporations' levels of sustainability efforts as composite ESG disclosure scores. ESG refers to three distinct areas of corporate sustainability engagement (environmental, social, and governance categories), which serves as the dependent variable in this study. Bloomberg L. P. classifies ESG indexes of public companies by firm size, financial performance, market capitalization and so on in order to support sustainable investors in making sustainable investment decisions (Bloomberg L. P., 2019). The details of ESG scores and its three components are illustrated in Appendix E.

To test the study's seven hypotheses, the study collects firm-level (Bloomberg ESG) and industry-level (four GICS food industries, which are nine GICS food *sub*-industries) data from the Bloomberg Finance L. P. database (2019). The food industry is classified by global industry classification standard (GICS) (MSCI, 2019a).

Descriptive Statistics of Sample

The descriptive statistics of the food industry firms were analyzed for an overview of the global food industry. The sample of this study consists of four GICS food industries (which are nine GICS food *sub*-industries) from the Global Industry Classification Standards (GICS) (MSCI, 2019a). Table 1 illustrates the distribution of the food industry GICS firms in the sample set.

Table 1 shows the four GICIS food industry (which are nine GICS food *sub*-industries) firms' sustainability engagement levels represented by ESG disclosure scores. Four GICS food industry firms (restaurants, food retailing, beverages, and food products) comprise the sample set. The sample food firms are selected based on the existing reporting of Environmental, Social, and Governance (ESG) disclosure scores in the fiscal year 2017 in the Bloomberg Finance database (Bloomberg Finance L.P., 2019). The data collection of Bloomberg ESG data occurred in April 2019.

There are four food industries per GICS classifications used by the Bloomberg database. Of the 504 food firms in the sample set, the mean sustainability engagement level (ESG disclosure score) was 26.41 from the fiscal year 2017.

Table 1:
Descriptive Statistics of the Four Food Industries by Global Industry Classification
Standards (GICS) and Firm Sustainability Engagement Levels

Four Food Industry Classifications by GICS (Nine Food GICS <i>Sub-</i> Industries)	Food Firm Sustainability Engagement Levels (ESG Score)		
	M	SD	N
1) Restaurants	21.66	9.25	106
2) Food Retailing (food retail, food distributions, and hypermarkets & super centers)	24.04	10.87	103
3) Beverages (brewers, distillers & vintners, and soft drinks)	28.99	14.19	61
4) Food Products (agricultural products, and packaged foods & meats)	28.95	12.94	234
Sample Set	26.41	12.38	504

Sample size. The population of this study is the fiscal year 2017 investable food industry firms in the four GICS industries: 1) restaurants, 2) food retailing, 3) beverages, and 4) food products. In April 2019, the data set included 379 public restaurant firms, 380 food retailing firms, 344 beverage firms, and 1748 food products firms for the fiscal year 2017. These firms were screened for whether they had reported ESG disclosure scores, whether firms operated in countries where all six related institutional scores were reported, and firms in countries that did not have more than five firms with ESG scores. Applying these qualifiers reduced the sample to 106 restaurants firms, 103 food retailing firms, 61 beverages firms, and 234 food products firms (see Table 1), which resulted in total of 504 public food firms. These were recorded and analyzed for 1) ESG disclosure score by the Bloomberg Finance database, 2) Yale's World Economic Forum's Environmental Performance Index (EPI), 3) three of the BCFN Foundation's Food Sustainability Indices (FSIs) (food loss and food waste; sustainable agriculture; nutrition challenge), and 4) Hofstede Insight's uncertainty avoidance and long-term orientation indices.

Sample size justification is based on correlation analysis, simple and multiple linear regression analysis, and one-way ANOVA as follows. Wilson, Voorhis, and Morgan (2007) suggest a sample size of 50 for simple correlation analysis, with a larger sample size with multiple IVs analyzed simultaneously. Green (1991) suggests $N > 50 + 8m$ (m represents the number of multiple IVs for multiple correlation analysis) as reasonable. This study anticipated using a multiple correlation model with six IVs. $50 + 8(6) = 98$. It is still statistically relevant to run a multiple regression analysis test with less

data points of 98 as long as there are at least 50. This study's sample size is larger than 98, thus it is statistically appropriate to use correlation analysis.

Wilson et al. (2007) suggest a sample size of 50 for simple linear regression analysis with a larger sample size, with multiple IVs analyzed simultaneously. Green (1991) suggests $N > 104 + m$ (m represents the number of multiple IVs for multiple regression analysis) as reasonable. This study anticipated using a multiple linear regression model with six IVs: $104 + 6 = 110$. This study's sample size is larger than 110, thus it is statistically relevant to use multiple regression analysis.

Cohen (1988) suggests that a sample size of 30 per group should lead to 80 percent power with a medium to a large effect size (Wilson et al., 2007). Consequently, this study can collect a sample size of approximately 30 or more per category found from the data collection to use one-way ANOVA. ANOVA is used to analyze categorical data such as four GICS food industry firms' (restaurants, food retailing, beverages, and food products) comparison. ANOVA cannot be used to study economic development levels of the countries of origin within the global food industry because there were fewer than 30 in one category.

Variables

This study aims to measure the influence of national laws, regulations, and national culture on a food industry firm's sustainability engagement. To move forward with the study, a set of variables that operationalize the institution-based view (IBV) theoretical framework that the study aims to examine are discussed.

Dependent variable. This study uses the Bloomberg ESG disclosure score as the dependent variable, which measures sustainability engagement of the food industry firms considered in the sample. The study uses numeric data to measure CSR engagement, as represented by the Bloomberg ESG disclosure score (Bloomberg Finance L.P., 2019; Fukukawa, 2010; Garriga & Mele, 2004; Nemetz, 2014, 2015; Lloyd, 2018). CSR engagement refers to how much firms are actively committed to and actively involved in CSR efforts. Sustainability engagement and CSR engagement for this study share the same definition. The Bloomberg ESG disclosure score (Bloomberg Finance L.P., 2019) is a quantified score, which refers to environmental, social, and governance measurements of public companies analyzed by Bloomberg. In this study, the Bloomberg ESG scores of the global food industry firms represent their level of CSR engagement. The higher the ESG score, the more the firms are engaged in their CSR efforts. The dependent variable is measured on a scale from 0 to 100, with higher scores reflecting firms that engage in more CSR. Refer to Appendix E for a detailed description of the Bloomberg ESG data.

Bloomberg ESG data is ideal for this study, due to its increasing interest in sustainable investing and ESG disclosures (Amel-Zadeh, & Serafeim, 2018; Lai et al., 2016; Liern & Perez-Gladish, 2018). In the past 25 years, exponential growth has been observed in companies reporting their ESG data, including environmental data (such as water consumption, carbon emissions, and waste management); social data (such as employee demographics, product quality standards, and workplace safety); and governance data (such as board diversity, anti-corruption measures, and lobbying behaviors) (Amel-Zadeh, & Serafeim, 2018; Lai et al., 2016; Liern & Perez-Gladish, 2018). While fewer than 20 companies reported ESG data in the 1990s, the number of

companies generating sustainability reports has now increased to almost 9,000 in 2016 (Amel-Zadeh, & Serafeim, 2018; Lai et al., 2016; Liern & Perez-Gladish, 2018).

Pullman et al. (2009) illustrate how relatively rare sustainability efforts are made in the food industry supply chain. This is supported by the figures in Table 1. Within the restaurants industry, ESG reporting was only done for 109 (29 percent), of the 379 identified firms in the restaurants industry. An additional three of the remaining 109 were eliminated for lacking one or more of total six institutional factor indexes. In the food retailing industry, only 120 (32 percent) of 380 firms in the food retailing industry had an ESG score while 17 of those firms that did not have complete institutional factor data were not included in the sample. Within the beverages industry, a mere 61 (21 percent) of the 344 identified by Bloomberg database had ESG scores, but 14 lacked the required number of institutional factors for inclusion. Finally, within the food products sector, only 278 (16 percent) of the 1,748 firms had ESG scores. Of those, another six were eliminated for not having the required six institutional factors (BCFN Foundation, 2019; Hofstede Insight, 2019; World Economic Forum, 2019) that this study aimed to test.

Advantages and disadvantages of using composite scores such as Bloomberg ESG data are as follows. An important advantage of composite indicators is they can be used to understand complex and multifactorial phenomena in a simple summarized view. They offer a big picture perspective wherein decision-makers can easily interpret trends with various indicators being

analyzed simultaneously (such as social performance, operational performance, environmental performance, and so on). Additionally, composite ESG reporting makes the ranking of complex corporate sustainability performance manageable. Composite ESG scores can facilitate rapid analysis of corporate sustainability engagement within and across industries (Bhattacharjee, 2012).

Disadvantages of using composite ESG scores include the fact that poorly constructed and misrepresented composite indicators can confuse information users. For example, an overly generalized view of complex phenomena represented by composite ESG scores can be misleading. Therefore, composite scores, such as ESG data, should often be utilized along with other credible indicator sources to draw conclusions. Construction of composite ESG scores can involve judgment rather than objective, scientific analysis (Bhattacharjee, 2012).

Many third-party providers create ESG data as ESG vendors. Bloomberg ESG data is analyzed and reported for over 10,000 public companies globally. ESG data reporting is incorporated into Bloomberg equities and the business intelligence services of Bloomberg Finance L.P. (2019). Bloomberg ESG indexes rate firms based on their ESG reporting of quantitative, qualitative, and policy-related ESG data on a daily and annual basis. Bloomberg uses third-party sustainability reporting agencies, such as CDP Climate disclosure score, ISS Quality score, Sustainalytics and RobecoSam to illustrate an overview of the firm's ESG reporting relative to its peers and its historical ESG information. Public companies are analyzed on a daily and an annual basis by gathering ESG data garnered from corporate annual reports, CSR reports, sustainability reports, news, public sources, and companies' public relations and investor relations websites.

The ESG data is verified and standardized by 120 environmental, social, and governance indicators such as climate change, carbon emissions, energy, pollution of water and air, waste management, resource utilization, supply chain management, diversity inclusion, discrimination, community engagement, community relations, political contributions, human rights considerations, human resource management, cumulative voting, shareholders' rights and participation, executive compensation, takeover defense, independent directors, and staggered boards (Bloomberg L.P., 2019). Bloomberg's ESG data has obtained a credible reputation in the financial community as well as in academia. In 2016, there were over 12,200 Bloomberg ESG subscribers, which makes Bloomberg ESG data one of the mainstream, sustainable investment databases (Huber, Comstock, & Polk, 2017).

The use of archival data allows researchers to analyze multidimensional and complex information and aggregate, compare, and contrast a vast amount of data quantitatively. The advantages of archival data analysis are high validity, accuracy, low cost, ability to compare historical trends, and large sample size. The disadvantages of archival data analysis are difficulty accessing data, data can be outdated, difficulty in trend analysis when records are not consistently reported, need to understand how data was collected to assess its validity, and data collected may not reflect a complete picture of the study of interest (Dikolli et al., 2013; SAMHSA, 2018).

Using self-reported data has advantages and disadvantages. Low cost, practicality, scalability, and comparability represent some of the more significant

advantages. Disadvantages can be numerous, however, including potential dishonest reporting, incomplete answers, differences in interpretation of collected data, difficulty in interpreting participants' emotions and circumstances, difficulty in analyzing complex responses, participants having hidden political agendas, difficulty in assessing unique situations of each participant, accessibility of self-reported survey data, and the possibility of inaccurate reporting caused by survey fatigue (Bhattacharjee, 2012; Northrup, 1996; Surveyanyplace, 2019).

Independent variables. There are six proxy measurements for this study: four formal and two informal institutional measurements. This study aims to investigate the relationship between formal and informal institutional factors and food industry sustainability engagement.

National environmental performance. This study examines national environmental performance using Yale's World Economic Forum Environmental Performance Index (EPI). This study explicitly examines environmental policy effectiveness and agri-food policy effectiveness using the Environmental Performance Index (EPI) developed by Yale's World Economic Forum (World Economic Forum, 2019).

The EPI is a measurement of environmental health and ecosystem vitality. The EPI from 2018 is a complex construct involving ten issue categories, which are grouped into 24 indicators. The ten categories are air quality, agriculture, biodiversity, plant and animal habitat, fisheries, forests, health influences, water use and sanitation, water resource management, climate change, and energy (World Economic Forum, 2019). The EPI metric provides a national measure to gauge how countries are achieving their

environmental policy goals and offers a measurement on national environmental performance and guides environmental sustainability best practices (World Economic Forum, 2019).

The data source for the 2018 EPI is from research institutions, government agencies, academia, and international NGOs. The data is gathered through several techniques such as remote sensing data, observations of monitoring situations, surveys, academic research, estimations derived from statistical models and on-the-ground measurements, industry reports, government statistics reports by international organizations, or individual government agencies, which may or may not be verified independently. Environmental data inclusion into the EPI framework is judged by criteria such as relevance, performance orientation, use of established peer-reviewed methodology, verification, completeness, and quality (World Economic Forum, 2019).

National sustainable food policy and its responsiveness. This study examines 1) national food loss and food waste responsiveness, 2) national sustainable agriculture implementation, and 3) national nutritional challenge responsiveness with BCFN Foundation Food Sustainability Indexes (FSIs). There are three FSIs as follows: 1) *food loss and food waste index*, 2) *sustainable agriculture index*, and 3) *nutrition challenge index*.

The Food Sustainability Indexes (FSIs) was developed by the BCFN Foundation's Economist Intelligence Unit. FSIs measure the sustainability efforts of national food systems in 35 countries using *three* key issues—*food loss and food waste*, *sustainable agriculture*, and *nutrition challenges*—to meet the

objectives set by the 2015 BCFN Milan Protocol and Sustainable Development Goals (SDGs).

The FSIs reflect the food policies and performance outcomes around food usage, sustainable agriculture, and nutrition, using key performance indicators which assess the environmental, social, and economic sustainability engagement of each nation (BCFN Foundation, 2019). A detailed explanation of three FSIs follows.

First, the *food loss and food waste index* was developed because nearly one billion individuals suffer from hunger, but almost a third of food is lost or wasted due to inefficient use. Food waste in the FSIs equate to four times the amount of food required to feed those who are suffering from hunger.

Second, the *sustainable agriculture index* corresponds to climate change effects on agriculture, which can be difficult to measure and estimate. Agriculture can sequester carbon emissions and aid in alleviating the influence on climate changes. At the same time, the negative ecological and social influences of agriculture are increasing from such land uses. For example, the transition from fossil fuels to renewable energy, such as biofuels, both reduces the availability of arable land to produce food crops and replaces more efficient carbon sequestering natural environs (BCFN Foundation, 2019).

Third, the *nutrition challenge index* assesses the spectrum of coexisting hunger and obesity. The growth rate in obesity poses a burden on governments' healthcare systems and threatens national economic stability. Globally, for every individual who suffers from undernutrition, two individuals are overweight or obese (BCFN Foundation, 2019).

The FSIs cover 35 indicators and more than 55 sub-indicators across three categories. Each category is assigned a score and is calculated from a weighted average of the underlying scores, with scores from 0 to 100. One hundred is the highest agricultural sustainability and the highest progress toward accomplishing environmental, social, and economic indicator objectives (BCFN Foundation, 2019).

The FSI framework is developed by numerous researchers and contributors. Researchers collect data from primary legal transcripts, government and academic publications, government websites, and international NGOs. The data used in the FSIs have weaknesses. The BCFN Foundation's (2019) thorough review of available data sources include data from Conservation Finance Network, Sustainable Stock Exchanges Initiative, Climate Bonds Initiative, World Resource Institute, USFAO, Climate Policy Initiative, OECD, Climatescope, Sustainable Stock Exchanges Initiative, and Bloomberg Finance, L.P. Although several indicators reflect specific characteristics of sustainable agriculture investment (for instance, in green bonds that are used for renewable energy), the majority of indicators in 34 nations in the FSIs lack specific measurable features. Moreover, many studies examined specific agricultural sustainability and land use in selected countries, but these studies do not cover all of the nations analyzed by the FSI, and thus the FSIs cannot be compared across these 34 countries (BCFN Foundation, 2019).

Proposed 2018 FSI qualitative indicators allow cross-country comparison of sustainable agriculture financing. Measurements for micronutrient deficiencies and consumption are not analyzed frequently. Such indicators assessing nutrition challenges can have substantial data gaps. Comparisons across regions, such as regional variances,

are conflated by different sustainability objectives and measurement techniques. For example, food spoilage in warmer climates occurs more rapidly than in colder climates.

However, the FSIs cannot distinguish such climate influence differences on food loss across nations. Infrastructure and transportation are significant components of food loss throughout the food supply chain, but the FSIs cannot fully assess and offer solutions such as how each country should address food loss and waste due to limited data available. Sustainable agriculture categories need careful analysis because soil quality and latitude influence the amount of water use, but the FSIs cannot capture complex and varying soil conditions in every region. In cases where data is incomplete or unavailable, the BCFN's Economist Intelligence Unit uses custom estimation models, which aggregate proxy datasets and use statistical analysis to estimate data when applicable. The data sources used for the FSIs are ASTI, ITUC Global Rights Index, Animal Protection Index, USDA, UN Comtrade, Land Matrix, African Development Bank, UNFAO, Central Intelligence Agency, CIA Fact Book, World Health Organization, Yale's Environmental Performance Index, World Bank Group, Eurostat, OECD, BP Statistical Review of World Energy, WTO, and academic journals. The data source of indicators and sub-indicators included in the FSI ranges from 1991 to 2018 (BCFN Foundation, 2019).

National cultural factors. This study uses Hofstede's long-term orientation index and uncertainty avoidance index, which represent informal institutional factors (Garrido et al., 2014; Peng et al., 2009) that are reflected in a country's social customs and values. This author uses informal institutional factors as the proxy measures of social customs

and norms. This study specifically investigates long-term orientation and uncertainty avoidance using Hofstede's cultural dimension indexes (Hofstede Insights, 2019).

The advantages and disadvantages of Hofstede's cultural factors are as follows. The benefits of Hofstede's national cultural indexes allow for simple comparison of numerous national cultures that are complex and contextual. A composite score provides a generalized view of different national cultures. The disadvantages of Hofstede's national cultural indexes are due to its difficulty in generalizing national cultural characteristics of individual and organizational differences (Bhattacharjee, 2012; Catalin, 2012).

Moreover, Hofstede conceptualized culture as collective cognitive habituation, which is characteristically different from other cultures (Hofstede, 1991). According to Hofstede (1991), culture is social and is formed and shared by a group. Culture is programmed in participating individuals' minds and is a cognitive process. Since culture is a social product of a group of individuals, there are numerous cultures as there are many social groups, organizations, and systems. Hofstede (1991) observed that an individual could belong to multiple cultures, given an individual participates in multiple social circles. However, Hofstede (1991) is criticized for having overlooked the ambiguity of what culture can mean. Though Hofstede (1991) claims that an individual can belong to multiple cultures, Hofstede appears to simplify the effects of multicultural phenomena where multiple cultures may influence individuals, organizations, and groups.

Additionally, members who belong to a country or an organization are unlikely to share an identical set of values, attitudes, and behavior patterns. There also may be an overlap between different cultures, and the overlap can occur on individual and social levels (Catalin, 2012). Catalin (2012) reports that simplistically stereotyping a national culture can be problematic, and Hofstede's cultural dimension model does not consider the complexity, context, and fluidity of the changing nature of culture. Although Hofstede Insights (2019) updates national cultural indexes periodically, the author suggests that the most serious limitation of Hofstede's model is attributed to its information used in the 1960s and the 1970s to build the cultural dimension framework, and its failure to account for dynamic cultural changes in the globalized context of today (Catalin, 2012).

The national laws and regulations factors represented by Yale's World Economic Forum, the BCFN framework, and the national culture factors are represented by the Hofstede framework. Thus, the study uses six independent variables to measure the six institutional aspects at a national level: Yale's World Economic Forum's environmental performance index; the Barilla Center for Food and Nutrition (BCFN) Foundation's food loss and food waste index, sustainable agriculture index, and nutrition challenge index; and Hofstede's long-term orientation index and uncertainty avoidance index.

The study analyzes categorical data (such as the four GICS food industries: 1) restaurants, 2) food retailing, 3) beverages, and 4) food products) for the independent variables that reflect the institutional scores for each nation represented in the sample. Each food industry firm is assigned an individual ESG disclosure score, which reflects its

CSR engagement, and an individual score on each national institutional dimension characterizing the country where its headquarters are located.

All formal and informal institutional data are collected from Yale's World Economic Forum, the BCFN Foundation, and Hofstede's official website (World Economic Forum, 2019; BCFN Foundation, 2019; Hofstede Insights, 2019). Environmental performance (Lyon & Maxell, 2008; Petruzzella et al., 2017; Portney, 2008; Rahman & Post, 2012) is a measurement of effective environmental policy responsiveness. Refer to Appendix B for 180 countries analyzed by Yale's World Economic Forum's environmental performance index; Appendix C for 67 countries analyzed by the Barilla Center for Food and Nutrition (BCFN) Foundation's food loss and food waste index, sustainable agriculture index, and nutrition challenge index; and Appendix D for 108 countries analyzed by Hofstede's long-term orientation index and uncertainty avoidance index (BCFN Foundation, 2019; Hofstede Insights, 2019; World Economic Forum, 2019).

This study classifies industry-level variables considered in accordance with the institution literature (Ho et al., 2011; Ringov & Zollo, 2007).

Industry-level effects. This study uses four Global Industry Classification Standard (GICS) food industries to examine their differences in sustainability engagement levels. The sustainability literature suggests industry effects such as industry-specific characteristics, context, and stakeholder expectations and operations lead to random variations in industry practices (Cruz & Boehe, 2010; Decker, 2004; Donleavy et al., 2008; Ho et al., 2012; Tan & Chow, 2009). Thus,

this study uses industry-specific classifications represented by four GICS food industries to control for its relative effects. The food industry (Baldwin, 2015; Hartman, 2011; Rueda et al., 2017; Wilde, 2018) is a global and collective industry with diverse food supply chains around the world (DEFRA, 2002; Rueda et al., 2017; Smith, 2008). The global food industry supplies agricultural and food products consumed by multiple stakeholder consumers in the world (Baldwin, 2015; Hartman, 2011; Nestle, 2002; Rueda et al., 2017; Smith, 2008; Sustain, 2002; Wilde, 2018).

This study defines the global food industry according to the Global Industry Classification Standard (GICS) (MSCI, 2019a). Four GICS industries are included as the global food industry for this study. Consumer discretionary (Sector 25) and consumer staples (Sector 30) are represented by 1) restaurants industry, 2) food retailing industry (food distributors, food retail, hypermarkets and super centers), 3) beverages industry (brewers, distillers and vintners, soft drinks), and 4) food products industry (agricultural products, and packaged foods and meats) (MSCI, 2019a). Refer to Appendix A for details about the nine food GICS sub-industries and four food GICS industries.

This research question guides this study's hypotheses.

Research question. *How do formal and informal institutional factors influence the level of global food industry sustainability engagement?*

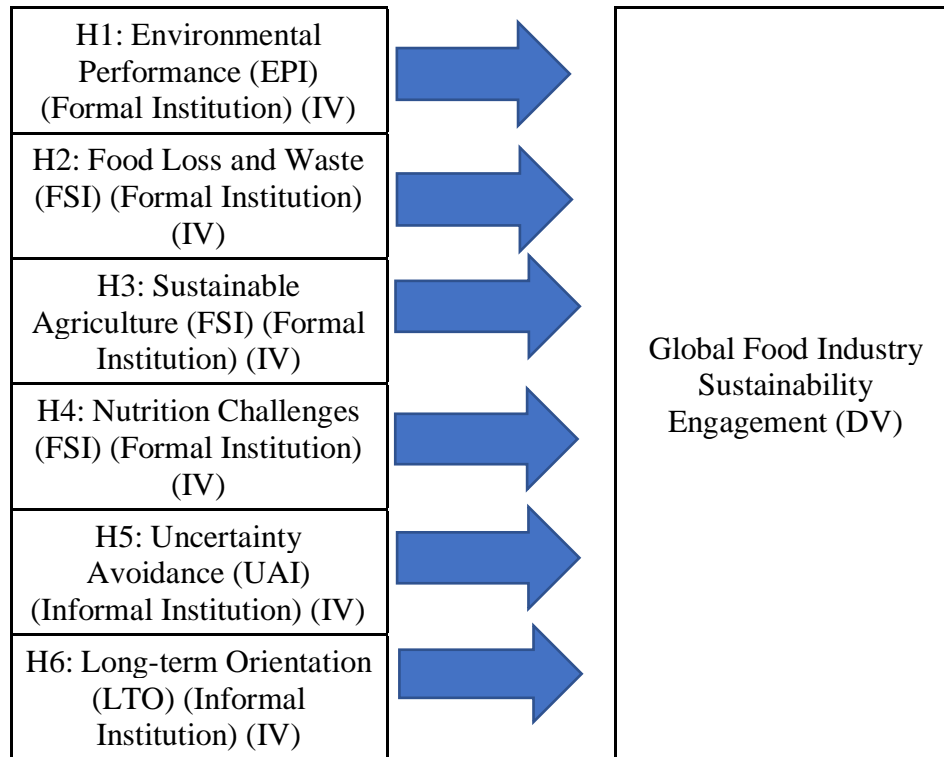
Hypotheses

The study derived seven hypotheses from the study's research question and proposed theoretical constructs. As shown in Figure 1 and Figure 2, hypotheses proposed to test formal and informal institutional factors' (six independent variables) influence on

global food industry corporate social responsibility (CSR) engagement (one dependent variable) with their proxy measurements (BCFN Foundation, 2019; Bloomberg Finance L.P., 2019; Garrido et al., 2014; Hartman, 2011; Hofstede Insights, 2019; Nemetz, 2014, 2015; North, 1990; Peng et al., 2012; Peng et al., 2009; World Economic Forum, 2019).

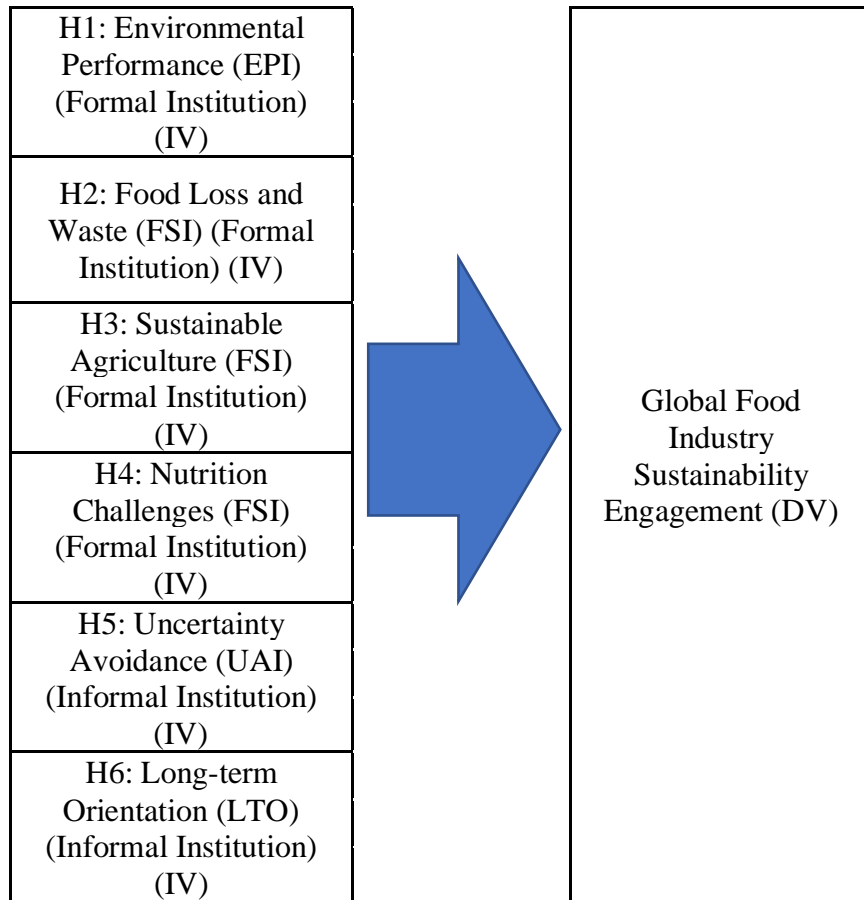
As explained in detail below, it is important to note that the institutional indexes are proxy measures of the effectiveness of a national government's policies (formal institutional factor) and national cultures (informal institutional factor). The BCFN Foundation, Bloomberg Finance L.P., Hofstede Insights, and Yale's World Economic Forum scale their institutional indexes from 0 to 100 by countries (BCFN Foundation, 2019; Bloomberg Finance L.P., 2019; Hofstede Insights, 2019; World Economic Forum, 2019).

This study also accounts for the individual and combined effects of six institutional factors on food industry sustainability engagement. Isolated and combined influence of the six institutional factors are analyzed by simple and multiple regression analysis respectively as illustrated in Figure 1 and Figure 2.

Theoretical constructs and propositions.

H7: Sustainability Engagement Levels Differences among 4 GICS food industries:
 1) restaurants, 2) food retailing, 3) beverages, and 4) food products.

Figure 1: Isolated formal and informal institutional factors' (6 IVs) influence on global food industry sustainability engagement (1DV) based on the institution-based view (IBV) framework



H7: Sustainability Engagement Levels Differences among 4 GICS food industries: 1) restaurants, 2) food retailing, 3) beverages, and 4) food products.

Figure 2: Combined formal and informal institutional factors' (6 IVs) influence on global food industry sustainability engagement (1DV) based on the institution-based view (IBV) framework

Formal Institutional Factors

National environmental policy. Pullman et al. (2009) report that one measure of food supply chain environmental performance is resource conservation, including energy and water. Food supply chain sustainability studies have found that firms that are committed to environmental best practices experience improved environmental performance (Melnik, Sroufe, & Calantone, 2003; Pullman et al., 2009). This previous study leads to the first hypothesis.

***Hypothesis. H1.** Higher levels of national environmental performance are positively related to levels of the food industry firm's sustainability engagement.*

Measurement. The Environmental Performance Index (EPI) by Yale's World Economic Forum (2019) is used to measure the national environmental performance levels of the food industry firms where their headquarters are located in their countries. Simple and multiple regression analysis are used to determine the relationship between the levels of national environmental performance levels and the food industry firms' sustainability engagement levels.

National food loss and food waste. The World Commission of Environment and Development (1987) proposed that the sustainable food systems should meet the needs of the present generation without hindering the needs of the future generations (Pullman et al., 2009). In the last few decades, food businesses are increasingly pressured to pay close attention to efficient use of resources to process their products (Kleindorfer et al., 2005; Pullman et al., 2009). Therefore, this study expects national food policy responsiveness

to food loss and waste is positively related to the food businesses' sustainability engagement, which leads to the following hypothesis.

Hypothesis. H2. *Higher levels of national food policy responsiveness to food loss and food waste are positively related to levels of the food industry firm's sustainability engagement.*

Measurement. One of the Food Sustainability Indexes (FSIs) out of the three, the *food loss and food waste index* by BCFN Foundation (2019) is used to measure the *food loss and food waste* levels of the food industry firms where their headquarters are located in their countries. Simple and multiple regression analysis are used to determine the relationship between the levels of national food policy responsiveness to *food loss and food waste* levels and the food industry firms' sustainability engagement levels.

National sustainable agriculture. Sustainability researchers state that food businesses' supply chain performance needs to be measured by their influence on environmental, social, and economic objectives (McDonough & Braungart, 2000; Pullman et al., 2009; Sharma & Henriques, 2005; Shrivastava, 1994; Starik & Rands, 1995). Sustainability practices of the food supply chains necessitate heightened consideration because decisions in food production involve the survival of vegetation and animals (Burkhardt, 1986; Pullman et al., 2009). Large food manufacturers are expected to pay attention to the depletion of productive arable land and increasing growth in world population, which leads to increased control of the sustainable agricultural inputs for environmental, social, and economic performance (Hamprecht, Corsten, Noll, & Meier, 2005; Pullman

et al., 2009). Thus, this study expects national food policy responsiveness to sustainable agriculture is positively related to the food businesses' sustainability engagement, which leads to the following hypothesis.

Hypothesis. H3. Higher levels of national sustainable agriculture policies and implementations are positively related to levels of the food industry firm's sustainability engagement.

Measurement. One of the Food Sustainability Indexes (FSIs) out of the three, the *sustainable agriculture index* by BCFN Foundation (2019) is used to measure the *sustainable agriculture policies implementation* levels of the food industry firms where their headquarters are located in their countries. Simple and multiple regression analyses are used to determine the relationship between the levels of national responsiveness for *sustainable agriculture policies implementation* and the food industry firms' sustainability engagement levels.

National nutritional challenge. Silver and Bassett (2008) suggest that to make the global food supply more wholesome and healthful, governments need to reduce ingredients such as added sugar and artificial trans fatty acids—known to be harmful in excess—either by regulation or coordinated voluntary action of food businesses and governments. Marks (2017) suggests sharing responsibility for human health within the global food industry, mainly the large food corporations who are often not willing to collaborate with policymakers and stakeholders to improve public health. The United Nations' Sustainable Development Goals suggest multiple stakeholder collaboration, diversity inclusion, and states the need for global food corporations to be part of the

solution rather than the problem (Marks, 2017; Temples, Verweij, & Block, 2017; United Nations Development Programme, 2019).

Sustainability researchers state that food businesses' supply chain performance needs to be measured by their effect on environmental, social, and economic objectives (McDonough & Braungart, 2000; Pullman et al., 2009; Shrivastava, 1994; Starik & Rands, 1995; Sharma & Henriques, 2005). Sustainability practices of the food supply chain require heightened attention because decisions in food production involve the survival of vegetation and animals (Burkhardt, 1986; Pullman et al., 2009). Large food manufacturers are expected to be attentive to the depletion of productive arable land and increasing growth in world population, which leads to increased control on the sustainable agricultural inputs for environmental, social, and economic performance (Hamprecht et al., 2005; Pullman et al., 2009). Thus, this study expects national food policy responsiveness to *nutrition challenges* is positively related to the food businesses' sustainability engagement, which leads to the following hypothesis.

Hypothesis. H4. *Higher levels of national food policy for responding to nutritional challenges are positively related to levels of the food industry firm's sustainability engagement.*

Measurement. One of the Food Sustainability Indexes (FSIs) out of the three, the *nutritional challenge index* by BCFN Foundation (2019) is used to measure the levels of *food policy responsiveness to nutritional challenge* of the food industry firms where their headquarters are located in their countries. Simple and multiple regression analyses are used to determine the relationship between

the levels of national responsiveness levels for *nutritional challenges* and the food industry firms' sustainability engagement levels.

Informal Institutional Factors

National uncertainty avoidance. National uncertainty avoidance of the national culture and food industry sustainability engagement are tested as follows. There are six of Hofstede's national culture factors (Hofstede Insights, 2019). The national culture factors represent the country's independent collective preferences (rather than individuals) over another country's. The national scores on the factors are comparative and relative to each national culture (Hofstede Insights, 2019).

The uncertainty avoidance index (UAI) signifies the degree of uncertainty shared collectively within a society (Hofstede Insights, 2019; Petruzzella et al., 2017). A country with high values of UAI tends to avoid uncertain and ambiguous situations. Explicit and implicit codes of conduct—such as laws and regulations, as well as collectively accepted cultural norms—are commonly used to lessen the uncertainty in societies demonstrated by a high degree of uncertainty avoidance. On the other hand, countries with low UAI tend to have flexible attitudes about taking risks and chances (Hofstede, 1980, 2011; Hofstede Insights, 2019; Petruzzella et al., 2017). Rallapalli, Vitell, Wiebe, and Barnes (1994) report that high risk-taking behaviors are associated with unethical decision-making. Moreover, according to the sustainability literature, there is a positive relationship between the level of uncertainty avoidance and the level of sustainability engagement (Ho et al., 2012; Peng et al., 2012; Petruzzella et al., 2017; Ringov & Zollo, 2007). Thus, the author expects that food industry firms operating in an uncertainty

avoidance national culture, where laws, regulations, and cultural norms are in place to avoid risks, demonstrate a higher level of sustainability engagement.

***Hypothesis. H5.** Higher levels of national culture's uncertainty avoidance are positively related to levels of the food industry firms' sustainability engagement.*

Measurement. Hofstede's uncertainty avoidance index (2019) is used to measure the levels of national culture's uncertainty avoidance of the food industry firms where their headquarters are located in their countries. Simple and multiple regression analyses are used to determine the relationship between the levels of national culture's uncertainty avoidance and the food industry firms' sustainability engagement levels.

National long-term orientation. Long-term orientation of the national culture and food industry sustainability engagement are tested as follows. A national culture with high scores in the long-term orientation (LTO) index signifies thriftiness, perseverance, and ordering relationships by status (Hofstede Insights, 2019). Conversely, a national culture with high short-term orientation (STO) index tends to have reciprocal social interactions and protection of personal reputation (Hofstede, 2011; Hofstede & Bond, 1988; Hofstede Insights, 2019; Petruzzella et al., 2017).

A national culture with LTO is associated with nations that are flexible to adopt practices used by other cultures to improve themselves. Additionally, societies with high LTO are characterized by a higher likelihood of increased savings for future investments (Hofstede, 2011; Hofstede & Bond, 1988; Hofstede

Insights, 2019; Petruzzella et al., 2017). Therefore, based on previous studies, the study expects the food industry firms which originate from nations with high LTO are more committed to sustainability engagement. Previous studies' findings on the LTO influence on sustainability leads to the following hypothesis.

Hypothesis. H6. *Higher levels of national culture's long-term orientation are positively related to levels of the food industry firms' sustainability engagement.*

Measurement. Hofstede's long-term orientation index (2019) is used to measure the levels of national culture's long-term orientation of the food industry firms where their headquarters are located in their countries. Simple and multiple regression analyses are used to determine the relationship between the levels of national culture's long-term orientation and the food industry firms' sustainability engagement levels.

Sustainability Engagement in the Four GICS Food Industries

This study tests whether or not the four GICS food industries: 1) restaurants, 2) food retailing, 3) beverages, and 4) food products have significantly different sustainability engagement levels.

Hypothesis. H7. *The sustainability engagement levels of the four GICS food industries differ significantly.*

Measurement. One-way ANOVA post-hoc analysis (Tukey and Games-Howell tests) are used to measure the differences among the means of sustainability engagement levels in the four GICS food industry firms.

Data Analysis and Methodology

The research methodology of this study is selected based on the problem of this study, the objective of this study, the theoretical framework, and the nature of the ESG data and institutional indexes data (Creswell & Creswell, 2018; Roberts, 2010). This study aims to analyze isolated and combined formal and informal institutional factors' influence on global food industry sustainability engagement. This study uses a sample size statistically significant enough to use correlation analysis, single and multiple linear regression analysis, and ANOVA based on the study's assumptions and limitations. This study used SPSS for statistical analysis (Field, 2017; IBM, 2018). These quantitative tests are statistically analyzed for the nine GICS food *sub*-industries (four GICS food industries).

Simple and multiple linear regression analyses. This study uses simple and multiple regression models to test the relationship between six institutional factors (6 IVs) and food industry sustainability engagement (1 DV). Six institutional factors are used to predict the regression equation with the firm sustainability as the criterion. An independent variable is the predictor (six institutional factor indexes), and the dependent variable is the criterion (ESG) (Creswell & Creswell, 2018; Field, 2017; Nemetz, 2014; Roberts, 2010).

This study also uses the linear correlation model embedded within regression analyses. To study the relationship between six institutional factors and food industry sustainability engagement, the study examines the relationship between these variables by measuring their correlation and test the strength of their relationship. Correlation analysis measures the relationship between six

independent variables (six institutional factors) and one dependent variable (ESG).

One-way ANOVA (or analysis of variance). This study uses the one-way ANOVA model comparing the means of categorical data such as the four GICS food industries (restaurants, food retailing, beverages, and food products) because the sample size found from data collection satisfied the statistical power Cohen (1988) suggests. ANOVA is used when one factor or one variable is examined and it has more than two levels. One-way ANOVA analyzes only one dimension represented by one dependent variable. In this study the grouping dimension used is the sustainability engagement levels represented by the food firm ESG disclosure scores. (Creswell & Creswell, 2018; Field, 2017; Roberts, 2010).

To compare the means of ESG disclosure scores of the four GICS food industry firms in 1) restaurants industry, 2) food retailing industry, 3) beverages industry, and 4) food products industry, one-way ANOVA post-hoc tests such as Tukey and Games-Howell are used.

Assumptions

The author makes assumptions in this study as follows. First, the author assumes that the Bloomberg Finance, L.P. (2019) archival ESG data analyzed is accurately reported.

Second, this study assumes institutional factors (BCFN Foundation, 2019; Hofstede Insights, 2019; World Economic Forum, 2019) used are accurately analyzed and reported by research institutions.

Third, this study assumes that there is a statistically significant fiscal year 2017 Bloomberg ESG disclosure score data sample size of the food industry firms to analyze.

This study uses the fiscal year 2017 ESG disclosure score data because there the author was able to collect a large enough food industry firm Bloomberg ESG data sample size. This study uses 504 food industry firms' ESG score data for data analysis.

Limitations

This study has several limitations as follows. First, the author analyzes archival data only (BCFN Foundation, 2019; Bloomberg Finance L.P., 2019; Hofstede Insights, 2019; World Economic Forum, 2019). This study does not test self-reported data by each food industry firm.

Second, this study does not collect the fiscal year 2018 Bloomberg Finance, L.P. (2019) archival ESG data because they are not yet likely thoroughly reported and analyzed; thus, the study only collects the fiscal year 2017 ESG data (data was collected from April 16 to 26, 2019) (A. Nemetz, personal communication, February 14, 2019).

Third, the number of countries analyzed is limited by the developers of formal and informal institutional factors measurement instruments (BCFN Foundation, 2019; Hofstede Insights, 2019; World Economic Forum, 2019). An actual number of countries analyzed by formal and informal institutional factors measurement instruments are reported in Appendix B, C, and D. Additionally, the country-specific statistics can be generalizations and there could be specific companies within those countries that do not conform to those generalizations.

Fourth, potential biases of research institutions (BCFN Foundation, 2019; Hofstede Insights, 2019; World Economic Forum, 2019) which developed

institutional factor indexes can pose a limitation to this study. Biases of research institutions could be due to sponsorship from for-profit organizations, sampling bias, political biases, recall bias, social desirability bias, common method bias, and so on (Bhattacharjee, 2012).

Fifth, the sampling of food industry firms' sustainability engagement factors (ESG data) is analyzed by Bloomberg Finance L.P. (2019), which is a for-profit organization; thus, it could involve possible commercial bias due to the profit-maximization motive of the ESG data vendor, Bloomberg (Doyle et al., 2011; Fatemi et al., 2017; Eccles et al., 2011; Husted & Sousa-Filho, 2016; Kotsantonis et al., 2016; Lai et al., 2016; Park & Ravel, 2013).

Sixth, this study does not analyze food industry firms' sustainability engagement for those firms not evaluated or reported by Bloomberg Finance L.P. (2019). Thus, there are many large private firms in the food industry that cannot be analyzed by Bloomberg ESG data.

Chapter Four: Analysis and Results

Chapter Four is organized as follows: 1) relationship analyses (correlation and regression) of the six individual institutional factors and the food industry firms' level of sustainability engagement, and 2) discussion of the multiple regression analysis of the six institutional factors and the food firm sustainability engagement levels, and 3) ANOVA statistical analysis of the sample.

The simple and multiple regression analyses of independent variables are reported. This includes the six institutional factors: 1) national environmental effort levels, 2) national food loss and food waste responsiveness levels, 3) national sustainable agriculture implementation levels, 4) national nutrition challenge efforts levels, 5) national culture's uncertainty avoidance levels, and 6) national culture's long-term orientation levels on the dependent variable (food industry firms' sustainability engagement levels).

Analysis of Individual Institutional Factors' Influence

This section reports the results of the six individual institutional factors' influence on the food firm sustainability engagement levels. One-to-one analysis of each institutional factor (independent variable) and firm sustainability engagement (dependent variable) is reported.

National environmental performance levels. The study proposed that the high levels of national environmental efforts are positively related to the food firm sustainability engagement levels (H1).

A simple regression analysis indicated that national environmental performance was not a significant factor in food industry sustainability engagement ($B = 0.009$, $SE = 0.050$, $\beta = 0.008$, $p = 0.864$), which suggested that hypothesis one is not supported.

National levels of responsiveness to food loss and food waste. This study proposed that the high levels of national food loss and food waste responsiveness are positively related to the food firm sustainability engagement levels (H2).

A simple regression analysis suggested that national responsiveness to food loss and food waste was not a significant factor in the food industry sustainability engagement ($B = -0.027$, $SE = 0.086$, $\beta = -0.014$, $p = 0.754$), which indicated that hypothesis two is not supported.

National levels of efforts on agriculture sustainability. This study proposed that the high levels of national agriculture sustainability efforts are positively related to the food firm sustainability engagement levels (H3).

A regression analysis of national agricultural sustainability efforts of the food industry firms indicated significant association to firm sustainability engagement ($B = -0.582$, $SE = 0.095$, $\beta = -0.263$, $p = 0.000$), which indicated that hypothesis three is supported.

There was a positive correlation between national agricultural sustainability and the food industry firm sustainability engagement ($R^2 = 0.069$, $F(1, 503) = 37.38$, $p = 0.000$). Approximately 6.9 percent of the variation in firm sustainability engagement levels could be explained by the levels of national agriculture sustainability efforts when other factors are not controlled.

National levels of nutritional challenge efforts. This study proposed that the high levels of national nutrition challenge efforts are positively related to the food firm sustainability engagement levels (H4).

A regression analysis of national nutritional challenge efforts of the food industry firms indicated significant association to firm sustainability engagement ($B = -0.316$, $SE = 0.075$, $\beta = -0.184$, $p = 0.000$), which indicated hypothesis four is supported.

There was a positive correlation between national nutritional challenge efforts and the food industry firm sustainability engagement ($R^2 = 0.034$, $F(1, 503) = 17.54$, $p = 0.000$). Approximately 3.4 percent of the variation in firm sustainability engagement levels could be explained by the levels of national nutrition challenge efforts when other factors are not controlled.

National levels of uncertainty avoidance. This study proposed that the high levels of national uncertainty avoidance culture are positively related to the food firm sustainability engagement levels (H5).

A simple regression analysis suggested that national uncertainty avoidance is not a significant factor in the food industry sustainability engagement ($B = -0.021$, $SE = 0.022$, $\beta = -0.043$, $p = 0.336$), which indicated that hypothesis five is not supported.

National levels of long-term orientation. This study proposed that the high levels of national long-term orientation culture are positively related to the food firm sustainability engagement levels (H6).

A regression analysis of national long-term orientation culture of the food industry firms indicated significant association to firm sustainability engagement ($B = -0.054$, $SE = 0.020$, $\beta = -0.121$, $p = 0.006$), which indicated hypothesis six is supported.

There was a positive correlation between national long-term orientation culture and the food industry firm sustainability engagement ($R^2 = 0.015$, $F(1, 503) = 7.521$, $p = 0.003$). Approximately 1.5 percent of the variation in firm sustainability engagement levels could be explained by the levels of national long-term orientation culture when other factors are not controlled.

Analysis of Combined Institutional Factors' Influence

This study proposed that the high levels of national environmental performance (H1), national food waste and food loss responsiveness (H2), national sustainability agriculture implementation (H3), national nutrition challenge responsiveness (H4), national uncertainty avoidance culture (H5), and national long-term orientation culture (H6) have a positive influence on the food industry firm's sustainability engagement levels.

As shown in Table 2, multiple regression analyses of national environmental performance level ($B = 0.178$, $SE = 0.098$, $\beta = 0.160$, $p = 0.069$), national food waste and food loss responsiveness level ($B = 0.143$, $SE = 0.133$, $\beta = 0.074$, $p = 0.282$), national sustainable agriculture implementation levels ($B = -1.604$, $SE = 0.181$, $\beta = -0.726$, $p = 0.000$), national nutrition challenge responsiveness levels ($B = -0.054$, $SE = 0.234$, $\beta = -0.032$, $p = 0.816$), national uncertainty avoidance levels ($B = 0.288$, $SE = 0.056$, $\beta =$

0.583, $p = 0.000$), national long-term orientation levels ($B = -0.137$, $SE = 0.059$, $\beta = -0.305$, $p = 0.022$), and food industry firm sustainability levels were performed.

Results indicate that the levels of national sustainable agriculture efforts, national uncertainty avoidance culture, and national long-term orientation culture have statistically significant influences on the food industry firm's sustainability engagement levels.

Combined, six institutional factors tested showed a positive correlation with the food industry sustainability engagement ($R^2 = 0.209$, $F(6, 497) = 21.899$, $p = 0.000$), indicating that approximately 20.9 percent of the variation in the food firm's sustainability engagement levels could be accounted for by the combined influence of the institutional factors examined, when other factors are not controlled.

Table 2:

Multiple Regression Statistics of Institutional Factors Influence on Food Firm Sustainability Engagement Levels

	Unstandardized B	Coefficients Standard Error	Standardized Coefficients β	P-value
Formal Institutional Factors				
National Environmental Performance Levels	0.178	0.098	0.160	0.069
Levels of National Food Waste and Food Loss Responsiveness	0.143	0.133	0.074	0.282
Levels of National Sustainable Agriculture Implementation	- 1.604	0.181	- 0.726	0.000
Levels of National Nutrition Challenge Responsiveness	- 0.054	0.234	- 0.032	0.816
Informal Institutional Factors				
National Uncertainty Avoidance Levels	0.288	0.056	0.583	0.000
National Long-Term Orientation Levels	- 0.137	0.059	- 0.305	0.022
Number of Cases	504			

Sustainability engagement of sample food industry firms. As shown in Table 3, one-way ANOVA test was used to examine the differences among the four GICS food industries. Sustainability engagement levels differed significantly across these four industries. $F(3, 500) = 11.29, p = 0.000$.

Tukey and Games-Howell post-hoc comparison tests showed significant differences between the restaurants industry ($M = 21.66$) and the beverages industry ($M = 28.99$), $p = 0.001$ suggesting that the beverages firms have higher sustainability engagement than the restaurants firms. The restaurants industry ($M = 21.66$) and the food products industry ($M = 28.95$), $p = 0.000$ showed significant differences suggesting that the food products firms have higher sustainability engagement than the restaurants firms. The food retailing industry ($M = 24.04$) and the food products ($M = 28.95$), $p = 0.003$ showed significant differences indicating that the food products firms have higher sustainability engagement than the food retailing industry. Findings from Tukey and Games-Howell post-hoc comparison tests support hypothesis seven (H7).

Table 3:
ANOVA Statistics of the Four Food Industries by Global Industry Classification
Standards (GICS) and Firm Sustainability Engagement Levels

Four Food Industry Classifications by GICS (Nine Food GICS <i>Sub-</i> Industries)	Food Firm Sustainability Engagement Levels (ESG Score)		
	M	SD	N
1) Restaurants	21.66	9.25	106
2) Food Retailing (food retail, food distributions, and hypermarkets & super centers)	24.04	10.87	103
3) Beverages (brewers, distillers & vintners, and soft drinks)	28.99	14.19	61
4) Food Products (agricultural products, and packaged foods & meats)	28.95	12.94	234
Sample Set	26.41	12.38	504

Chapter Five: Discussion and Conclusion

Based on the findings in Chapter Four, this chapter discusses the implications to the literature, management practice, Institution-Based View (IBV) theory building, and future research (Haigh, 2018).

In Chapters One and Two, the author discussed considerable environmental and social consequences the food industry imposes from its production, distribution, and processing. Naturally, as the interest in sustainability investing has risen in recent years with increasing momentum, developing a greater understanding of how the food industry firms engage or do not engage in sustainability efforts becomes gradually more important (Amel-Zadeh, & Serafeim, 2018; Lai et al., 2016; Liern & Perez-Gladish, 2018). Changes in climate, inequalities in access to food for survival, changing biodiversity of animals and plants for consumption, and increasing depletion of arable land for agriculture production are a few of the main issues that the food industry operations and processes pose on the long-term sustainability of the planet (Baldwin, 2015; Pullman et al., 2009).

Implications Relative to the Sustainability Literature

The author contributes to the theory or the research stream on sustainability by investigating the institutional factors' influences on the food firm sustainability engagement levels on a global scale. The author aims to inform practitioners by illustrating the food industry firm management implications.

Country level sustainability policy and cultural context on sustainability performance in the food industry are discussed. Also, another important goal of this study is to add to the theory development of the Institution-Based View (IBV) with empirical data analysis of the global food firm sustainability engagement.

Significance of the findings. Though the literature reports that more sustainability efforts are needed in the food industry, the author did not expect to discover firm sustainability engagement levels are relatively low and rare. It is surprising to note that for the fiscal year 2017, only 29 percent of restaurants firms, 32 percent of food retailing firms, 22 percent of beverages firms, and 16 percent of food products firms in the Bloomberg database were analyzed for Environmental, Social, and Governance (ESG) disclosure scores.

Another surprising finding is from the ANOVA statistics from Table 3. It illustrates comparatively little food industry sustainability engagement efforts exist throughout the global food industry in all four sectors: 1) restaurants, 2) food retailing, 3) beverages, and 4) food products. The mean fiscal year 2017 ESG scores of the four food industries were 21.66 for restaurants firms, 24.04 for food retailing firms, 28.99 for beverages firms, and 28.95 for food products firms.

As shown in Table 3, sustainability engagement levels of the food industry firms per ANOVA statistics, Nemetz (2014, 2015) examined various industry sectors such as automobile, finance, chemicals, construction, food, healthcare, household goods, industrial goods, insurance, basic materials, media, oil, gas, real estate, technology, telecommunications, travel, leisure, and utilities public firms, and used Bloomberg ESG data for global firm sustainability engagement study reported mean ESG score of 30.95

for a total of 400 firms. In Nemetz's (2014, 2015) sustainability study, 33 food and beverages firms' Bloomberg ESG scores with a mean value of 28.41 from the fiscal year 2011 were used.

From comparing this study's food firms' mean ESG score in 2017 of 26.41 and Nemetz's (2014, 2015) food firms' mean ESG score of 28.41 in 2011, it could mean that the food industry's sustainability engagement levels have decreased from 2011 to 2017. Also, Nemetz (2014, 2015) did not study the entire food industry firms' Bloomberg ESG reporting, so the actual 2011 food industry sustainability engagement levels could have been lower than 28.41 if Nemetz (2014, 2015) examined the entire food industry's ESG disclosure by Bloomberg in 2011. In any case, this study shed light on the realities of the entire food industry's sustainability engagement levels in 2017 to fill the gaps in the sustainability literature.

To understand why the food industry firms' sustainability engagement levels globally are relatively low can make significant contributions to the sustainability literature. Therefore, the author uses the food industry sustainability literature to interpret this surprising finding and to derive the meaning for this discovery.

Conclusions from the research question and the hypotheses. This section interprets the results from multiple linear regression analysis of six institutional factors' influences on the food industry firms' sustainability engagement levels. It also interprets differences among sustainability engagement

in the four food industries (restaurants, food retailing, beverages, and food products).

First, hypothesis one (H1) tested whether higher levels of national environmental performance and higher levels of the food industry firms' sustainability engagement are related. As reported in Chapter Four, hypothesis one is not supported, which suggests that national responsiveness to environmental issues and the food industry firm sustainability engagement ($p = 0.069$) are not as significantly associated compared to national agriculture sustainability efforts ($p = 0.000$). The food industry involves a range of environmental issues. Fox (1997) reported problems with agricultural production such as manure disposal, water and soil pollution, and deforestation due to the effects of industrialized agriculture monocropping practices. Boehlje (1993) notes more agricultural practice issues such as soil damage from synthetic chemical fertilizers and large-scale farming practice by the industrialized food industry practice. More research and work by management and policymakers are needed to encourage the food industry's sustainability engagement through national responsiveness to environmental issues.

Second, hypothesis two (H2) tested whether higher levels of national food policy responsiveness to food loss and food waste and higher levels of the food industry firms' sustainability engagement have a relationship. Hypothesis two is not supported, which suggests that the national food policy responsiveness to food loss and food waste and food firm sustainability engagement are not significantly associated. This finding illustrates that the food firms in the sample do not engage in more sustainability efforts, even when national policies are responsive to food loss and food waste. Cosmin and Mihaela (2018) report the effects of food waste is becoming increasingly an urgent

problem, but it is still not addressed by national governments and businesses, which this study's finding also confirms.

This study's finding suggests that the food waste and food loss have an important consideration for the economy, society, and environment across every national economic development level (Cosmin & Mihaela, 2018; Kowalska, 2017). The United Nations Food and Agriculture Organization (UNFAO) reports that approximately 35 percent of food is wasted globally. This study's finding could encourage food policymakers and practitioners to explore more ways to reduce food waste and food loss.

Currently food waste represents six times the amount of food provided for hunger relief for the world population (Cosmin & Mihaela, 2018). This study's finding can be used by scholars to explore the many ways food is lost throughout the food supply chain. Food can be lost by food producers and farmers, in food processing factories, by food distributors and food retailers, by restaurants, and by consumers (Baldwin, 2015; Benjamin & Virkler, 2016; Pullman, 2011). Although it can be impossible not to have any food waste, the results from hypothesis two illustrate that more efforts to minimize food waste and food loss across the food supply chain is needed at the firm level. Also, the food industry and governments need to work on more hunger relief in developing nations to alleviate social inequality in food access.

Third, hypothesis three (H3) tested whether higher levels of national sustainable agriculture policy implementations and higher levels of the food industry firms' sustainability engagement have a relationship. Hypothesis three is

supported, indicating that national sustainable agriculture policy implementation is significantly associated with the food industry firm sustainability engagement. This finding could mean that the farmers and food producers tend to comply with national food policies to operate their businesses. It is expected that the food industry firms at least comply with sustainable agriculture policies related to food production. For instance, under the USDA organic certification as well as in the EU nations, the U.S. and the EU governments encourage food producers to practice sustainable farming and food processing to implement sustainable agriculture policies (Dillard & Pullman, 2017; Maloni & Brown, 2006; USDA, n.d.). Thus, as found in this study, the positive relationship between the levels of national sustainable agriculture policies implementation and the levels of the food firms' sustainability engagement levels could mean that food firms analyzed for ESG scores tend to make more sustainability efforts when national food policies encourage agricultural sustainability practices.

Fourth, hypothesis four (H4) tested whether higher levels of national food policy responsiveness to nutrition challenges and higher levels of the food industry firms' sustainability engagement have a relationship. Hypothesis four is not supported, indicating that national food policy responsiveness to nutrition challenges and food firm sustainability engagement are not significantly associated. This finding confirms the claim by Silver and Bassett (2008), two public health experts and physicians, who warn that current food supply provided by large food MNCs are tainted with unhealthy fat, sugar, salt, and excessive caloric intake. There are many unwholesome food choices widely available to consumers who are unaware of damaging health consequences of continuous intake of unhealthful food products. The obesity epidemic, for example,

results from chronic unhealthy consumption of unhealthy foods; consumers in the U.S. as well as in developed countries are increasingly becoming more obese, which is a leading cause of heart problems and diabetes. Thus, the finding suggests that to make the global food supply more wholesome and healthful, national governments need to reduce ingredients such as added sugar and artificial trans fatty acids—known to be harmful in excess—either by improved national food policies or proactive cooperation between the food industry and national governments. Shortages of healthful foods are prevalent in the world. Additionally, the finding suggests that national governments must continue to encourage increased access to healthful food alternatives and the development of healthful eating and exercise habits through various interventions and joint marketing campaigns with the food industry.

Fifth, hypothesis five (H5) tested whether higher levels of national culture's uncertainty avoidance levels and higher levels of the food industry firms' sustainability engagement have a relationship. Hypothesis five is supported, which indicates that national uncertainty avoidance and food firm sustainability engagement are significantly associated. This study anticipated long-term orientation national culture to have a positive influence on the food industry firms' sustainability effort levels based on previous studies' findings. As reported by Capelle-Blancard, Crifo, Diaye, Oueghlissi, Scholtens (2019), Durach and Wiengarten (2017), and Memili, Fang, Koç, Yildirim-Öktem, and Sonmez (2018), this study also found long-term orientation national culture influences firms' sustainability engagement levels. Policymakers and management practice

could use this finding and propose effective sustainability performance approaches that uncertainty avoidance national cultures practice. This study's finding is meaningful because it is one of the first studies to find long-term orientation national cultures have a positive influence on the global food industry firms' levels of sustainability efforts.

Sixth, hypothesis six (H6) tested whether higher levels of national culture's long-term orientation levels and higher levels of the food industry firms' sustainability engagement have a relationship. Hypothesis six is supported, which indicates that national long-term orientation and food firm sustainability engagement are significantly associated. This study anticipated uncertainty avoidance national culture to have a positive influence on the food industry firms' sustainability effort levels based on previous studies' findings. As Gallén and Peraita (2018), Miska, Szócs, and Schiffinger (2018), and Venaik and Brewer (2010) reported, the findings of this study confirmed that both uncertainty avoidance and long-term orientation national cultures have a positive influence on firm sustainability engagement efforts. Policymakers and management practice could use this finding and use effective sustainability performance approaches that long-term orientation national cultures practice. Few studies have performed an empirical investigation of food industry sustainability. This study made contribution by reporting that global food industry sustainability is influenced by uncertainty avoidance national culture.

Seventh, hypothesis seven (H7) examined that the four GICS food industries' firm sustainability engagement levels vary. This study found statistically significant sustainability engagement level differences between restaurants and beverages industries, restaurants and food products industries, and food retailing and food products industries.

This finding adds to the literature because few food industry sustainability studies have examined multiple food industry sectors. Consequently, this study contributes to the literature by reporting various food industry sectors' sustainability engagement level differences. Future research can further examine how each food industry sector engages in sustainability, which can lead to differences in sustainability engagement among these four food industries.

Limitations of the conclusions drawn from the results. This project has some limitations; thus, interpreting the results of this study requires a few caveats. The first major limitation of this study is its generalizability of the meaning of the results as follows: 1) generalizability of this quantitative study due to its use of archival data such as limitations involving the six institutional factors' website resource such as BCFN Foundation (2019), Yale's World Economic Forum (2019), and Hofstede's Insight (2019); 2) limitations stemming from Bloomberg financial database (2019). These limitations are illustrated in the Chapter Three in detail. The use of generalized composite index scores in this study could lead to issues with the generalizability of the study's findings or misrepresentation of results.

The second major limitation is relatively small sample size of the food industry firms which were analyzed for their sustainability engagement levels (by their ESG disclosure scores in the Bloomberg finance database). This limitation poses the generalizability of this study's findings. Scholars are advised to understand that relatively few food industry firms report or are analyzed for their sustainability engagement efforts.

The third major limitation stems from how the study uses only the headquarter location for the national environment, national food policy, and national culture measurements. Hofstede (1980, 1991) reported that in large multinational enterprises (MNEs), which operate in multiple country locations, generally multiple country cultures can be observed within MNE organizations. This study does not account for multiple national cultures' influence on firm sustainability engagement levels within an organization.

This chapter discusses the study's limitations in appropriate sections while providing context when offering future research suggestions.

Possible alternative explanations from the results. George Fox University's DBA Research Manual (Haigh, 2018) expects researchers to consider possible alternative explanations from the results of the dissertation project. The multiple regression analysis did not show inconclusive results in this study. For this study's case, there appears to be no other possible alternative explanations of the study's results.

Implications for the Institution-Based View (IBV) theory development. This study used the Institution-Based View (IBV) of management strategy to observe the influences of institutional factors on the food industry sustainability activity levels. Peng et al. (2009) who developed the IBV framework pointed out that the IBV theory needs to be supported by scholars who are willing to develop stronger institutional factor measurements (Garrido et al., 2014).

The author used institutional factor measurements relevant to the food industry sustainability in a global setting as illustrated in Chapter Two. This study makes a contribution to the body of the IBV literature related to the food industry sustainability by

testing multiple institutional factors' influence on the food industry sustainability efforts, and demonstrates that the IBV framework is capable of measuring institutional factors' effects by using available institutional measurement resources such as Yale's World Economic Forum (for Environmental Performance Index), the BCFN Foundation (for Food Sustainability Index: food loss and food waste, sustainable agriculture, and nutrition challenge), and the Hofstede's Insight (uncertainty avoidance index and long-term orientation index). By using multiple institutional factor measurements and their relationship with the food industry sustainability engagement levels, this study contributed to the sustainability literature by illustrating the interrelationships among the institutional factors and characteristics of each institutional factor measurement. By involving the institutional dimension into the empirical study of global food firm sustainability engagement, this study contributed to building the IBV theory relative to the sustainable food supply chain management literature.

New measurements of institutional factors may become available for scholars to analyze the effects of institutional factors in the near future. This study can be used as one of the first examples in the food industry sustainability literature as a benchmark against new institutional measurements to deepen the understanding of sustainability activities in the global food industry.

As Garrido et al. (2014) suggest, the institutional dimension measurement needs to be available to the researchers so that strategic management research with the IBV framework can be conducted frequently for the IBV theory development. This study selected to use relevant institutional factors for the food

industry sustainability engagement measurement. To build the IBV framework of strategic management and to make meaningful contributions, this study used institutional factor measurements which are available to the public and are designed to measure the institutional features of nations' economic and political activities.

Management practice implications. This study provides several management practice implications. Since sustainability engagement is not widely practiced in the food industry, the management practice will benefit from the study's findings and use this new knowledge to improve their food industry sustainability efforts throughout the global food supply chain.

The food supply chain is globalized, contextual, region-specific, and diverse. This study helps the management practice, particularly in the food industry, to understand the status quo of the food industry sustainability engagement levels and the effects of relevant institutional factors. As suggested by Aguilera and Jackson (2003) and Chkanikova and Mont (2015), there is a need to study institutional influence within a specific industry. Thus, this study focused on the institutional factors within the food industry. The food industry typically is able to maximize profits from using the mass-food production model, which has negative environmental and social consequences (Pullman et al., 2009). This study offers a starting point to developing a more sustainable food system by informing managers in the food industry and the policymakers who develop food policies. This study also provides information for consumer stakeholders who demand more sustainable business behavior.

Absence and the low levels of the food industry sustainability engagement found in this study are concerning. The author suggests the food industry management practice

find innovative, efficient, and economical ways to not only increase sustainability efforts, but also to save money by engaging in more sustainability. The food industry management and society cannot merely expect more sustainability efforts by the food industry yet still demand inexpensive food products which are produced by the food industry mass production operations that inevitably pose environmental costs (water and air pollution, depletion of productive arable land, high food miles, food waste and food loss, and so on) (Benjamin & Virkler, 2016; Pullman, 2011), and social and economic influences (unlivable wages and unsafe work environment for small farmers and food production workers, unreported workplace accidents due to fear of lost employment from the dominant food industry firms, and so on) (Benjamin & Virkler, 2016; Pullman, 2011).

Consumers and various stakeholders need to be educated about interrelatedness within the global food supply chain so that less-informed stakeholders will not place accountability on only one part of the food industry in isolation for the low levels of the food industry sustainability engagement. Management could encourage more healthful food choice education for consumers to promote sustainable food consumption habits. Also, food loss and food waste from the food industry can negatively influence food equity in the world. Management could also create marketing campaigns to promote hunger relief to increase food security in the society.

Food supply depends on raw ingredients and food from animals, fish, and seafood, such as fresh meat to dairy. The demand on the global food industry increases as the standard of living of world populations continues to rise because

more and more people demand food items that fit their lifestyle (Wilde, 2018). There are sustainability concerns unique to the food industry. Production of food by the industrialized food system influences the wellbeing of agriculture and animals, and it has a significant consequence on the environment (Pullman, 2011). Governments, public and private policymakers, and management need to further examine the food needs of consumer stakeholders and align the food industry sustainability issues. The food industry constituents—farmers, suppliers, manufacturers, marketers, consumers, and so forth—need to collaborate to develop a more sustainable food system.

To encourage more sustainability engagement by the food industry, management could examine the food industry sustainability issues from multiple perspectives such as consumer, government, and business. Each stakeholder has a role in improving the food supply chain sustainability. Naturally, every consumer needs to consume food to survive. This means that every consumer stakeholder interfaces with the global food supply chain regularly. Not every consumer is likely not educated about the environmental, social, and economic consequences the industrialized food system has on the planet. In order to encourage more sustainability efforts by various players within the food supply chain, the author suggests the following to the management practice. The management practice could use, for instance, cause-related marketing campaigns and educational events to encourage sustainable consumption habits by consumer stakeholders. The management practice can also take advantage of cost-saving opportunities offered by sustainability support programs to produce more with less resources. This can be accomplished by investing in more sustainable food production methods, engaging in more recycling of resources, searching for energy-saving and resource-saving food production methods.

The management practice can also work with policymakers and NGOs to promote sustainable food production, sustainable food consumption, and fair treatment of food industry employees.

This study's findings demonstrate that sustainability engagement by the food industry firms is not the rule, but rather an exception. To address this problem, there are numerous organizations that encourage sustainability efforts by the food industry on a global level. The food firms' management can use sustainability practice support programs as illustrated by Maloni and Brown (2006). The food industry can adopt such sustainability practice support programs by Agriculture Information Sharing and Analysis Center (FAISAC), Council for Sustainable Development (WBCSD), Food and Food and Agriculture Sector Coordination Council (FASCC), Global Reporting Initiative (GRI), World Business Institute for Social and Ethical Accountability, and comply with International Organization of Standardization (ISO) standards for food safety (ISO 22000), guidelines for environment (ISO 14000).

Future Research

Simpson and Power (2005) report firms that adopt lean practice have shown to have higher environmental protection activities (pollution prevention and waste management) in some studies (King & Lenox, 2001; Ohno & Bodek, 1988; Ohno, 2012; Rothenberg, Pil, & Maxwell, 2001). Consequently, lean practice adoption can be a beneficial mechanism to encourage sustainability engagement efforts in the food industry because issues in environmental performance, food loss and food waste, sustainable agriculture, and nutrition

challenge could be effectively improved. Future research could investigate the effectiveness of increasing sustainability efforts via lean practice adoption in the food supply chain and could improve their sustainability engagement levels.

Lean practice adoption is also applicable in uncertainty avoidance and long-term orientation perspectives because lean practice requires organizations to commit to long-term implementation of lean practice (Yamamoto & Lloyd, 2019a, 2019b, 2019c). Lean practice also encourages organizations to avoid wasteful use of resources, which is related to uncertainty avoidance tendencies. Lean practice can be valuable in improving sustainability engagement of food firms that operates in uncertainty avoidance and long-term orientation in national cultures. Future studies could conduct a case study comparing similar food operations in different countries. Scholars could investigate how food firms operate around environmental performance in various nations.

As described by Ahi and Searcy's (2013) sustainable supply chain management (SSCM) and Elkington's (1998) triple-bottom line concepts (3BL), further studies can investigate how food industry firms accomplish long-term competitive advantage by engaging in sustainability engagement by sustainability support programs. This study only examined a composite ESG disclosure score—which quantifies multiple environmental, social, and governance metrics into one score—to understand a food firm's sustainability engagement level in the fiscal year 2017. Future studies can examine sustainability engagement levels of the four GICS food industry sectors—restaurants, food retailing, beverages, and food products—over several years to understand whether sustainability engagement levels of the food industry have increased, decreased, or stayed the same over the years. Future studies could examine whether food firms' sustainability

engagement is effectively measured using different sustainability performance databases such as ASSET 4, KLD, Datastream, and Bloomberg.

Future studies could examine how national and private food policies influence sustainability engagement of food firms in different countries. Sustainable investors and stakeholders are interested in evaluating the sustainability performance of the food firms by understanding detailed environmental, social, and governance metrics before they make investment and purchasing decisions. Hence, future research could investigate the food industry sustainability engagement components of environmental, social, and governance performances in-depth, and which sustainability engagement activities of food firms are more or less important to investors and stakeholders.

More efficient measurement of environmental sustainability engagement of the firms and national policy effects is needed. Future studies can examine how various food supply chain entities adopt various mechanisms of sustainability management practice to improve their sustainability engagement which are influenced by national sustainability policies. Further research can also study how effectively sustainability engagement national and private policies encourage food supply chain players, from small suppliers to large firms in various food industry segments to engage in sustainability activities.

As noted by Nemetz (2014, 2015), to promote sustainability engagement efforts by firms, adopting organization-wide food supply chain practice requires the commitment by executives and senior management to yield results. Future studies could examine how food firms in the four industries (restaurants, food retailing, beverages, and food products) manage food operations to encourage sustainability engagement through executive commitment to engage in sustainability support activities. Future scholars can

also study how to effectively promote executive leadership to commit to sustainability efforts in the food industry. Future scholars could work with policymakers and NGOs to study how to provide incentives for the food industry executives to commit to sustainability engagement for improved firm sustainability performance.

Findings of this study suggest that national efforts toward environmental issues, food loss and food waste, and nutritional challenge are not as highly related to food firm sustainability engagement compared to national efforts toward sustainable agriculture, national uncertainty avoidance culture, and national long-term orientation culture. Food industry sustainability engagement related to the environment, food waste and food loss, and nutrition could be improved with positive cost-saving incentives for the food industry practice to control pollution (King & Lenox, 2001; Rothenberg et al., 2001). Future research could investigate how cost-saving sustainability programs offered by national and private food policies could improve food industry sustainability engagement.

To increase the global food industry's sustainability performance, using the benefits of a relationship-based management practice approach can be useful in developing a more sustainable food system in the globe. The food supply chain involves many relationships between suppliers and customers, and there are many sustainability engagement opportunities from food production and food operations. Future study can examine the relationship-based food supply chain management practice effectiveness in promoting the food industry's sustainability engagement with qualitative methods to discover new research questions. Also, quantitative methods can examine the food supply chain entities' environmental sustainability performance influenced by national and private food policies.

Adopting sustainability programs can incur costs for food industry firms. Research has reported the implementation of sustainability programs in the food industry to be relatively low (Pullman et al., 2009). Pullman et al. (2009) report that most food firms do not adopt sustainability support programs unless they can expect measurable and attainable performance improvements. As suggested by Pullman et al. (2009), future research can help food industry firms identify where to implement sustainability programs while improving their cost performance.

Each industry has its unique characteristics, consumer and stakeholder demands, and sustainability performance profiles; one sustainability study on one industry cannot be generalizable to other industries. Because each industry has unique sustainability research needs, future studies can yield more accurate and applicable findings for each industry's sustainability performance improvements by industry-specific sustainability studies. Thus, future research intended to extend food industry sustainability engagement could continue to focus on various sustainability issues within the food industry.

Chkanikova and Mont (2015) report that power imbalance between large food suppliers and small food suppliers remains significant. This power imbalance affects the ability of small suppliers to engage in sustainability as well as maintain their profit margin. Future research can further examine what factors are helping or hindering numerous small food suppliers from becoming profitable and practicing sustainably at the same time.

As Maloni and Brown (2006) and Pullman et al. (2008) pointed out, there are multiple sustainability support programs available in the food industry (such as ISO 9000 and ISO 14000). Future studies can examine which sustainability support programs or

certifications are most effective in improving food firm sustainability performance in various food industry segments.

As reported by Atkins, Deranek, and Nonet (2018), more food industry firms in developed, emerging, and industrialized nations showed higher levels of Food Waste Reduction Activities (FWRA) than in developing nations. However, the authors found that FWRA benefits are still limited to specific stakeholder groups rather than aiding the full food supply chain with food waste management. Hence, future research can examine specific factors that could contribute to eliminating food waste within the food supply chain on a broader scale in various sectors of the food industry.

Future researchers can examine national and organizational culture in the food industry using an institutional measurement instrument other than Hofstede. Although Hofstede's framework is continuously updated to reflect the changes in national culture, Hofstede is an established culture measurement model (based on the 1960s and 1970s research) (Catalin, 2012) compared to the GLOBE (Global Leadership Organizational Behavior Effectiveness) model which expanded Hofstede's model (Hofstede, 2006; Garrido et al., 2014; GLOBE Project, 2016). The GLOBE model is more current (based on the 1990s and 2000s research) (Garrido et al., 2014; Hofstede, 2006). Hofstede's cultural dimensions are based on surveying managers of the same MNE (IBM) while GLOBE's cultural and organizational dimensions are derived from a more diverse group of organizations and societies (Garrido et al., 2014; Hofstede, 2006). Some of the important divergences of GLOBE model from Hofstede model are: GLOBE is theory-driven while Hofstede is action-driven; GLOBE is decentered, and Hofstede is US-inspired by one MNE; and GLOBE further classifies culture into national and

organizational culture dimensions, while Hofstede only considers national culture dimensions (Hofstede, 2006). Thus, using a more updated GLOBE model rather than the Hofstede model could allow managers to gain a more in-depth understanding of current global, national, and organizational culture changes. Future studies could use the GLOBE model and survey the influence of organizational culture within food industry firms and how they relate to food industry sustainability engagement.

Conclusion

Food supply chain relationships are diverse and complex, which involve many institutional factors. Such complex interrelationships can be influenced positively by the education of the benefits of sustainability efforts by the food industry and members involved in the food supply chain. Food is an essential need of every human, and nearly all consumers interact with the global food supply chain. The food supply chain involves numerous food industry players and members.

Hence, the food supply chain involves and influences nearly all individuals on the planet because consumer stakeholders need to consume food. Rather than isolating the low sustainability engagement levels of the food industry and blaming the food industry management alone, further examination to understand what led to the current state of low sustainability engagement by the food industry worldwide is needed to fill the gaps in the sustainability literature.

Additionally, more study on the complexities and contexts of the global food industry sustainability through the lens of the Institution-Based View (IBV) framework (developed by Peng et al. (2009)) will continue to add to the

knowledge to the food industry sustainability literature. More research on how to encourage sustainability efforts throughout the global food supply chain with sustainable food supply chain practices as well as other environmental management practice mechanisms will benefit the future of the food industry.

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Appendix A: Global Industry Classification Standard (GICS)

the four GICS food industries, which represent
the nine GICS food *sub*-industries included in this study
as the global food industry GICS sectors (MSCI, 2019a)

- 1) Sector 25 Consumer Discretionary: Industry group 2530 Consumer services: Industry 253010 Hotels, Restaurants, & Leisure: Sub-Industry 25301040 Restaurants
- 2) Sector 30 Consumer Staples: Industry group 3010 Food & Staples Retailing: Industry 301010 Food & Staples Retailing: Sub-Industry 30101020 Food Distributors
- 3) Sector 30 Consumer Staples: Industry group 3010 Food & Staples Retailing: Industry 301010 Food & Staples Retailing: Sub-Industry 30101030 Food Retail
- 4) Sector 30 Consumer Staples: Industry group 3010 Food & Staples Retailing: Industry 301010 Food & Staples Retailing: Sub-Industry 30101040 Hypermarkets & Super Centers
- 5) Sector 30 Consumer Staples: Industry group 3020 Food, Beverage & Tobacco: Industry 302010 Beverages: Sub-Industry 30201010 Brewers
- 6) Sector 30 Consumer Staples: Industry group 3020 Food, Beverage & Tobacco: Industry 302010 Beverages: Sub-Industry 30201020 Distillers & Vintners

- 7) Sector 30 Consumer Staples: Industry group 3020 Food, Beverage &
Tobacco: Industry 302010 Beverages: Sub-Industry 30201030 Soft
Drinks
- 8) Sector 30 Consumer Staples: Industry group 3020 Food, Beverage &
Tobacco: Industry 302020 Food Products: Sub-Industry 30202010
Agricultural Products
- 9) Sector 30 Consumer Staples: Industry group 3020 Food, Beverage &
Tobacco: Industry 302020 Food Products: Sub-Industry 30202030
Packaged Foods & Meats

Refer to: <https://www.msci.com/gics>

Appendix B: National Environmental Sustainability Formal Institutional Factor
Environmental Performance Index (EPI) (Yale's World Economic Forum, 2019)

180 countries analyzed:

Afghanistan, Albania, Algeria, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Comoros, Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Czech Republic, Dem. Rep. Congo, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Germany, Ghana, Greece, Grenada, Guatemala, Guinea, Gunea-Bissau, Guyana, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Libya, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Mauritania, Mauritius, Mexico, Micronesia, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Congo, Romania, Russia, Rwanda, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, South Africa, South Korea, Spain, Sri Lanka, Sudan, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania,

Thailand, Timor-Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey,
Turkmenistan, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States,
Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Zambia, Zimbabwe.

Refer to <https://epi.envirocenter.yale.edu/about-epi>

Appendix C: National Food Sustainability Formal Institutional Factor

The three Food Sustainability Indexes (FSIs) by Barilla Center for Food & Nutrition

(BCFN Foundation, 2019)

67 countries analyzed:

Burkina Faso, Cameroon, Canada, China, Colombia, Cote d'Ivoire, Croatia, Cyprus, Czech Republic, Denmark, Egypt, Estonia, Ethiopia, Finland, France, Germany, Ghana, Greece, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Jordan, Kenya, Latvia, Lebanon, Lithuania, Luxembourg, Malta, Mexico, Morocco, Mozambique, Netherlands, Nigeria, Poland, Portugal, Romania, Russia, Rwanda, Saudi Arabia, Senegal, Sierra Leone, Slovakia, Slovenia, South Africa, South Korea, Spain, Sudan, Sweden, Tanzania, Tunisia, Turkey, Uganda, United Arab Emirates, United Kingdom, United States, Zambia, Zimbabwe.

Refer to <http://foodsustainability.eiu.com/>

Appendix D: National Culture Informal Institutional Factor

Hofstede's national cultural factors (Hofstede Insights, 2019)

109 countries analyzed:

Albania, Angola, Argentina, Australia, Austria, Bangladesh, Belgium, Bhutan, Brazil, Bulgaria, Burkina Faso, Canada, Cape Verde, Chile, China, Colombia, Costa Rica, Croatia, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Fiji, Finland, France, Germany, Ghana, Greece, Guatemala, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kenya, Kuwait, Latvia, Lebanon, Libya, Lithuania, Luxembourg, Malawi, Malaysia, Malta, Mexico, Morocco, Mozambique, Namibia, Nepal, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Panama, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Romania, Russia, Saudi Arabia, Senegal, Serbia, Sierra Leone, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Suriname, Sweden, Switzerland, Syria, Taiwan, Tanzania, Thailand, Trinidad and Tobago, Turkey, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Venezuela, Vietnam, Zambia.

Refer to detail: <https://www.hofstede-insights.com/country-comparison/>

Appendix E: Firm Sustainability Engagement Factor

Bloomberg ESG (environmental, social, and governance)

disclosure score (Bloomberg Finance L. P., 2019)

Bloomberg ESG data is composed of three distinct categories of public companies' sustainability engagement efforts: environmental, social, and governance (Bloomberg Finance L. P., 2019). Bloomberg ESG data uses public companies' annual reports, sustainability and CSR reports, company websites, news, direct reports from firms (Huber et al., 2017).

Environmental

Environmental data analyzed includes carbon emissions, climate change impact, pollution of air and water, waste management, renewable energy, and resource management (Bloomberg Finance L. P., 2019).

Social

Social data studied incorporates supply chain management, discrimination and diversity inclusion, political contributions, human resource management, human rights, and community relations (Bloomberg Finance L. P., 2019).

Governance

Cumulative voting, executive compensation, shareholder's rights, takeover defense, staggered boards, and independent directors (Bloomberg Finance L. P., 2019).

Number of countries reported unknown.

Refer to: <https://data.bloomberglp.com/professional/sites/10/ESG-Brochure1.pdf>