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Sustainability Practices That Influence Profitability in the Petroleum Industry

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Abstract

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Doctoral Study Submitted in Partial Fulfillment

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Abstract

Petroleum industries in the U.S. attract increased scrutiny from governmental bodies, businesses, and the civil society for their lack of sustainability practices, such as air emissions control, the use of cleaner fuels, and water pollution mitigation. Although the short-term cost of implementing these practices may be high as stated by a sample of the industry's leaders, long-term benefits include lower business costs and a reduction of the adverse impacts on society, the environment, and the economy. This multiple-case study highlighted the practices of several petroleum industry leaders who demonstrated an exception to these practices—who have been clear thought leaders in the delivery of both environmental sustainability and profitability. Data collection included in-depth interviews with 16 purposively selected petroleum business participants supplemented by a review of archival records containing annual sustainability reports. The participants were experts who practiced sustainability as part of their work-related activities. Data saturation occurred when no new data or patterns emerged. Methodological triangulation occurred as evidenced by the convergence of data from the different sources. Yin's 5-step analysis, which guided the coding process, yielded 3 main themes: environmental air quality, fuel, and water. These themes aligned with practices identified from the review of 20 archival reports across a 5-year period. Key practices identified from the archival records included flaring reduction, natural gas utilization, and water re-cycling. The implications for positive social change include the potential for the preservation of resources for present and future generations when all companies operating in the petroleum industry embrace sustainability.

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Dedication

I dedicate this study to Almighty God, who provided the strength, motivation, and patience to complete this study and achieve this pinnacle in my life. I also dedicate this to my late parents who guided me to embrace education to achieve success. I wanted to become a medical doctor, but I hope my parents are proud of my becoming a doctor of business. I hope my parents accept the fact that the nature of my doctorate will also change lives in a positive manner. Last, I dedicate this achievement to my Aunt Edlin de Gourville who was always my support mechanism while I was a youth.

Acknowledgments

With immense appreciation, I acknowledge my chair, Dr. Chery Lentz. Through your masterful guidance and exceptional advice, I committed to complete my doctoral study. Secondly, I sincerely appreciate the commitment and kind support from my committee members, Dr. Susan Fan and Dr. Marilyn Simon. I was motivated and educated by your wisdom. I acknowledge my wife, Mrs. Shaliza Ali for her love, patience, and understanding that reinforced my resolve to complete this academic journey. I want to honor the motivation and guidance of my mother, Mrs. Marjorie Small, to always aim for the continuous improvement that continues to contribute to my success and the success of those around me. Finally, I hope this study motivates my three children, Fyze Anderson, Bre-Anne Samantha, and Rohan Quinlin to achieve excellence and change the world positively in their ways.

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Section 1: Foundation of the Study

Introduction

Sustainability means living in the present in ways that allow others to exist in the future (Epstein & Buhovac, 2014a). Sustainability practices are an important aspect of doing business in any industry (Merriman & Sen, 2012). However, the leadership of U. S. petroleum companies hesitates to implement practices that support environmental sustainability. According to Du, Pan, and Zuo (2013) the perception is that sustainability practices increase operating costs and thus affect organizational profitability.

The purpose of this study was to determine the influence, if any, of practices that support environmental sustainability while improving profitability in the U. S. petroleum industry. By explaining the influence of such practices, company leaders will be able to make better-educated decisions about implementing such practices (Stoddard, Pollard, & Evans, 2012). An understanding of these influences may add value to the bottom line for the businesses (Hollos, Blome, & Foerstl, 2012).

Background of the Problem

Ascertaining the influence of sustainability practices on profitability is difficult for business leaders, employees, and community members in the business world (Heffes, 2011). Although some business leaders are doubtful (Rettie, Burchell, & Riley, 2012), sustainability practices may lead to profits (Chakraborty, 2010; Jang, 2010).

The belief in some business circles is that profitability reduction occurs when leaders implement sustainability practices (Butler, Henderson, & Raiborn, 2011). Other successful companies recognized the importance of the alignment between social and

environmental responsibility and financial performance (Epstein & Buhovac, 2014a). The conflicting views presented in these and other studies indicate the need for more research on how sustainability increases profitability (Du et al., 2013).

Costs associated with sustainability can affect profitability outcomes during production lifecycles (Williams et al., 2014). The importance of sustainability practices is an open question (Heffes, 2011). This ambiguity creates a business problem for petroleum executives of organizations uncertain about implementing sustainable practices. Some industry leaders believe that sustainability practices decrease profitability (Stocchetti, 2012). The goal of this research study was to explore the influence of sustainability on profitability in the U. S. petroleum industry. The aim was to determine whether sustainability practices could add value to these organizations and improve profits.

Problem Statement

The lack of sustainability initiatives in the petroleum industry could shorten the survival of the human race (Hashmi & Al-Habib, 2013). Some of these initiatives include (a) material reduction, (b) recycling, (c) waste reduction, and (d) spill avoidance (De Giacomo et al., 2014). British Petroleum (BP) paid over $21 billion in civil damages and suffered a loss to its reputation because of sub-standard sustainability practices that caused a major spill in the Gulf of Mexico (Baker, 2015). The general business problem is that the management of some petroleum companies does not have a holistic understanding of profitability in petroleum extraction with long-term effects on the environment (Nwagbara & Brown, 2014). The specific business problem is that some

petroleum industry leaders lack knowledge about how sustainable environmental practices affect profitability.

Purpose Statement

The purpose of this qualitative, multiple-case study was to explore sustainable environmental practices that petroleum industry leaders can use to affect profitability. Sustainability practices and profitability can be balanced benefit petroleum companies (Du et al., 2013; Parast & Adams, 2012). The expectation is for this research to explore sustainable environmental practices that petroleum industry leaders can use to affect profitability.

The target population was operations personnel and leaders in the petroleum industry who had experience in the United States. Front line leaders attained sustainability by bridging any gaps between their superiors and followers (Merriman & Sen, 2012). Targeting the leaders allowed for changes in these business practices that may contribute to sustainability implementation (Epstein & Buhovac, 2014a).

The implication for positive social change is that leaders in private and public organizations might use the findings to improve profitability. Profit and sustainability can and must go together because a social benefit exists (Voser, 2012). These benefits may include the protection of human lives while creating the economic requirements for social comforts (Epstein & Buhovac, 2014a). Sustainable practices are a requirement to enhance business outcomes, including reputation and financial performance (Petrovich, 2014).

Nature of the Study

Topics covered in this sub-section are the three main research methods and the justification for the choice of method. Quantitative research entails data collection that focuses on precise and objective measurements that use numerical and statistical analysis to support or refute a hypothesis (Campbell, 2014). In this study, the use of precise and objective measurements is not a requirement because the researcher aims to capture the experiences and beliefs of participants.

The approach of mixed-methods methods entails the use of a combination of qualitative and quantitative techniques, approaches, concepts and language (Yin, 2014). Plans to use oil price data as a variable for this study were absent. The planned approach for this study excluded the use of mixed-methods. The key reason for this approach was to avoid learning two research methods because I am a new researcher.

Qualitative research and the results generated are of relevance to the management issues experienced, where the research may provide practical solutions to business problems (Guercini, 2014). Qualitative researchers strive throughout the research process to ensure methodological alignment by thinking about the aspects of the research that included the selected methods, and the data analysis (Kramer-Kile, 2012). The focus of this study—the influence of sustainability practices on profitability indicators—aligned with a qualitative approach because of the need to consider the views of participants.

Design options for qualitative methodology included (a) ethnography, (b) phenomenological, (c) narrative, (d) grounded theory, and (e) case study (Yin, 2014). Ethnography entails prolonged observation of a group within their environment

(Compton-Lilly, 2015). Phenomenological studies entail the generation of meaning from the lived experiences of individuals to achieve an understanding of a phenomenon (Finlay, 2012). The narrative approach focuses on stories of lived experiences of an individual (Compton-Lilly, 2015). Grounded theory aims at theory creation based on data capture from studies (Staller, 2012).

The use of designs aligned with ethnography, phenomenology, narrative, and grounded theory were not the preference because they did not present the opportunity of investigating the contemporary phenomenon of sustainability and the relationship with profitability in the real-world context. Ethnography was not under consideration because this design type aligns with behavior and social interactions (Staller, 2012). The narrative approach did not align with this study requirements because the lives of individuals were not the focus. I did not select grounded theory for this research topic because of the lack of focus on theory creation.

Whenever the focus is on *why* more than an organization or act, a multiple-case study is the preference (Yin, 2014).The use of a multiple-case study facilitated this research because the boundaries between the phenomenon and context were not evident. Elements of a successful case study include (a) planning, (b) designing, (c) preparing (d) collecting, (e) analyzing, and (f) sharing of results (Yin, 2009).

For this research, a multiple-case study enabled an exploration of the sustainability environmental practices that influence profitability in the petroleum industry. Bone (2014) stated that case study design could facilitate the exploration of the link between sustainability and profitability. The use of a qualitative methodology

encompassing a multiple-case study design allows for a quality study outcome (Yin, 2014). Multiple-case studies can enable rigorous research and allow for the triangulation of data from different sources (Manning, 2016). The goal of this research was to explore the sustainable environmental practices that petroleum industry leaders use to affect profitability in the petroleum industry. For this study, the multiple cases involved four well-known petroleum industry corporations: BP, Chevron, ExxonMobil, and Shell.

Research Question and Survey Questions

The online questionnaire used 14 questions to help answer the research question: What sustainable environmental practices do petroleum industry leaders use to affect profitability?

1. What, if any, sustainability practices does your employer execute?
2. Describe how your employer implements sustainability environmental practices in the execution of business?
3. How does your employer behave to illustrate their embrace of sustainability practices?
4. What practices does your employer use to ensure all elements of the organizational system and structures benefit by the use of sustainability initiatives?
5. What evidence leads you to believe that your employer focuses on environmental protection in alignment of sustainability?
6. What are the thoughts of your employer about the influence of sustainability environment practices on profitability?

7. Which sustainability practices does your employer believe has a positive influence on profitability?
8. Which practices does your employer believe negatively affects profitability?
9. Which practices are beneficial to the environment and affects profitability neutrally?
10. Are you of the belief that sustainability practices have an influence on profitability and can you justify reasons for your answer?
11. What metrics does your employer use to determine how sustainable practices affect profitability?
12. Can you discuss how aligned you are to the importance of sustainability based on your job responsibilities within the petroleum industry?
13. How can you as a professional contribute to the implementation of sustainability practices as part of your professional responsibilities?
14. Why do you think embracing sustainability is important and how does each part of the system including operations, finance, human resources, legal, and suppliers and customers contribute and benefit?

Conceptual Framework

This conceptual framework for this study was systems theory based on Von Bertalanffy's (1972) theory. The definition of the word *system* from Greek history means reunion, conjunction or assembly (Soojin, Miso, & Joonhwan, 2011). In 1950, the theorist of this approach asserted systems theory as the necessity of investigating not only parts but also the relationships of organizations that resulted from the dynamic interaction

to understand behaviors. In systems thinking, applies nonlinear causal thinking to planning and management problems (Mirchi, Madani, Watkins, & Ahmad, 2012). Understanding a system may be of importance in the implementation of sustainability practices.

Sustainability is a leading model for societal development (Christen & Schmidt, 2012). A symbiotic relationship exists between sustainability and societal development (O'Conner & Gronewold, 2012). Senge et al. (2010) stated that the importance of a systems approach to implementing sustainability practices. For success, this systems approach entails consideration of all the components including (a) ecological systems, (b) fossil fuels, (c) global production, (d) waste, (e) standardization, and (f) the maximization of income (Senge et al., 2010). Thus, if all stakeholders of the societal system agreed to the importance of sustainability, implementation of this concept may become easier (Epstein & Buhovac, 2014a).

Systems thinking is a theory for better understanding the interrelationships of the components within systems (Stacey, 2011). Because business and society have an interrelation, balancing business needs and societal needs creates a purposeful system (Kassel, 2012). By understand the relationship between elements, the behavior of the whole can be determined (Mingers & White, 2010).

This paragraph outlines the elements considered in the creation of the online questions. The formulation of the online questions took into consideration the interrelationships between the different elements that contribute to the acceptance or non-acceptance of sustainability as an important aspect of business. The formulation of the

questions followed a holistic appreciation of the need to understand what sustainability practices were in use, how organizations and the participants perceived these practices, why the practices were important, and how these practices facilitated the creation of themes that needed integration to deliver sustainability outcomes. The formulation of the questions also took into consideration the need to understand the relationship, if any, between the sustainability practices and profitability.

For sustainability to work, social, environmental, and economic impacts must be managed (Epstein & Buhovac, 2014a). By using a systems thinking approach to guide this study, an understanding of the interrelations between the different elements was a possibility (Fischer & Zink, 2012). This understanding provided reasons why stakeholders embraced sustainability practices (Senge et al., 2010).

Definition of Terms

Biodegradable: Material that is biodegradable has undergone conversion from harmful products to harmless end products for re-use (Adekunle, Igbuku, Oguns, & Shekwolo, 2013).

Complexity. Complexity is the interrelatedness between chaos and order, communications, and organizations (Bouchier, 2012).

Stakeholders. Stakeholders are those with a vested interest and include employees, business owners, suppliers, partners, the community, and the natural environment (Latham, 2014).

Sustainability. Sustainability is the creation of long-term financial performance by addressing opportunities originating from economic, social, and environmental

performance inclusive of pollution reduction, recycling, waste management, and decreases in fuel consumption while facilitating the livelihood of future generation (Epstein & Buhovac, 2014b).

Assumptions, Limitations, and Delimitations

Assumptions

This study was based on 4 assumptions. Researchers' assumptions shape the research they undertake (Kirkwood & Price, 2013). These are the facts that the researcher assumes to be true, but cannot verify. Assumptions can enable interpretations of results to enhance conclusions (Bennell, Snook, Macdonald, House, & Taylor, 2012).

- The expectation that the participants who participated in this study had experience and familiarity with their employer's sustainability practices was a reality. This expectation held true because the participants included experienced engineers and technical/operations employees immersed in the sustainability activities of their organizations aimed at environmental protection (Williams & Dunwoody, 2012).
- The participants would respond truthfully to the interview questions (Yin, 2014).
- The participants would be familiar with the profitability outcomes of their employers and could provide responses that aligned sustainability efforts to changes if any profitability.
- The last assumption was that the participants recognized the importance of sustainability activities as a business practice (Jooh, Pati, & Roh, 2011).

Participants' responses to the research questions did clarify this assumption as expected of studies of this nature (Khankeh, Ranjbar, Khorasani-Zavareh, Zargham-Boroujeni, & Johansson, 2015).

These assumptions bounded the study. Participants' education and experience aligned with the expectation that truthful answers were an expectation and would contribute to bias reduction goals because of confidentiality. In support of the last assumption, participants did recognize the importance of sustainability as a necessary business practice for long-term viability. The idea that these participants were willing to contribute to the study indicated the importance of this issue, and the willingness to provide honest answers.

Limitations

Researchers need to be aware of their study's limitations (Seeber, 2013), that is, constraints or boundaries that of potential weaknesses in the study (Kirkwood & Price, 2013). A potential weakness of the study is the plan to use participants on a limited geological environment despite the global nature of the petroleum industry. The presentation of issues related to bias during research adds to validity and reliability outcomes (Yin, 2013). The use of sustainability reports written internally by petroleum companies as a form of improving data reliability may also introduce bias. The multiple-case study approach may display what happens in the United States, but the results may not be valid for other geographical areas in the petroleum industry.

Data collection during a period of depressed oil prices may be a limitation of the study. Oil and gas companies focus on operational cost cutting during a period of falling

oil prices (Pierce, 2014). It was possible that sustainability initiatives aligned with operational cost and yielded negative outcomes (Epstein & Buhovac, 2014a). Further research on this topic should have the ability to show that environmental protection can yield economic prosperity (Beckmann, Hielscher, & Pies, 2014).

Delimitations

Delimitations are entitlements or boundaries (Huang & Liao, 2014). In this study, participants were limited to 20 petroleum industry participants who had at least 5 years' experience working for a single petroleum exploration and production company. The participants had experience working in the United States may not be aware of sustainability practices elsewhere within the company or the industry. Petty, Thomson, and Stew (2012) stated that the importance of using experienced sustainability practitioners to understand sustainability outcomes. The sample of participants included engineers who had experience in, and responsibility for, sustainability environmental practices in the production of petroleum fluids.

The participants would describe, without bias, their perceptions of current sustainability practices and how, if at all, they think these practices affected the profitability of the employer with which they had U.S experience. Ienciu, Popa, and Ienciu (2012) stated the importance of independent thinking in the evaluation of sustainability practices. Outside the scope of this study are the sustainability practices of other companies, and practices in other geographical regions.

Significance of the Study

Contribution to Business Practice

Sustainability involves living in the present in ways that do not jeopardize the future (Senge et al., 2010). Threats to sustainability include (a) ineffective leadership and strategy; (b) absence of cultural alignment; (c) absence of performance management, evaluation, and reward systems; and (d) perceptions of non-value-adding costs (Epstein & Buhovac, 2014a). These threats require mitigating actions to facilitate the ability to deliver business goals (Harvard Business School, 2005).

Sustainable development (SD) is necessary to enhance business practices (Lion, Donavan, & Bedggood, 2013). Organizational leaders have the ability to implement practices that will enhance the sustainability of the environment, society, and economics (Abdulrahman, Huisingh, & Hafkamp, 2015). Companies focusing on sustainability could experience win-win scenarios at an ecological, social, and governance level (Beckmann et al., 2014). According to Epstein and Buhovac (2014a), achieving sustainability requires concentration on the triple bottom line: (a) the environment, (b) social issues, and (c) economic outcomes. Sustainability aligns with improvements in business performance (Haanaes, Michael, Jurgens, & Rangan, 2013). The outcome may result in a competitive advantage for the petroleum industry against the competition of energy renewable organizations.

Implications for Social Change

Social change was also the intention of this study. Attaining sustainability outcomes in the petroleum business must include social elements (Schneider, 2013). The

purpose of this study was to determine the influence, if any, of practices that support environmental sustainability while improving profitability in the U. S. petroleum industry. An objective was for stakeholders aligned with petroleum companies to embrace sustainability practices as a solution for value creation to improve business performance. This objective may improve the lives of individual communities within the petroleum industry, which is a social outcome, and avoid the negative financial outcomes experienced by the Exxon Valdez Alaska spill, British Petroleum's Macondo blowout, and Occidental Petroleum Piper Alpha environmental incidences (Dittrick, 2013; Weaver, 2014). These unfortunate incidents resulted in the loss of (a) human and animal lives; (b) ecological capital; and (c) billions of dollars (Dittrick, 2013; Weaver, 2014).

The expectation was for sustainability efforts to increase the ability of petroleum companies experience profitability while providing social benefits to the communities in which the companies operate via jobs, improved health benefits, schooling and superior quality of life. The expectation is for long-term sustainability to be a success (Petrovich, 2014).

A Review of the Professional and Academic Literature

Introduction

Literature reviews can help develop sharper and more insightful questions about a topic (Yin, 2014). Reviews can also relate to larger ongoing dialogue in the literature by showing gaps that justifies extending prior studies (Cooper, 1984; Marshall & Rossman, 2006). Literature reviews should (a) indicate how the literature allows for the creation of the research question; and (b) provide connectivity to the doctoral study (Yin, 2014).

The organization of the review. The purpose of this review was to evaluate the literature on sustainability and its influence on profitability. A brief description of the content and organization of the review previews a description of the search strategy. The literature review itself includes a critical analysis of the conceptual framework and an in-depth discussion of eight themes on (a) business; (b) petroleum industry; (c) practices; (d) profitability; (e) leadership; (f) change management; (g) policy and planning; and (h) self-regulation. These themes help in the identification, extraction, and synthesis of information that can help answer the research question (Foster, 2013).

Critical analysis and synthesis of various sources.

This study focuses on the influence of sustainability practices on profitability in the petroleum industry. An exhaustive review of the literature using electronic databases can reveal a problem (Foster, 2013). In reviewing the literature, the focus was on the elements of SD, sustainability, sustainability practices, and the positive and negative perceptions of these issues.

Strategy in searching the literature. Web searches are an important activity for data capture (Maloney & Yoxtheimer, 2012). This approach is in alignment with Dixon-Fowler et al. (2013) who stated the importance of manual searches when executing research. Thus, the three key aspects of the study are *sustainability*, *profitability*, and *petroleum*. The searches were in focus on these three elements because this approach allows for specification searches that can improve research outcomes in sustainability studies (Hajmohammad & Vachon, 2014). The strategy in searching the literature

centered on the Thoreau database that facilitates access to multiple databases in the Walden University system.

The following keywords—singly or in combination— were in use; (a) *sustainability*, (b) *sustainability practices*, (c) *SD,* and (d) *environmental practice*s. Other words and phrases included (a) *profitability, (b) profit,* and *(c) success.* Additional keywords and phrases included (a) *petroleum* and (b) *oil and gas.* As per Walden University, the use of peer-reviewed articles published within 5 years of graduation, choosing the peer-reviewed option, and bracketing the search between 2012 and 2017 was a requirement. This approach generated a 100% rate of articles published within the required 5-year period.

Summary of the peer-reviewed literature. The literature review contains 103 references of which, 11 (11%) are outside the 3–5 -year window as required by Walden University and 88 (85.4%) are peer-reviewed, which aligns with Walden University requirements. Five textbooks were also of use for the literature review. Additional sources of information included a review of the annual sustainability reports of petroleum companies including BP, Chevron, ExxonMobil, and Shell. The obtainment of these reports was from the company public websites. Additionally, a review of the public website of the Environmental Protection Agency (EPA) allowed for guidance in focusing the study towards key environmental concerns and practices.

Application to the Applied Business Problem

The purpose of the study. The purpose of this qualitative multiple-case study was to explore the sustainable environmental practices petroleum industry leaders use to

affect profitability. It is possible to balance sustainability practices and profitability outcomes to benefit petroleum companies (Du et al., 2013; Parast & Adams, 2012). The expectation is for this research to unveil the contribution of these practices to the petroleum business.

The target population for this study was operations personnel and leaders in the petroleum industry who had experience in the United States. Front line leaders attained sustainability by bridging any gaps between their superiors and followers (Merriman & Sen, 2012). Targeting the leaders allowed for changes in these business practices that may contribute to sustainability implementation (Epstein & Buhovac, 2014a).

The implication for positive social change is that leaders in private and public organizations might use the findings to improve profitability. Profit and sustainability can and must go together because a social benefit exists (Voser, 2012). Sustainable practices are a requirement to enhance business outcomes including reputation and financial performance (Petrovich, 2014). Additional outcomes included (a) improved employee morale, (b) increased employee loyalty, and ultimately, (c) more-efficient business operations (Florea, 2012).

Conceptual framework. The conceptual framework for this study was one aligned with systems theory. A system is a set of interdependent components organized by design to accomplish one or more objectives (Garrity, 2012). Mirchi, Madani, Watkins, and Ahmad (2012) stated that the use of systems theory provides methods and techniques to apply non-linear causal thinking to planning and management problems. Systems may comprise of and organize by subsystems, and each of these may interact

with each other as well as with their environment and share information (Garrity, 2012). Systems theory also points to the limits of predictability by introducing circular causality, which makes for difficulty in the determination of what causes what, or what precedes what (Stacey, 2011). With humans using the resources of nature for existence, harm comes to our habitat (Stevens, 2012). In the case of this study, the questions arise whether what environmental practices may have an influence on profitability or whether being profitable may cause the implementation of sustainability in the petroleum business.

Society depends on sustainable approaches for development (O'Conner & Gronewold, 2012). A systems approach is a requirement for the implementation of sustainability practices (Senge et al., 2010). Davidson and Venning (2011) stated that the application of systems thinking contributes to an integrated decision-making framework because such approaches encourage a thorough examination and evaluation of (a) goals and objectives; (b) the relationships between inputs, throughputs, and outputs; (c) processes for evaluation, feedback, and review; and (d) the context or environment. The failure to take advantage of systems thinking results in decision-making processes being less effective than they could be. With the need for the application of systems theory to decision-making in the implementation of sustainability practices, the examination and evaluation of the elements listed above may be of critical importance.

A comprehensive systems approach is a requirement for effective decision making regarding global sustainability (Fiksel, 2012). Garrity (2012) stated the importance of the use of systems theory in the analysis of the overuse of the natural resources. Thinking systematically also enables a review of the literature to unveil items

of interest for research (Foster, 2013). Similarly, in the petroleum industry, systems thinking may facilitate an understanding of why the management of some companies exploits natural resources to extinction for the benefit of their companies and at the same time may or may not have an unwillingness to embrace sustainability practices.

An eco-social relationship exists between the environment and humanity (Stevens, 2012). This relationship creates situations where humans make decisions and implement changes that are harmful to the environment (Stevens, 2012). Inadequate knowledge and tools hinder the successful implementation of sustainability into organization systems (Gallo, 2012). Understanding the interrelationships among the main factors that contribute to acceptance of sustainability requirements was possible by the development of a conceptual model using systems thinking (Gonzalez, Sandoval, Acosta, & Henao, 2016). This result indicated the importance of systems thinking in understanding the interrelationships that are important in the implementation of sustainability.

The use of system thinking in a greenhouse gas emissions reduction initiative aimed to reduce school emissions by 10 tonnes (metric tons) in one year, was a success (Lewis, Mansfield, & Baudains, 2014). The achievement of the goal was a reality because of the systems thinking approach used to implement a variety of environmental and social actions undertaken by the parents, students, teachers, and community partners (Lewis et al., 2014). A link between system thinking and sustainability unfolded when college students Hedmark University College used a pervasive game to teach sustainability while giving elementary students a real world experience (Nordby,

Oygardslia, Sverdrup, & Sverdrup, 2016). The game allowed for a collaborative environment. Collaboration while working together promoted the use of a systems thinking approach in the solution of problems related to the environment (Westphal & Zajac, 2013).

A systems thinking approach was important in understanding and describing fishers' ways of knowing and dealing with complexity in ecosystems (Garavito-Bermudez, Lundhold, & Crona, 2016). Elements identified as being important included (a) feeding interactions; (b) populations' dynamics over time; (c) climate change, water quality, and overfishing; and (d) the ecosystem (Garavito-Bermudez et al., 2016). Systems thinking theory was arguably part of fishers' professional skills and significant for sustainable natural resource management. Systems thinking also facilitated the successful development of a causal model to understand what were the different factors and factor relationships in wind energy at the system level related to sustainability (Tejada & Ferriera, 2014). Systems thinking allowed for a holistic understanding of the system and provided a better understanding of its behavior (Stacey, 2011).

Themes and phenomena. An investigation of sustainability dilemmas can provide the ability to benchmark global sustainability best practices (Jayanti & Gowda, 2014). The focus of the literature review was to discuss different dilemmas that may influence sustainability. The themes of the literature review entailed eight topics. These topics were (a) sustainability in business, (b) sustainability challenges in the petroleum industry, (c) sustainability practices, and (d) influence on profitability. A review of the relationships between organizations, the environment, and society is of importance when

researching sustainability (Linnenluecke & Griffiths, 2013). Other themes, which may allow for an understanding of sustainability challenges, included (a) sustainability leadership; (b) change management for sustainability; (c) policy and planning issues; and (d) self-regulation vs. legal requirements. These themes displayed items in the literature concerning sustainability that aligns with this doctoral study. The presentation of gaps in the literature allowed for showing how this study can bridge those existing gaps where possible and display personal mastery of the research topic (Yin, 2014).

Sustainability in business. Much disagreement about the idea of sustainability exists and this situation results in the unsatisfactory outcome (Christen & Schmidt, 2012). The perceptions that the concept of sustainability is arbitrary allow for the loss of action-guiding power (Christen & Schmidt, 2012). Dixon-Fowler, Slater, Johnson, Ellstrand, and Romi (2013) studied whether the use of sustainability was profitable. The variables of their study included return on assets (ROA), stock price, sales growth, and market share. In this study, the topic of discussion was that small firms benefit from environmental performance as much or more than large firms and environmental performance seems to have the strongest influence on market measures of financial performance (Dixon-Fowler et al., 2013).

In addition, Issa, Attalla, Rankin, and Christian (2013) completed a detailed statistical analysis of the costs related to upgrading Toronto schools to a sustainable status by the use of greener practices. The results of the quantitative study indicated no statistically significant difference between upgrade costs in conventional, energy-retrofitted, and green schools (Issa et al., 2013). Research concerning the ability of

sustainable supply chains to generate profitability outcomes indicated that waste elimination in conjunction with profitability improvement is a possibility (Kumar, Teichman, & Timpernagel, 2012).

Completed research entailed the challenges technology organizations faced in balancing SD with conventional profit-driven development (Du et al., 2013). The case study involved China Mobile that launched a Green-IT program with impressive results in 2007. The study results indicated the importance of collaboration amongst the key stakeholders including (a) top management, (b) business units, (c) supplier networks, and (d) customer networks. By collaborating, a balance between sustainability and profitable business outcomes is a possibility (Du et al., 2013). The study highlighted the importance of the key constructs of ambidexterity including (a) strategic renewal, (b) organizational configuration, (c) ecosystem redefinition, and (d) market renormalization.

One of the key observations of businesses that embrace sustainability approaches is the use of reporting on sustainability outcomes (Lynch, Lynch, & Casten, 2014). Stakeholders can use these reports to understand the value added in businesses. Drohan et al. (2012) successfully documented their findings from the Goddard Forum on the oil and gas impacts on forest ecosystems. By reporting their findings, stakeholders gained a comprehensive prospective on the management challenges and research needs for evaluating the impacts and generating possible solutions to mitigate environmental risks (Drohan et al., 2012). Sustainability efforts requires managing planet Earth as a corporation (Mac Cormac & Haney, 2012). The statements in the section are in alignment

with the understanding that focusing efforts on sustainability, review use of commas as a business problem may allow for appropriate creating of measures to provide solutions.

The aim of this doctoral study was to study the business problem concerning the influence of sustainability environmental practices on organizations involved in the petroleum business. The literature indicated that judgment on the benefits of sustainability practices is still pending conclusion (Heffes, 2011). The expectation was for this study to provide more clarity on this issue.

Sustainability opportunities in the petroleum industry. Even though petroleum fuel is a requirement for human activities, the burning of such fuels produces gases that are harmful to humanity (Liu, Lin, & Sagisaka, 2012). Petroleum companies are liable for damage to the environment as per the case of Shell in the Nigerian Niger Delta (Hennchen, 2014). Because of increasing evidence of climate change and harm to the environment, businesses embraced an active role in the preservation of resources for future generations (Jayanti & Gowda, 2014). The need exists for sustainability outcomes in the petroleum business (Voser, 2012). Attempts at implementing sustainability in the petroleum industry do come with challenges (Aaron, 2012). This conclusion was the result of a study to assess the impact of new models of corporate-community engagements in response to the failings of older models by petroleum industry trans-nationals. When Chevron and Shell attempted to implement SD practices in host communities in Nigeria's petroleum producing regions, setbacks were the outcome (Aaron, 2012). The question arises as to what practices petroleum companies should implement to attain sustainability goals.

Companies in the petroleum industry should embrace the practice of educating stakeholders in their sphere of operation on the environmental impacts of executing their businesses (Willits, Luloff, & Theodori, 2013). Shell (2013) focused on local stakeholders wherever they do business to avoid conflicts and ensure the dissemination of knowledge about environmental protection efforts occurs. The use of sustainability indicators enhances the ability to provide information and knowledge that educates the public on sustainability performance (Singh, Murty, Gupta, & Dikshit, 2012).

The importance of aligning sustainability with research and development efforts for continued profitability in the global petroleum industry (Jooh et al., 2011). Sustainable environmental practices in the petroleum industry can (a) minimize land utilization; (b) reduce waste and air pollution; (c) reduce pollution of underground water (Yi et al., 2012). An important sustainability challenge in the petroleum industry was the management of produced water to avoid negative public health effects or associated environmental issues (Wilson & VanBriesen, 2012).

Environmental reporting and the practice of astute corporate governance can facilitate sustainability outcomes (Ienciu, et al., 2012). This objective is possible by the establishment of committees focused on (a) safety, and (b) the environment that monitor and transparently report on the environmental impact of the company (Ienciu et al., 2012). This approach can deliver an improvement in environmental compliance performance. Ingelson and Nwapi (2012) stated that environmental compliance is a possibility with the use of environmental impact assessments (EIAs). These EIAs should be in alignment with the laws to ensure environmental sustainability outcomes and should

entail the phases of (a) project proposal, (b) screening, (c) scoping, (d) report submission to authorities, (e) decision-making, and (f) project implementation (Ingelson & Swapi, 2012).

O'Connor and Gronewold (2012) stated that by embracing the need of corporate social responsible as a practice can allow for sustainability outcomes in the petroleum industry. This responsibility may entail changes in the products and services in use. The use of biofuels as a fuel stock product is an opportunity for the reduction of harmful gases produced from fossil fuel consumption (Liu et al., 2012). Ullah, Bano, and Nosheen (2014) agreed with Liu et al. (2012) by stating that the pollution and non-sustainable outcomes associated with fossil fuel guided global interest towards the use of biofuels as a sustainability practice. The expectation was for this practice to continue (Ullah et al., 2014).

In the planning phase of hydrocarbon exploration, prospectors need to evaluate and determine the impact on the environment (Shell, 2015). The issues of importance include (a) the footprints results of energy development; (b) the integration of best practices; and (c) impacts on other industries (Drohan et al., 2012). Successful petroleum industry operations should also include (a) the need to align operations with regulatory requirements; (b) how to protect sensitive environmental resources; and (c) land reclamation (Drohan et al., 2012). Astute project management is a necessity to achieve sustainability outcomes in the petroleum industry (Hopkins, 2011).

Any form of mineral extraction is an unsustainable enterprise (Pierce, 2014). Drilled wells eventually need plugging and abandoning and operation practices should

involve (a) economics; (b) adequate funding for abandonment; (c) taxation incentives to achieve environmental sustainability; (d) focus on reservoir development as a unit (Pierce, 2014). Companies in the petroleum industry should also focus on pollution management during operations (Tatoglu, Bayraktar, Sahadev, Demirbag, & Glaister, 2014). Waste management, in general, provides an opportunity for sustainability outcome successes (Senge et al., 2010). Maloney and Yoxtheimer (2012) stated that an imperative practice was to manage the waste products for oil and gas extraction to minimize the negative economical outcomes from hydraulic fracturing in unconventional petroleum operations.

Avoiding the flaring of produced gas is an opportunity for reducing emissions. Abdulrahman, Huisingh, and Hafkamp (2015) stated that when a reduction in the burning of hydrocarbons occurs, the negative impact on the environment reduces. Shell (2015) stated that carbon management is a necessity to avoid harmful gases pollution. Additional enhancement of this approach entails the use of solar energy to provide power in the petroleum industry (Pinkse & Van Den Buuse, 2012). Companies' willingness to embrace solar energy is a function of their ability to integrate this energy type into the supply chain, and economics (Pinkse & Van Den Buuse, 2012).

Shell (2015) stated that their key practices that enhance environmental sustainability included (a) risk identification and mitigation; (b) recycling; (c) waste management and disposal; and (d) energy conservation. Senge et al. (2010) proposed the waste reduction is a possibility by the use of (a) *natural nutrients* that are biodegradable products of industrial processes, and (b) *technical nutrients* that can circulate back into

the creation of new products. Fluid waste disposal in the petroleum industry should incorporate the use of (a) recycling, (b) re-injection, and (c) disposal at sewage treatment plants (Maloney & Yoxtheimer, 2012).

BP focused on environmental sustainability in their petroleum operations by the use of (a) innovative well control systems; (b) water table isolation; (c) fluids recycling; (d) regulated disposal; and (e) leakage protection systems (BP, 2015b). Other practices for environmental sustainability in the petroleum industry includes (a) carbon management, (b) cleaner burning fuels, (c) alternative energy use, (d) drinking water protection, and (e) green building for office space (Shell, 2015). The aims of these practices are to (a) preserve biodiversity, (b) minimize deforestation, (c) maintain health, and (d) achieve economic viability (Nickel, 2014).

For drilling of new wells, the use of slim hole techniques and coiled tubing, resulted in (a) cost reduction; (b) lower waste volumes; (c) smaller environmental footprints; and (d) reduced noise and fuel consumption (Rocca & Viberti, 2013). Companies must focus on data and process traceability at every step on the petroleum industry supply chain (Bureau Veritas, 2015). By the use of astute reservoir characterization and data capture, the possibility exists for an understanding of the fluid types that requires management to prevent environmental issues (Rocca & Viberti, 2013). This approach will allow for effect air emissions and carbon capture management (Rocca & Viberti, 2013). The expected result is a reduction of environmental harm as required by stakeholders (Yi et al., 2012).

A review of the literature did unveil some of the sustainability challenges in the petroleum industry yet documentation in a single study is absent. In addition, authors of the literature failed to review the direct influence of sustainability environmental practices on profitability, which this study aims to accomplish. Key petroleum industry sustainability practices unveiled by a review of the literature surrounds (a) waste reduction, (b) recycling, (c) use of cleaner fuels, (d) stake holder engagement, and (e) project planning.

Sustainability practices. Hashmi and Al-Habib (2013) studied sustainability and carbon management practices in Saudi Arabia. Von Hirshhausen, Holz, Gerbaulet, and Lorenz (2014) stated the importance of decarbonization as a sustainability practice in the energy sector in Europe. Responses to surveys completed by Saudi enterprise managers indicated the importance of the practice of carbon emission management as a sustainability practice (Hashmi & Al-Habib, 2013). Findings from this study can assist policy makers and leadership of public and private sector enterprises to formulate future sustainability and carbon management policies (Hashmi & Al-Habib, 2013). A similar focus on the importance of carbon capture as a practice that can facilitate the expansion of Chinese oil companies into global markets to ensure energy security is in execution (Vermeer, 2015).

Managing the risks associated with oil and gas development is an important practice (Brasier et al., 2013). The perception is that hydraulic fracturing causes harm to the environment and human existence so that all associated activities require scrutiny (Brasier et al., 2013). Drohan et al. (2012) stated the importance of aligning activities

with regulatory requirements. The development of best practices guidelines is also of critical importance (Finer, Jenkins, & Powers, 2013).

The use of conceptual plans is a best practice for petroleum development in South America for all phases of such projects (Finer et al., 2013). These plans should be available before commencement of any work. Other best practices include (a) the use of computer modeling, (b) horizontal drilling, and (c) the prohibition of new access roads (Finer et al., 2013). Additional practices include (a) no permanent camps in the jungle interior, (b) allowance for only air and river transport; and (c) limitation on the right of way construction for pipelines (Finer et al., 2013). These practices fulfilled the focus of executing business in environmentally sensitive industries (Bachoo, Tan, & Wilson, 2013).

Additional proposals included (a) astute pipeline construction to prevent ruptures and leaks; (b) funds set aside for site abandonment and ecosystem remediation; and (c) consideration as to whether the pursuit of oil and gas development is a necessity (Finer et al., 2013). Practices that can also have a positive impact on sustainability goals included (a) an understanding of the footprints results of energy development; (b) how to protect sensitive environmental resources; and (c) land reclamation (Drohan et al., 2012). The reduction of (a) heavy equipment traffic, (b) air emissions, and (c) population growth are also appropriate practices in environmental protection (Brasier et al., 2013).

Before embarking on a petroleum oilfield development project the following are a necessity (a) a detailed analysis of existing and planned hydrocarbon activities and infrastructure; (b) an evaluation of the planned activities; and (c) infrastructure

requirements with accompanying expected environmental impacts (Finer, Jenkins, & Powers, 2012). The ability to measure and report issues aligned with sustainability initiatives is critical (Ienciu et al., 2012). This practice entails astute corporate governance whereby reporting practices illustrate transparency, attract appropriate oversight, and critique (Ienciu et al., 2012).

Maloney and Yoxtheimer (2012) proposed best practices for the disposal of waste products from drilling activities in the Marcellus Shale in Pennsylvania. These practices include (a) the use of landfills, and (b) the use of interstate and inter-basin transport. Other practices included flow-back water reuse and injection into disposal wells and industrial waste treatment plants (Maloney & Yoxtheimer, 2012). In avoiding spills from petroleum development operations, the following practices are a requirement: (a) improved prediction of worse case scenarios; (b) planning ahead to prevent damage to the environment; and (c) determination and presentation of a risk profile so that mitigating actions are available should future problems occur (Michaels, 2010). Wilson and VanBriesen (2012) stated the importance of water treatment management to ensure water by-products from petroleum development operations do not create environmental concerns. Spacing remains a major concern.

The use of environmental impact assessments (EIAs) proved successful in the determination of the success of sustainability practices (Ingelson & Nwapi, 2014). Yip et al. (2012) also presented the importance of EIAs in the management of sustainability initiatives. Konne (2014) noted the importance of monitoring and enforcement to deliver sustainability in the Nigerian petroleum industry. Times existed when lawsuits in

international courts are a requirement for national governmental compliance. In Konne's study, more astute monitoring of international petroleum companies was the practice required to get the results expected by local tribes in the delivery of profits.

Best practices are those that focus on (a) inputs, (b) processes, (c) outputs, and (d) outcomes (Epstein & Buhovac, 2014b). British Petroleum focused on the generation of environmentally friendly energy sources (Quisenberry, 2012). General Electric realized $16 Billion in profits by the implementation of practices entailing (a) strategic thinking, (b) optimizing managerial processes, and (c) operations efficiency improvement (Quisenberry, 2012). Stochetti (2012) stated the importance of practicing a micro level approach to sustainability. In addition, having a green supply chain can also deliver sustainability outcomes (Timpernagel, 2012).

Well known petroleum industry super-major Shell includes the following in their environmental sustainability practices: (a) risk identification and mitigation; (b) recycling; (c) waste minimization and disposal; and (d) energy conservation (Shell, 2015). ExxonMobil (2015) focused on (a) environmental emergency preparedness, (b) energy efficiency, and (c) environmental protection compliance. Additionally, Shell (2015) focused on (a) carbon emissions management, (b) cleaner burning fuels, (c) alternative energy use, and (d) drinking water protection. Practices for environmental cleanup include (a) proactive minimization of site disturbance; (b) the design of complementary site re-use infrastructure; and (c) maintenance of the natural setting (EPA, 2013).

In summarizing the sustainability environmental practices, studies indicated numerous options for the prevention of environmental incidences (Finer, Jenkins, &Powers, 2012; Ingelson & Nwapi, 2014; Maloney & Yoxtheimer, 2012). A lack of clarity exists on how these practices can directly influence the financial performance of organizations and so increase the value of a firm. The goal of this study was to bridge this gap and deliver a clearer understanding of the alignment between sustainable environmental practices and profitability results.

Influence on profitability. The question asked was how does the implementation of sustainability practices influence profitability? Profitability aligns with the ability to generate positive net cash flows (Ross, Westerfield, & Jaffee, 2013). The question of how profitability emerges and evolves is a central issue in strategic management and industrial organization research (Jacobides, Winter, & Kassberger, 2012). Sustainable profits may represent a small part of the total wealth created over time by a firm and industry (Jacobides et al., 2012). A challenge for managers was an understanding of the complex interrelationships between social, environmental, economic, and financial performance (Epstein & Buhovac, 2014a).

Epstein and Buhovac (2014b) stated that increased profits are possible upon the implementation of sustainability practices. This statement supports Baumgartner (2013) who stated sustainability could create success, innovation, and profitability for companies. Sustainability can allow for cutting overhead costs that can have positive outcomes on profitability (Richerson, 2013). For the realization of profitability to occur key elements include (a) management commitment, (b) a sustainability strategy, (c)

reduced environmental impact, (d) reputation improvement, and (e) lower costs (Epstein & Buhovac, 2014b). Of importance was the ability to implement cost-effective value-added sustainability improvements that will add to the bottom line (Klein, 2015a).

The need exists to blend the triple bottom line of people, planet, and profits to achieve sustainability (Klein, 2015b). This approach was a necessity because sustainability offers companies opportunities for cost savings, efficiency improvement, and the attraction of new customers and suppliers (Kumar, Teichman, & Timpernagel, 2011). The resultant competitive advantage allows for the generation of profits (Kumar et al., 2012). This outcome was also possible by engaging the loyalty of workers in the range of knowledge protection (Mazur & Kulczyk, 2013).

Focusing on sustainability in the long-term can give an extended competitive advantage (Epstein & Buhovac, 2014a). The protection of a long-term competitive advantage was more complicated than the protection of current profits (Mazur & Kulczyk, 2013). An option for accomplishing this objective was to increase efficiency by (a) the reduction of the use of raw materials; and (b) waste elimination (Kumar et al., 2012).

Often organization leaders and scholars assumed the need exists to sacrifice profits in their pursuit of sustainable activities (Quisenberry, 2012). Questions asked of business leaders often include making false choices between being profitable and being environmentally sustainable (Scherer, 2013). Improved accounting was a practice that can facilitate the guidance of leaders to examine the possibility of waste reduction to result in improved profitability outcomes (Scherer, 2013). The focus should be on

focusing the opportunities available to link environmental issues to financial ones. The common sense of sustainability was to minimize the impact of the company's activities on the environment and on social discomfort without sacrificing profitability (Stocchetti, 2012).

In summary, the implementation of sustainability practices was possible while achieving profitability outcomes (Quisenberry, 2012). Achievement of the required outcomes necessitates understanding the linkages between sustainability and profitability (Epstein & Buhovac, 2014b). A crucial role exists with the involvement of leadership and control systems that emphasizes the interdependencies between an organization's processes (Stocchetti, 2012).

Leadership role in sustainability. In the creation of a competitive advantage for their organizations, leaders in the world's largest petroleum companies use communication as a vehicle to show the benefits of environmental sustainability (O'Connor & Gronewold, 2012). Singh, Murty, Gupta, and Dikshit (2012) noted the importance of leaders in strategy formulation in the delivery of sustainability initiatives. To illustrate corporate social responsibility, leaders must focus on issues such as global warming, and the effects of this phenomenon on business outcomes (Bell & Lundblad, 2011).

Leaders must explore the effects of non-technical risks to understand their impact on sustainability initiatives (Hopkins, 2011). Treating the environment with respect was a requirement for sustainability (Hopkins, 2011). Having the ability to ensure an optimal balance between the environment and the use of human capital was a requirement for

effective leadership (Mezher, Tabbara, & Hosani, 2010). Effective leaders ensure than while managing their organizations, the use of environmental strategies was equally important (Delmas, Hoffmann, & Kuss, 2011).

Leading human capital development aids in sustainability by the enhancement of business performance (Monday, 2015). For SD to be a success, scaling up of sustainability leadership was a requirement (Christopoulous, 2012). Key elements in leading an approach towards sustainability include (a) the integration of different modes of governance; (b) disclosure of information; and (c) knowledge and institutional learning (Christopoulos et al., 2012). Other elements include (a) empowerment of weaker players; (b) deliberation on appropriate choices in governance and policymaking; and (c) enabling appropriate local practices in cross-border work activities (Christopoulos et al., 2012).

The literature has documentation concerning the importance of astute leadership as a practice that influences the positive aspects of sustainability (Makipere & Yip, 2008; Mirchandani & Ikerd, 2008). Gaps exist with how different leadership activities may affect the management of sustainability environmental practices. This issue was an area of study via the use of the online questionnaire questions documented in Section 1.

Change management for sustainability. Organizational sustainability may require change management approaches (Brannmark & Benn, 2012). This statement may be true for organizations that do not presently embrace sustainability as a means of doing business. Change management aligns with diversity, leadership, and sustainability initiatives (VanEyde, Maes, VanEyde, & Unyzeitig, 2013). Vora (2012) stated the importance of change management to sustainability. Elements of change management

include (a) leadership, (b) sustainability, (c) strategic planning, (d) culture, (e) learning, and (f) negotiation (Van Eyde et al., 2013). Francis-Jennings and Lewis (2014) stated the use of two approaches to facilitate sustainable change as (a) content neutral facilitation (CNF), and (b) positive defiance (PD). Key items of the CNF and PD approaches include (a) defining a sustainability strategy, (b) considering the needs of stakeholders, (c) communication among managers, supervisors, and subordinates, (d) ownership of the justification for change, and (e) engaging of the top talent (Francis-Jennings & Lewis, 2014).

Corporate sustainability drivers catalyze change from the unsustainable status quo (SQ) towards more sustainable activities (Lozano, 2013). Change processes that result in sustainability should (a) be systemic; (b) encourage open discussion of barriers to effective strategy implementation and adaptation; and (c) develop a partnership among all relevant stakeholders (Fukukawa, Spicer, Burrows, & Fairbrass, 2012). Other change elements that facilitate sustainability include (a) replication of successful training and successes; (b) defining success; (c) building new departments where necessary; and (d) the use of evidence-based data for decision-making (Francis-Jennings & Lewis, 2014). Additional elements include (a) practical experimentation; (b) collaborative decision-making; (c) over-coming constraints; and (d) acting accordingly to the perspectives of customers (Francis-Jennings & Lewis, 2014).

Chi Cong, Perry, and Loh (2014) identified seven core elements for the implementation of successful change to maximize sustainability. These elements are (a) vision, (b) the identification of key challenges, (c) objectives, (d) measurement, (e)

strategy, (f) initiative, and (d) outcome (Chi Cong et al., 2014). Failure of effective change management can compromise sustainability and financial outcomes (Epstein & Buhovac, 2014a). The main factors for failure center on (a) goals metrics and rewards; (b) bureaucracy and politics; (c) knowledge transfer; (d) process; and (e) leadership (Decker et al., 2012). Other issues which lead to failure in the implementation of change initiatives include (a) decision-making and planning; (b) culture; (c) alignment; and (d) low motivation and ability to change (Decker et al., 2012).

For the innovative changes that enhance sustainability to attain acceptance, the requirement to design them with stakeholders in mind was a requirement (Kravul & Bruton, 2013). Change management was of importance in the implementation of sustainability practices because such management facilitates these practices to become the norm in organizations (Brannmark & Benn, 2012). To implement sustainability using change management requires the use of programs that (a) provides direction, and (b) has an implementation strategy (Brannmark & Benn, 2012). Fukukawa et al. (2013) found that successful implementation of sustainability initiatives at the tertiary education level was dependent on change management strategies aligned with policy, and the implementation of such policies.

In summary, for situations where organizations need to change to embrace sustainability, the following are imperative; (a) active ownership of the sustainability initiatives; (b) professional steering; (c) competent leadership; and (d) engaged participants (Brannmark & Benn, 2012). Change management approaches to implement sustainability entail (a) awaking, (b) pioneering, and (c) transformation (Newman, 2012).

The ability to apply change management in different organizational structures and to enhance multiple types of initiatives including sustainability exists (Vora, 2012). Examples of the change management of behaviors that reduce the consumption of wood fuel to contribute to the preservation of the environment and health exist in places such as Guatemala and Zanzibar (Kravul & Bruton, 2013). These examples highlight the importance of change management to sustainability.

Policy and planning issues. Organizations increasingly need to consider environmental issues because of (a) stricter governmental regulation; and (b) growing pressures from a broad range of stakeholders (Hofmann, Theyel, & Wood, 2012). Planning and policy issues may be critical in the ability of firms to gain a competitive advantage in business. Siiskonen (2013) presented the importance of planning as a precondition and key practice for efficiency and profitability in the forestry industry in Finland and Sweden. The planners focused on continuous yield, and economic and social sustainability (Siiskonen, 2013). Planning for sustainability should include ways to overcome the inner obstacles that inhibit a sustainability mindset while implementing linkages with practical action (Hoppe, 2014). These barriers may encompass global sustainability goals and local action (Hoppe, 2014). Planning for the implementation of sustainability requires elements aligned with (a) organizational structure, (b) costing, capital investment, and the integration of risks; and (c) performance, evaluation, and rewards systems (Epstein & Buhovac, 2014a).

Planning and policy managers should focus on how to improve stakeholders' commitment and cooperation in the changes required for successful sustainability

practices implementation (Hoppe, 2014). Research showed that those with visions of achieving sustainable outcomes would benefit from more dialogue with planners rather than simply seeking to subvert planning processes (Adams, Scott, & Hardman, 2013). This argument should be of importance when taking planning into consideration when trying to make the cultural changes towards sustainability. The perception of unresponsive planning would undergo improvement, while the act of *learning by doing* would also create an effective evidence base on which to base future policy discussions (Inch, 2011).

Planners are typically part of a regulatory system where all developmental decisions are subject to legal precedent, appeal and sometimes costly and lengthy judicial reviews (Adams et al., 2013). DuBois and DuBois (2012) stated that for environmental sustainability to become norm in and organization, new policies, and rules are a requirement. Senior management attracts the view as being primarily responsible for the implementation of sustainability initiatives (DuBois & Dubois, 2012). This statement indicates the importance of policy and planning for sustainability outcomes. In planning environmental sustainability, importance elements are (a) use of a centralized strategy; (b) coordination plans across local and long distances; (c) focusing on the reduction of negative environmental impacts; and (d) safety (Hoppe, 2014).

Three elements that can have an influence on the attitude of business owners to environmental sustainability are those that are (a) regulatory, (b) cognitive, (c) normative (Roxas & Coetzer, 2012). Of importance are laws, which facilitate policy adoption, that result in environmental sustainability outcomes. As such, the nature of institutional

environment and accompanying business policies can also guide leaders to embrace sustainability (Roxas & Coetzer, 2012). Idoko, Nkamnebe, and Amobi, (2013) found that the absence of enabling environmental state laws that complement federal environmental laws allow constraints to environmental sustainability behavior adoption among SMEs in Nigeria. Dylan (2012) supported this statement by informing of the importance of national and international practices regarding environmental conventions and laws. When focus on local laws occurs, the possibility for environmental sustainability increases (Dylan, 2012).

Self-regulation vs. legal requirements. Siiskonen (2013) conducted research in Finland and Sweden where forested areas are of importance to their national economies. The results of the research indicated the importance of government regulation in the removal of differences between private forest owners and the forestry authority (Siiskonen, 2013). When government regulations are mandatory, this approach creates an environment of transparency that allows businesses to care for planet Earth while achieving profits (Frynas, 2012). By contrast, Hashmi and Al-Habib (2013) found that government regulators are not doing enough to regulate carbon emissions in Saudi Arabia. The perception was that the Saudi Arabian government was not serious about environmental protection. Primary data revealed private sector enterprises were better prepared to deal with sustainability and carbon management problems compared to public sector enterprises and as such embraced self-regulation (Hashmi & Al-Habib, 2013). Surveyed Saudi managers reported hope that their employers would start

rewarding positive carbon management actions and focus on educating managers about carbon management practices (Hashmi & Al-Habib, 2013).

Institutional language attains use in the description of governmental regulations and laws, industry standards for SD reporting and expenditures, and the type of SD initiatives and partnerships (O'Connor & Gronewold, 2012). Pierce (2014) stated the importance of regulation, policy implementation, and planning as requirements to enable sustainability in the petroleum industry. Achieving sustainability is mainly a matter of communication, commitment and cooperation (Hoppe, 2014). By implementing these practices in self-regulation, sustainability was achievable (Hoppe, 2014).

Summary and Transition

Section 1 was an introduction to the study and included (a) background of the problem, (b) problem statement, (c) purpose statement, and (d) research question. The subject of the study was an exploration of the sustainability practices that improve profits in the petroleum industry. The study method and design was a qualitative multiple-case study. The target audience was all stakeholders in the petroleum industry. The goal of this study was to inform petroleum industry leaders of the elements of sustainability that may affect their business outcomes.

Highlighted in Section 1 are the challenges accompanying the non-implementation of sustainability practices in the petroleum industry. Organizations hesitate to implement sustainability practices when there is a cost and a benefit may not result (Epstein & Buhovac, 2014b). Without the implementation of sustainability practices harm to the environment was possible (Senge et al., 2010). With environmental

deprivation, the creation of a problem occurs whereby a reduction in economic value can occur in the petroleum industry Anosike (2014). The purpose of the study was to explore what sustainability practices influence profitability in the petroleum industry.

A qualitative method and a single case study design can provide clarity to the understanding of problems in business (Yin, 2014). The research question was as follows: What sustainable environmental practices do petroleum industry leaders use to affect profitability? A review of the literature is a necessity when executing research (Foster, 2013). The focus of the review was on the sustainability in business in general and in particular the petroleum industry. Additionally, the literature review provided background sustainability practices in the petroleum industry and accompanying issues and challenges.

Section 2 includes a detailed description of the (a) purpose statement; (b) participants; (c) data collection; (d) data analysis; and (e) reliability and validity issues. Section 3 includes (a) an introduction, (b) presentation of findings; (c) implications for social change; and (d) recommendations for action. Section 3 includes with (a) recommendations for further research, (b) reflections, and (c) a conclusion.

Section 2: The Project

Section 2 of this study covers the following topics: (a) purpose statement; (b) role of researcher; (c) participants; and (d) research method and design. Additionally covered are (a) population and sampling; (b) ethical research; and data collection. Last, the section closes with (a) the data analysis; (b) reliability and validity; and (c) a transition and section summary.

Purpose Statement

The purpose of this qualitative, multiple-case study was to explore sustainable environmental practices that petroleum industry leaders can use to affect profitability. Sustainability practices and profitability can be balanced benefit petroleum companies (Du et al., 2013; Parast & Adams, 2012). The expectation is for this research to explore sustainable environmental practices that petroleum industry leaders can use to affect profitability.

The target population was operations personnel and leaders in the petroleum industry who had experience in the United States. Front line leaders attained sustainability by bridging any gaps between their superiors and followers (Merriman & Sen, 2012). Targeting the leaders allowed for changes in these business practices that may contribute to sustainability implementation (Epstein & Buhovac, 2014a).

The implication for positive social change is that leaders in private and public organizations might use the findings to improve profitability. Profit and sustainability can and must go together because a social benefit exists (Voser, 2012). These benefits may include the protection of human lives while creating the economic requirements for social

comforts (Epstein & Buhovac, 2014a). Sustainable practices are a requirement to enhance business outcomes, including reputation and financial performance (Petrovich, 2014).

Role of the Researcher

One of the results of research can be the creation of paradigm shifts in research activities (Carr, 2013). The tasks related to academic research are (a) networking, (b) collaboration, (c) managing research, (d) doing research, (e) publication of results, and (f) evaluation of the research (Kyvik, 2012). The role of the researcher in this doctoral study aligns with the need to improve business practice and facilitate the implementation of positive social change (Lunde, Heggen, & Strand, 2013). My primary role was for data collection, analysis and the dissemination of results.

Sustainability initiatives to reduce pollution, minimize waste, and recycle material are part of my profession as a petroleum engineer. My work on environmental protection has increased over the past 20 years. I had no influence on the respondents because the data collection was via an anonymous online questionnaire. Moreover, I work in the Middle East rather than in the United States and the geographical distance inhibited one-on-one contact.

Yin (2014) stated the importance of using multiple sources of data when conducting qualitative case study research. With the reviews of sustainability reports of four petroleum companies that operate in the United States and the use of data collected from online-administered questionnaires, completed were the plans to have a comprehensive understanding of how sustainability environmental activities affect profitability. Even though data analysis was via the use of NVivo 11 qualitative analysis

software, the role of the researcher is a necessity because of the need to answers questions about (a) what data needs assessment; and (b) what different terms are requirements for data assessment (Moon, 2015).

In conducting this research, familiarity with the topic and participants was a reality because of ongoing employment in the petroleum industry of both researcher and participants. As such, the need to mitigate against bias was a reality. Avoiding bias entailed (a) interpreting answers fairly; (b) avoiding entrapment by existing ideologies and preconceptions; and (c) being sensitive to contrary evidence (Yin, 2014). This approach requires the use of effective questioning so that participant responses enable the achievement of reliable data interpretation (Sather, 2012). In addition to the use of an online questionnaire to capture participants' responses, also completed was a review of the annual sustainability reports four petroleum industry companies as the secondary data source. Assurance of reliability and validity of this case study is a possibility because of the use of multiple data collection procedures (Yin, 2013).

The U.S. Department of Health & Human Services (HHS) prescribed ethical guidelines and principles for the protection of human subjects of research. Ethical research adds to the quality of the study (Yin, 2014). The role of the researcher aligned with the requirements of the Belmont Report for ethical research (HHS, 2016). Basic ethical principles required included (a) respect for persons, (b) beneficence, and (c) justice (HHS, 2016). In addition, informed consent, assessment of the risk and benefits, and the selection of subjects is a requirement (HHS, 2016). These requirements were in effect during the research process.

Participants

The study attracted responses from 16 participants from a prescribed survey pool who responded to a Survey Monkey administered online questionnaire. Choice of the participants was via purposive sampling. Purposive sampling focuses on the attraction of experts with knowledge of a known phenomenon (Trotter II, 2012). In addition, purposive sampling ensured voluntary participation (Anosike, 2014). For this study, of the 30 plus participants asked, 16 responded.

Bowen et al. (2012) stated the importance of having study participants who have experience in the industry under research. The approach of Bowen et al. (2012) aligns with having operations, engineering, and middle-level participants with experience in the petroleum industry whose daily activities encompass sustainability. This preference attained validation by requesting these characteristics in the informed consent letter. Low response rates when using questionnaires is a possibility (Thomson & Naoya, 2014). Mitigating this outcome is possible by requesting the response of more participants than the requirement to attain a quality study (Yin, 2014). The need to mitigate the low response rate justified why invitation e-mails to over 30 participants were the reality.

Qualitative methodology requires capturing participants' experiences and perceptions to develop a greater understanding of their experiences within the required context (Thyer, 2012). Of importance is the presentation of human perspectives through multiple data collection (Fairweather & Rinne, 2012). The use of questionnaires and the review of companies' sustainability reports enabled this approach. The relationship with

participants was via the use of the online questionnaire responses to the questions asked. Absent was any direct contact with participants.

Data preservation will occur over a 5-year period as per Institutional Review Board (IRB) regulations after which destruction will occur. Each participant reviewed an enclosed informed consent form before commencing the interviews. The form (a) stated the study's purpose, (b) indicated confidentiality and risk issues, and (c) showcased the focus on trust. Also included on the form were participants' rights in withdrawing from the data collection process. Responding to the questionnaire carried the assumption that the participants read the informed consent form.

Research Method and Design

Rigorous scholarly research allows for closing gaps in undeveloped research fields (Kieser, Nicolai, & Seidl, 2015). The three main research methods are (a) qualitative, (b) quantitative, and (c) mixed methods that include both qualitative and quantitative approaches (Zachariadis, Scott, & Barrett, 2013). Whereas quantitative research requires numerical methods, qualitative research entails the use of experiences to generate results (Upjohn, Attwood, Lerotholi, Pfeiffer, & Verheyen, 2013). In the ensuing discussion, I aim to justify the choice of a qualitative methodology for this doctoral study.

Research Method

Qualitative methodology. Qualitative approaches allow for exploration of complex issues in new territory (Parry, Mumford, Bower, & Watts, 2014). Qualitative methodologies are participatory in nature in that they facilitate an inclusion rather than

the extraction of the views of others (Upjohn et al., 2013). Yin (2014) stated the requirements of a good qualitative study as having (a) a core research problem, (b) proper framing of the study with assumptions, (c) having the characteristics of the research approach and (c) inclusion of the researcher's role and biases.

Qualitative methodologies require the use of (a) perception, (b) interpretation, and (c) representation (Sather, 2012). These elements align with rigorous data collection, data analysis and report writing (Yin, 2014). I completed the plans for this study to attain the perception of experienced professional with respect to the influence of sustainability on organizational profitability. This achievement was possible by use of a qualitative approach because of the alignment with qualitative methodologies.

Quantitative methodology. Quantitative approaches provide an objective measurement of problem frequency (Upjohn et al., 2013). When executing this research method, assessing and reporting validation is a critical requirement compare to qualitative research (Venkatesh, Brown, & Bala, 2013). To study the influence of sustainability practices on profitability in the petroleum industry the focus, as allowed in qualitative research, was on the perceptions of the study participants. A focus on the frequency of these perceptions was not a requirement. For quantitative research the development of correlations, which relate to causation, was a requirement (Zachariadis et al., 2013). Based on the expected outcomes of a qualitative methodology, a quantitative approach was not the method of research for this study.

Mixed-methods research (MMR). Three important aspects of conducting mixed-methods research (MMR) include (a) appropriateness of mixed methods approach,

(b) development of meta-inferences (i.e., substantive theory) from MMR, and (c) validation of MMR (Venkatesh, Brown, & Bala, 2013). MMR studies are difficult to do well (Latham, 2014). In addition, Plowright (2014) stated that MMR causes confusion as to whether the main method was qualitative and quantitative. Being a new researcher, and with the ability of the use of a qualitative methodology to complete the research, MMR was not the preference at this time.

Research Design

I planned to use a multiple-case study design for this research. Multiple-case studies enable the collection of data from participants in their environments (Yin 2014). Case studies are important for evaluating the success of learning and experimental studies (Earley, 2014). The requirements in the execution of cases studies include a focus on (a) study design, (b) data collection, (c) data analysis, and (d) a review of the comparative literature (Cronin, 2014). I used each of these steps in the execution of the research topic. Data collection included (a) participant response to online questionnaires, and (b) reviews of the company reports. Case study as a research method is one that is an in-depth investigation of life within the real-world context of meaning-making (Compton-Lilly et al., 2015). The data collection method aimed at the completion of the in-depth investigation of the influence of sustainability practices on profitability in the petroleum industry.

The United States oilfield operations were the defined geographical area. I assured that the participants were familiar with the United States oilfield operations by requesting that only participants with this background were to respond to the

questionnaire. The objections to the use of such methodologies include validity, and reliability concerns (Mariotto, Pinto Zanni, & De Moraes, 2014). Yin (2014) supported the use of multiple-case studies as a valid form of research. Qualitative research design could (a) create thick descriptions that include detail, complexity, context, subjectivity, and multifaceted nature of human knowledge; (b) capture the narrative structures of human knowledge; and (c) enable the ability to derive generalizations from the bottom up (Fishman, 2013). This statement aligns with all aspects of case study research including the single-case study. The expected result of the use of a multiple-case study was the execution of a focused examination to deliver the analysis required (Yin, 2014).

Successful legitimization of case study research in the literature included (a) the rejection of the positivist criteria; (b) enhancing the value of uniqueness, (c) the dismissal of representativeness as a criterion; and (d) disciplining the transfer of knowledge between cases (Mariotto et al., 2014). The complexity of sustainability requires a holistic examination of one environment via the capture of the experiences of experts (Tracy, 2010). This holistic approach facilitates results that align with leadership elements that contribute to sustainability outcomes (Strand, 2014).

In a review of the other possible qualitative research designs, options were (a) ethnography, (b) phenomenological, (c) narrative, and (d) grounded theory (Yin, 2014). Ethnography requires the prolonged observation of a group within their environment (Compton-Lilly, 2015). Ethnography was not an appropriate option because of the focus on behavior and social connections (Staller, 2012). A phenomenological study focuses on generating meaning from individual lived experiences to attain an understanding of a

phenomenon (Finlay, 2012). For this study, sustainability does not undergo the treatment as a phenomenon, and so this approach does not apply. The narrative approach focuses on stories of lived experiences of an individual (Compton-Lilly, 2015). The narrative approach does not align with this study requirements. Grounded theory aims at theory creation based on data capture from studies (Staller, 2012). I did not select grounded theory for this research topic, because of the lack of focus on theory creation. Based on these justifications, a single-case study design was the choice.

Population and Sampling

Sixteen experienced petroleum company operations personnel, engineers, and middle-level managers were the population for this study. Survey Monkey is the online website preferred for the execution of the questionnaire. Small numbers of participants allow for intensive studies (Cleary, Horsfall, & Hayter, 2014). This claim supports justification for the sample size chosen. The aim was for data saturation, which is an assumption when little new data becomes available after review of all collected data (Issacs, 2014). The choice of population attributes for a study should depend on (a) demographics, (b) geographical, (c) physical, (d) psychological, and (e) life experiences (Robinson, 2014). For this study, the focus was on the life experiences of the participants, based on their observations in the geographical setting of the United States. The experience of the participants enabled an increased understanding of the sustainability environmental activities that influence profitability in the petroleum industry. The variation in participant expertise was a proposal to provide a deeper understanding of the study topic (Petty et al., 2012). This sample allowed for attaining multiple perspectives

about sustainability across disciplines. The challenge in using multiples disciplines was the ability to generate consistent terminology from the research participants (Trotter, 2012).

Sampling is central to the practice of qualitative methods (Robinson, 2014). Options for sampling may include (a) purposive, (b) theoretical, (c) convenience, or (d) snowball (Petty et al., 2012). The sample size was purposive in nature, because of the belief that this size was relevant to the study. Purposive sampling is a non-random way of ensuring that particular categories of cases within a sampling universe experience representation in the final sample of a project (Robinson, 2014). Qualitative sampling allows for focusing on a small sample of participants to attain a large data set on issues (Trotter, 2012). Face-to- face interview of participants was absent. This approach was because of the aim to use only an online questionnaire and the review of the annual sustainability reports of petroleum companies that operate in the United States as data sources. This approach improved the quality of the data collected (Yin, 2014).

Ethical Research

Ethics is a branch of philosophy that deals with values and the alignment of these values in the execution of behaviors (Finch & Mc Fee 2012). Yin (2014) stated the importance of ethical behavior for the completion of a quality case study. While executing this study, protection of the participants occurred by following the guidelines of the Institutional Review Board (IRB). The IRB approval number is 8-17-16-037404. The IRB requires protection of participants against issues aligned with (a) risk, (b) physicality, (c) psychology, (d) social, and (e) economics. These guidelines to ensure

protection involves (a) gaining informed consent from all persons who may be part of the study; (b) avoiding deception; alignment with privacy and confidentiality concerns; (c) special precautions for the vulnerable; and (d) ensuring an equitable selection of participants (Yin, 2014).

McNamara (2011) presented the importance of having plans to protect participants before the IRB grants approval for the execution of any study. The requirement was possible via the execution of the informed consent process (Yin, 2014). The informed consent process involves providing each participant with an informed consent form for his or her review.

No compensation to the study participants as per IRB approval. The non-material benefit for the participants in this study was in helping the researcher identify how environmental sustainability actions, where implemented, affect the profitability of petroleum companies operating in the United States. The participation may also generate a sense of pride in the knowledge of helping an improvement in the understanding of environmental sustainability outcomes.

Each participant had to review the informed consent form that provided the necessary information about the planned research process including participants' rights and confidentiality issues. This form was ahead of the research questions in the SurveyMonkey questionnaire. This approach aligns with ethical behavior that leads to successful research outcomes (Lin-Hi & Muller, 2013).The form had the IRB approval number and the date of expiration of the IRB approval. In addition, the form had (a) study background and purpose, and (b) contact information. The goal was to avoid unethical

behavior that could occur because of the ruthless pursuit of self-interest (Yukl, George, & Jones, 2010). Providing as much information as possible, concerning the study, showed participants that self-interest was not the only focus. This approach contributed to building a trusting relationship with participants that will aid in their willingness to provide the required information for the study (Thomson & Naoya, 2012). Participants had contact information for Walden University. Before starting interviews with the participants, their signatures were a requirement, and each participant received a copy of the signed consent forms. Participants can withdraw from the study at will. The preference would be for written request for withdrawal.

The administrative elements of research are of importance (Kyvik, 2012). These elements also align with ethics in the need to gain access to, and the protection of participants (Yin, 2014). The requirement to protect participants also entails non-disclosure of participants' identities especially for controversial topics (Yin, 2014). Because of the ongoing discussion on the well-known harm to the environment aligned with petroleum industry operations, the necessity existed to ensure participants remain anonymous. The informed consent form and collected data are in storage for a 5-year period as per IRB requirements. This period allows the opportunity for any required data review and interpretation. After this period, data destruction will occur.

Data Collection

Instruments

The use of computer-assisted tools is a possibility for case study research (Yin, 2014). For this study, I was the primary data collection instrument even though also in

use for facilitating the process was online software. Electronic questionnaires provide a quick, inexpensive manner to capture data and previously noted disadvantages are no longer valid (Hunter, 2012). Data collection for this study included the use of the online tool Survey Monkey as the instrument to capture information over a one-month period. The use of Survey Monkey allowed for the quick and inexpensive distribution of questionnaires across geographical areas (Brandon, Long, Loraas, Mueller-Phillips, & Vansant, 2014). Yin (2014) stated the use of Survey Monkey as a data collection instrument. Participants concluded that online questionnaires are relevant, enable quick responses, and easy to complete (Minnaar & Heystek, 2013). Based on these statements, the use of Survey Monkey as a data collection instrument attained justification.

Qualitative researchers strive to ensure methodical alignment by thinking about the relationship between (a) their theoretical position, (b) selected methods, and (c) emerging analysis of the data (Kramer-Kile, 2012). Based on this requirement, of importance was the data collection process. Venkatesh et al. (2013) presented the importance of data collection in the execution of research activities. Building a study within an authentic setting requires in-depth and varied data collection (Snyder, 2012). With the need to collect data to execute qualitative research, a presentation of the instrument used for data capture was a requirement.

Rogers (2015) stated that the use of online questionnaires to capture quality data during research activities was a possibility. Focus groups are an option for valuable data capture during qualitative research (Ullrich & Schiek, 2014). Survey Monkey is an online website that allows for the execution of questionnaires and facilitates responses from

focus groups (SurveyMonkey, 2015). For this study case, participants were petroleum industry professionals with experience, chosen via purposive sampling, and involved with sustainability activities in the United States.

Questionnaire types at Survey Monkey included those that were (a) academic, (b) customer satisfaction, (c) education related, and (d) employee related (SurveyMonkey, 2015). The possibility existed that based on experiences with previous online questionnaires, the use of Survey Monkey can add value to attracting participants for my study. The keys to engaging participants to respond to online questionnaires lie in the ability to reduce the burdens of (a) lengthy questionnaires; (b) topic salience; and (c) poorly written or hard to answer questions (Downes-Le Guin, Baker, Mechling, & Ruyle, 2012). Short data capture instruments in maximizes the numbers of participants who respond (Yin, 2014). The limited number of questions on the questionnaire allowed participants to provide detailed responses to personal thoughts and experiences aligned with the influence of sustainability and environmental practices on profitability in the petroleum industry. NVivo 11 Pro allows for the coding and categorizing of large volumes of data and can assist in the qualitative data analysis process (Yin, 2014). The use of coding software NVivo 11 Pro facilitated the analysis of participants' responses and allowed me to complete the interpretation and assessment for themes creation.

Yin (2014) stated the importance of multiple sources of data for qualitative studies. Multiple sources of data enable quality research (VanEyde et al., 2013). In addition to the use of Survey Monkey, I reviewed and captured data from the sustainability reports of BP, Chevron, ExxonMobil, and Shell to determine if their focus

on sustainability initiatives affects profitability. The use of multiple sources of data was of importance in case study research because of the perception that limited applications of the results existing beyond one firm or sector (Salzmann, Ionescu-Somers, & Steger, 2005).

Other than the online questionnaire tool, SurveyMonkey, I created data tables to capture the sustainability practices in use over the years 2011 to 2016 at BP, Chevron, ExxonMobil, and Shell. The completion of data capture and analysis was manual. This process entailed reading 20 reports. These reports consisted of yearly reports over the 5-year period of the four companies under study. There were eighteen practices identified across the companies even though not all the companies utilized all the practices. Appendices L, M, N, and O have the results of the sustainability reports as a data source.

Data Collection Technique

A carefully devised strategy of (a) sample specification and selection; (b) data processing; (c) screening; and (d) editing can boost the quality of online questionnaire responses (Chang & Vowles, 2013). The use of a Survey Monkey online questionnaire allowed the capture responses of 16 participants. By use of the strategy outlined earlier, the capture of quality data via online methods was a possibility. Baskarada (2014) stated the importance of data triangulation to improve data validity. By capturing data from separate unique sources via the use of Survey Monkey, I had the ability to review the data to observe similarities and differences in thoughts from the participants. The questions are in Section 1. For the execution of case studies, multiple sources of data can collaborate and validate data captured from other sources (Yin, 2014). Of importance

during data collection was the capture of any relevant rival or contrasting theories takes place (Baskarada, 2014).

Distribution of the questionnaire to participants was via the use of Survey Monkey. Whitehead (2011) stated that online questionnaires (Internet) offer wider access to participants in research studies and the advantages include (a) the ability to reach traditionally inaccessible groups; and (b) widened geographical range and less time constraint. Guidance to Survey Monkey for the execution of the questionnaire would entail specification and classification of the intended participants. Researchers should set aside an appropriate amount of time to reflect upon administrative, population, and data collection considerations when using the Internet for data collection (Wilkerson, Iantaffi, Grey, Bockting, & Rosser, 2014). With the use of Survey Monkey to execute the questionnaire, completed actions entailed (a) the placement of the questionnaire on-line; (b) Survey Monkey as the platform for data capture from participants; (c) data capture and storage; and (d) the ability to download captured data into data analysis software NVivo Pro 11.

Additional sources of data were the annual sustainability reports of BP, Chevron, ExxonMobil, and Shell over a 5-year period from 2011 to 2015. This approach aligned with data collection using triangulation, which allowed for data validation (Zazhariadis, Scott, & Barrett, 2013). Marais (2012) stated the importance of cross-validation using triangulation. Attaining data from different sources allowed for data validity and reliability (Mariotto, Pinto Zanni, & De Moraes, 2014). The review of these companies' sustainability reports aided in the completion of the data collection requirements.

Documentary information is relevant to every case study topic (Yin, 2014). The data from documents are useful in corroborating and augmenting evidence from other sources (Yin, 2014). An evaluation of the data from the annual sustainability reports was a necessity. This process entailed (a) reading the entire reports, (b) forming an opinion of the value of the data related to sustainability practices, (c) taking notes as the review was ongoing, and (d) placing indication of *yes* (Y) or *no* (N) into the spreadsheets listed in Appendices J, K, L, or M. The process allowed for an indication whether those particular practices were in use at the companies under study during the period 2011 to 2015. The data collected from the annual sustainability reports did corroborate the responses of participants of the online questionnaire.

Data Organization Techniques

Soergel (2015) stated the importance of data organization to (a) learning, (b) understanding, (c) inference making, (d) discovery by people, and (e) discovery by computer programs. The approaches used to organize the data included placement of the responses of each question into separate files, while the manual note-taking allowed for separate classification of sustainability practices into manually written spreadsheets. To re-cap, the sources are questionnaire responses via Survey Monkey, and raw data captured from the review of annual sustainability reports of the four subject companies. The use of archival sustainability reports aligns with the need to use archival data to complement other data sources (Adler & Hiromoto, 2012). Clear identification of the collected data is a requirement for research (Ritzholz et al., 2011). The focus was to organize the data for easy access, references, and analysis.

Data are a source of knowledge (Mahdzur & Salim, 2015). Transcripts of the data are also of importance for the completion of research activities (Yin, 2014). The storage of transcripts of each of the responses into separate labeled files occurred. Thus, in organizing the data, my notes allowed for making data organization a reality. By taking personal notes during the review of online data and sustainability reports, the ability to reference the captured data may be easy. These notes entailed summarization of data captured from both the online questionnaires and the petroleum companies' sustainability reports. Challenges exist with the ability to handle large amounts of data (Ireland & Hitt, 2005). If the amount of data is too large, an option for storage after the organization is the use of the cloud-based storage (Griffith, 2013). In addition to the use of a cloud-based system, data storage will include the use of a password protected hard drive and kept in a safe deposit for a 5-year period. Data destruction will occur after the 5-year storage requirement via shredding of hard copies or erasure of soft copies.

Data Analysis

Ritholz et al. (2011) stated the importance of coding and theme development to data analysis. The study approach includes multiple reading of the participants' responses to interpret the presence of any specific patterns. The approach aligns with Tsang (2013) who stated the importance of a thorough examination of the data to generate realistic interpretation. Yin (2014) stated the importance of interpretive techniques to the generation of patterns. Data analysis included planning a manual review of responses to develop emerging themes to describe the elements of the data that occurred. Strategies stated by Yin (2014) for data analysis included (a) relying on theoretical propositions; (b)

working the data from the *ground up*; (c) the development of a case description; and (d) the examination of plausible rival explanations. For this case study, data analysis included the strategy of relying on theoretic propositions concerning the influence of sustainability practices on profitability.

These theoretic propositions require taking into account systems theory that was the conceptual framework for this study. Under review was the theory that a systems approach facilitates the successful implementation of sustainability (Epstein & Buhovac, 2014a). The propositions aforementioned require attaining an understanding of how each of the elements related to sustainability outcomes influence each other (Fischer & Zink, 2012). For successful data analysis, required was an understanding of how each parameter captures from the questionnaires relate to each other (Yin, 2014).

A key element of qualitative research is the presentation of a prescription for the data analysis (Issacs, 2014). Yin (2014) stated the importance of the use of software for data analysis. After initial review, transcription, note taking, coding, and theme generation, the use of NVivo 11 Pro software facilitated data organization and analysis. A detailed analysis of the data should present trends that can allow for and understanding of the effectiveness of environmental practices (Maloney & Yoxheimer, 2012). By using NVivo 11 Pro software, the expectation was for the emergence of themes aligned with the participants' responses.

Purposive sampling entailing the focus on experts to provide data saturation is a result in qualitative research (Trotter II, 2012). During the course of data collection, when little or no new data comes out of the participants, data saturation occurs (Issacs, 2014).

In this study, after the review of responses for the 16 participants, and a review of the 18 sustainability environmental practices of the 4 petroleum companies, the belief was data saturation occurred. Across all sources, no new data observation occurred.

Data triangulation is an important aspect of the analysis process (Yin, 2014). Triangulation entails cross-validation of the data captured (Marais, 2012). Triangulation can facilitate an improvement in internal validity (Baskarada, 2014). This approach requires the use of more than one data source that provides multiple sources of evidence to validate research results (Yin, 2014). Data triangulation should entail the collection of data from multiple sources aimed at collaborating the same findings (Patton, 2002). For this study, data triangulation occurred whereby the responses collected from 16 participants triangulated with the 20 annual sustainability reports across the 4 petroleum companies under study.

Member checking is of importance in executing qualitative research (Harper & Cole, 2012). This process entails the vigorous process of data coding and interpretation (Carlson, 2010). Refinement of the coded data was a possibility by the use of additional queries to ensure clarity and further elaboration that may of value (Snyder, 2012). This objective requires the maintenance of responses and contact information of all participants of this study.

For this research, a multiple-case study enabled an exploration of what sustainability environmental practices influence profitability in the petroleum industry. Sixteen participants responded to the 14 questions in the questionnaire. Online survey

conduit, SurveyMonkey allowed for sending the questionnaire to the sample participants who experienced selection by the use of purposive sampling.

A summary spreadsheet of all responses to the 14 questions was of use in capturing the responses from SurveyMonkey into Microsoft Excel. Sixteen individual files that represented the individual responses of each sample participants together with another format of fourteen question response summaries (all 16 responses for each of the 14 questions) formed the database of data captured. Saving of the responses was in a pdf format.

Using NVivo 11 Pro, data analysis of the downloaded qualitative data began. The process began with the downloading of the Excel files into NVivo 11 Pro. The 16 participants (individual responses to each question) attained conversion into casefiles in NVivo 11 Pro. Then, the 14 question summaries (of all participants) experienced placement into nodes in NVivo 11 Pro. Therefore, each item of the questionnaire had a corresponding node in the NVivo 11 Pro project. This procedure allowed the placement of all the given answers, of each question, into a common area so the researcher could conveniently examine and analyze them. I then created additional nodes, for each question to hold only those direct quotes that specifically address the research question asked. All the participants' quotes, from the questions, were gathered and examined for common themes and/or common sub-themes where applicable. The results of the coding process are in Appendices A through I. The presentation of these results is in Section 3 of this study.

Reliability and Validity

Reliability

Data dependability is the ability to be reasonably sure that the replications of findings are a possibility upon a repeat of the study with the same participants in the same context (Marshall & Rossman, 2006). Data dependability is a possibility when the researcher takes into consideration the changes in the setting of the study that occurs and how these changes affected the approach to research process (Venkatesh et al., 2013). The ability to increase the creditability of a research study lies with the consistency of the research method that removes doubt (Svensson & Doumas, 2013). By using online tools, consistency in the administration of the questionnaire was the expectation. Greater reliability of the data is possible by administering questionnaires to experts in the field (Siti-Nabiha et al., 2014). Siti-Nabiha et al. (2014) were in agreement with Trotter II (2012) who stated that the possibility to increase data reliability exists by using a sample of participants who have the experience as sustainability practitioners.

Data reliability is of importance for case study research (Mariotto et al., 2014). Gordon (2012) stated that the practices of proper recording and transcription of the data improve the reliability of the study. During the recording and transcription process, of importance is an unbiased approach while documenting the data as per participants' responses (Yin, 2014). The focus on the reliability of the data was to maximize the ability of others to repeat the data capture, organization, and analysis to generate similar conclusions.

Validity

The three classifications for validity research include those that align with (a) measurement validity, (b) design validity, and (c) inferential validity (Zachariadis et al., 2013). External and internal data validity increases reliability (Mariotto et al., 2014). External validity is how aligned findings from a case study are with others situations that were not part of the original study, whereas internal validity is the strength of any cause-effect links (Yin, 2014). Craig et al. (2013) stated that for online data capture, an issue with data validity is possible when participants inaccurately claim they have expertise in a particular area. Consideration that the participants' claims of expertise in the area under study are untrue was a necessity. With purposive sampling, knowledge of the participants' expertise was available.

Data transferability and confirmability are of importance in qualitative research (Venkatesh et al., 2013). Transferability included using participants with adequate experience and education such that their responses may be applicable in similar environments. This outcome will also add to the confirmability of the data whereby others can confirm similar outcomes because of the unbiased mode to data capture and analysis. Incomplete or no ascertainment of data may negatively influence or bias the final study results, threaten internal and external validity, or limit the ability to draw accurate inferences (Udtha, Nomie, Yu, & Sanner, 2015). To increase data validity, I (a) used two sources of data capture, namely online questionnaires and company archives; (b) maintained a chain of evidence storage; and (c) exercised care in the use of data that may come from electronic sources, which may not be reliable (Yin, 2014). This approach

included the triangulation of the data that improves the validity of the findings (Synder, 2012). The expected result was a study of higher quality.

Summary and Transition

The aim of this qualitative case study was to explore, understand, describe, and document what influence, if any, sustainability practices have on profitability in the petroleum industry. The geographical area of focus was the petroleum exploration and production business in the United States. A deeper understanding of environmental sustainability was the preference. By understanding the issues and drivers why management of some petroleum companies do or do not embrace sustainability approaches may lead to ways to create sustainable value.

The data collection process planned entailed the use of the online questionnaire vehicle Survey Monkey. The primary source of data was to be from responses online of experienced sustainability practitioners who work in the United States oil industry. Sixteen individuals with in-depth knowledge of sustainability while working in engineering, middle-level managers, and operations functions participated. The questionnaires involved the use of open-ended questions, and my personal notes and NVivo 11 Pro software aided in data analysis and coding to generate the required understanding of the research problem. Additionally, the use of annual sustainability reports of BP, Chevron, ExxonMobil, and Shell to compare and contrast responses of the questionnaires to improve study creditability and validity, and establish whether the conclusions converge completed this study.

For Section 3, findings from the data capture are enclosed. In addition, I present the implications of the findings for business practice and positive social change. Also included are a summary of recommendations for action and recommendations for future research. Section 3 also contains a discussion of personal reflections, together with a summary, and conclusions.

Section 3: Application to Professional Practice and Implications for Change

Introduction

Section 3 includes the findings of this qualitative, multiple-case study of U. S. employees of BP, Chevron, ExxonMobil, and Shell: leaders and operations personnel. Data capture was from two sources: an online questionnaire about employees' experiences and 20 annual sustainability reports from these firms. Appendices J, K, L, and M include these reports.

The purpose of this study was to explore sustainable environmental practices that petroleum industry leaders use, if any, to affect profitability. The target population for this study included participants in the petroleum industry based in the United States. The targeting of this group allowed for possible changes in business practices that could contribute to the implementation of sustainability as an element of corporate strategy.

The findings provided an in-depth understanding of the effects of sustainability practices on profitability. The results indicated that sustainability environmental practices inter-relate with the profitability outcomes of the companies under study. These companies generated multi-billion dollar net revenues during the study period and continued to be among the world largest oil companies (Forbes, 2016). In general, participants believed that sustainability environmental practices would improve business outcomes. A small sample suspected that these practices could have a neutral impact on profitability. This perception is of importance to illustrate the possibility of maintaining profits while executing sustainability environmental practices to protect the environment for the use of future generations (Epstein & Buhovac, 2014; Senge et al., 2010).

Data analysis is a critical part of any research (Hajmohammad & Vachon, 2013). The process entails the analysis of words to build details views of informants (Isaacs, 2014). I used Yin's (2014) five-step process for data analysis: (a) compiling, (b) disassembling, (c) reassembling (and arraying), (d) interpreting, and (e) concluding. Themes identified resulted from the analysis of the participants responses to the questions in the Survey Monkey questionnaire. The analysis involved all the data from the online questionnaire and the 20 annual sustainability reports. Attending the data entailed reading and making notes on all information related to the central research question. Second, a review of plausible rival interpretations occurred to determine whether alternative conclusions were possible. The analysis took into consideration the most significant aspects of the multiple-case study, including the sustainability environmental practices that petroleum industry leaders use to affect profitability. Finally, I used my expert knowledge as a petroleum engineer who works on sustainability initiatives to help validate the findings. These steps allowed for a complete analysis of the data to generate the unbiased outcomes as listed in the following section.

Findings

The research question was: What sustainability environmental practices do petroleum industry leaders use to affect profitability? Data collection entailed (a) the use of SurveyMonkey to capture responses of participants and (b) a review of the annual sustainability reports of the companies in this multiple-case study. The use of purposeful sampling facilitated the attraction of those who met specific inclusion criteria.

The criteria entailed those who are either (a) field operations personnel, (b) engineers, or (c) middle-level managers. Also included were participants working or with prior work experience within the U.S. petroleum industry during the past 5 years or over a 5-year period. In addition, the criteria included those who are (a) of legal working age of 18, (b) native English speakers, and (c) have experience with one of the top petroleum industry companies within the United States to include BP, Chevron, ExxonMobil, and Shell.

Preliminary Review of Participants' Responses

A sample of 16 participants provided responses pertinent to addressing the central research question. Data collection entailed a 1-month period. Participants responded to the 14 questions within the online questionnaire focused on an understanding of the sustainability environmental practices of the companies with which they had petroleum industry experience. All participants included working experience with at least one of the four companies inclusive of BP, Chevron, ExxonMobil, and Shell. A preliminary review of participants' responses follows. Paraphrases of the participants' responses to the research questions 1-14 are below. The questions are in Section 1. These statements include a summary of each participant's responses, completed by manually analyzing the responses to specific questions into a single paragraph format.

The initial review of participant's responses resulted in the identification of six themes that participants believed are sustainability environmental practices that affected profitability. The identified themes resulted from reading the responses and highlighting

key words. The themes unveiled using this manual method included (a) the environment, (b) fuel, (c) human resources, (d) recycling, (e) mitigation, and (f) water.

The environment. Every participant stated the importance of environmental protection. The focus should be at a community level with the aim to minimize air pollution, and activities to improve air quality where possible but burning less hydrocarbons. P8 mentioned the importance of returning the environment to original status via the use of decommissioning activities.

Participant 1 (P1) stated,

> The focus was on activities that prevent environmental disaster.

Participant 2 (P2) noted,

> The use of each sustainability environmental practice gives a license to operate and does have a positive influence on profitability when implemented.

Participant 4 (P4) asserted,

> The company embraced sustainability by (a) focusing on environmental safety, (b) ensuring the needs of host communities are under consideration, and (c) executing business in a manner that considers future benefits for all.

Fuel. The second theme I recognized was that of fuel. Presented were the importance of cleaner fuel, biofuels, and the need to use more natural gas elements. The results indicated the desire for organizations to use less fossil fuel where possible and include higher percentages of alternative energies, including wind and solar. The main goal uncovered was the reduction of the carbon footprint that harms the environment. P4 stated, “Shell’s focus was on the use of renewable sources of fuel inclusive

of hydrogen and biofuels for transportation."

Participant 8 (P8) asserted that "Of importance is (a) the reduction of greenhouse gas (GHG) emissions, and (b) focus on renewable resources such as solar and wind energy during operations.

Human Resources. The third theme identified was human resources (HR). The participants stated the importance of hiring employees who are sensitive to the importance of sustainability while training those who are veteran employees and may not heed sustainability as a license for continued operations. One employer linked sustainability outcomes with compensation. Participants 8, 9, and 11 mentioned that by maintaining a safe environment for employees, employers illustrated leadership in their sustainability practices. P 8 mentioned: "Focusing on training employees on the importance of sustainability environmental practices and linking compensation to individual contribution was part of the business culture."

Participant 11 (P11) asserted,

Training of staff as to the importance of sustainability is a necessity.

Recycling. Recycling was the fourth theme. Employers use products specifically designed for recycling. Waste management practices align with the focus on recycling. Participant 5 (P5) and Participant 7 (P7) both stated the importance of recycling. Participant 14 (P14) stated,

Recycling was also of value as a sustainability practice.

Participant 15 (P15) mentioned as other participants that key sustainability environmental practices include (a) recycling, (b) use of LNG and natural gas, (c) spill management, and (d) waste management.

Mitigation. Mitigation against environmental harm is a key practice of protection. The reduction of hydrocarbon gas flaring is a preference. This approach reduces the production of the greenhouse gases that harm the environment. Another mitigation strategy is the implementation of zero tolerance of oil or gas leaks and emissions. P3 stated that emissions control was a key activity in use as a sustainability practice

P5 contributed that,

> Employer's environmental practices included (a) flaring reduction, and (b) greenhouse gas emission.

Water Management. The final theme identified was water and the management of this resource. Participant 6, 10, 13, and 14 were specific in noting the importance of water management as a sustainability practice.

Participant 9 (P9) mentioned that,

> Water fingerprinting was of use in determining if hydraulic fracturing operations in the petroleum are harming local water supplies.

Participant 11 (P11) asserted that,

> Water management is important to avoid pollution and requires trained staff for implementation. Having environmental policies and plans aimed at compliance is also critical.

Participant 13 (P13) contributed that used by the employer were,

Metrics to determine sustainability outcomes include statistics about spills and fresh water withdrawal frequencies.

Data Analysis of SurveyMonkey® Questionnaire Using NVivo 11

The following sub-section contains a summary of each theme revealed upon the use of NVivo 11. Using the inductive reasoning process, the researcher analyzed the direct quotes from the participants and searched for sub-themes using NVivo 11 qualitative data software package. Subsequently, further categorization of the sub-themes into major themes occurred. In some cases, the varied nature of the quotations did not allow for placement into a common category. The use of the NVivo 11 software facilitated the confirmation of the six themes already determined namely (a) the environment, (b) fuel, (c) HR, (d) recycling, (e) mitigation, and (f) water.

Research question 1, *What, if any, sustainability practices does your employer execute?* was important in identifying all the practices in use by the four petroleum industry companies under study. The analysis allowed for the place of the responses in six themes and twenty-one sub-themes. Analysis for this question is in Appendix A. According to the participants, their employers executed six types of sustainability practices that identified as relating to the following (a) the environment, (b) fuel, (c) human resources, (d) recycling, (e) mitigation, and (f) water. Also included in this section is a summary of the participants' responses on their employers' perception of the practices' influence on profitability. Also included are the personal thoughts of the participants themselves.

Environment. For elements entailing the environment, as determined by the use of the NVivo 11 software, P1, P4, P5, P6, P7, P8, and P9 to P16 all stated their employers' focus on air quality, the community, and general environmental protection issues. P1 stated the importance of low-cost energy, whereas P2 mentioned the use of employee participation for sustainability implementation.

The sustainability practices analyzed into sub-themes accordingly as presented in Appendix A in response to Question 1. Under the theme of the environment, three sub-themes unfolded. These were (a) community, (b) air quality, and (c) general comments concerning environmental protection. P1, P3, P4, P8, P9, P12, and P13 stated the importance of community engagement in the implementation of sustainability outcomes. Although all participants' responses implied the importance of ensuring air quality, P9 was specific in the mention of the employer's focus on all efforts to minimize harm to the air, land, and water resources that can be a result of petroleum industry operations.

Fuel. The second theme unveiled was *fuel.* P4, P6, P8, and P16 stated the importance to reduce the use of fossil fuel where possible. Sustainability practices involving fuels sub-themed into alternative fuels, biofuels, the use of cleaner fuels, lower carbon footprint generation, and the use of natural gas. P16 said that an employer focused on the use of cleaner burning fuels in petroleum industry operations. P3, P5, and P15 mentioned the use of natural gas as the preferred cleaner fuel. P4, P5, and P12 stated that biofuel, which reduces the resultant hydrocarbon footprint is in use as an alternative fuel at their companies.

The captured data in Appendix B indicated that for the theme of air, actions ongoing included (a) the need to shift to cleaner fuels, (b) the use of natural gas, and (c) projects that reduced GHG emissions. A consensus existed amongst P3, P4, P6, P8, P9, P11, P14, P15, and P16 that reduction in the use of hydrocarbon based fuels can improve profits. The responses indicated the perceived linkage between the use of fuels and positive sustainability outcomes.

Human resources. The third major theme generated using the NVivo 11 software was practices involving *HR*. See Appendix A. The four subthemes generated were (a) training, (b) engagement, (c) employment, and (d) safety. P 4, P6, P8, P11, P15, and P16 presented the importance of training personnel to understand the value of sustainability efforts, and the activities and compliance issues of importance in the successful implementation. HR engagement is also a necessity in relating compensation to sustainability outcomes as P1 stated. P2, P8, P9, P12, and P14 mentioned how their employers kept their workers engaged in sustainability outcomes by the transfer on information of results realized.

P12 stated that previous sustainability experience is a consideration for prospective employees. Last, for this theme, P1, P4, P6, P8, P9, P11, P13, and P14 responded that safety is a core focus area for the implementation of sustainability environmental practices. The aim for their employers was to minimize loss or damage to people, the environment, and reputation to continue having a license to operate. P1 stated that this approach might preclude environmental disasters and avoid negative profitability outcomes.

The participants claimed that their employers implemented sustainability environmental practices aligned with HR practices using the following (a) business practices; (b) partnerships; (c) personnel training; and (d) structural and physical changes. Sub-themes under business practices included (a) employee guidelines, (b) general guidelines, and (c) specific procedures. P13 mentioned that employee guidelines included a comprehensive set of codes, policies, and assurance processes that define how companies operated. P1, P3, P4, P8, P9, P12, and P13 stated that their employers spend time to engage the community and stakeholders at a formal level. For the community and stakeholders, the petroleum industry companies hold numerous town hall meetings to create awareness and maintain reputation.

P2, P9, and P12 stated that general HR guidelines included the need to incorporate sustainable practices into business affairs. P11 and P14 opinioned that the implementation of mandatory standards by the creation of operating manuals, and the sharing of learnings among different operating units as an HR policy ensured the business benefited from the use of sustainability initiatives. The focus was on ensuring employees, customers, and suppliers entertained sustainability in their decision-making and daily activities.

As stated by P12, P13, and P16, the subtheme of partnerships included (a) partnering with local governments, (b) working with renewable energy institutes and academics; and (c) the allocation and deployment of employees to have consistent and continuous engagement with key stakeholders. Personnel training requirements entailed (a) formal; and (c) experiential as P9 and P14 stated respectively. P3 and P11 stated the

training to include the exposure of a sustainability code for all staff. In addition, P7 mentioned the need to encourage employees to join volunteer organizations involved with environment/sustainability activities while P4 responded on the importance of having a HSE department focused on the environment.

P4 and P14 responded on the importance of structural and physical changes focused on the consolidation of office space to reduce the environmental footprint. P14 in response mentioned new office buildings should meet the Leadership in Energy and Environmental Design (LEED) criteria. P12 asserted that his employer uses solar steam generation and research new technologies to deduce GHG emissions as a priority.

Recycling. *Recycling* was the fourth theme that came to the forefront. P14 mentioned the importance of the link between waste management and recycling. P9 stated that efforts exist at his employer whereby the design and use of products are in alignment with recycling outcomes. P15 mentioned that an awareness exists that his employer recycles steel and offshore equipment. P4, P5, P7, P9, and P10 noted that company policies exist for the recycling of paper and other waste products in their operations.

P6, P10, P13, and P14 stated the importance of spill and water management. Again, in their responses, P4, P5, P7, P9, P10, and P14 mentioned their employers embrace waste management and recycling as activities to illustrate their implementation of sustainability environmental practices. P6 mentioned activities specifically aimed at the prevention of water contamination by effective post usage chemical treatment before recycling or disposal.

Mitigation. P1, P3 through P9, P11, and P13 stated that the *mitigation* activities experienced in their place of employment included those aligned with (a) flaring; (b) greenhouse gases; and (c) oil and gas-leaks and emissions. P5, P6, and P7 mentioned flaring reduction as mitigating activities to prevent environmental harm. P5 and P8 stated that their employers aimed to reduce greenhouse gas emissions during their petroleum industry operations. This goal of this approach was to minimize harm to air quality. Last, P1, P3, P4, P6, P8, P9, P12, and P13 stated the efforts apace to minimize oil and gas leaks and emissions. These efforts are a necessity because of the known harm to the environment when hydrocarbon leaks occur (Shell, 2015).

Mitigating efforts included ensuring the integrity of oil and gas wells, efficient and optimal decommissioning of infrastructure and equipment, and closing any gaps unveiled in environmental impact assessments. P6 and P11 maintained that ensuring well integrity, spills, and leaks may not occur and this avoidance will enhance profitability. P6, P8, P9, and P13 experienced employers willing to ensure astute decommissioning activities to prevent environmental harm and loss of reputation that can inhibit revenue generation and profitability outcomes.

Water. The last practice detailed using NVivo software was *water*. The theme divided into three sub-themes. The sub-themes analyzed included (a) disposal, (b) water, and (c) treatment. First, P13 stated the importance of disposal of water that may be damaging to the environment. P6, P10, and P14 disclosed the importance of water management for environmental conservation and sustainability outcomes. Companies

that produce hazardous waste material should treat such material before disposal (Epstein & Buhovac, 2014).

For the water theme as a practice, P6 alluded that linkages exist between management, treatment, and disposal to avoid the contamination of fresh water sources. P10 and P13 stated that their employers pay attention to appropriate (a) sourcing, (b) storage, (c) transportation, and (d) recycling of produced water. These are activities aimed at the effective management of water usage for their petroleum industry operations.

P9 stated that water finger printing is under consideration as a new technology application that can provide proof that groundwater protection is a reality. See Appendix B. P6, P13, and P14 contributed the importance of new technology to reduce the need and use of water in the petroleum industry. With employers focusing on new technology applications to improve water management outcomes, conclusions are possible as to the importance of protecting this resource.

Influence on profitability. Questions 6, 7, 8, and 9 facilitated responses concerning the influences of the themes identified on profitability outcomes. The analyses for these questions are in Appendices D, E, F, and G. Even though the first question yielded six sustainability practices themes, according to the participants, their employer believed that only five of them had a positive influence on profitability. P3, P13, and P15 surmised that their employers' thoughts were that even though short-term profitability may suffer the resultant license to operate generated long-term profitability.

Themes analyzed based on responses included (a) environment, (b) fuel, (c) human resources, (d) recycle, and (e) mitigation.

None of the participants indicated that sustainability practices targeting water had a positive influence on profitability. Similarly, none of the participants was of the belief that water had a negative influence. Each participant stated that practices aligned with avoiding discharge and pollution of the environment aids in environmental protection.

P16 stated that ignoring the current energy structure and supply chain while demanding society to use renewables prematurely can have a negative effect on the employer's profitability. P12 mentioned that substandard health, safety, and environmental practices generally create negative profitability outcomes. This possibility exists due to the increased cost of associated corrective actions. Another participant, P15, proposed that times exist whereby the most sustainable practice may be too expensive. These comments possibly hint at the use of cheaper practices that may be equally effective where applicable.

P1 was generic in proposing that the employer was of the belief that any practices that result in leaks, spills, or environmental disaster would infringe on profitability due to clean-up costs and eventual loss of reputation. The loss of reputation can affect share pricing and erode value. P1 also mentioned that minimum safe designs of wells are a questionable practice often proposed when the petroleum industry experiences lower oil prices and should not occur. P7 stated that the employer believed that any practices that required new R&D would have a negative effect on profitability. These comments hinted

towards the use of practices that may already be common and accepted as standard in the petroleum industry.

For Question 10, the participants' *beliefs* on their perception of the influence on profitability generated three sub-themes. The results are in Appendix G. These themes were (a) affirmative, (b) neutral, and (c) negative. A lack of a negative response to this question occurred. The *justifications* for the *beliefs* analyzed into three sub-themes: (a) conjecture, (b) evidence, and (c) examples.

When asked about their personal perceptions, P1, P2, P3, P4, P5, P6, P8, P10, P12, P13, P14, and P16 responded affirmatively that sustainability practices do have an influence on profitability. In responding neutrally, P11 stated that the influence depends on the situation whereas P15 mentioned not having enough information on this issue to make a judgment. P7 surmised the belief that influence existed but sustainability practices were expensive to develop and implement. P9 hinted that the influence existed, but may be negative with the flawed implementation of the practices.

The justification given by P13 aligned with conjecture included guessing that the need exists to develop more technologies to preserve the environment. P14 provided conjecture to the belief that the influence of sustainability practices are positive to profitability by stating that stakeholders may incline more to allow additional lands for petroleum industry operations. P2 stated evidence existed whereby the employer took the time to engage with community stakeholders that avoided project inhibition. P6 proposed that the employer had evidence that the practice reduction of GHG from hydrocarbon usage had a positive effect on profitability.

P3, P6, and P13 gave examples to justify their beliefs where sustainability environmental practices may profitability. P3 stated the additional costs in the short-term necessary in capture emissions. P6 mentioned the cost to capture water. Similarly, P12 gave the example of governments enforcing carbon regulation that may not be cost-effective now. The belief is that these aforementioned activities may create long-term value for their respective organizations.

Participants also contributed that there may be elements, of which they are unaware, that are beneficial to the environment and affects profitability neutrally. P1, P2, P3, P5, P6, P7, P8, P9, P13, and P15 stated that a lack of clarity exists on the practices that have a neutral effect on profitability. P14 and P15 responded that their belief was that environmental impact assessments are of benefit to the environment but may have a neutral effect on profitability. P10 believed that waste management and recycling is beneficial to the environment yet affects profitability neutrally. P11 had similar thoughts about biofuels and alternative energy.

Contributions as a professional. Interview Question 13 was *How can you as a professional contribute to the implementation of sustainability practices as part of your professional responsibilities?* Based on the responses, the possibility existed to create three themes. See Appendix H for details of the analysis for this question. As professionals, participants could contribute to the implementation of sustainability practices as part of their professional responsibilities by (a) joining the corporate efforts, (b) having personally responsibility, or (c) being a vocal advocate.

For the theme *join corporate efforts,* P9 stated that employees should become knowledgeable and better equipped to promote the company's sustainability goals. P11 divulged that following the rules could contribute to sustainability practices as part of his professional responsibilities. P4 was of the belief that following environmental standards and practices also aligned with joining corporate efforts.

The theme of *personal responsibility* entailed an appreciation of how a project that can affect the environment as P13 stated. This approach results in mitigating against actions that may inhibit sustainability outcomes. P8 and P11 contributed responses that personal responsibility also entails assigning sustainability as an element of every employee's function to facilitate an understanding of how the environmental harm can occur. This understanding can allow employees to include a review of the environmental impacts of their petroleum industry projects.

The last sub-theme generated from the responses to this question was *vocal advocate*. P6 and P8 highlighted the importance of vocal advocacy. This approach entailed (a) an explanation to stakeholders of the importance of sustainability practices, and (b) assuming a role for the dissemination of sustainability plans, results, and proposed changes going forward. P8 proposed that for professionals, the assumption of a leadership role for the implementation of sustainability practices is of importance.

Importance of Sustainability. Question 14 was the last item in the online questionnaire. The question was; *Why do you think embracing sustainability is important and how does each part of the system including operations, finance, human resources, legal, and suppliers and customers contribute and benefit*? Appendix I contains the

analysis for this question. In their response to this question, participants' answers facilitated the creation of four themes. All of the participants believed that embracing sustainability was important. The main theme generated based on responses were because of (a) economic benefit, (b) comfort of life for future generations, (c) need to save the environment, and (d) present day life itself. P8, P12, and P16 responded that sustainability was important because of economic benefits. P4, P10, and P14 mentioned the specific importance of sustainability activities for the benefit of future generations. P11 and P13 disclosed the need to protect life by the use of sustainability practices. P4, P14, and P15 stated the importance of saving the environment as an expectation of living in the present.

The second part of question 14 only two responses from the participants resulted. P8 summarized that organizations could realize positive financial impacts while experiencing a reduction in litigations costs. In addition, P14 stated that the perception is for more clarity on the economic benefits of each part of the system will result from embracing sustainability. This result may provide the granularity required to optimize the operations of each organizational function to generate the profitability outcomes required.

Data Analysis Conclusions by use of NVivo 11

For this research, a multi-case study enabled an exploration of the sustainability environmental practices that influence profitability in the petroleum industry. The participants to the 14 items questionnaire comprised of a convenience sample of employees who work in the industry. Choice of these participants was via purposeful sampling. These 16 participants have several levels of responsibilities in the area of

sustainability within their company. The questionnaire sought their perceptions, knowledge, and expertise on numerous issues. The primary purpose was to attain common responses to the questions that seek to identify what sustainability environmental practices the participants believe influence profitability whether positively, neutral, or negatively.

First, the participants presented a host of sustainability environmental practices that allowed placement into six themes and 21 sub-themes. Based on the responses of all the participants, their four petroleum industry employers with which they had work experience executed multiple sustainability practices. These practices generated six themes namely (a) environment, (b) fuel, (c) HR, (d) recycle, (e) mitigation, and (f) water. Implementing sustainability practices would definitely present challenges to any company (Epstein & Buhovac, 2014). There would be logistical, cost, and personnel issues that may be barriers to implementation (Senge et al., 2010). Nevertheless, eight of the participants, namely, P2, P9, P10, P11, P12, P13, P14, and P16 claimed that their employers implemented sustainability environmental practices using elements involving (a) business practices; (b) partnerships; (b) personnel training; and (d) structural and physical changes.

In embracing sustainability practices, the employers used a combination of (a) direct action; (b) incentives; (c) indirect action and rules, reports and regulations. All participants except P5, P15, and P16 stated that these practices were present in their organizations. P4, P9, P8, P11, P13, and P14 further indicated that to maximize the possibility of all components of the organizational system and structures benefiting from

the use of sustainability initiatives, their employers initiated (a) global appeals, (b) local appeals, and (c) mandatory standards. Looking at the participants' perceived thoughts of their employers regarding the influence of sustainability environment practices on profitability, P3, P7, P9, P10, P12, P13 and P14 specifically claimed their employers were either: supportive, neutral, or wait-and-see; no participant provided a negative response to this question.

Even though there were six sustainability practices themes generated, according to an analysis the responses 14 of 16 participants concluded that their employers believed only five of the practices have a positive influence on profitability. The exceptions to this conclusion were P5 and P16. The themes stated as having a positive influence on sustainability align with (a) the environment, (b) fuel, (c) human resources, (d) recycle, and (e) mitigation. Sustainability practices targeting water did not factor as having a positive influence on profitability. Although sustainability practices that target water resources were not of the belief to have a positive influence on profitability, the participants did not list them as having a negative influence. There were no sustainability environmental practices identified as having a negative effect on profitability. Additionally, no sustainability practices identified as having a neutral effect on profitability.

Findings from Annual Sustainability Reports

Another requirement for this doctoral study was a review of the annual sustainability reports of four petroleum industry companies operating in the United States. The years of the reports were 2011 to 2015. This approach facilitated the ability to

capture data from other sources beyond the online questionnaire data presented previously. As required for qualitative study, data capture from multiple sources allows for improving the quality of the study via triangulation (Yin, 2014).

Triangulation is the convergence of data collected from different sources (Yin, 2014). To confirm or disconfirm the results of the online questionnaire I reviewed the annual sustainability reports of four petroleum industry companies who operate in the United States. The companies included BP, ExxonMobil, Chevron, and Shell. These companies are reputable brands in the United States among the top petroleum businesses globally (Forbes, 2015).

A review of these reports over the years 2011 to 2015 unveiled 18 environmental practices that these companies collectively perform. The 18 practices in the following two paragraphs are in alignment with those presented by the participants in the online questionnaire responses. These environmental practices within the realm of sustainability include (a) environmental policy and planning; (b) impact assessments; (c) flaring reduction; (d) greenhouse gas (GHG) mitigation; and (e) waste management. Also within the reports are the practices of (a) recycling, (b) biofuels usage, (c) natural gas usage, (d) using liquefied natural gas (LNG), and (d) carbon capture and storage.

Additional practices observed included the use of (a) renewable energy, (b) hydrogen technology for electricity, and (c) spill management techniques. The list of practices closes with the inclusion of (a) biodiversity protection; (b) water management; (c) performance measurement and reporting; (d) decommissioning of equipment and restoration of land assets to original status; and (e) research and development targeted at

environmental sustainability. These 18 practices are within the collective sustainability reports across all four companies. Some of the companies do not have them all in practice. Following are the results of the review of the annual sustainability reports.

The review of the annual reports entailed capturing the sustainability environmental practices implemented in the company's operations. Appendices J, K, L, and M show the results in tabular format. Each Appendix has results for one company, BP, Chevron, ExxonMobil, and Shell respectively. The list of 18 environmental practices is in the first column. The subsequent five columns capture whether any mention existed as to the use of that practice as a corporate requirement, which includes the United States or reference to the use of that particular practice in the United States existed. The data capture is in a chronological manner over the years 2011 to 2015 (see Appendices L, M, N, and O).

For the presence of mention of a particular practice in any particular year, the use of alphabet letter *Y* acknowledges a positive outcome. Similarly, when that practice was non-existent, the letter *N* highlighted a negative outcome. The last column named *Comments* captures any special attributes observed in relation to that particular practice as observed in the reports.

BP. The results for BP are available in Appendix J. Of the 18 practices unveiled, BP implemented 16. No mention of carbon capture and storage of the use of hydrogen technology for electricity generation existed in the reports (BP, 2015). Consequently, the findings indicated that BP implements the use of sustainability practices in a similar

majority as per the other companies investigated inclusive of Chevron, ExxonMobil, and Shell (BP, 2015).

Chevron. Results for Chevron Corporation are in Appendix K. The company executed 14 of the 18 environmental practices identified. The practices not mentioned in the annual reports are (a) the use of biofuels, (b) LNG usage, (c) carbon capture and storage; and (d) hydrogen technology for electricity generation. No mention existed for practices focused on decommissioning and restoration during the earlier review years of 2011 to 2015. This practice is in place in the later years during 2014 to 2015 (Chevron, 2015).

ExxonMobil. Mention of all 18 practices existed in the annual reports throughout the 5-year period with the exception being no mention of recycling in 2011. Most notable is that ExxonMobil focuses on energy conservation, and leads industry efforts to minimize and mitigate spills associated with their operations. The company embraces the use LNG as a clean burning fuel, and leads this area of the business by owning and operation the largest LNG terminal in the world in Louisiana in the United States (ExxonMobil, 2015). The results are in Appendix L.

Shell Oil Company. In reviewing the results of data captured from the Shell annual reports, noted were two practices not in full implementation over the 5-year period. The practice of carbon capture and storage was not ongoing in the United States operations (Shell, 2015). Research and development studies and the planned implementation of carbon sequestration exist for other countries globally (Shell, 2015). The possibility exists that this practice may undergo implementation in the United States.

Last, no mention existed on the practice of decommissioning and restoration until 2015 (Shell, 2015). The results are in Appendix M.

Applications to Professional Practice

The focus of this study was an understanding of how sustainability environmental practices influenced profitability. This sub-section contains an appreciation of the application of the study to professional practice. Professional practice entails competences aligned with individual motives, traits, skills, aspects of self-image or bodies of knowledge applied during work to generate a certain level of performance (Lindberg & Rantatalo, 2015). Leaders in the petroleum industry have an opportunity to improve performance by embracing sustainability environmental practices (Stocchetti, 2012). The results of this study indicated which practices could add value to business performance and should attain inclusion within professional practices in the petroleum industry.

Practices identified that should attain inclusion in to improve business performances are those that (a) protect the environment from harm, (b) engages; informs, trains, and compensates human resources (HR) to implement, monitor and focus on environmental protection; and (c) execute mitigating activities to ensure air quality by the reduction of flaring and the production of greenhouse gases. The use of cleaner burning fuels such are biofuels, natural gas, and alternative energy such as solar and wind can also be of value. Where possible, recycling of waste products generated during petroleum industry operation is a necessity. Water management approaches including minimizing the use of fresh water, and the treatment of water to remove harmful products before

disposal can also add value to business performance. Practices aimed at decommissioning of old infrastructure and the restoration of equipment, petrochemical plants and site to original states can reduce any harmful footprints from petroleum industry operations. Last, continuous research and development that facilitates the deployment of improved sustainability practices continued to be a goal of the four companies studied and should be a practice other companies can imitate to create value.

The responses of all the participants support the understanding that policies that incorporate the importance of sustainability in business operations are a requirement. An appreciation of sustainability with the skillset to mitigate against associated negative outcome should be one of the skills for any employment opportunities (Edirisinghe & Fraser, 2015). The performance of employees, teams, and business units should include a sustainability performance component where appropriate (Epstein & Buhovac, 2014). Employees should have the ability to display their sustainability actions by having the ability to incorporate activities associated with this mindset into daily activities at work (Rashash, Elliott, & Madhosingh-Hector, 2015). Corporate policies and plans should incorporate sustainability as a standard part of business practice (Baumgartner, 2013). The expectation is for the improvement in the delivery of professional practices goals.

Education and training of sustainability initiatives and the understanding of the benefits of these initiatives to business should be a requirement of professions across all disciplines (Edirisinghe & Fraser, 2015). Companies need to communication the practices that can ensure sustainable outcomes (Baumgartner & Winter, 2014). The results of the

questionnaire indicated that the participants do not all identify the same practices as being of importance and relevant.

All the participants agreed that environmental protection was importance. Ten participants agreed that the practices of ensuring that the human resources align with sustainability initiatives are of importance. Ten participants stated that practices aimed at mitigating environmental harm are necessary. Eight participants noted that the use of cleaner burning fuels or the use of alternative sources of energy could create sustainability outcomes. Six participants mentioned the importance of recycling whereas four experienced water management as an important practice at their employer.

The results are in contrast with the four company's annual sustainability reports whose authors captured similar practices over the 5-year period across all companies. These results indicated the need for companies to disseminate information to their employees more effectively with respect to all sustainability activities ongoing in their petroleum operations. Employee training is a tool that may be of use in the dissemination of the value and competencies required for a sustainability culture (Epstein & Buhovac, 2014a). Based on the results of the study, professional practice improvement is a possibility by the incorporation of education and training of the sustainability practices available.

Participants' responses indicated the perception of the importance of working together to achieve sustainability. These responses are in alignment with Baumgartner (2013) who stated the need for inclusiveness and integration in the governance of sustainability initiatives. Balancing the needs of business and society facilitates win-win

scenarios (Kassel, 2012). This approach is a possibility when professionals of different disciplines work together as part of the same team to formulate plans for sustainability activities. Collaboration across different professions and stakeholders is of importance for sustainability to become a reality (Senge et al., 2010). With this goal in mind, teams with employees across technical, operation, legal, loss prevention, and financial sub-disciplines should work together to ensure the delivery of sustainability goals as a requirement in professional practice.

The findings of this multi-case study indicated that the four globally recognized petroleum industry companies under study use sustainability environmental practices. BP, Chevron, ExxonMobil, and Shell generate billions of dollars in yearly profits (Forbes, 2016). These companies are profitability (Forbes, 2016). One can infer that with the drive for financial success and their willingness to embrace their sustainability environmental programs, these programs contribute to their profitability. Participants' responses to the online questionnaire support these conclusions.

A limited body of research focused on sustainability and associated business outcomes exist (Muja, Appelbaum, Walker, Ramadan, & Sodeyi, 2014). These findings can be of value to business stakeholders within the petroleum industry. The findings display useful insights to the practices in use by four of the largest petroleum industry companies in the world. These findings may guide the leadership of other companies towards embracing sustainability as a core part of doing business. The benefits to humanity include pollution reduction (Tsai, 2013). An improvement in the life of humanity, while creating profitability outcomes results can occur (Senge et al., 2010).

Implications for Social Change

Businesses and organizations should operate in a socially responsible manner (Epstein & Buhovac, 2014a). Value for organizations is possible when organizations integrate sustainability practices into their core business strategy (Micah & Umobong, 2013). The possibility exists for positive social change when businesses (a) invest in local and global communities, (b) interact with stakeholders, and (c) respond to their needs (Epstein & Buhovac, 2014a). To achieve these goals, activity planning should be a key vehicle in the implementation of social changes (Adams, Scott, & Hardman, 2013). Achieving social change is possible by the use of the results of this study to guide the leaders of petroleum industry companies to appreciate that the use of sustainability environmental practices does have a positive effect on profitability.

Mounting pressure from key stakeholders in industry made sustainability imperative for business organizations (Chakrabarty & Wang, 2012). The results of the study provided evidence to conclude that the implementation of sustainability environmental practices can create a competitive advantage by improving profitability outcomes. These results can have the ability to change the focus of leaders and other stakeholders within petroleum industry business to embrace sustainability environmental practices as part of the status quo in business operations in the petroleum industry. Communities may also benefit, because harm to the environment can be minimum during operations, and the focus should be on the restorative efforts once operations of the business are complete (Bone, 2014). These results may further enhance the reputation of the business involved and may enhance business relations with the host society and

ultimately profitability. With the knowledge that the harm to the environment may be minimal, a permanent behavioral change is possible in the culture of executing business in the petroleum industry whereby all organizations align their operations with the focus on the use of these environmental practices where possible (Anosike, 2014).

Participants' responses indicated that social change is possible because humans may have a cleaner environment for their existence. This conclusion was possible because the three elements of sustainability do include (a) social, (b) economic, and (c) environmental elements (Kiron, Kruschwitz, Hannaes, & Velken, 2012). A symbiotic relationship exists between these three elements (Epstein & Buhovac, 2014a). This conclusion is in evidence from the annual sustainability reports where discussion around sustainability included the inter-relationship between the three elements (BP, 2015; Chevron, 2015; ExxonMobil, 2015; Shell, 2015). The benefit to the host community and associated stakeholders may include an improved standard of living including one of comfort and longevity (Konne, 2014).

A review of the annual sustainability reports of the four companies under study also indicated a focus on the research and development of new practices and technologies that can affect the way humans live. Renewable energy options can aid in sustainability efforts (Miskinis, Baublys, Konstantinaviciute, & Lekavicius, 2014). These options include wind, solar, and geothermal (Shell, 2015). Social change is a requirement to embrace these options because of the need for different equipment, and modes of tapping into these energy sources. Depending on the option and the availability of the renewable

energy technology, a reduction in environmental impact is possible, and this achievement becomes a benefit to humanity.

Recommendations for Action

To drive sustainability initiatives through an organization, various actions including product costing, capital budgeting, information transfer, and performance evaluation are necessary (Epstein & Buhovac, 2014a). Any call to action sustainability requires a vision for the future (Senge et al., 2010). Sustainability environmental practices are beneficial to organizations because they allow for (a) cost cutting; (b) reputation enhancement that attracts employees and customers, and (c) minimal use of natural resources that can result in long-term viability (Richerson, 2013).

Recommendations for action logically follow from conclusions from the study, states who needs to pay attention to results and how leaders and other stakeholders in the petroleum industry can attain the motivation to focus on sustainability solutions. Shunning the call for sustainability would be a missed economic opportunity, and deliver a death sentence to large portions of the world's population (Ross, 2010). Therefore, the implementation of sustainability action plans is a necessity (Kiron et al., 2012). Action plans must include (a) agreeing on goals, (b) performance measures, (c) a determination of human and physical resources, (d) interlocks required, and (e) financial estimates (Harvard Business School, 2005). Creating, implementing and monitoring the outcomes of these plans are dependent on the leadership traits in every stakeholder (Epstein & Buhovac, 2014a).

The results of the study indicated an alignment between the sustainability practices the participants believe are of importance and those actually in practice based on the data within the companies' annual sustainability reports. Conclusions from the participants' responses indicated that the use of sustainability environmental practices is present in the companies researched. More than 90% of the participants agreed that these practices should be an integral part doing business in the petroleum industry, and facilitated a license to operate (see Appendix C). In addition, the perception exists that profitability results when sustainability practices are in use in the companies reviewed in this doctoral study.

Participants indicated that sustainability environmental practices do influence profitability. The perception is that the influence is positive for the majority of the practices. The results of the study indicated that gaps exist within the practices in actual existence in the four companies under study, and the knowledge of the participants who have working experience with these organizations. In planning for the removal of any knowledge gaps that exist, training of personnel is a requirement (Panford, 2012). This approach should be within a comprehensive policy. When corporate leaders integrate of sustainability training into corporate plans, a competitive advantage may result (Muja et al., 2014).

Leaders in petroleum industry companies, middle-level management, and individual contributors should pay attention to these results. The implementation of sustainability is dependent on all (Senge et al., 2010). The use of a chief sustainability officer to plan, implement, and monitor sustainability initiatives can give a competitive

advantage (Kiron et al., 2012). To incorporate sustainability as one of the *must do* elements in the execution of business, change management is a requirement (Lozano, 2011).

For each of the sustainability practices identified, implementation in other organizations where gaps exist is a possibility. The call to action requires nine key steps to sustainability practices implementation. These steps include (a) getting support from corporate management, (b) engaging all stakeholders, (c) creating a plan, and (d) setting goals (Richerson, 2013). Other steps include (a) execution, (b) measurement, (c) sharing progress, and (d) conducting reviews (Richerson, 2013). For all practices, the focus must be on recycling activities and decreasing the rate of on consumption of non-renewable energy (Marques & Machado, 2013).

Plans to disseminate this study are through the Society of Petroleum Engineers (SPE). SPE is the largest individual-member organization serving managers, engineers, scientists and other professionals worldwide in the upstream segment of the oil and gas industry (Society of Petroleum Engineers [SPE], 2016). Membership of SPE stood at 160,000 globally in 2015. The organization also has a magazine, named the Journal of Petroleum Technology (JPT), read for millions of industry professionals on a monthly basis. Plans are to publish an extract of this paper in JPT to display the results of this study to the petroleum industry.

Recommendations for Further Research

This research allowed for the exploration of the sustainability environmental practices that affect profitability in the petroleum industry. A review of the literature did

not unveil a similar study from any part of the world (Bone, 2014). Not enough is available on sustainability research (Muja et al., 2014). The results of the study indicated the need for further research.

As previously stated, the debate about the importance of sustainability environmental practices and how they affect profitability is absent in certain business environments (Schaltegger et al., 2011). Additional research may provide further deliver evidence to understand the affect these practices have on profitability. Sustainability initiatives should be at a global level (Senge, 2010). Taking the global concerns of sustainability into consideration is a necessity (Carroll & Shabana, 2011).

Based on statements in the previous paragraphs, an additional area of research proposed includes expanding the study to developed and developing nations. The focus of this expanded study area can allow researchers to understand the importance of sustainability environmental initiatives to the government and citizenry within these two national classifications. Such understanding may provide ways forward to ensure the implementation of practices that can protect the environment (Ingelson & Nwapi, 2014).

Other keys areas of interest include research aligned with (a) national and publically owned petroleum industry companies; and (b) land operations versus marine operations. Nationally owned petroleum companies may or may not operate in a manner that takes environmental protection seriously (Vermeer, 2015). This approach is possible because of the ability to operate above the law when a company experiences national ownership. Ownership structures influence sustainability outcomes (Vermeer, 2015). Researching how the different ownership structures affect profitability may provide an

understanding of reasons for action or non-action on environmental sustainability issues. Similar research on different approaches, if any exists, between land-based and marine petroleum industry operations may also provide information to understand where issues exist and how to implement appropriate sustainability environmental practices.

A limitation of this study is the focus on responses from participants associated with four large petroleum industry companies operating in the United States. A recommendation for further research entails the use of participants who have experience of employment with mid-sized and small independent companies. This approach may facilitate a more complete sample spectrum whereby researchers can interpret and determine the practices across different sized petroleum industry organizations.

The results may provide answers to the measures necessary to ensure that the petroleum industry embraces sustainability as a means of doing business. In summary, the expanse of this research across (a) type of ownership, (b) land-based versus marine and, (c) different sized companies may generate solutions, where necessary, towards a more global holistic approach to the important issues in business. Companies such as Coca-Cola embraced sustainability to attain a financial competitive advantage (Kumar et al., 2011). Sustainability environmental practices can become an inherent part of business in the global petroleum industry and generate the profits required.

The most harmful result of petroleum industry operation is the creation of harmful waste released into the environment in quantities that are un-natural (Rocca & Viberti, 2013). A mitigating action is the use of green chemicals that are non-damaging (Jones & Lubinski, 2013). A complete knowledge of the limitations of green chemicals is

unavailable (Marques & Machado, 2013). The possibility exists for the use of greener chemicals to be of value in curbing the harmful effects of waste production of petroleum industry operations. As such, further research on green chemical as an opportunity for environmental protection is a requirement.

Reflections

The journey through this doctoral study allowed for a focus on business administration, and the manner in which to focus on providing solutions for associated issues. Three areas were in focus during this doctoral study process. These areas include an appreciation of how organizations lead in the implementation of sustainability environmental practices. In addition, an understanding of how successful and renowned firms use sustainability practices as part of their business model. The third area is a thorough understanding of qualitative research process.

Businesses must make decisions that give a competitive advantage, and that advantage is a possibility with the use of sustainability practices (Quisenberry, 2012). Sustainability in organizations requires strategic leadership (Strand, 2014). I was not aware what sustainability entailed and the importance of such practices in creating opportunities for future generations. Without a skilled a motivated workforce, implementation of sustainability practices is impossible (Milliman, 2013). An attainment of an appreciation of the importance of human capital in the delivery of sustainability practices also resulted from this study.

Conclusion

With this qualitative multiple-case study, I explored, identified, and attained an understanding of the sustainability environmental practices that affect profitability in the petroleum industry. The focus of this study was four reputable petroleum industry companies operating in the United States. Data capture from study participants generated five sustainability environmental practices themes perceived to have positive influences on profitability. These practice themes were (a) the environment, (b) fuel, (c) HR, (d) recycle, and (e) mitigation. The practice theme aligned with *water*, which was the sixth theme identified, attracted the perception as having a neutral effect on profitability.

To improve study validity and data reliability, I studied the annual sustainability reports of the four companies that were the focus of the study. Eighteen actual sustainability practices aligned with the six sustainability environmental practices themes identified from participant data capture are in use across all four companies. Findings from the study uncovered similar practice results whether they are perceptions of the participants of the positive outcomes from sustainability practices or the companies embracing the practices to deliver value and maintain their competitive advantage. Conclusions from data captured indicated that embracing sustainability environmental practices should be a necessity to maintain a license to operate.

Noted from the study, was the need to have policies in place to embrace sustainability practices while integrating the involvement of all stakeholders. Having a holistic view of how each of the sustainability practices in place affect each other gives credence to the need for a systems approach in the delivery of sustainability solutions.

This approach attained the perception of being possible by the continued display of the results of the sustainability environmental practices so ensure awareness of all parties. Accountability, and continued measurement of the impact of sustainability environmental practices attained the view as a key element of the petroleum industry business. Where necessary, there should a drive to change the culture of organization to one of sustainability delivery. This approach can deliver comfort, success, and longevity for present and future generations.

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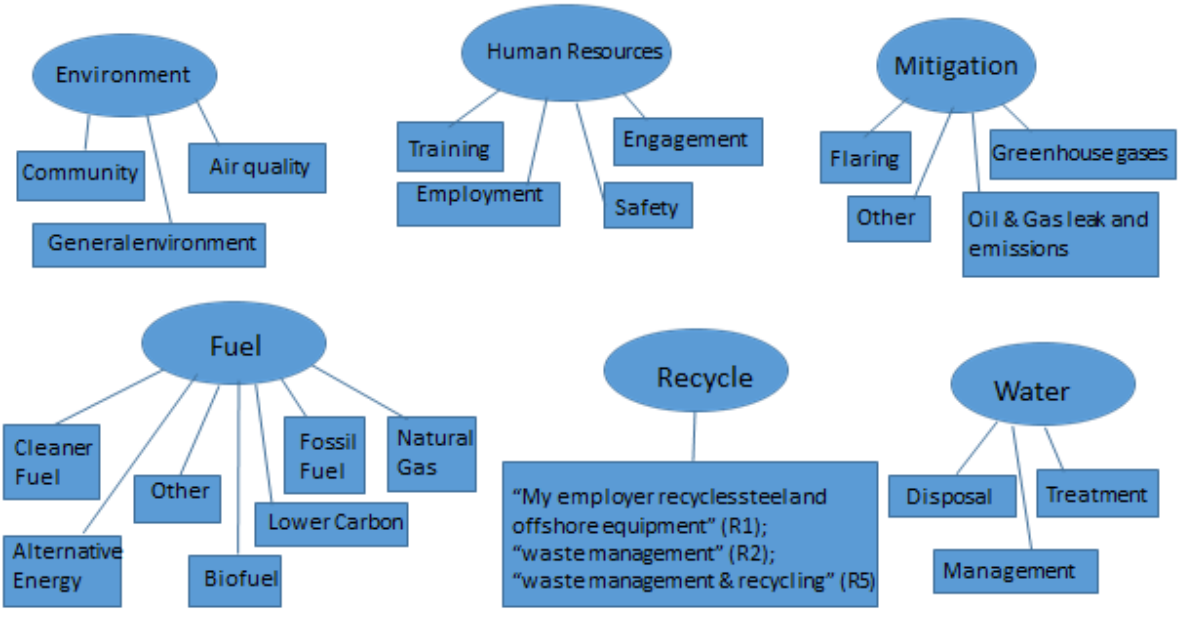
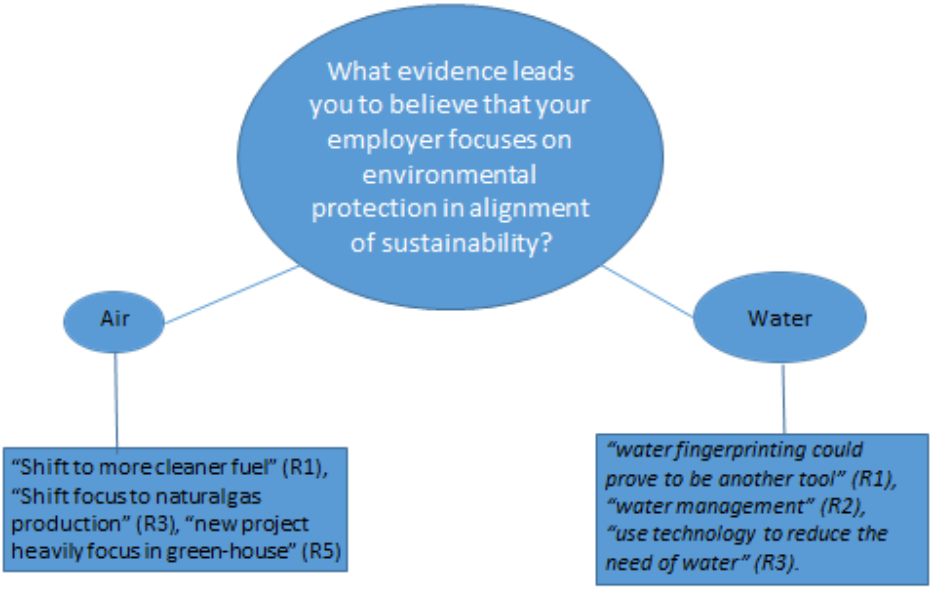
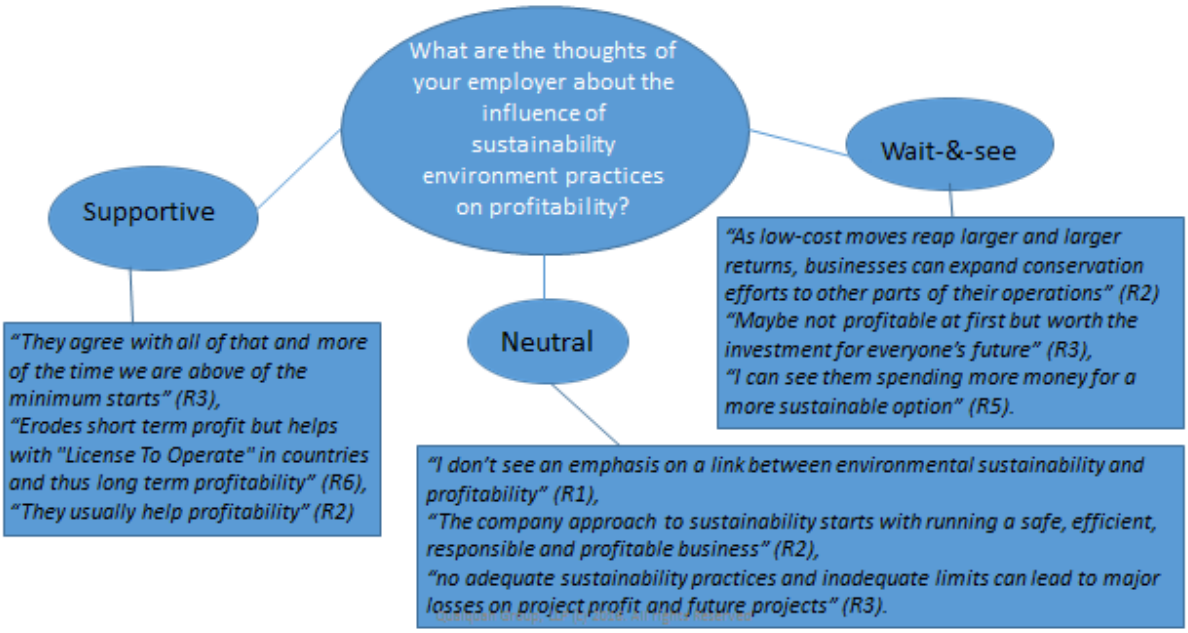
Appendix A: Main Environmental Themes generated from NVivo 11



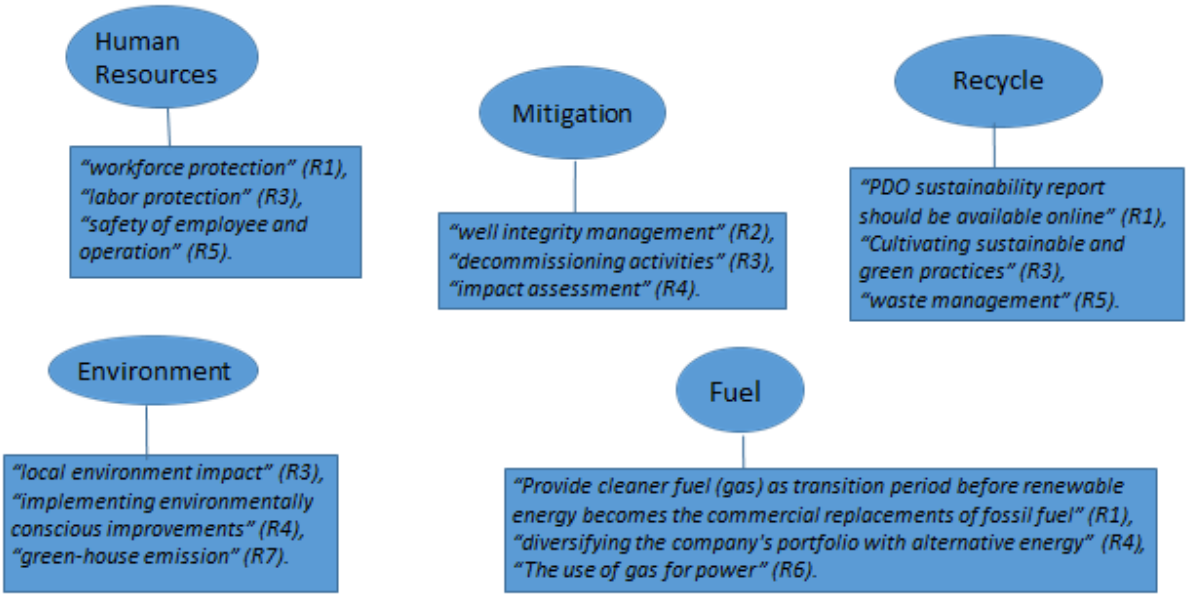
Appendix B: Evidence of Environmental Protection generated from NVivo 11



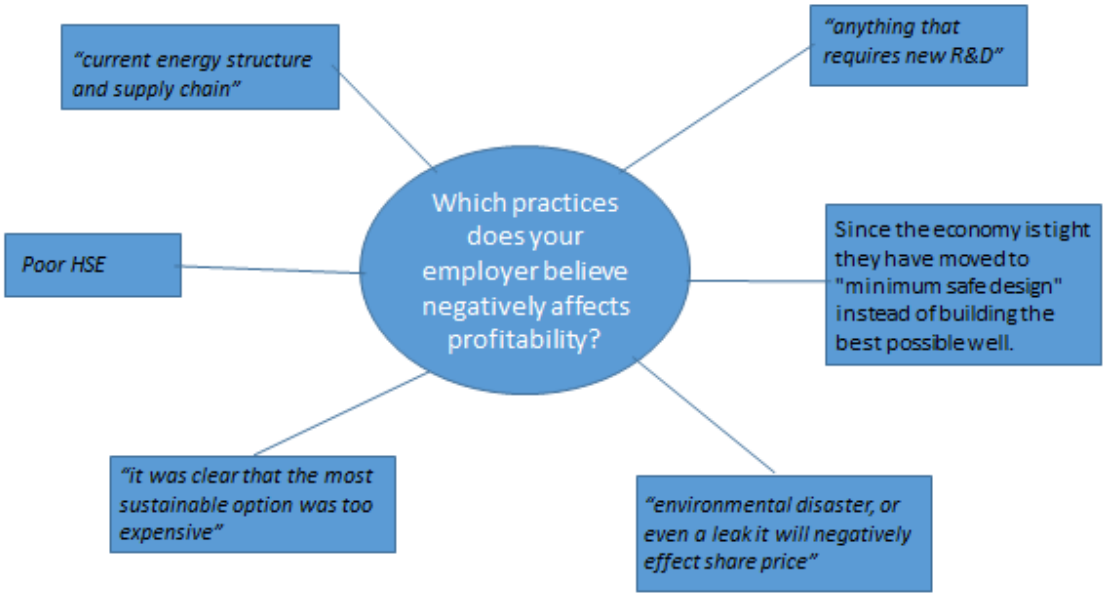
Appendix C: Employer's Thoughts on Influence of Practices on Profitability



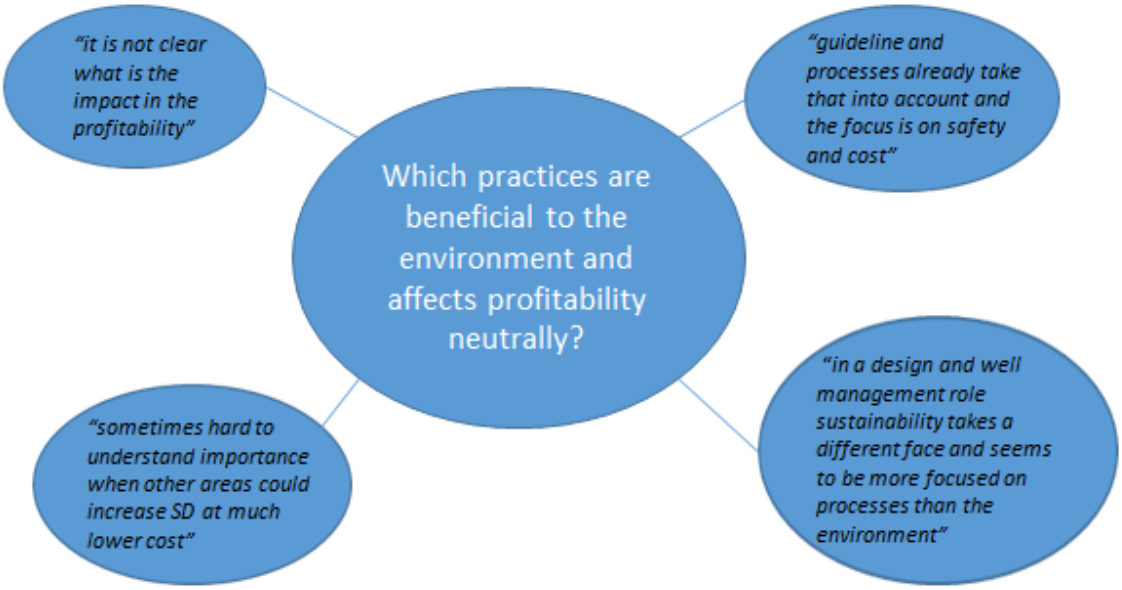
Appendix D: Participant's Determination of Positive Influences



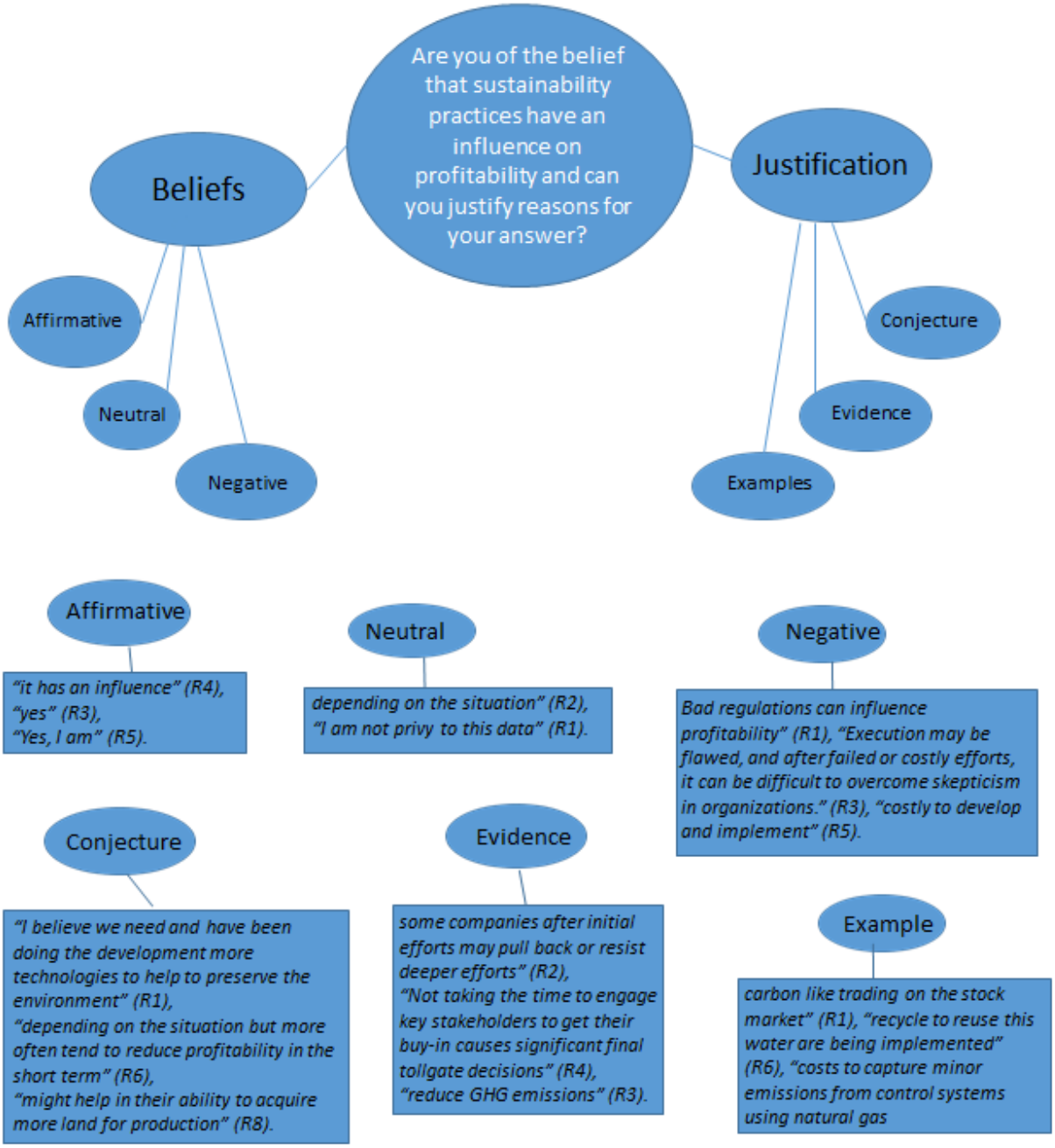
Appendix E: Identification of Negative Practice Themes



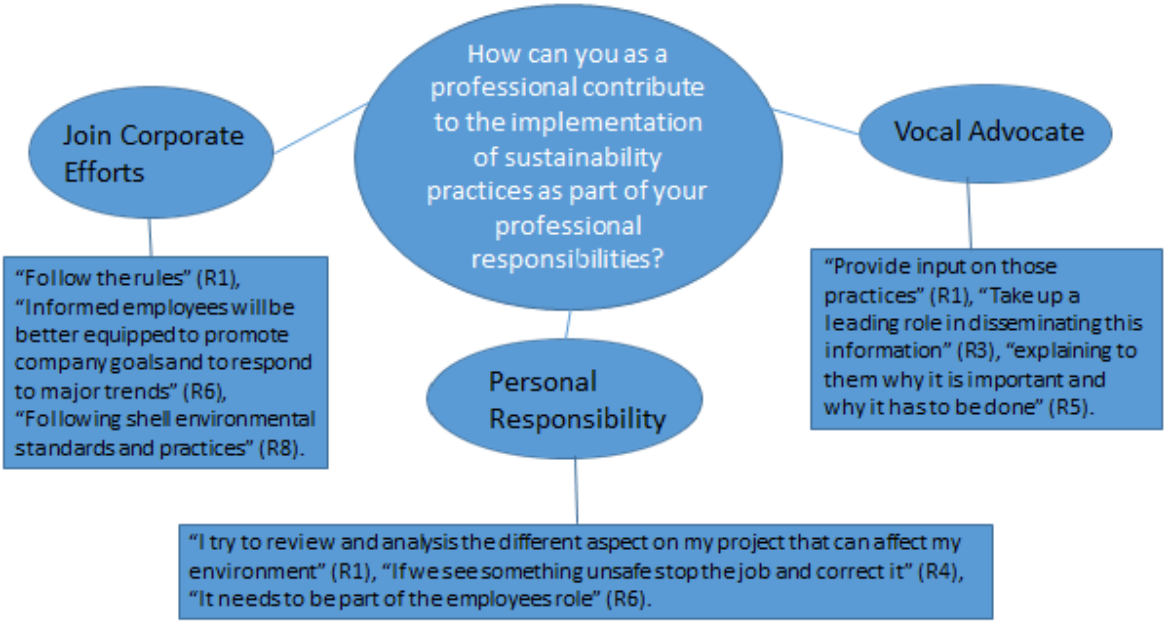
Appendix F: Identification of Neutral Practices Themes



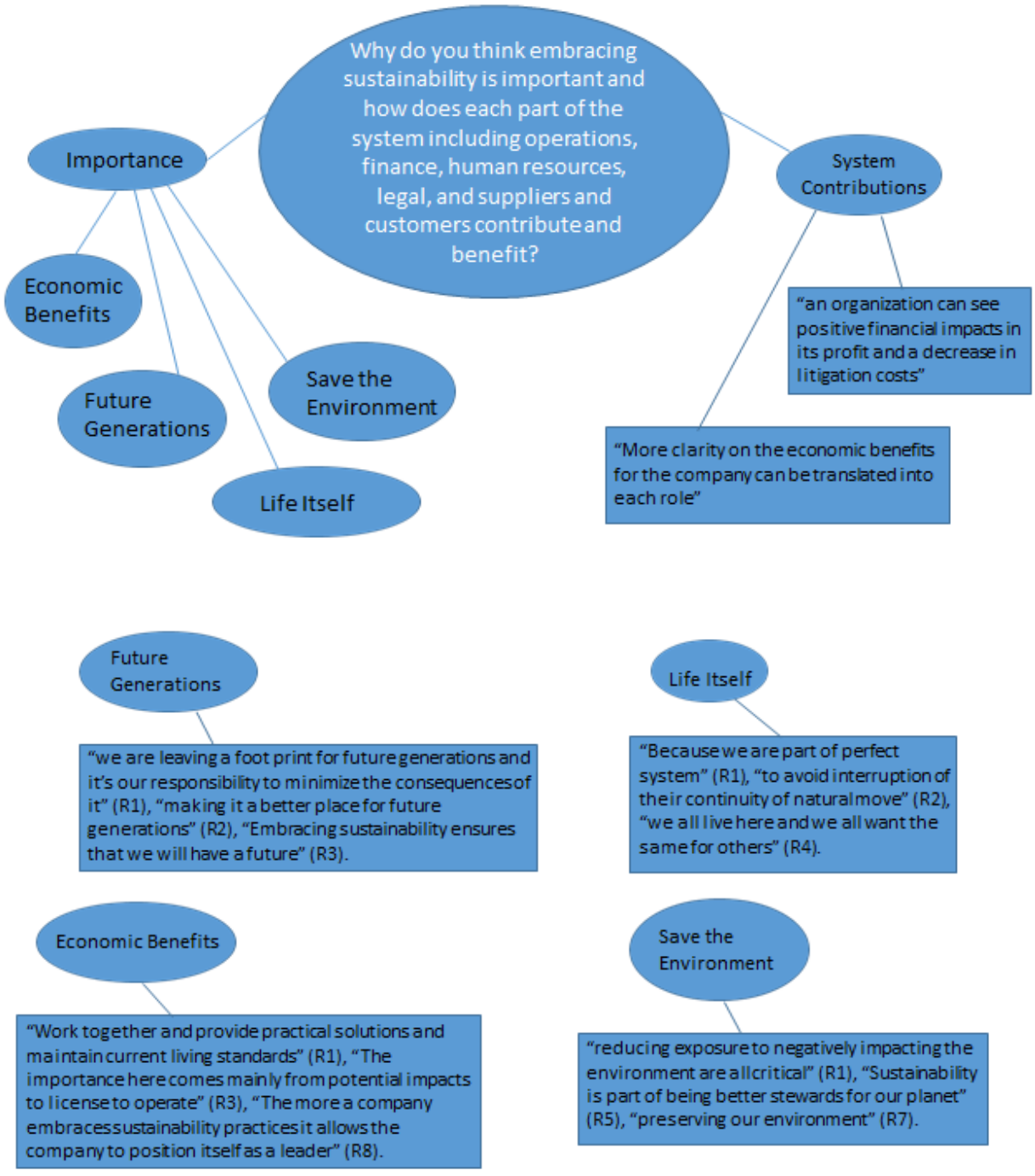
Appendix G: Participants Personal Beliefs with Justification



Appendix H: Contributions to Sustainability as a Petroleum Industry Professional



Appendix I: Importance of Sustainability



Appendix J: *British Petroleum Annual Sustainability Reports (2011-2015)*

Year	*2011*	*2012*	2013	*2014*	*2015*	*Comments*
Environmental Practices						
Policy & Planning	Y	Y	Y	Y	Y	ongoing updates
Impact Assessments	Y	Y	Y	Y	Y	always required
Flaring Reduction	Y	Y	Y	Y	Y	Ongoing challenges
GHG Mitigation	Y	Y	Y	Y	Y	Carbon costs considered
Waste Management	Y	Y	Y	Y	Y	A focal point
Recycling	Y	Y	Y	Y	Y	
Biofuels	Y	Y	Y	Y	Y	15% ethanol in gas
Natural Gas	Y	Y	Y	Y	Y	Rebranded as gas producer
Liquefied Natural Gas	Y	Y	Y	Y	Y	Texas operation sold
Carbon Capture/Storage	N	N	N	N	N	Not mentioned
Renewable Energy	Y	Y	Y	Y	Y	Primarily R&D
Hydrogen Electricity	N	N	N	N	N	Not mentioned
Spill Management	Y	Y	Y	Y	Y	Area of focus
Biodiversity Protection	Y	Y	Y	Y	Y	Within policy goals
Water Management	Y	Y	Y	Y	Y	Technology in development
Performance Measurement/Reporting	Y	Y	Y	Y	Y	Ongoing
Decommissioning/Restoration	Y	Y	Y	Y	Y	Since GOM spill
Targeted R & D	Y	Y	Y	Y	Y	

Appendix K: Chevron Corporation Annual Sustainability Reports (2011-2015)

Year	*2011*	*2012*	2013	*2014*	*2015*	*Comments*
Environmental Practices						
Policy & Planning	Y	Y	Y	Y	Y	Corporate policy present
Impact Assessments	Y	Y	Y	Y	Y	Always performed
Flaring Reduction	Y	Y	Y	Y	Y	33% reduction over time
GHG Mitigation	Y	Y	Y	Y	Y	An ongoing goal
Waste Management	Y	Y	Y	Y	Y	8% reduction
Recycling	Y	Y	Y	Y	Y	Reduction of water usage
Biofuels	N	N	N	N	N	No evidence of use
Natural Gas	Y	Y	Y	Y	Y	Focuses on clean fuel
Liquefied Natural Gas	N	N	N	N	N	No evidence of use
Carbon Capture/Storage	N	N	N	N	N	Not in reports
Renewable Energy	Y	Y	N	N	N	mention disappeared over time
Hydrogen Electricity	N	N	N	N	N	No mention
Spill Management	Y	Y	Y	Y	Y	Efforts ongoing
Biodiversity Protection	Y	Y	Y	Y	Y	Part of policy
Water Management	Y	Y	Y	Y	Y	Primarily recycling
Performance Measurement/Reporting	Y	Y	Y	Y	Y	yearly
Decommissioning/Restoration	N	N	N	Y	Y	Area of focus
Targeted R & D	Y	Y	Y	Y	Y	Projects ongoing

Appendix L: *ExxonMobil Corporation Annual Sustainability Reports (2011-2015)*

Year	*2011*	*2012*	2013	*2014*	*2015*	*Comments*
Environmental Practices						
Policy & Planning	Y	Y	Y	Y	Y	Ongoing updates
Impact Assessments	Y	Y	Y	Y	Y	
Flaring Reduction	Y	Y	Y	Y	Y	
GHG Mitigation	Y	Y	Y	Y	Y	
Waste Management	Y	Y	Y	Y	Y	
Recycling	N	Y	Y	Y	Y	Recycling of used oil/water
Biofuels	Y	Y	Y	Y	Y	Focus on algae biofuels
Natural Gas	Y	Y	Y	Y	Y	
Liquefied Natural Gas	Y	Y	Y	Y	Y	Largest terminal in world in Louisiana
Carbon Capture/Storage	Y	Y	Y	Y	Y	CO2 sold for oil recovery in Wyoming
Renewable Energy	Y	Y	Y	Y	Y	Opposes renewables
Hydrogen Electricity	Y	Y	Y	Y	Y	Ongoing research
Spill Management	Y	Y	Y	Y	Y	Leadership taken industry-wide 2011
Biodiversity Protection	Y	Y	Y	Y	Y	Vegetation, wildlife, fisheries
Water Management	Y	Y	Y	Y	Y	Water use reduction is focus
Performance Measurement/Reporting	Y	Y	Y	Y	Y	Works alongside communities
Decommissioning/Restoration	Y	Y	Y	Y	Y	corporate policy
Targeted R & D	Y	Y	Y	Y	Y	Focus on energy conservation

Appendix M: *Shell Oil Company Annual Sustainability Reports (2011-2015)*

Year	*2011*	*2012*	2013	*2014*	*2015*	*Comments*
Environmental Practices						
Policy & Planning	Y	Y	Y	Y	Y	Policy advisor in place
Impact Assessments	Y	Y	Y	Y	Y	Always done
Flaring Reduction	Y	Y	Y	Y	Y	Aims to minimize flaring ongoing
GHG Mitigation	Y	Y	Y	Y	Y	Resulted in ongoing reduction
Waste Management	Y	Y	Y	Y	Y	Focuses on both hazardous and non-hazardous
Recycling	Y	Y	Y	Y	Y	Focused on water
Biofuels	Y	Y	Y	Y	Y	In use at gas stations
Natural Gas	Y	Y	Y	Y	Y	Nationwide use for fuel where possible
Liquefied Natural Gas	Y	Y	Y	Y	Y	LNG and GTL in use where possible
Carbon Capture/Storage	N	N	N	N	N	Ongoing research for mass deployment
Renewable Energy	Y	Y	Y	Y	Y	Plans for up to 30% usage by Year 2050
Hydrogen Electricity	Y	Y	Y	Y	Y	Filling stations available
Spill Management	Y	Y	Y	Y	Y	Inconsistent results
Biodiversity Protection	Y	Y	Y	Y	Y	Always considered
Water Management	Y	Y	Y	Y	Y	Focused on use minimization
Performance Measurement/Reporting	Y	Y	Y	Y	Y	Corporate requirement
Decommissioning/Restoration	N	N	N	N	Y	EPA regulations
Targeted R & D	Y	Y	Y	Y	Y	Eco-Marathons