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Green Innovative Strategies Construction Business Leaders Implement to Increase Organizational Performance

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Abstract

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MS, University of Leicester, 2007

BS, University of the West Indies, 2004

Doctoral Study Submitted in Partial Fulfillment

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Doctor of Business Administration

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Abstract

The construction industry lacks innovative green strategies to increase organizational performance. However, construction business leaders are hesitant to implement innovative green strategies due to the possibility of decreased organizational performance. Grounded in Fiedler's contingency theory, the purpose of this qualitative multiple case study was to explore the innovative green strategies implemented by construction business leaders to increase organizational performance. Data were collected from semistructured interviews and company documents with 5 construction business leaders in Antigua who successfully used innovative green strategies to increase organizational performance. Data were analyzed using Yin's 5-step process. Five themes emerged: innovative research and design, collaboration, leader involvement, education, and marketing. A key recommendation is that construction industry leaders apply green innovations to increase organizational performance. The implications for positive social change include the potential for construction business leaders to raise awareness and knowledge of energy efficient and green practices, conservation of natural resources and the reduction of waste, and to decrease dependence on natural resources.

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Section 1: Foundation of the Study

The growing scarcity of natural resources has increased concerns about the environmental impact of organizational operations (Sellitto, 2018). Organizational leaders are encouraged to be proactive in protecting the environment from the effects of business activities. Subsequently, leaders are challenged to explore how environmental and internal resources can complement organizational capabilities in gaining competitive advantages and improving organizational performance (Singjai, Winata, & Kummer, 2018).

Background of the Problem

Green innovation is a new philosophy transforming the construction sector (Sim & Putuhena, 2015). The construction industry contributes to economic growth in today's societies (Okere, 2017). Leaders of developing countries have placed more emphasis on economic growth driven by the construction sector as opposed to engaging in holistic sustainable practices that integrate the social, economic, and environmental aspects of sustainability (Banihashemi, Hosseini, Golizadeh, & Sankaran, 2017). However, the industry has been slow to adopt innovative technologies for sustainable growth (Szymańska, 2016).

Leaders of construction organizations are plagued with issues such as project delays, high overheads, and lack of construction innovation and the adoption of sustainable technologies that affect competitiveness and organizational performance (Hwang & Shan, 2018). Construction leaders tend to ignore the relativity of management

functions with the integration of green innovative construction processes, hence the need for additional research in this area particularly focusing on developing countries (De Paula, Arditi, & Melhado, 2017).

Construction supports the dynamic growth of the economy, yet exploits approximately 40% of the world's resources (Ali, Jainudin, Tawie, & Jugah, 2016). The implementation of green construction practices is low and there is a need to create awareness, to improve, adopt, and implement green innovative practices in construction (AlSanad, 2015). Implementation of green innovation in construction requires a strategic approach to effectively manage resources and increase organizational performance (Yilmaz & Bakis, 2015).

Problem Statement

The construction industry contributes to the dynamic growth of the economy, yet exploits approximately 40% of the world's resources (Ali et al., 2016). The Eastern Caribbean Central Bank (2017) estimates that the construction sector in Antigua and Barbuda expanded by 16% in 2017. The general business problem is that some construction business leaders do not understand how insufficient strategic planning and green innovation may hinder efficiency and productivity. The specific business problem is that some construction business leaders lack green innovative strategies to increase organizational performance.

Purpose Statement

The purpose of this qualitative multiple case study was to explore the green innovative strategies implemented by some construction business leaders to increase organizational performance. The population of this study consisted of 5 construction business leaders in Antigua who have successfully implemented green innovative strategies. Construction business leaders who have successfully implemented green innovative strategies could potentially promote social change and enhance the country's social and economic development, as well as potentially decrease dependence on natural resources while improving environmental sustainability and improving Antigua's Gross Domestic Product (GDP). Citizens of Antigua could become aware of energy efficient practices, apply conservation techniques of natural resources, reduce waste, improve productivity in their daily routines, and be catalyzed to adopt green building in construction to conserve natural resources.

Nature of the Study

I considered the qualitative, quantitative, and mixed methods research methodologies. I selected a qualitative methodology for this study. The qualitative method was appropriate for this study because I inquired and explained participants' responses through semistructured interviews. Quantitative researchers examine variables' relationships and test hypotheses about the relationships' significance (Cooperstein, 2017). I did not examine the relationship among variables; therefore, the quantitative method was not applicable. Mixed method studies consist of both qualitative and

quantitative methodologies (Turner, Cardinal, & Burton, 2017). Since the purpose of this study did not require a quantitative component, the mixed methods approach was not suitable for the study.

I considered the narrative, ethnography, and case study research designs for this study. I chose a multiple case study research design. In a case study design, researchers conduct an in-depth exploration of a real-life phenomenon and use multiple sources of evidence to understand a complex situation (Yin, 2018). Narrative research includes a description of the experiences of the participants in a time sequence and is not applicable to understand social constructs derived over different and separate events (Saunders, Lewis, & Thornhill, 2015). In an ethnography design, researchers describe and interpret elements of culture by assessing the behavior, language, and the values of a group (Saunders et al., 2015). Ethnography was not appropriate because I investigated the development and application of green innovative strategies and provided explanations and interpretations within a group's cultural context. I selected a case study design as the most appropriate approach for this study to understand the green innovative strategies some construction business leaders have successfully implemented to increase organizational performance.

Research Question

The research question for this study was as follows: What green innovative strategies do construction business leaders implement to increase organizational performance?

Interview Questions

1. What green innovative strategies do you use to increase organizational performance?
2. What green innovative strategies used are most effective to increase organizational performance?
3. How do you measure the effectiveness of green innovation strategies to increase organizational performance?
4. What, if any, external-oriented green innovative strategies have you adapted to keep pace with environmental changes that help to increase organizational performance?
5. What were the key challenges you encountered in implementing successful green innovative strategies to increase organizational performance?
6. How did your organization address the key challenges of implementing your successful green innovative strategies to increase organizational performance?
7. What control mechanisms are implemented for the execution and control of green innovation strategies to increase organizational performance?
8. What additional information can you share about your organization's green innovative strategies that have improved organizational performance?

Conceptual Framework

I chose Fiedler's contingency theory (CT) as the foundation theory for the conceptual framework for my study. In 1964, Fiedler theorized CT is applicable to

different styles of management because there is no one method of management that relates to situational events that include managing and implementation of organizational processes (Andersen, 2016; Fiedler, 1964). Fiedler's CT concept is appropriate to understand how the leader operates in a situation. Leaders could use CT to identify which management style could help to achieve organizational goals. Fiedler extended the model in 2006 to explore how changes in the environment—internal and external—influence the way leaders manage. CT is suitable to explore organizational performance that is contingent on leadership control, influence, and effectiveness of tasks in the organization. In CT, a researcher can use contingencies to represent any variable in the model that moderates the effect of an organizational characteristic on its performance. Researchers can use the CT model to understand how to adapt external-oriented strategies to environmental changes in the organization (Yuen & Thai, 2017). Researchers use CT to analyze leaders' effectiveness in managing, gaining competitive advantage, and increasing profits and organizational performance (McAdam, Miller, & McSorley, 2019; Wadongo & Abdel-Kader, 2014). Based on my review of the literature, I used CT as a lens for me to understand the processes through which construction business leaders develop and implement green innovative strategies to increase organizational performance.

Operational Definitions

Commercial/institutional construction: An organization that is in the business of building, selling, or leasing properties for commercial use. For example, offices, manufacturing, and retail stores (Deng & Wu, 2014).

Competitive advantage: The unique strategies organizational leaders incorporate into its organizational operations and processes that are different and cannot be substituted by its competitor to gain a superior position in the market (Kafafi, 2018).

Construction: The set of activities that involve the planning, designing, and building of project-centered structures (Okere, 2017).

Contractors: The individuals who provide the necessary resources that include materials labor, skills, equipment, and services for the construction of a project (Rui, Ismail, & Hussaini, 2015).

Green construction: The practice of creating and using more resource-efficient methods of construction aimed to reduce degradation impacts on the environment in building processes or structures. The terms “sustainable building” or “green building” are used interchangeably with this term (Darko & Chan, 2016).

Green innovation: The creation of new products and processes that have value for the consumer and supplier, with the main purpose of reducing negative environmental impacts and creating efficiency (Khaksar, Abbasnejad, Esmaeili, & Tamošaitienė, 2016).

Organizational performance: The assessment of a company’s performance and its ability to meet its goals. Performance can be measured by non-financial, financial

indicators, market growth, and internal business processes (Arfi, Hikkerova, & Sahut, 2018).

Assumptions, Limitations, and Delimitations

The concepts of assumptions, limitations, and delimitations include the scope of the research and include conditions that may affect or restrict methodology and data analysis (Gammelgaard, 2017). Research methods and basic assumptions should be aligned based on participants' attitudes towards the study (Clark & Veale, 2018).

Assumptions

Assumptions are what a researcher perceives as knowledge but may not be proven, such as circumstances a researcher cannot control (Chae-Young, 2016). I assumed that participants in this study were available for the duration of the data collection process and that the interviewees were truthful in giving information and did not respond based on what they believed I wanted to hear. I also assumed that the case study design was the most appropriate methodology for the research question. Finally, I assumed that green innovation is an essential component of construction businesses and can improve organizational performance.

Limitations

Limitations are weaknesses or hindrances that may affect the study or factors that influence the interpretations of the findings, because they are out of a researcher's control (Sherif, 2018). The research study was limited to five construction businesses in Antigua and may not reflect what is happening in other geographical locations. In qualitative

research, there is the possibility of selection bias and context analysis may not be suited for generalization (Shaw & Stalkar, 2018). To reduce this type of bias, I had participants review and verify data collected from the interview. I was the only person responsible for the processes of collecting, analyzing, interpreting information, and obtaining conclusions for the study; therefore, I took measures to reduce personal bias.

Delimitations

Delimitations are the components that define the scope or boundaries set for study (Yin, 2018). The sample population included five construction leaders in Antigua, thus narrowing the study. Focusing on specific participants is appropriate, as the widening of the population may introduce difficulty in interpreting the results. The interview method was the primary data collection in order to confine the research method and restrict the conclusions that may be inferred by data. The results of the study might not be generalizable to different industries or geographical locations because the study was focused on a specific industry and location. The situation in Antigua may not necessarily occur in another country or industry differentials might exist in construction across nations. The information of the study was collected using semistructured interviews, which were appropriate for the research design.

Significance of the Study

The construction industry contributes to economic growth in today's societies (Okere, 2017). Leaders who apply green innovation in construction require strategies and practices to create competitive advantages that lead to increased economic profit and

growth for the business (Lu, Cui, & Le, 2013). The relationship between internal and external stakeholders (managers, employees, consumers, investors, and suppliers) can help organizations to become more innovative, and increase profits and organizational performance (Hahn, Preuss, Pinkse, & Figge, 2014).

Contribution to Business Practice

Green innovation in construction supports economic development (Ali et al., 2016). Leaders who adopt green practices within the organization can reduce waste and unnecessary costs (Sim & Putuhena, 2015). Organizations that implement innovation can increase efficiency, competitiveness, and the effectiveness of cost management for increasing long-term performance (Schneider, 2015). Identifying and implementing successful green innovation strategies could also aid construction leaders to create more efficient value chains that contribute to organizations' increased productivity (Chan, Darko, & Ameyaw, 2017).

Green innovation strategies aid construction leaders to create efficient value chains that contribute to increased productivity (Chan et al., 2017). Individuals in other industries and external stakeholders in developing green building capacity may be persuaded by the findings of this study to implement green technologies that can contribute to improving organizational performance.

The findings and recommendations of this doctoral study may assist construction business leaders to become more knowledgeable and strategic about green innovation in construction. As a result, businesses can become more sustainable from enhanced

productivity and increased profits. Construction organizations could use the findings of this study to develop strategies that can help to improve the efficiency within their organizations.

Implications for Social Change

The implication for positive social change from this study is the potential to create greater awareness and understanding of successful green innovation strategies within the construction industry. In turn, citizens can be influenced to engage in green practices in their work and social environments to adopt and promote the conservation of natural resources. Results from this study may also contribute to social change by providing construction stakeholders and citizens of Antigua with both awareness and strategies, to increase energy efficient practices, the application of conservation techniques, reduction of waste, and an improvement in productivity. Construction business leaders could use information from my study to guide individuals to design, implement green innovation in projects, and develop and adopt green building in construction within the Caribbean region. Altogether, these benefits can contribute to the country's GDP, reduce dependency on natural resources, and improve environmental sustainability.

A Review of the Professional and Academic Literature

I searched for peer-reviewed articles, journals, and reports that entailed the following concepts using keywords and phrases: *green innovation, green innovation in construction, green innovation and organizational performance, innovation, eco-innovation, eco-innovation in construction, commercial construction, organizational*

performance, construction, organizational performance in construction, and *construction in the Caribbean and international countries and sustainable construction.* The majority of the search was conducted through database searches including Business Source Complete, ABI/Inform Complete, Emerald Management, SAGE, and ProQuest Central. References in dissertations with topic concepts were also searched to gain information for which journals to access. This information was collected from the Walden University Library over the past 12 months. In this study, I examined diverse theoretical perspectives that address green innovation strategies and the application to construction firms. I explored the effect of green innovation strategies on organizational performance in the construction industry.

In the review of the professional and academic literature, I discussed CT as the conceptual framework used within the study and how it is applicable to this study. I examined the views of theorists regarding how CT constructs can be analyzed and used to understand the relationship with the main themes of the study. I discussed the significance of innovation to organizations with the development of green innovation and how innovation contributes to organizational performance.

I explored how green innovation strategies contribute to organizational performance in the construction industry. I discussed the benefits of green innovation, its role, and its application in organizations. The review of literature comprised of a discussion on how green innovation contributes to organizational efficiency and improves organizational performance. Organizational performance and its measures were discussed

and related to the construction industry. Lastly, I discussed the development of the construction industry and focused on the level of development in Antigua, the premise for this research, and the connection between relevant themes that may impact organizational performance.

Analysis of the Conceptual Framework

Fiedler's (1964) CT formed the basis of the framework I used to assess how green innovation strategies contribute to organizational performance. CT is an organizational theory that ascertains there is no one specific leadership style that can be used to manage an organization (Fiedler, 1971). The CT concept emphasizes that the leader's personality and situational events determine the effectiveness of the management and implementation of organizational processes. In CT, the organizational design and subsystems must fit with the business environment (Fiedler, 1971). Researchers can use CT to examine situational events that include the application, management, and implementation of organizational processes (Marin-Idarraga & Cuartas-Marin, 2013). CT is suitable for researchers to analyze situational constructs (contingencies) that can be influenced by the changes in the environment and can influence a leader's decision. Researchers can use CT to explain the elements that represent organizational characteristics and the characteristics should be able to moderate its effects regarding performance.

CT is applicable for a researcher to assess the situation in which the leader interacts with organizational systems to achieve organizational goals (Junqueira, Dutra, Filho, & Gonzaga, 2016). Contingencies can comprise environmental uncertainties,

technology, competitive strategy, and organizational size. The fit between contingencies and structure is vital to organizational leaders achieving higher performance or organizational success. Leaders can evaluate the effective implementation of strategies on subsystems in the organization and make decisions or changes to improve competitiveness. Furthermore, leaders should consider and analyze the effect of organizational processes on their environment in terms of the contribution to organizational performance (Sayilar, 2017).

Fiedler's (1964) CT can be used to explore leaders' effectiveness to manage, increase organizational competitiveness, profits, and performance (McAdam, et al., 2019). CT suggests that organizational leaders are challenged by external conditions that should be realigned to adjust to the environment and better market opportunities. The alignment of external conditions aids organizational leaders to increase innovation levels and overall organizational performance (Karim, Carroll, & Long, 2016). Fiedler (1971) posited that the effectiveness of organizational strategies or plans depends on the attributes of the leader, members of the organization and the situation. Organizational performance can be evaluated not by the ability of a leader but how well the followers execute the task. Prasad and Junni (2017) suggested the contingency approach be used to understand a leader's influence on organizational innovativeness that could contribute to sustainable competitive advantage.

Yuen and Thai (2017) perceived that organizational environments are dynamic. Yuen and Thai (2017) discussed that contingency variables could be based on

organizational and external environmental factors. Organizational and external environmental factors can be used to influence performance, tools, and practices. Organizational leaders can develop externally oriented strategies to cope with environmental changes. Theorists Martinez (2014) and Yuen and Thai (2017) suggested that CT is used to promote corporate strategy by using a conceptual model to understand *corporate greening* as a strategic tool. Application of *corporate greening* in a model will assist organizational leaders to understand the process and relationships between green innovation, business strategies, and operations.

Prajogo (2016) found that organizational leaders can use CT to apply and assess the effectiveness of innovative strategies. Prajogo's perspective can be used to support the research phenomenon to understand how successful implementation of green innovation strategies contributes to organizational performance. The situation of the business environment determines the impact of innovative strategies on organizational performance. However, Junqueira et al. (2016) indicated that the organizational leader should adjust the organizational structure to the contingency, and then develop a strategy. Leaders can apply CT to analyze the impact of organizational strategies on operations. Leaders can monitor the effectiveness of a strategy on the organization's systems and performance (Yuen & Thai, 2017). Albu, Albu, Dumitru, & Dumitru (2015) asserted that CT is applicable for leaders to examine if there is a fit between construct variables and its implementation phase. How the fit is managed will determine the fit or impact on organizational performance.

Theory Comparison and Contrast

Alves, Jabbour, Kannan, and Jabbour (2017) emphasized that CT is applicable to organizational management. Alves et al. opined that organizational performance is contingent on the fit between organizational strategies and the organizational environment, and contended that leaders can use CT to understand organizational contingencies, divulge information, and manage uncertainties in the business environment to gain competitive advantage.

Feng, Morgan, and Rego (2017) took a similar perspective to Alves et al. (2017) on the contingency approach about understanding the dynamics of the organizational environment and how the application of CT can leaders in organizations to be more efficient in the allocation and control of organizational resources. Feng et al. (2017) perceived that market conditions could affect operation capabilities. Market conditions can influence the interaction of contingencies and change organizational dynamics, availability of resources and the achievement of organizational goals. Feng et al. developed an in-depth approach to CT to understand the effect of new contingencies and the integration of different resources and capabilities that can contribute to competitive advantage.

Yuen and Thai (2017) viewed CT from a slightly different approach instead of focusing solely on the organization's supply chain. Yuen and Thai emphasized that the supply chain could be analyzed using a contingent approach to identify and understand the complexities that occur in the supply chain. The contingent approach can be used by

leaders to analyze the impact of green innovation to increase organizational performance based on the organization's capabilities. In summary, theorists have found CT suitable to understand organizational dynamics as the constructs could measure organizational capabilities, growth, and market conditions. Using CT as a framework, I explored how green innovations influenced organizational performance.

Andrews, McDermott, and Beynon (2016) perceived that the CT concept is applicable to assess how external and internal contexts form the outcome of organizational performance. The responsiveness to changes in an organization depends on how well the organization's characteristics, design, structures, management, and decision-making style, align with the organizational strategy (Oyewobi, Windapo, Rotimi, & Jimoh, 2016). Ho (2015) opined that researchers have used CT to explore the relationship between organizational characteristics and strategies and the effects on organizational performance. In sharing similar views with Ho (2015), Junqueira et al. (2016) stated that CT can be used to analyze organizational structures. Researchers can use CT to detect the impact of green innovation strategies on organizational performance. The information gained can be used to guide organizational leaders to effectively align strategies to achieve organizational performance (Ho, 2015).

Green Innovation

According to Yang, Sun, Zhang, and Wang (2017), green innovation is a multifaceted phenomenon that can be used to study green research and development in different organizational contexts. Arfi et al. (2018) stated that green innovation can be

described and used as interchangeable with terms such as *ecological innovation, environmental innovation,* and *sustainable innovation*. Arfi et al. (2018) perceived that green innovation strategies can be used as a factor to gain competitive advantage and improve organizational performance. Arfi et al. (2018) posited that process, product, and organizations can be categorized as dimensions of green innovation. Ma, Hou, and Xin (2017) shared similar views to Arfi et al. (2018) on the elements of green innovation. Ma et al. (2017) identified green innovation as new or modified processes, techniques, systems, and products that are environmentally safe. Ma et al. claimed that green product innovation comprised of new or modified products, and green processes can be new or modified production, equipment together, or procedures that are environmentally sustainable.

Ramus (2002) took a different approach and further categorized green innovation according to the application method and potential effects. Ramus discussed that green innovation could decrease the environmental impact of an organization's operations on the environment, and purported that green innovation could help organizational leaders to develop environmentally efficient products and processes and, in turn, improve environmental sustainability.

Yang et al. (2017) argued that organizational leaders should have internal preparations for green innovation. Internal preparations would help leaders to mitigate external challenges and capitalize on market opportunities. Managers are becoming more knowledgeable about the adoption of green practices. Implementation of green

innovation in organizations require leaders to facilitate factors that include knowledge sharing, organizational culture, finance, and environmental regulations. Strategic integration of these factions within the organization can help to improve organizational performance (Leal, Cunha, & Couto, 2017).

The concept of green innovation is not much different from the generally known definition of innovation, but additionally includes the mission of decreasing the impact of environmental effects (Carrillo-Hermosilla, Del Rio, & Konnola, 2010). Davis, Gajendran, Vaughan, and Owi (2016) stated that innovation is vital to improving productivity in the construction sector. The increase in competitive markets has required organizations to change and adopt innovation processes to improve organizational performance. Organizational innovativeness can include new or changed processes, services, and products adopted by organizational leaders. Organizational leaders should be strategic in the allocation of organizational resources and partake in decisions in order to be innovative (Prasad & Junni, 2017). Prajogo (2016) asserted that organizational leaders can control or manipulate the level of innovation within the organization. Innovation strategies are effective in improving performance in certain environments. The actions of organizational leaders in organizations and involvement in innovative activities are contingent and sometimes driven by market demand and external factors (Meng & Brown, 2018). Therefore, it is pertinent that organizational leaders aim to regulate the fit and effect on performance between the organization's innovative strategies and the external environment (Prajogo, 2016). Implementation and support for

innovation strategies are easier to manage when strategies are sanctioned by leaders in the organization (Ho, Lin, & Chiang, 2009). Support for innovation can influence the implementation of green innovation.

The development of innovative strategies in an organization requires the support and reassurance of management. The resources required for the implementation of new technologies and innovative strategies require the collaboration and coordination of different departments within the organization (Meng & Brown, 2018). Organizational culture has positive effects on the company's performance. The implementation of a green strategy has become a fundamental aspect of organizational culture and necessitates a strong culture for the adoption of strategies (Rokhyadi, Haryono, & Untoro, 2015).

Innovation and organizational performance are key determinants for organizational leaders in attaining competitive advantage. When organizational leaders implement innovation, the organization can benefit from increased efficiency, productivity and become more competitive that will indivertible improve organizational performance (Huang, Wu, Lu, & Lin, 2016). Osmon, Shariff, and Lajin (2016) reiterate that innovation can improve administrative processes, increase efficiencies, and contribute to organizational performance. Kamal, Yusof, and Iranmanesh (2016) classified innovation into four categories: (a) product, (b) process, (c) technological, and (d) organizational. Innovation can be created internally or adopted by others. Adoption is considered innovation because it represents the products, services, administration, or

technical innovation adopted by organizations from their competitors. In this study, the approach to green innovation and concepts of innovation were applied similarly.

Cobo-Benita, Rodriguez-Segura, Ortiz-Marcos, and Ballesteros-Sanchez (2016) substantiated that organizational innovation, size, and cooperation (organizational characteristics) are essential for enabling the successful implementation of innovative strategies in the organization. Innovation is not limited to technology because technological innovation cannot create competitiveness without organizational innovation. Innovation can reduce rework, increase quality, lower labor costs, and increase time efficiency in construction businesses (Thornhill-Miller & Dupont, 2016). Green innovation evolves from concept innovation and likewise can influence the innovation of projects within the organization to improve performance. Green innovation activities include green technology innovation, green management innovation and green marketing innovation related to the production of goods and services (Zhaojun, Jun, Zhang, Wang, & Cao, 2017).

According to Kawai, Strange, and Zucchella (2018), organizational leaders can use green innovation to support and create new environmental processes that produce environmentally sustainable products and services. Creation of environmental products and process innovations enable organizational leaders to utilize strategic and organizational resources efficiently for competitive advantage. Theorists Kawai et al. (2018) stated that the development of green innovation strategies can help organizational leaders to focus on a holistic approach to organizational efficiency and performance.

Implementation of green strategies may require hard and soft technologies, infrastructure, and new procedures by organizational leaders. An integrative approach to research management should be considered by leaders to assist them with the management and allocation of organizational resources (Mele & Spena, 2015).

Green innovative strategies stem from the concerns of environmentalists and leaders on the integration of sustainable practices into core business strategies. Green innovation strategies can be made possible and implemented by construction leaders who must develop sustainable strategies. Construction leaders are responsible to provide the requisite resources for the implementation of green innovation strategies (Tunji-Olayeni, Mosaku, Oyeyipo, & Afolabi, 2018). Green innovation can contribute to an organization's competitiveness once strategies are developed and designed to increase organizational innovation (Oncioiu, Ifrim, Petrescu, & Bilcan, 2018).

There is increasing pressure on organizational managers to deliver environmentally friendly innovative products and services. However, information is limited on the extent environmental products and services impact organizational performance (Doran & Ryan, 2016). Ma et al. (2017) asserted that the relationship between green innovation and economic performance is inconclusive. Omar, Othman, and Jabar (2017) stated there is a need for further research on the relationship between green innovative practices and organizational performance, and how green innovative strategies can help managers achieve competitive advantage and improve overall

organizational performance. The perspectives of these researchers support the rationale for this doctoral study.

Green Innovation in Construction

Green innovation in construction is a form of sustainable construction that has benefits in energy and resource conservation. Green innovation consists of the development of new concepts, services, and developing energy efficient buildings. Energy efficient buildings are constructed with minimal environmental impact and designed to create a healthy environment for occupants (Durdyev, Zavadskas, Thurnell, Banaitis, & Ihtiyar, 2018). Green innovation is designed and developed within the organization's processes, eco-design, products, and market with the intent to contribute to competitive advantage and increase organizational performance (Sellitto, 2018).

Innovation in construction is the introduction of new procedures, processes, or technologies into construction industry operations. The globalized market, labor market challenges and advances in technology have increased the pressure on construction companies to innovate (Goodland, Lindberg, & Shorthouse, 2015). Innovation is an essential component for improving organizational productivity and progressive development in different sectors of the economy (Davis et al., 2016). Construction leaders can use innovation to reduce production costs, achieve completion times and develop the organizational brand (Kamal et al., 2016).

Some construction leaders fail to understand the importance of innovation in construction. Some construction leaders also lack the motivation to implement innovation

in construction. Although organizational leaders can use innovation to increase productivity and gain competitive advantage, it is imperative for leaders to understand innovation implementation phases (Yusof et al., 2015). Davis et al. (2016) opined that internal organizational factors and process innovation need to be developed adequately to facilitate the implementation of efficient innovation strategies. However, Davis et al. viewed that defining, conceptualizing, and assessing innovation in construction are major challenges in the construction industry.

Khaksar et al. (2016) believed that green innovation is one of the most effective factors of production in the construction industry. Organizational leaders can exploit green innovation to increase financial performance and protect the environment (Gurlek & Tuna, 2018). According to Izekova, Roy, and Murgul (2016), there is a lack of environmental protection measures in construction. Construction leaders can incorporate green construction strategies to achieve sustainable development, minimize the environmental impact of construction on the environment and create a healthy environment of individuals (Izekova et al., 2016). Improving eco-efficiency can be achieved by focusing on green practices, which can potentially improve organizational performance and serve as a competition driver. Eco-efficiency requires leaders to use technology and organizational processes to reduce resource use and environmental impact in producing goods and services (Sellitto, 2018).

An alternative point of view is that green technologies can instead yield higher production costs and create a barrier to the adoption of green technologies in construction

(Chan et al., 2017). Chan and colleagues (2017) reiterated that attitudes and behaviors from consumers, the public and awareness of environmental sustainability can influence the adoption of green technologies and strategies in construction. Green innovative strategies are the organizational processes or environmental practices that are related to green products or processes, technical improvement or new administrative practices used to improve organizational performance (Weng, Chen, & Chen, 2015). Implementation of different forms of technologies and green process innovation by leaders can help to manage waste, reduce pollution, and increase production efficiency goals (Küçükoğlu & Pinar, 2015).

Green innovation. Green innovation is the reduction in consumption of energy and pollution emission, recycling of wastes, sustainable utilization of resources, and green product designs (El-Kassar & Singh, 2017). Green innovation is the development of products and processes that are modified and include technical, managerial, marketing, organizational and operational innovations that help an organization to sustain the natural environment (Weng et al., 2015). Strategic green innovation is a driving force for sustainable development to improve organizational performance. Organizational leaders can use green to redesign production processes, products, or services to reduce pollution and increase organizational efficiency. Organizational leaders use green innovation strategies to improve the efficiency of production processes and reduce the costs of raw material and waste that can help leaders reduce production costs and create competitive advantages for an organization (Ge et al., 2018). The implementation of green supply

chain practices by organizational leaders can also create opportunities to improve organizational performance (Tabesh, Batt, & Butler, 2016).

Ofek, Akron, and Portnov (2018) stated that green innovation in construction can also be extended to strategies used in green building or construction products. Ofek et al. (2018) expounded that green constructs can improve the quality of life, energy efficiency, maintenance, and operational costs. The implementation of green practices and purchasing activities within the organization's supply chain has positively impacted a firms' environmental and financial performance. Leaders can control the cost of pollution and improve both environmental and economic performance by the application of green innovative strategies in organizational processes (Khan & Qianli, 2017). The implementation of green innovation activities can have an impact on the environment as well as the short and long-term organization's financial performance. It is important for business leaders to also manage the supply chain of the organization because proper management can improve organizational competitiveness and efficiency. Hence leaders must understand the interrelationships between stakeholders and organizational constructs (Wibowo, Handayani, & Mustikasari, 2018).

Construction leaders implement green innovation strategies to improve economic and environmental performance and achieve a competitive advantage (El-Kassar & Singh, 2017). In response to increasing environmental pressures faced by leaders, green innovation has become an important strategies tools used organizational leaders to achieve sustainable development. Successful implementation of green innovation is

contingent on an organizational leader's ability to overcome challenges associated with green development. If organizational leaders fail to align innovative goals with organizational strategy, innovation competes with different priorities and may not be effective towards organizational performance (Abdullah, Zailani, Iranmanesh, & Jayaraman, 2016).

Despite the importance and the advantages of green innovation, the participation of producers in green innovation has not been in line with expectations (Abdullah et al., 2016). There is no unanimous conclusion about the impact of corporate green innovation business performance, although there are existing empirical studies that revealed there are positive effects of corporate green innovation organizational performance (Ebrahimi & Mirbargkar, 2017). For successful green innovation implementation in construction, it is essential for organizations to encourage a green culture. When organizational leaders promote a green organizational culture, they promote the development of green innovation and the sharing of *green values* to facilitate the implementation of green innovation activities (Gurlek & Tuna, 2018).

The development of construction buildings accounts for approximately 40% of the worldwide consumption of energy (Deng & Wu, 2014). Energy efficient technologies have the potential for reducing expenses in the construction sector. Should leaders combat the mismanagement of the use of energy resources and the elimination of technological backwardness of the construction industry, construction business leaders can achieve improved energy efficiency and reduce unnecessary costs (Larionov,

Metechko, Davydov, & Davydov, 2018). Eco-innovations increase eco-efficiency for organizations and society (Ifrim, Stoenica, Petrescu, & Bilcan, 2018). Green innovation can help to solve environmental problems in construction and reduce unnecessary costs (Yuan, Guisheng, & Baogul, 2017).

Organizational leaders may implement green practices if they believe that green practices can increase finance, improve operations, and increase the organization's competitive advantage (El-Kassar & Singh, 2017). Innovation has become a driver of competitive advantage (Goodland et al., 2015). The ability to analyze constructs in the organization's environment can be examined to accommodate the creation and implementation of innovative processes (Wirtz & Daiser, 2017). Leaders can assess the organization's strengths and weaknesses and divulge information that can help to enhance efficiency, improve competitiveness, and increase profits (Christensen, Bartman, & van Bever, 2016).

Theorists Calza, Parmentola, and Tutore (2017) argued that the application of green innovation leads to reduced costs due to increased efficiency and the effective distribution of resources. Research has shown that green technologies have significant benefits such as reduced costs, minimization of waste and increased efficiency that can increase the organization's competitiveness and performance (Albort-Morant, Leal-Millan, & Capeda-Carrion, 2016). Green innovation shortens the production time of a project and reduces material costs towards improving organizational performance (Goodland et al., 2015).

However, a gap exists within the literature, as there is a small amount of conflicting evidence regarding the implications of capital and costs on green innovation within construction (Rehm & Ade, 2013). Green innovation is a new area in research and an organization's culture can impact its development. Küçükoğlu and Pinar (2018) emphasized that organizations that develop an atmosphere of green culture will lead to green innovations within the company.

Construction Development

Construction professional services include architecture, landscaping, urban planning, survey, and construction-related technology services (Ye, Lu, Flanagan, & Ye, 2018). Pocock, Steckler, and Hanzalova (2016) believed that construction projects in developing countries are regarded as unsustainable. The construction industry in developing countries has become essential for economic growth yet the industry faces a series of challenges in trying to achieve sustainability (Ganiyu, Fapohunda, & Haldenwang, 2015). Construction leaders may encounter challenges in achieving sustainable construction. These challenges may result limited knowledge on sustainable construction, skilled labor shortages, energy and resource management, adoption of digital and new technologies, regulatory changes, high costs associated with the implementation of green practices and technologies and resistance by staff to change from conventional construction practices to green practices (Yin, Laing, Leon, & Mabon, 2018).

As construction leaders strive to build sustainable businesses, organizational performance can increase competitive advantage (Arfi et al., 2018). Green innovations can reduce organizational inefficiencies and enhance the proper allocation of resources to minimize production time and reduce unnecessary costs (Calza, Parmentola, & Tutore, 2017). For the development of sustainable construction, construction business leaders should develop and implement sustainable plans, and provide requisite resources to manage the implementation of strategies (Tunji-Olayeni et al., 2018). The purpose of this qualitative case study was to explore how green innovative strategies contribute to organizational performance in construction.

From a green innovation perspective, stakeholders can influence how construction organizational leaders adopt innovation strategies (Gluch, Gustafsson, & Thuvander, 2009). Gluch, Gustafsson, and Thuvander (2009) applied the model of absorptive capacity (ACAP) to green innovation and organizational performance. Gluch et al. (2009) posited that it is important for leaders to apply theories that consider the internal knowledge management process and external knowledge exchange of the organization. Yusof, Iranmanesh, and Kamal (2015) criticized the construction industry for its characteristics of low output and value. Lack of innovation is the main reason for low productivity. Construction firms need to implement practices to successfully adopt or generate innovation to ensure growth and survival (Yusof, Iranmanesh, & Kamal, 2015).

Critical Analysis of Green Innovation, Construction, and Organizational Performance

The adoption of green technologies in the construction industry has increased because of the demand for green buildings (Chan et al., 2017). Green innovation can improve competitiveness hence the need for further research on construction processes for development in the construction industry (Huang & Chen, 2015). I applied Fiedler's (1964) contingency theory to investigate the research question.

Fiedler's (1964) contingency theory relates to situational theories that emphasize that there is no one best management style and implementation of processes in an organization (Wadongo & Abdel-Kader, 2014). The contingency theory explores the relationship between leaders and their abilities to effect change and understand the organization's environment in relation to innovative strategies that can improve performance and effectiveness to increase profits (McAdam et al., 2019).

In reference to the application of CT, theorists Mellett, Kelliher, and Harrington (2018) explored and supported CT in the application of green innovation. Mellett, Kelliher, and Harrington (2018) argued that the development of green capabilities and resources in organizations is linked to the green innovations made by organizational leaders. The above-mentioned theorists further argued that green innovative capabilities deployed and developed by organizational leaders needed organizational networking to provide access, resources, and monitoring for proper implementation of strategies and alignment with organizational goals.

Strategies can help an organization to enhance organizational improvement and achieve performance excellence (Oyewobi et al., 2015a). The decision making styles and strategies of organizational leaders influence competitive advantage and organizational performance. Fiedler (1964) conceptualized that organizational leaders should choose strategies and make decisions based on the firm's competitive strategy (Oyewobi, Windapo, & Rotimi, 2016). Leaders must engage in strategic flexibility to assess how internal organizational design variables adjust to fit with organization contingencies to monitor the relationship between variables and environmental responsiveness. Changes in organizational forms support constant adaptation and reconfiguration of organizational processes to increase efficiency within the organization (Perez-Valls, Cespedes-Lorente, & Moreno-Garcia, 2016).

According to Chen, Huang, Liu, Min, and Zhou (2018), organizational leaders tend to perceive that it is easier to formulate than implement innovation strategies. The achievement of fit between organizational culture and innovation strategy by organizational leaders determine the success of innovation strategy implementation and innovation performance. As a result, a positive organizational culture can impact the relationship between innovative strategies and organizational performance by reconciling multiple and conflicting contingencies. Organizational leaders can integrate green innovation into their products and processes to improve resource efficiency, waste reduction and resource recovery to achieve performance improvement and sustainability. When leaders identify resource alignment as a moderator that influences innovation

strategy and green innovation performance, organizational performance can improve through collaboration and mitigating impacts that arise from inter-organizational processes (Huang & Li, 2018).

Rawashdeh (2018) referred to the implementation of green activities and innovative strategies as green management. Green management includes redesigning operational and production processes, innovation and research and development (R&D) functions, energy saving technology, reduction of waste and creating environmental awareness among stakeholders. Rawashdeh reiterated that the green management concept can be recognized as a proactive environmental strategy that aims to create business performance. Rawashdeh (2018) believed that the successful implementation of green management practices using innovation can help organizational leaders increase efficiency and competitive advantage. Green innovation within the organization can help to build and develop organizational structures, corporate strategies and assess new processes that can improve organizational performance (Rawashdeh, 2018).

Organizational Performance

The evolution of sustainability has caused a change in global thinking and forced organizational leaders to examine the extent of green innovation practices and its effects on sustainable organizational performance (El-Kassar & Singh, 2017). The introduction of the concept of sustainability has embodied three main principles: environmental integrity, social equity, and economic prosperity. Sustainable principles have implications for organizational strategy and how organizations can measure performance (Omar et al.,

2017). An organization's performance is not only considered based on the quality of its product but also on its environmental characteristics as well as on society (Pipatprapa, Huang, & Huang, 2017).

Organizational performance is the efficient and effective attainment of organizational goals (Ajagbe, Cho, Udo, & Peter, 2016). There are several different criteria to determine organizational performance such as profitability, gross profit, return on asset (ROA), return on sale (ROS), growth, market share, sales growth, revenue, and operational efficiency (Ajagbe et al., 2016). Financial and non-financial measures can be used to analyze organizational performance (Serban, 2017). Organizational leaders can use non-financial measures to detect weak signals from both external and internal processes (Arena & Arnaboldi, 2014). Tabesh, Batt, and Butler (2016) defined performance as a measurement that can be assessed from multiple outcomes that include economic, environmental, and operational variables. Economic outcomes include greater profitability, increased sales, and market share and reduced costs and reduce waste (Oyewobi, Windapo, & Rotimi, 2016). Operational outcomes include cost reductions and improved quality, reduced inventory levels, increased organizational efficiency, and delivery (Tabesh et al., 2016).

Managing organizational performance requires organizational leaders to implement a control system to manage organizational strategies, policies, and feedback from the different organization levels (Oyewobi, Windapo, & Rotimi, 2015b). Leaders can monitor performance outcomes of the organization that can potentially reveal

information on the fit between organizational strategies and external systems (Titus Jr. & Anderson, 2018). Eva, Sendjaya, Prajogo, Cavanagh, & Robin (2018) stated the organizational leader must be able to manage organizational contingencies, as the leader's influence impacts how the internal fit of contingencies such as leadership, strategies, and structures impact organizational performance.

Management should consider how financial measures can be translated into financial strategies an organization can adapt to improve internal processes and improve quality (Baird & Su, 2018). Organizational leaders must constantly monitor, measure, and improve their processes if the organization is to survive in a dynamic business world. The construction industry has been criticized for low productivity and problems related to processing management (Dave, 2017). Organizational leaders are challenged with conflicting goals that require a balancing between economic growth and environmental sustainability. The balancing of economic growth and environmental sustainability can influence the performance of an organization (Hwang, Zhao, & Tan, 2015). Leaders in large organizations tend to be more traditionally inclined to invest in green R&D with the aim of contributing environmentally efficiency and sustainability towards improving organizational performance. On the contrary, SMEs have been striving to allocate their limited resources to the implementation of new environmental practices and/or to the development of green innovations (Corrocher & Solito, 2017).

Advancement of technology and increased competition has caused leaders to reconfigure organizational resources to improve performance (Aslam & Azhar, 2018).

Ajagbe et al., (2016) reiterate that a single mechanism does not measure organizational performance, and efficiency to improve performance can be achieved by an effective organizational structure that facilitates the internal and external relationship between all the organization's entities.

Baird and Su (2018) reiterated that organizational performance measures can be both non-financial and financial. The effects of performance systems in the organization can be attributed to the behavior of employees, the resources, and organizational capabilities of individuals to perform their tasks can influence non-financial performance. Financial performance can be impacted by market demand, the growth of the business and overhead cost can determine the level of organizational performance (Serban, 2017). Leonidou, Christodoulides, Kyrgidou, and Palihawadana (2017) argued that organizational performance can increase competitive advantage. Leonidou et al., (2017) opined that organizational performance can take two different forms: market and financial performance. Improvements in market performance are viewed to increase and satisfy new and existing customers and increase the organization's market share. Financial improvements are measured through the increase in profit, sales, and efficient cash flow management.

Organizational performance can be dependent on the impact and effectiveness of a leader to manage an organization (Eva, Sendjaya, Prajogo, Cavanagh, & Robin, 2018). The quality of leadership and management has an impact on the success of the organization's management practices, internal organizational processes, effective

implementation of strategies, and level of organizational productivity (Andrews et al., 2016). The leader's ability can impact organizational performance to manage and control the internal fit of leadership strategies with organizational structures and processes (Eva et al., 2018).

The construction sector faces challenges through the instability of economics, recession, and failure to adapt to the knowledge era (Leal et al., 2017). The performance of the construction industry is significant to a country's economy due to the contribution the industry makes to a country's economic growth (Chaturvedi, Thakkar, & Shankar, 2018).

In a construction organization, the internal characteristics of the organization form the foundation for leaders to achieve optimal performance (Oyewobi,Windapo, Rotimi et al., 2016). According to Yuen and Thai (2017), the decision-making style of organizational leaders directly influences the measure of organizational effectiveness. Organizational leaders can assess organizational characteristics and the extent to which organizational characteristics impact competitive strategy and organizational performance (Oyewobi, Windapo, & Rotimi, 2016). Construction leaders can increase organizational competitiveness and improve performance by reducing operating and administrative costs. Construction leaders can increase organizational performance by improving service and product quality and applying innovative solutions to their procedures and processes (Budayan, Dikmen, & Birgonul, 2014).

Globalization, climate change, the changing dynamics of the market, the advancement of technology and increased competition has necessitated that organizational leaders account for social responsibility and integrate strategies that factor both social and environmental aspects of the business and adhere to business regulations (Dedahanov, Rhee, & Yoon, 2017). The implementation of green innovative strategies contributes to the organization's financial performance (Bocquet, Le Bas, Mothe, & Poussing, 2017). To compete successfully, businesses are required to demonstrate responsiveness and product innovation while using internal and external competencies optimally (Aslam & Azhar, 2018). Technological and non-technological innovations support organizational performance by enhancing productivity and organizational growth (Bocquet et al., 2017).

Organizational leaders that implement green practices in their operations are perceived to be environmentally responsible. Organizational leaders may adopt environmental management systems to monitor the impact and regulate waste management of green innovation strategies. Leaders can create a positive public image for their organizations when integrating green practices into the organization's process. Organizational leaders that implement green purchasing practices can increase organizational performance. Leaders can attain low costs, improved quality and increase competitive performance as a result of implementing green purchasing practices (Famiyeh, Kwarteng, Astante-Darko, & Dadzie, 2018). According to Kauskale, Geipele, Zeltins, and Lecis (2017), an organization can gain economic benefits from the

implementation of green practices and innovation in construction. Organizational leaders can achieve economic benefits and increase organizational competitiveness because the implementation of green innovation can create new market opportunities, create new products, decrease operating costs, and increase organizational productivity.

Dedahanov, Rhee, and Yoon (2017) discussed that organizations require more creative and innovative ideas from employees to improve innovation performance. The integration of strategies and innovative involvement of leaders and employees can create opportunities for leaders to explore new techniques, processes, technologies, and product designs that can contribute to organizational performance (Dedahanov et al., 2017; Yang et al., 2017).

Organizational leaders strive to attain sustainable innovation in the form of green innovation is a collaborative relationship between suppliers and management. A collaborative relationship with the supplier network has performance implications for the organization (Kähkönen, Lintukangas, Ritala, & Hallikas, 2017). Sang et al., (2018) reiterate that leadership, knowledge of construction managers, and organizational capabilities, and target management is significant factors that affect green construction performance.

Implementation of green innovation contributes to organizational performance, and the inclusion of technology-based green innovation increases organizational competitiveness. To attain any aspect of improved performance, organizational leaders should assemble and integrate capabilities and resources into manageable bundles that

will aid in gaining maximum efficiency and benefits (Yang et al., 2017). Organizational leaders may not be knowledgeable of which green practices are feasible to develop or how to implement green practices to create for efficiency within the supply chain. An efficient supply chain has the potential to create economic benefits for the organization and is essential for the adoption and management of green practices (Kirchoff, Tate, & Mollenkopf, 2016).

Green product innovation is becoming more relevant to policymakers, companies, and society. The development of green innovation processes is contingent on internal and external organizational factors that can contribute to organizational performance and environmental sustainability. Internal factors that contribute to efficiency and productivity results from strategies implemented by managers to attain competitive advantage, cost reduction, improved reputation, and opportunities for innovation. Environmental regulations and market demand are external factors that drive the pursuit of green innovation by organizations to improve performance (Dangelico, 2016).

Pekovic and Rolland (2016) stated that organizational leaders can capitalize on market opportunities and sustain a competitive advantage to improve organizational performance. Leaders must concurrently integrate customer orientation and innovation strategies to improve performance (Pekovic & Rolland, 2016). Calza et al. (2017) reiterate that the implementation of green innovation may represent a challenge for companies, because it requires the acquisition of new resources and competencies. Green innovation strategies in the form of green product and process innovation can increase an

organization’s economic and social performance and reduce environmental impact through waste and cost reduction (Singjai, Winata, & Kummer, 2018).

The implementation of green innovation can minimize environmental risk reduce energy consumption, control waste management which can result in cost competitiveness and competitive advantage through product differentiation. Organizational leaders can improve performance by adopting environmental strategies that improve organizational efficiency and increase competitiveness by offering new products and services to its customers (Singjai et al., 2018).

Construction leaders can improve performance using efficient construction methods and tools and operational processes. Efficient organizational processes and economic activity lead to a production increase, lower production costs and thereby creates the prerequisites for ensuring competitiveness. The growth of products' competitiveness, in turn, helps to increase the sales volume and on this basis the growth of business profits (Mkrtchyan & Lokhova, 2017). Organizational leaders can promote business performance by advertising the organization ’s inclusion of environmental sustainability. The implementation of a green marketing strategy helps organizational leaders to enhance and improve the effectiveness of its products and services. Marketing can contribute to a positive effect on overall performance, nonfinancial performance and financial performance and innovation have a significant positive impact on performance (Wu & Lin, 2016).

The fit of an organization's supply chain can impact organizational performance. The management of supply chains can help to improve operational efficiency, responsiveness, agility, and flexibility and thereby influence the effective management of resources. The ability of the organizational leader to respond and network with stakeholders in the supply chain can improve communication and service with members of the chain, and indirectly contribute to organizational efficiency (Hallavo, 2015).

Overview of the Construction Industry

The construction industry contributes to economic development in the form of employment creation, re-distribution of income, and stimulates economic growth through inter-sectoral linkages (Durdyev et al., 2018). Construction leaders are challenged with increasing pressure to become innovative and adopt proactive environmentally sustainable strategies. Construction leaders are mandated to redesign construction processes to reduce the negative impacts of construction activities on the environment (Akadiri & Fadiya, 2013). Construction leaders need to implement green construction strategies and technologies to increase organizational innovativeness that will help in achieving sustainable goals in the construction industry (Ahn, Jung, Suh, & Jeon, 2016).

The construction industry is one of the largest consumers of environmental resources (Kauskale, Geipele, Zeltins & Lecis, 2017). The increased attention from society regarding environmental protection has influenced the corporate practices of construction firms. Some organizational leaders have been proactive in environmental management by moving towards green construction. Green construction has many known

environmental, economic, and social benefits. However, the financial benefits of the implementation of green innovation practices have not been thoroughly exploited by construction organizational leaders (Kauskale et al., 2017).

Durdyev, Zavadskas, Thurnell, Banaitis and Ihtiyar (2018) reiterated that adoption of sustainable construction practices is limited and alleged to be caused by the lack of sustainable awareness, knowledge, and reluctance by construction leaders to adopt new sustainable technologies in organizations. Ahn, Jung, Suh, and Jeon (2016) stated that green building is becoming a driving factor for the construction industry and managers in construction firms require support to develop green strategies. To achieve sustainability, in construction, green design and construction principles require organizational leaders to introduce better energy efficiency, minimize resource usage, efficiency, increase health and occupant productivity into construction processes. The management of construction organizations requires construction leaders to effectively manage the daily activities of workers in the construction company to achieve organizational goals (Stupakova, Sokolnikov, Osipenkova, & Nurgalina, 2018).

Construction organizational leaders need to lead innovation in their business according to their own situations and features. Innovation is a vital process and construction companies differ in size, main business, business scale and interests in innovation matters, company strategies. Leaders must be knowledgeable and flexible in managing innovation in organizations with diverse characteristics (Kamal, Yusof & Iranmanesh, 2016).

Construction companies should formulate sustainable construction business strategies to create a competitive advantage and remain competitive in the market to increase organizational performance (Giannoni, Alarcon, & Vera, 2017). Organizational leaders must be equipped with the necessary skills to manage and prevent the negative impact of changes in the construction industry. Changes in construction organizations are unpredictable and construction leaders must be able to adapt and implement strategies to maximize profits (Serpell & Diaz, 2016).

Organizational leaders need to integrate sustainable practices into organizational structures, processes, and policies to remain competitive, increase market share and further develop new markets (Terouhid & Ries, 2016). Durdyev et al. (2018) posited that sustainable construction includes design, site planning, organizational material selection, recycling, and waste minimization. Sustainable construction practices can be considered part of organizational strategies and can have an impact on organizational performance. Construction leaders can adopt sustainable practices that include energy efficiency, waste management, conservation of natural resources, and reduction of pollutants. Leaders can engage in sustainable construction practices that can contribute to improving the health, safety, and welfare of occupants in building (Terouhid & Ries, 2016).

The construction industry is challenged from a managerial perspective. The growth of the industry in recent years now requires a sustainable approach to construction technologies and products (Hwang & Shan, 2018). A thematic approach is needed to

transform the construction industry to improve the market and competitiveness which contributes to improved quality of life for people (Mousa, 2015).

Karunasena, Rathnayake, and Senaranthne (2016) suggest there are barriers that hinder the development of the construction industry and that the application and experience of experts are not satisfactory in some circumstances. The construction industry suffers from a lack of education and training in sustainable construction practices (Pocock, Steckler, & Hanzalova, 2016). Banihashemi et al. (2017) share similar views to Pocock et al. (2016) on the lack of knowledge and formal education on sustainable construction practices from individuals in the industry.

The construction industry has encountered an increase in informal construction due to growing urbanization in many developing countries which may result in little regard for building codes and regulations (Chmutina & Rose, 2018). The limitation of advanced construction in developing countries has caused foreign scholars to determine that green innovation is an effective way to improve the environment and achieve sustainable development (Gao et al., 2018). Mkrtchyan and Lokhova (2017) stated that it is essential to develop the national construction industry by implementing innovative technologies in present society.

In Antigua and Barbuda, there are not any government policies relating to inclusive design standards, sustainable design and construction standards, national construction strategy, smart city strategy, and city resilience strategy as it relates to green building (Commonwealth association of architects, 2018). Jenkins (2014) conducted a

study in Antigua that revealed that 41% of contractors were familiar with the concept of building practices and 20% were involved in green labeled construction projects. It was found that the main challenges in establishing green building practices in construction were high-cost premiums (28.81%), lack of interest and local market demand (29.03%), lack of political support of incentives and subsidies (12.90%) and lack of local green building regulations (19.35%) (Jenkins, 2014).

Summary of the Review of Academic and Professional Literature

I explored green innovative strategies construction business leaders implement to increase organizational performance in the proposed study. In the review of the academic and professional literature, I discussed and gave a critical analysis of the main themes: *green innovation, construction,* and *organizational performance* within the context of the research question. The views of several theorists were discussed for the application of the conceptual framework chosen for the study. The main themes were then analyzed showing a relationship with the research question with a brief synopsis of construction development in Antigua was discussed as it pertains to the study.

The review of the academic and professional literature provided support and foundation for the study. The discussion of literature within the context of related topics revealed green innovation can be identified as new or modified processes that can be used for competitive advantage and organizational performance (Arfi et al., 2018). The implementation of green innovation by organizational leaders can impact organizational performance (Wibowo et al., 2018). Organizational performance can be measured

financially and non-financially (Serban, 2017). Green innovation in construction is beneficial for energy and resource conservation for enhancing organizational performance (Durdyev et al., 2018). These key elements support the need for further academic research showing the relationship with green innovation and organizational performance in the construction industry and particularly in Antigua where academic research in this field is limited.

Transition

The purpose of this qualitative multiple case study was to explore what green innovative strategies construction business leaders use to increase organizational performance. In Section 1, I explained the background of the problem, problem and purpose statement and the nature of the study. In this section, I included the research and interview question, conceptual framework, operational definitions, assumptions, limitations, delimitations, and significance of the study. Section 1 included a literature review that is organized into main themes of the research phenomenon: contingency theory, green innovation, green innovation in construction, construction development and operational performance.

In Section 2, I outlined the role of the researcher, the participants, the research method and design chosen for the study. The data collection instruments and analysis techniques are included in this section. I discussed the population and sampling techniques used for the study, and the role and ethical responsibilities of the researcher. Section 2 also included a description of how I ensured the reliability and validity of the

study findings. In Section 3, I provided a presentation of the study findings, recommendations for organizational practices, and recommendations for future research.

Section 2: The Project

In Section 2, I outlined the purpose of the study, the researcher's role in a qualitative study, the selection criteria of participants, and my research method and design. I discussed the population and sampling techniques, ethical research, my data collection instrument, data collection technique, data organization technique, and data analysis of the proposal. I also described the methods used to ensure reliability and validity to preserve the integrity of my study.

Purpose Statement

The purpose of this qualitative multiple case study was to explore the green innovative strategies that some construction business leaders implement to increase organizational performance. The targeted population of this study consisted of five construction business leaders in Antigua who have successfully implemented green innovative strategies. Construction business leaders who have successfully implemented green innovative strategies to make decisions that could potentially promote social change and enhance the country's social and economic development. Construction business leaders who use green innovation strategies could potentially decrease the dependency on natural resources while improving environmental sustainability and improving Antigua's GDP. Citizens of Antigua could become aware of energy efficient practices, apply conservation techniques of natural resources, reduce waste, improve productivity in their daily routines, and be catalyzed to adopt green building in construction to conserve natural resources.

Role of the Researcher

In qualitative research, the researcher's role is participatory, and the researcher must understand that biases can influence the outcomes of the study (Clark & Veale, 2018). I guarded myself against any personal influence and remain neutral in communication with participants. I minimized biases by adhering to an interview protocol (see Appendix A).

Data collection in qualitative research consists of processes that include defining the study, conducting the interviews, analyzing the results, and reporting findings (Gammelgaard, 2017). I participated in the research by collecting, organizing, coding data, identifying themes, and drawing conclusions. I conducted validity checks and methodological triangulation throughout the data collection processes. Researchers can use validity checks to verify and measure data to ensure factual analysis and findings to maintain research quality (Heale & Twycross, 2015). Methodological triangulation can be used to check for the accuracy and consistency of the data findings (Fusch & Ness, 2015). I used methodological triangulation to maintain the integrity and quality of my research.

Researchers should always be ethical and act with integrity for all aspects of the study, be knowledgeable and schedule participants for the study (Phillippi & Lauderdale, 2018). In this study, I ensured that I have the required knowledge and understanding of the study and involve scheduling and interviewing participants. I reviewed information

regarding conducting qualitative interviews to ensure I maintained proper interview protocols.

Researchers should not have any prior relationship with the participants of the study as it could cause a potential conflict of interest in data collection and analysis (Heale & Twycross, 2015). I did not have any prior relationships with the study participants or organizations selected for the study. As a qualitative researcher, I acted as an interviewer, moderator, and facilitator. The application of an interview protocol helps to reduce bias in the interview process and minimize discrimination or unfair treatment of participants (Saunders et al., 2015). Therefore, I used an interview protocol as a guide during the interviews (see Appendix A). In conducting the interview, I introduced myself and the purpose of the research, informed participants about recording the sessions, and I took notes. I did not exhibit any form of personal influence on participants and remain neutral by not giving any form of advice.

I reduced personal biases by using an interview protocol. Interview notes and the use of interview protocols help to ensure the validity of information (Shaw & Stalkar, 2018). I ensured ethical behavior in creating an environment of beneficence. Participants of a study should be guaranteed respect in the treatment of willingness to participate and their decisions (Belmont Report, 1979). I did not show any displeasure to the participants whether verbally or non-verbally towards participants' responses. I treated participants with fairness and did not show any biases towards participants' responses or behavior. It is important for a researcher to establish a professional relationship with the participants

and reassure them that their participation in the study is confidential (Amundsen, Msoroka, & Findsen, 2017). I gave participants an informed consent letter before the interview and address any concerns that may arise. Researchers should establish the ethical principles and protocols for use during the tenure of the research outlined in the Belmont Report (Nicolaides, 2016). I used informed consent, treated participants equally, developed interview protocols, and allowed for member checking to enhance the quality of the research.

Participants

Qualitative researchers should select participants that will help them answer their study's research question and understand the research phenomenon (Kornbluh, 2015). Researchers must establish eligibility criteria to ensure the alignment of participants with the overarching research question from the study (Yin, 2018).

The criteria for participation in the study consisted of construction business leaders or owners who are employed and serve in a leadership position with an Antiguan construction organization. Furthermore, the participants must have at least three to five years of tenure with the organization and had success in implementing green innovative strategies. I confirmed with construction leaders that implementation of green innovation is successful in the organization. I informed construction leaders that participants should have worked with the organization for a minimum of three years.

It was required that participants of the study were willing to participate and have a working knowledge of the overarching research question. Participants' willingness and

knowledge are important for the participant to provide information that is valuable to a study (see Marks, Wilkes, Blythe, & Griffiths, 2017). Researchers must initiate contact with potential organizations that could be useful for collecting information for the study (Saunders et al., 2015). I gained access to construction business leaders who were eligible to participate in the study by contacting the leader of the chosen organization for the study. I explained the purpose of the study and requested assistance from the manager/owner in identifying individuals who met the participant criteria. I asked the organizational leader for the prospective participants' contact information.

The qualitative researcher should provide the participants with information about the purpose of the study and indicate the type of access required to collect the necessary data (see Saunders et al., 2015). I identified potential participants in the construction organizations directly and informed them of the purpose of the research and the extent to which participant involvement was required. The development of the relationship between a researcher and participants facilitates the interview process and allows for follow up questions and member checking (see Kirilova & Karcher, 2017). Member checking helps a researcher to reduce personal bias and supports accurate participants' responses (see Kornbluh, 2015). The relationship between the researcher and the participant can help participants to overcome concerns of trustworthiness and granting of access to participants by organization leaders. When individuals realize that they are relevant contributors, they tend to be more motivated and are inclined to participate in research (see Kristensen & Ravn, 2015). Participants' ability to provide information

would help the researcher to explore the research phenomenon. Developing a relationship with participants should encourage them to engage in the research process and be forthcoming in providing information.

Research Method and Design

Research Method

Research is the systematic and rigorous process of inquiry which is used to describe phenomena and to develop and test explanatory concepts and theories (McCusker, & Gunaydin, 2015). Research may be either quantitative or qualitative (Rutberg & Bouikidis, 2018). The qualitative method suited the purpose of this study because the nature of the questions was exploratory; I explored green innovative strategies that construction business leaders use to increase organizational performance.

Qualitative researchers desire to understand the aspects and experiences of social life (McCusker & Gunaydin, 2015). The qualitative researcher has a range of flexibility to use different approaches and data collection techniques to understand a phenomenon and can examine the phenomenon with '*why,*' '*what,*' or '*how*' questions that can be used with interrogative strategies to get in-depth information (Barnham, 2015).

Qualitative researchers are interested in understanding the interpretations and assumptions that people experience daily (Roger et al., 2018). The qualitative research approach consists of a mechanism for researchers to explore participants' experience as it involves uncovering the emotional and symbolic dimensions of the members, and can

consist of in-depth interviews, observation, and focus groups to collect and leverage data into quality improvement studies (Rosenthal, 2016).

The quantitative research method was not appropriate for my study. Researchers use the quantitative method to describe a topic, use statistics, generalize, or casual inferences and test a theory (Guetterman, Fetters, & Creswell, 2015). The qualitative approach relies on numbers and accuracy. Quantitative methods are suited for researchers that seek to test hypotheses and include experimental, quasi-experimental and non-experimental approaches (Rutberg & Bouikidis, 2018)

Quantitative methodology is suited for researchers studying explanatory questions to identify how many, how much, or the relationship between research variables to quantify and validate statistics of results (McCusker & Gunaydin, 2015). I did not use hypothesis testing, and therefore, the quantitative approach was not suitable to obtain an in-depth view of participants' experiences.

Mixed method studies consist of both qualitative and quantitative methodologies (Turner et al., 2017). Quantitative researchers examine relationships and tests hypothesis (Cooperstein, 2017). Quantitative data is a component of a mixed method study (Yin, 2018). I did not examine the relationship between variables; therefore, the quantitative method was not applicable. The purpose of this study was to explore and not to examine the implementation of green innovative strategies. I did not use a quantitative component. Therefore, mixed methods was not suitable for this study.

Research Design

The purpose of my research was to explore how green innovative strategies increase organizational performance by using a multiple case study approach. Qualitative designs are case study, narrative research, phenomenology, and ethnography (see Polit & Beck, 2014). Researchers can use the case study approach to perform an in-depth investigation of contemporary events with the purpose of solving practical problems (Yin, 2018). I used the research question and supportive literature to explore a business issue. Narrative research, phenomenology, and ethnography designs were not suitable for the study.

Researchers use narrative research designs to describe the experiences of the participant in a time sequence (Barabasch, 2018; Polit & Beck, 2014). Narrative research is not applicable for a researcher to understand social constructs derived over different and separate events (Saunders et al., 2015). Narrative research was not appropriate for this study because I did not describe the experiences of participants and assessed social constructs over a period of time.

Researchers apply phenomenology design to explore participants' perspectives and experiences of an event or phenomenon and gain insight into social and cultural issues (Finlay & Elander, 2016; Schmidt, 2005). Phenomenology design is subjective and based on the participants' emotions and experiences (Fusch & Ness, 2015). I did not explore participants' perspectives to gain insight into social and cultural issues. Therefore, a phenomenology design was not suitable for the study.

Researchers use an ethnography design to describe and interpret elements of culture by assessing the behavior, language, and values of a group (Haight, 2018; Polit & Beck, 2014). Ethnography researchers use theoretical explanations and the interpretation of cultural context (Saunders et al., 2015). Ethnography was not appropriate for this study because I did not assess any aspect of cultural context.

I conducted a multiple case study. Researchers use case studies to explore participants' experiences to understand a research phenomenon and to ask open-ended questions and apply data saturation to the results (Yin, 2018). Qualitative researchers can use case study design for the interaction of theory and attaining data saturation, as well as use archival data to support conclusions (Yin, 2018). I explored the interaction of theory and used data saturation and archival data for my study. Therefore, a case study was suitable for this research.

In a qualitative case study, data saturation occurs when no new information emerges from the data collection process (Fusch & Ness, 2015). The validity and quality of the research require that the researcher achieve data saturation (Colombo, Froning, Garcìa & Vandelli, 2016; Lowe et al., 2018). After interviewing five construction business leaders, once no new information emerged during the interview process, I assumed data saturation. I ensured data saturation by creating themes from the information for the interview, member checking and making notes.

Population and Sampling

The population comprised of construction business leaders in construction businesses in Antigua who have successfully implemented green innovative strategies to increase organizational performance. I used the non-random purposive sampling method for the study. Purposive sampling is appropriate when a researcher intends to identify the specific characteristics or attributes of participants (Chandani et al., 2017). Nonrandom purposive sampling, also referred to as judgment sampling, relies on the judgment of a researcher for selecting the participants of the study (Jones et al., 2016). Researchers can use purposive sampling to maximize the chances of seeking information on specific cases for the phenomena of interest and avoid confounding effects (Serra, Psarra, & O'Brien, 2018).

I selected five construction business leaders who have successfully implemented green innovative strategies in Antiguan construction organizations to conduct the research. A case study should comprise of multiple cases to ensure data saturation (Yin, 2018). The sample size in qualitative research should range between 5-50 participants (Martino, Elvira, & Louzada, 2017). Saunders et al. (2015) contended that for a non-probability sample that is semi-structured and involves in-depth interviews, the sample size should range from 5-25 participants. The appropriate sample size is necessary to help a researcher obtain data saturation (Sim, Saunders, Waterfield, & Kingstone, 2018). The sample size should not be too small or too large to make data analysis difficult (Saunders & Townsend, 2016).

Researchers assume data saturation when participants' responses reveal no new information (Colombo et al., 2016; Fusch & Ness, 2015). I achieved data saturation when participants' responses revealed no new information. I monitored participants' responses during the interview for the consistency of themes. Data saturation can be achieved by checking for consistency of themes during the interview process and the replication of codes and themes from participants (Saunders et al., 2015). Failure of a researcher to achieve data saturation may influence the content validity of the findings and impact research quality (Fusch & Ness, 2015).

I explained the content of the interview to participants to assist in selecting a location that was most comfortable for the participant. A setting selected by the participant may have fewer distractions (Regalla, 2016). Researchers must be sensitive to the needs of research participants from the beginning until the completion of the research (Roberts, 2015). Qualitative interviews comprise of free-flowing interchange between a researcher and the participant (Saunders & Townsend, 2016). Therefore, participants may prefer an environment that is private and with limited distraction (Dawson, Hartwig, Brimbal, & Denisenkov, 2017).

Researchers may encounter challenges in gaining access to participants. Researchers should choose participants who are knowledgeable about the research question. The willingness of participants to engage and cooperate in the interview is essential for data collection and the quality of the research (Lancaster, 2017). Researchers should be aware of the unconscious bias that may be revealed in internal language and

can influence misinterpretations or misconceptions by the participant and impact the quality of the research (Chamberlain, 2016). Therefore, I refrained from having any input, coercion, or suggestive body language towards participants.

Ethical Research

An ethical researcher seeks informed consent of participants. Informed consent is a requirement for most research transactions (Grady, 2015). Informed consent is a form of agreement between a researcher and a participant (Smalley et al., 2015). Participants should easily understand the language of an informed consent form and should sign without any coercion or undue influence (Manti & Licari, 2018). I informed participants that the interview would be confidential, private and of their rights as participants in the study. I informed the participants that participation was voluntary and that they could withdraw from the interview at any time. The informed process builds trust and consideration protection for all participants (Smalley et al., 2015). The informed consent form contains the rights, privacy, and confidentiality given to participants in a study (Carter et al., 2015). The informed consent includes information on the rights, privacy, and confidentiality of participants. Further, informed consent includes information about the nature and freedom of participants to decline or withdraw at any time during the interview process. Privacy is the ability to control the records and sharing of personal information with others and potential risks of participation (Corbie-Smith et al., 2018). Participants were required to sign an informed consent form before the interview process.

A participant's involvement can be involuntary or voluntary (Grady, 2015). I explained to interviewees that their participation is voluntary, and they are free to withdraw at any time. Researchers should inform participants of any incentives for participating in the study (Grech, 2018). I did not provide any incentives to encourage or gain access to the participants of the study.

For confidentiality, participants should remain anonymous, and data collected during the research interview would be secured for a minimum of five years (Carter et al., 2015). Participants must be aware of what will happen to their data once study participation is complete (Corbie-Smith et al., 2018). I collected the data by visiting the participants at their offices or a location convenient to them. After formal introductions for the interview, I informed the participant about consent criteria and the confidentiality protocols before recording. I notified the participants that the interview was audio-recorded and secured using passwords for five years minimum. Participants were asked to not mention names or divulge that could identify them or the business. I identified the participants as Participant 1, 2, 3, etc.

I adhered to all regulations stipulated by the institutional review board (IRB) and Walden University. Participants received an informed consent form prior to the beginning of the interview. The informed consent included: (a) an invitation to consent, (b) details of the interview process and voluntary nature of the study, (c) benefit of the key in the study, (d) confidentiality, and (e) a statement of consent. The IRB reviewed and approved

the Proposal and consent document on April 24, 2020. The IRB approval number 04-25-19-0540173.

Data Collection Instruments

The researcher interacts with participants to develop an understanding of a research phenomenon from the perspective of those who experience them (Khankeh, Ranjbar, Khorasani-Zavareh, Zargham-Boroujeni, & Johansson, 2015). Qualitative researchers act as the primary data collection instrument (Abdalla, Oliveira, Azevedo, & Gonzalez, 2018). There are six possible data collection techniques: direct observation, interviews, participation-observation, archival records, documents, and physical artifacts that can be used to collect evidence in a case study (Yin, 2018). I was the primary data collection instrument.

Semistructured interviews require a researcher to engage the participant in in-depth conversations guided by the participant's perception, opinions, and experiences (Cridland, Jones, Caputi, & Magee, 2015). I followed the stipulated requirements of Walden University by first providing the informed consent, then using an interview protocol (Appendix A), and reminding participants that all data will be confidential. I selected a location suited to the participant. I introduced myself to the participant and gave the purpose of the research. During the interview, I refrained from any form of researcher bias and asked follow-up questions when necessary. I informed the participant that participation was voluntary and could cease at any time. After the interview, I thanked the participants and scheduled a follow-up for a member-checking interview. I

conducted the interview using open-ended questions (see Appendix B) and I audio recorded the face-to-face interview with my tape recorder and used the voice recorder on my mobile phone as a backup device.

I interviewed five participants. I used member checking and triangulation to verify the accuracy of data with participants. Member checking helps researchers to ensure research quality (Birt, Scott, Cavers, Campbell, & Walter, 2016). Member checking allows a researcher to validate the interpretation of the information collected by the interviewer (Yin, 2018). Triangulation ensures the accuracy and credibility of data and is used to minimize bias when multiple sources are applied to show the consistency of data findings (Fusch & Ness, 2015). A researcher can implement validity check measures such as triangulation, consistency, and replication to reduce the probability of systematic bias and false inferences (Zyphur & Pierides, 2017). I used triangulation in the study to ensure the validity and consistency of data findings. I analyzed the data from multiple perspectives and using different data sources on the research topic to gain perspectives and cross-validate research data.

Member checking is a method used to verify information or the accuracy of research analysis. The participants will review and validate the information collected by the researcher during the interview (Morse, 2015). Qualitative researchers can maintain integrity, trustworthiness, and rigor in research by member checking using information from transcribed interviews (Stewart, Gapp, & Harwood, 2017). I applied member checking as a method of reviewing accuracy in which the participants reviewed the

information collected to ensure that my interpretation of their responses was correct. Participants validate the credibility of qualitative data and results. The member checking process allows a researcher to confirm the accuracy of data and results with the participant. This strategy controls or corrects subjective bias by a researcher (Smith & McGannon, 2018). Member checking helps a researcher to ensure research quality and reliability as the participant is engaged in reviewing a researcher's work (Harvey, 2015).

Data Collection Technique

Qualitative researchers focus on the representation of topics discussed in interviews. Interviews are an appropriate technique for qualitative researchers (Roulston, 2016). Interviews are a key source of case study evidence because most case studies involve human actions (Yin, 2018). I used a semistructured interview for the data collection technique.

Researchers use the semistructured interview approach to make the interview less rigid, and more comfortable for participants (Yin, 2018). The interviews involve having a set of guiding questions that will keep the interview on track (Wilson, 2016). Face-to-face interviews allow a researcher to observe the interview subject, which could reveal further information. Interviews help to establish a relationship of trust between the interviewer, and the interviewee, the flow of conversation is easier to manage, and interviewees can respond in their terms (Potter, 2018). Researchers can obtain an understanding of participants' experiences, perceptions, and knowledge from an in-depth conversation and follow up probes (Rosenthal, 2016).

The semistructured interview has disadvantages because a researcher can contribute bias to the research. Researcher bias can occur by the tone or non-verbal behavior of the interviewer and influence the way the interviewee responds to questions (Saunders et al., 2015). Researcher error can occur because a researcher can also create bias through misinterpretation of responses. The semistructured interview and subsequent analysis of the data can be time-consuming (Darmayanti, Simatupang, & Rudito, 2018). To minimize biases in the study, I engaged in a member checking process with the interviewees. To facilitate validity and member checking, the interviewer must record the conversation and transcript the audio files for further analysis (Rosenthal, 2016). Recording of interviews should have the participants consent (Harvey, 2015). The disadvantages were minimized by adhering to the interview protocol found in Appendix A and by conducting a pilot study

After IRB approval, I conducted the interviews for the study. At the start of the interview, I introduced myself to the participant. I reminded the participant that participation is voluntary; the respondent can stop at any time and I scheduled a follow-up meeting for the member checking process. I informed the participant that I will be audio-taping and taking notes during the interview session. I used an audio recorder and a notebook for the recording of the data from the interviewee. I used my smartphone to record the interview as back up.

Member-checks were conducted to allow the participants to review their responses and make the necessary changes as needed. Member checking is a technique

used to explore the credibility of results. It involves returning the interview transcript to participants and a member check interview using the interview transcript data (Birt et al., 2016).

During the research process, validity checks can be conducted to verify and measure data to ensure factual analysis and finding to maintain quality (Heale & Twycross, 2015). Triangulation can be used to confirm data credibility and reveal inaccuracies during the research process. The use of triangulation improves the research quality because it enables a researcher to understand the depth and complexities associated with the research from multiple perspectives (Gibson, 2017). The use of triangulation limits personal and methodological biases and increases the accuracy of findings (Abdalla, Oliveira, Azevedo, & Gonzalez, 2018).

Researchers have the responsibility of using proper and justified research methods and validation techniques to ensure that the information reported is factual, attained by ethical standards and supported by theoretical data (Morse, 2015). I was reflective of my data collection. According to Clark and Veale (2018), qualitative researchers should engage in reflective and interpretive thinking to assess the research phenomenon accurately.

Data Organization Technique

The data collection process in academic research requires data management by the researcher. Researcher data is an asset that should be managed to sustain its value (Higman & Pinfield, 2015). I used a notebook to collect data submitted by participants

during the interview and as a reflective journal. I recorded all interviews with an audio recorder and my smartphone as a backup. I kept hard copies of interview notes and recording of interviews as well as transcribed documentation of interviews in its original format. I will maintain and secure the original data for five years. A researcher must adhere to the data retention policy of the university (Briney, Goben, & Zilinski, 2015).

Researchers can ensure data is secured for a minimum of 5 years (Walshe et al., 2016). I stored hard copies in a physical folder and locked storage. Electronic copies of files and audio are stored on my computer which is password protected and on a USB flash drive with encryption. Proper securing of data helps to maintain the university stipulated data policies for securing data.

I used NVivo 12 for Windows to record, code and analyze data. Houghton et al. (2017) recommended that qualitative researchers use data analysis software to assist in analyzing data and ensuring the quality of the research analysis.

Coding and organization of data are key components of the qualitative researcher (Yin, 2018). I coded and analyzed the information gathered from participants. I used thematic analysis to code data. Thematic analysis can be used to identify themes or patterns for analysis related to the research question for further exploration (Saunders et al., 2015). Researchers can use NVivo to record, manage, identify themes, collate, and analyze data, thereby saving time and enhancing the validity of the study's findings (Kim, Tang, & Bosselman, 2018).

I treated all information confidentially, identifying participants as participant 1, participant 2, participant 3, participant 4, and participant 5 to protect confidentiality. Participants will be identified and labeled as mentioned on both audio and transcribed data. The use of labels protects the privacy and anonymity of participants and makes it easier for a researcher to identify data (Morse & Coulehan, 2015). After a minimum of five years, I will shred all interview notes and research data, delete all audio recordings, and destroy data storage devices.

Data Analysis

Data analysis is significant within qualitative research as an interpretation by researchers can influence the results of the research (Mayer, 2015). I used triangulation as my approach in this qualitative study. Mayer (2015) defined triangulation as the use of more than one approach to investigate a research phenomenon to enhance reliability and validity in research findings. Qualitative researchers can use triangulation to combine both methods and collection of sources of qualitative and quantitative data as well as different methods for data analysis. Researchers can use triangulation to examine the phenomenon from multiple perspectives and widen understanding of the matter among different researchers making new and deeper dimensions possible (Abdalla et al., 2018).

Triangulation limits personal and methodological biases, and increases the accuracy of findings (Abdalla et al., 2018). Researchers can implement validity check measures such as triangulation, consistency, and replication to reduce the probability of systematic bias and false inferences (Zyphur & Pierides, 2017). A rigorous approach to

the qualitative process aids a researcher to minimize bias and adds to the trustworthiness of data (Maher, Hadfield, Hutchings, & de Eyto, 2018).

Yin (2018) stated that there are four types of triangulation: data, investigator, theory, and methodological triangulation. I used methodological triangulation for this case study. Methodological triangulation is the use of multiple data collection techniques to collect comprehensive information to answer a research question (Kihn & Ihantola, 2015). I used interview and peer reviews within the review of the academic and professional literature as the two data sources for the study. Multiple sources of evidence help to strengthen the quality of a case study as various sources complement each other (Yin, 2018). The selection of a variety of data helps to facilitate triangulation and validation of the results (Kihn & Ihantola, 2015).

Researchers must sort and compile data in a systematic and methodological approach (Yin, 2018). I analysed the data. I listened to and record responses. I identified, labeled, and categorized themes. I identified the connection between themes and then re-examined themes and tabulate themes. I reviewed files from the interview and member check interview notes. I wrote the findings of the study.

I transcribed all the information given by the participants. I ensured that the data collected is free from bias and influence. Qualitative researchers must minimize and disclose their assumptions and biases while collecting, coding, and sorting qualitative data to acquire an accurate representation of the phenomenon or topic. Coding is the term

used to describe the transitional process between data collection and data analysis (Clark & Veale, 2018).

I used thematic analysis to analyze data for the study. Thematic analysis involves observing, coding, and recording patterns in the data (Castleberry & Nolen, 2018). I used NVivo to code and organize themes into categories. Researchers can use NVivo can be used to identify, code themes to achieve thematic saturation. Thematic saturation occurs when no new themes emerge (Lowe, Norris, Farris, & Babbage, 2018). After the data collection process, I conducted a member checking interview with participants. I checked if the results from the analysis were consistent with the research question and the contingency theory within the conceptual framework.

Reliability and Validity

Reliability

Qualitative researchers are required to provide adequate information on research design and assessment of quality in academic studies. Research quality can be evaluated by examining the study against criteria that include reliability, dependability, credibility, confirmability, and transferability of the research (Moon et al., 2016). Sinclair et al. (2018) reiterate that conducting effective qualitative research is critical to ensure that instruments used in data collection possess adequate content validity. I used reliability, transferability, and confirmability to assess the validity of the research.

Reliability. Researchers and scholars use reliability to ascertain the quality of the study (Yin, 2018). Reliability is the consistency of analytical procedures and research

methods that may influence findings. The findings of the study must be repeatable (Noble & Smith, 2015). I used triangulation via semistructured interviews with respondents and multiple sources of data to ensure reliability. The interview questions were reviewed and checked for ambiguity and biases. I achieved reliability when there was consistency with the instruments used for measuring results. Qualitative researchers should transcribe all interviews to ensure the quality of the data for research analysis and conduct member checking with participants (Rosenthal, 2016). I used NVivo software to collect, manage and analyze data from the interview sessions.

Dependability. Researchers achieve dependability when data remains consistent and reliable with the documented research findings and processes (Morse, 2015). Korstjens and Moser (2018) stated dependability is the stability of the results over time, which are supported by participants' interpretation and evaluation of the study. I achieved dependability by recording interview notes and practicing reflexivity during the research. Reflexivity aids in self-reflective practices by a researcher to minimize potential biases that can influence the study (Cypress, 2017). I engaged in a member checking process with participants because member checking can be used to enhance the reliability of findings.

Validity

Researchers use validity to refer to data accuracy and consistency of data with other researchers, and truthfulness with scientific findings (Cypress, 2017). Morse (2015) defined validity as the degree to which inferences made in a study are accurate and

supported with theoretical literature. According to Yin (2018), to build trustworthiness and credibility in research, a researcher should be transparent, orderly, and truthful in data collection. The trustworthiness or rigor of a study is the degree of confidence in data, interpretations, and methods used in a study (Connelly, 2016). Researchers use literature-based peer-reviewed sources to warrant validity (Joslin & Müller, 2016). To ensure validity, I applied triangulation techniques, peer-reviewed literature, and data sources within the study. I used content validity by comparing the perspectives of different theorists and how these views relate to the themes of the study.

Credibility. Researchers demonstrate credibility by using methodological triangulation, using multiple sources of data and member checking to determine if findings reflect participants' experiences (Liao & Hitchcock, 2018; Moon, Brewer, Januchowski-Hartley, Adams, & Blackman, 2016). I used methodological triangulation and had the participants' member check interview notes to ensure credibility. Yin (2018) stated that triangulation is a validity strategy that strengthens the credibility of a study.

Transferability. Researchers base the transferability of the results on how well the findings of the study can be transferred from the study sample (Moon et al., 2016). Transferability is the extent that results from qualitative research are transferrable to other contexts or settings with other respondents (Gill, Gill, D., & Roulet, 2018; Korstjens & Moser, 2018). To achieve transferability, I provided a detailed description of the context, selection, and characteristics of participants that includes basic information and their role within the organization and expertise in the topic area. I implemented transferability by

leaving for the reader and future researchers to determine how the study can relate to other studies.

Confirmability. Researchers demonstrate confirmability when the findings of the study are consistent, link to conclusions and are replicable (Korstjens & Moser, 2018; Morse, 2015). Qualitative researchers can keep detailed notes of all decisions and analysis to achieve confirmability (Connelly, 2016). I ensured confirmability by using member checked interview notes. I provided a detail description of the methodology used in the research. To ensure confirmability, I discussed the measures of triangulation used for the study and an audit trail.

Data saturation. Researchers demonstrate data saturation when there is no new or additional information (Colombo et al., 2016). Data saturation can be used to support the conclusions of the research (Lowe et al., 2018). To ensure data saturation, I used a sample size of five, and I concluded the interview when there was no new information. I conducted member checks with participants and used an interview protocol in addition to an audio recording of participants' responses. I used these methods to monitor data saturation. Fusch and Ness (2015) argued that data saturation could vary for research studies. I achieved data saturation with the initial five participants when I received no new information from the research participants. Researchers can use data saturation to strengthen the reliability and validity of the study and enhance research quality (Fusch & Ness, 2015).

Transition and Summary

In Section 2, I restated the purpose of the proposal, defined the role of the researcher, and provided a description of the participants of the research. I outlined the research method and design and described the population and sampling of the proposal and the ethical researcher. The research question and conceptual framework formed the basis for the data procedures in Section 2. I discussed the data collection instrument, technique, and analysis including the instruments that were used to collect data and the application of NVivo. Last, I described how I achieved the reliability and validity of the findings as they related to my study.

In Section 3, I presented the results from the information collected and the analysis of data. I discussed how the findings from the study apply to professional practice and implications for social change. I provided recommendations for actions and further research. Finally, I included my reflections and conclusions for the case study.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this qualitative multiple case study was to explore green innovation strategies that construction business leaders implement to increase organizational performance. To explore the research phenomenon, I conducted semistructured interviews (see Appendix B) with five construction organizational leaders at different construction organizations located in Antigua.

The emergent themes of the study were (a) innovative research design, (b) collaboration, (c) leader involvement, (d) education, and (e) green marketing. I selected adult participants who were 18 years and older, employed in the construction industry within the last five years, and have implemented green innovation in construction projects to participate in the study.

I supported manual data analysis with the application of Nvivo 12. I kept a reflective journal with observation and notes from the interview and triangulated the data from the study. A researcher can use triangulation to reduce bias and false inferences (Zyphur & Pierides, 2017). I applied data triangulation by cross-referencing the information from the interview transcripts, journal notes, and theoretical literature. Abdalla et al. (2018) stated that a researcher can use triangulation to mitigate personal and methodological bias to enhance the validity of the findings. I based the discussions of the findings on the review of the conceptual framework and thematic analysis from the review of the literature review. In this section, I discuss how the findings can be applied

to confirm, disconfirm, or extended knowledge with other peer-reviewed studies from the literature review. I conclude the section with a discussion of the application to professional practice, implications for social change, recommendations for further research, reflections, and conclusions.

Presentation of the Findings

The research question was: What green innovative strategies do construction business leaders implement to increase organizational performance? I conducted semistructured interviews with five participants. I adhered to the interview protocol, which included obtaining consent, and engaged the participants in an icebreaker question. I collected my data by asking eight open-ended questions. All interviews were conducted in private locations specified by the participants. I took my own notes during the interviews, typed, and engaged participants in member checking. Researchers can validate the data with participants using member checking this process (see Birt et al., 2016). After the in-depth review and analysis of the collected data, five themes emerged, as summarized in the following paragraphs.

The participants of the research engaged in implementing different types of green innovative strategies within their organization. Participant 1 commented, “we implement this such as energy modeling, looking at site orientation, water conservation, indoor air quality, sourcing materials and that sort of thing.” Participant 2 said, “we have employed a new method in construction which is called Innova panel installation.” This was an application of green innovation.

Participant 3 emphasized, “The owner is an environmentalist” which explained the overall involvement and drive of green innovative strategies within the organization. The organizational leader (P3) commented, “the development of green is taken into consideration with the structure of the organization and organizational processes and services provided.” Participant 3 mentioned, “the organization is moving towards using solar energy throughout the entire property.”

Participant 4 responded, “we also implement some level of solar panels in most of the homes to reduce fuel consumption. A lot of our generators are solar powered as opposed to using fuel consumption. The upfront cost of obtaining these products may be more, it tapers out over time like fuel efficiency.” Participant 4 acknowledged, “we are still behind in green construction technology and renewable energy production. There is a challenge in converting present structures to adapt to any aspect of green innovation due to the original design.”

Participant 5 said, “we use green innovative strategies to improve our products and make them more environmentally viable. Green innovation should be factored into designs but recognize that there are challenges in creating these types of design spaces in Antigua.” Participant 5 reiterated, “we are a little detached from innovation here in Antigua, and opportunities for persons to get certified are not done here. So they may have to travel overseas. There is little development in the main construction of projects from the past. Some construction individuals tend to be set in their ways.” The

participants of the study implemented diverse green innovative strategies to increase organizational performance.

Theme 1: Innovative Research Design

Themes and findings. From the discussion with participants, it was evident that construction leaders engaged in management strategies, integrated new technologies, and conducted follow checks when implementing green or any new initiative. Sfakianaki (2015) opinioned construction leaders in developing countries effectively manage resources, learn, and incorporate new technologies. All participants discussed the design was a significant factor in their ability to incorporate any form of green innovation or technology into the construction process and building of structures. Suwartha et al. (2018) contended that management, design, and technology are vital to organizational growth and successful completion of construction projects. Construction leaders use innovative research design to implement green innovative strategies. Construction organizational leaders can introduce green innovation and contribute to the development of green technologies within their organizations. Green innovation can be implemented in the form of product innovation and green process innovation (Tang, Walsh, Lerner, Fitza, & Li, 2018).

Participant 1 stated, “we would implement knowledge-based criteria that persons gain from courses such as LEED and WELL into our daily operations and our business operations, and our designs of structures and so on. So, we implement this such as energy modeling, looking at site orientation, water conservation, indoor air quality, sourcing

materials." The participant affirmed, "you need a comprehensive and proactive approach" for the development of the construction industry.

Participant 2 said, "We use Innova panels to build, it takes us fewer panels to use than timber. It takes a shorter time to install. That helps us to be more efficient in terms of our speed of production. We are using less of our natural resources and more innovative green strategies make it more efficient." Participant 2 mentioned overall time projects were reduced using green materials and solar energy. Participant 2 commented, "we save money, we use less labor (men) are required and not much material is needed if we would have used wood."

The construction industry requires organizational leaders who can implement project management and improve the efficient use of resources and innovative strategies for sustainability (Uvarova, Belyaeva, Kankhva, & Vlasenko, 2016). Participant 2 used an innovative approach to the materials used for construction the other participants did not. Participant 2 stated, "we use Innova panels to build, it takes us fewer panes to use than timber." Participant 3 mentioned the organization uses biodegradable wood in their construction projects in the design of the buildings. Participant 3 commented, "innovative strategies are implemented in the design of the building. The materials they used was biodegradable. It's all wood, roof shingles, the wood came from South America."

Participant 4 mentioned the organization uses a different type of concrete in the building. Participant 4 said, "we use fiberized concrete is stronger and impact resistant which involves the use of natural materials." Participant 4 shared that the organization

constructed buildings foster natural ventilation. Natural ventilation is factored into the design of construction projects. In addition, participant 4 revealed they protect the environment by not using beach sand, to reduce beach erosion. Sand is imported from other Caribbean countries.

Participant 5, similarly to Participant 4 emphasized in building, “the design of projects is factored and constructed to promote natural airflow reduces electrical consumption from having to use air conditioners.” Organizational leaders, Participants 2, 3, 4 and 5 all mentioned they used solar energy in different projects. Within the organizations and in some housing projects, inverter units were used as opposed to air conditioners. The participants highlighted inverter units process energy differently and were more energy efficient thus reducing fuel consumption resulting in electricity cost savings.

Participant 5 commented the organizational leaders were hesitant to adopt solar energy “it is a cost to invest, especially with government policy.” All participants at some point during the interview mentioned the high costs involved with solar energy and the local perception that implementation of green innovative strategies or processes in construction is expensive. Construction leaders are known to be reluctant to implement environmentally sustainable processes because of the initial cost (see Hwang et al., 2015).

Findings and literature. Rivera and Kashiwagi (2016) opined construction organizational leaders are challenged with financial goals, scheduling, and customer

needs in addition to the turbulent changes in the environment. Construction leaders can benefit from increasing their management skills. To remain competitive construction business leaders must revise efficient management strategies (Parker, Parsons, & Isharyanto, 2015). From the data analysis, it is evident although organizational leaders used green materials and implemented green innovative strategies in construction. There are limitations to the development of green innovative strategies in construction in Antigua.

Construction business leaders are challenged with implementing innovative ways of managing issues related to the design production and maintenance of construction processes (Donofrio, 2015). Construction leaders need to be involved and engage architects and contractors in innovative processes or implementation of materials, services, and technologies (Herazo & Lizarralde, 2015). Innovation is a stimulating factor for organizational growth and performance (Marin-Idarraga & Cuartas, 2016; Olaniyi & Redolf, 2015).

Green innovation has an impact on both environmental and organizational performance. Organizational leaders can use innovative designs as a guide to implementing new processes and products (Silva & Merino, 2017; Weng et al., 2015). The organization's innovative research design strategy must integrate with management strategies and organizational goals (Uvarova et al., 2016).

Shurrab, Hussain, and Khan (2019) discussed initial costs for sustainable buildings are more than ordinary buildings. It is expected that organizational leaders

using innovative research designs and implementing a green construction framework will improve economic performance and competitiveness, thereby improving organizational performance. The implementation of green innovative strategies in construction can help to reduce environmental degradation by reductions in air emissions, effluent waste, solid waste, and toxic material consumption (Shurrab et al., 2019).

Financial and nonfinancial attributes of organizational performance were revealed from this study of the leaders' use of innovative research designs to implement green innovative strategies. Participant 3 said, "operational costs are reduced by implementing green innovations. We reduce water and electricity consumption from implementing recycling and monitoring checks." Participant 4 mentioned it was the strategies they used contributed to overall organizational performance. Participant 4 commented, "We have realized the fiberized concrete is most effective, and it limits our cost as opposed to using heavy steel equipment. It is not much more expensive when you do a dollar to dollar comparison of purchasing materials overseas. Material wise, there is not much difference in the cost. Locally, you can gain with labor. Projects are completed faster and the labor cost is less."

Participant 5 said, "it is not easy to measure or identify profit from the green innovative strategies implemented. When you can say we reduce our electricity by .271 per unit over this period of time, we are saving. It's a long term goal or process. The solar energy is beneficial as my APUA bills are approximately 20% lower utilizing these measures."

Relation of the theme to the conceptual framework. I used CT to understand how the adoption of internal and external strategies influenced organizational performance. Yuen and Thai (2017) viewed CT can be used to understand the processes through which leaders develop and implement strategies to increase organizational performance. The theme reinforces the application of CT as the construction business leaders who participated in the study explained how they used organizational elements to moderate performance. The participants implemented green technologies based on their knowledge. Participant 2 utilized innovative materials. All the participants implemented innovative strategies from the inception of the design process of construction projects.

The implementation of innovative research design and strategies contributed to increased reduced costs, organizational efficiency, competitiveness, and improved organizational performance. Sayilar (2017) reiterated the CT can be used to evaluate the strategies leaders implement to improve competitiveness. The ability of the participants' effectiveness to apply innovative design, manage, implement, and control organizational tasks contributed to the organization's performance. The strategic applications implemented by the participants reinforce McAdam, Miller and McSorley's (2019) perception of CT and its applicability for leaders to analyze the effectiveness to manage, gain competitive advantage, increase profits, and organizational performance. The theme of innovative research and design from this study aligns well with Fiedler's 2006 extension of CT.

Findings to the literature on effective business practice. The findings of this study suggest that construction business leaders can use green innovative strategies to increase organizational performance. From the results of the data, I confirmed the implementation of green innovation strategies can improve both non-financial and financial variables of organizational performance. Tabesh, et al. (2016) opined operational outcomes can increase organizational efficiency, reduce costs, and improve quality. Arfi et al. (2018) viewed organizational performance can be measured by the internal business process, market growth, and both financial and non-financial variables. The views of Arfi et al. support the information shared by participants of this study - both financial and non-financial variables can measure organizational performance.

Organizational performance is not only assessed on a quality product, but the benefits the organization's environmental characteristics on society (Pipatprapa et al., 2017). The involvement and collaboration of the participants with their employees' support Baird and Su's (2018) perspective management influence, resource allocation, and organizational capabilities can influence organizational performance.

Theme 2: Collaboration

Themes and findings. The participants of this research had an ongoing collaborative relationship with employees from the inception of the implementation of green strategies. Leaders collaborated frequently with their employees, stakeholders, and members of the organization's supply chain. Participant 1 said, "the approach we take is generally about enhancing the human resource capacity within the company." Participant

2 responded, “we create team leaders. We as management train supervisors who then train the other employees.”

Participant 3 mentioned staff participated in collaborative discussions regarding resource usage. The organization collaborated with experts in the industry. It was mentioned to create this type of organizational culture, organizational leaders had to motivate their staff. Employee motivation was found to be a significant factor as staff became involved in the implementation process and it helped to increase productivity. Participant 3 said, “Staff partakes in collaboration with making decisions regarding resource usage. Staff motivation is important. It helps in terms of productivity. The staff becomes motivated when they are involved.”

Participant 4 commented, “We also partner with APUA [Antigua Public Utilities Authority] for the information on particulars about solar panels we would need to determine the size for our homes and how the solar panels can be utilized for maximum efficiency.” Participant 5 mentioned, “the organization is involved in environmental clean-ups of beaches and charity work is done in the community schools. Employees are involved. There is a lot of training and education for staff. Activities are arranged with the staff.”

Findings and literature. Jin, Fawcett, Fawcett, and Swanson (2019) reiterated organizational leaders can improve their ability to create new or improved products from collaboration with environmental partners. Collaboration with environmental partners can assist organizational leaders to implement strategies that will help them to achieve

competitive advantage. Bidabadi, Hosseinalipour, Hamidizadeh, and Mohebifar (2016) discussed collaboration is a vital factor for organizational leaders to increase sustainability in construction.

Matthews, Love, Mewburn, Stobaus, and Ramanayaka (2018) stated collaboration helps organizational leaders to harness knowledge, capabilities, and technical abilities to achieve organizational goals. Matthews et al. (2018) opined in construction, ineffective collaboration and communication have impeded performance and productivity. A leader's attainment of organizational performance requires the collaboration of all supply chain members (Melander, 2017). Collaboration with organizational leaders helps to guide the leaders to ensure alignment of organizational strategies and design processes with supply chain members are synchronized with organizational goals (Pero, Moretto, Bottani, & Bigliardi, 2017).

Boton and Forgues (2017) opined in the construction industry, the supply chain consists of different organizational members. Zheng (2018) showed collaboration is essential for organizational leaders in the project implementation process. Zheng (2018) viewed collaboration can help to minimize conflicts may hinder the implementation process. Meng (2019) opined construction management can be more effective if construction organizational leaders integrate collaboration when implementing practices or strategies. The promotion of a collaborative culture by organizational leaders facilitate innovation and innovation implementation (Tuurnas, Stenwall, Virtanen, Pekkola, & Kurkela, 2019).

Collaboration with construction stakeholders in the country impacted the implementation of green innovation in construction. Participants 3 and 5 highlighted government policies make it difficult to manufacture solar energy on a large scale. Participant 3 commented “there are some legislative hurdles here in Antigua. It is not legal for one to go to the way of the solar farm without legal permission. Government policies are inconsistent. Whilst the government talks about sustainability, you cannot just come off the government grid for electricity.” Participant 5 claimed “it can become difficult if you want to manufacture solar energy for the entire property because of the costs associated and government policy. The government has been a major challenge.” Both participants mentioned the costs attached to the generation of solar energy was a hindrance to operating the entire business on solar energy.

Relation of the theme to conceptual framework. The theme of collaboration relates to CT to identify how management style could help to achieve organizational goals. Andersen (2016) opined CT could be used by leaders to situational events include management and implementation of the organizational process can contribute to organizational performance. The participants' collaboration with employees contributed to the effective implementation and monitoring of green innovative strategies in the organization.

Collaboration assisted managers in making decisions would guide what type of strategies to be implemented and be able to receive information on the effectiveness of green innovation strategies. The application of collaboration by the participants supports

Andersen (2016) that CT can be used to explore the management strategies that can use to achieve organizational goals. CT can be used by organizational leaders to understand the leader's interaction and influence on organizational tasks could contribute to competitive advantage (Prasad & Junni, 2017).

Findings to the literature on effective business practice. The findings of the study revealed the usage of collaboration by the participants contributed to the effective implementation of green innovation strategies and organizational performance. Construction leaders can increase organizational performance through collaboration and training programs (Parker et al., 2015). Green collaboration with stakeholders can assist organizational leaders to manage supply chains, improve economic performance, and increase organizational productivity (Melander, 2017).

The participants' interaction with employees assisted in making decisions and implementing green innovative strategies contributed to the achievement of organizational goals and improved organizational performance. The promotion of a collaborative culture by organizational leaders can influence innovative capabilities can contribute to organizational leaders increasing organizational competitiveness and performance (Butt, Naaranoja, & Savolainen, 2016). Collaboration is vital for construction business leaders to manage organizational processes (Boton & Forgues, 2017).

Theme 3: Leaders Involvement

Themes and findings. The participants of the study emphasized the importance of working with employees to achieve organizational goals. Organizational leaders engaged in planning, collaboration, and training with employees. Participants referred to the establishment of teams within their organizations. Participant 1 mentioned “we would implement knowledge-based criteria persons gain from courses such as LEED and WELL into our daily operations, business operations, and designs of our structures. Participant 2 commented “we created team leaders. We as management trained supervisors who then trained the other employees.” Participant 2 said, “ I use time, cost and the ‘activity network’ in construction.”

Participant 3 said, “organizational leaders lead by example to motivate employees to participate and become involved in the implementation process.” Participant 3 mentioned “management considered employees as the greatest asset to the organization and viewed training and motivation as important elements. “Training and having managers lead by example. Once employees see you doing it, it helps to motivate them. You must motivate people. The people are considered the greatest asset so management values staff.” Participant 4 commented on their involvement in the construction process. “We are using a sort of prefabricated molding system. We also use fiberized concrete.” We also implement some level of solar panels in most of the homes to reduce fuel consumption.

Participant 5 mentioned the teams were created, and individuals worked together to implement green innovative strategies. “I have a team. For organizational performance is how we implement green practices.” Participant 5 concluded “we use green innovative strategies to improve our products and make them more environmentally viable.”

Findings and literature. Participants operated with the teamwork approach. Organizational performance is dependent on organizational involvement and how strategies are implemented to achieve organizational efficiency (Parker et al., 2015). Participants 2, 3, 4, and 5 provided training for employees to assist with the implementation of green innovation strategies. According to Engle, Lopez, Gormley, Chan, Charns, and Lukas (2017), organizational leaders must be involved and committed to innovation implementation. Engle et al. (2017) reiterate training is necessary for the implementation of innovation and employees should be given the requisite tools to implement innovative practices. The participants' involvement with employees, creation, and training of teams within their organization contributed to organizational efficiency and performance. Kissi, Ahadzie, and Cobbinah (2015) noted organizational leaders who want to remain competitive within the construction industry must apply management strategies to increase organizational efficiency.

Construction managers can implement management strategies to monitor budget control, ensure quality assurance, and maximize the efficiency of human resources (Parker et al., 2015). Shet, Patil, and Chandawarkar (2019) stated organizational leaders should focus on developing employee competencies. Organizational performances can be

influenced by organizational effectiveness is dependent on leadership competencies, management, internal, and external factors of the organization (Feng et al., 2017).

Relation of the theme to conceptual framework. The leaders of all organizations were involved and engaged in strategic planning, collaboration, and communication with employees for the implementation and control of green innovation strategies. Organizational leaders apply the contingency approach when internal and external factors are assessed and implemented for organizational efficiency (Ozan, Tokel, & Cakmak, 2017). It was evident from the participants that leaders' involvement impacted the implementation of green innovative strategies and organizational performance.

The participants of the study facilitated a working environment that supported knowledge sharing. The participants' involvement and influence contributed to the effectiveness of the implementation of green innovative strategies and an increase in organizational performance. The actions of the construction organizational leaders aligned with CT and support the views of Feng et al. (2017) that organizational leaders should increase knowledge capabilities and coordinate organizational contingencies to achieve competitive advantage and increase organizational performance. CT is applicable to the implementation of teams by the participants increased organizational efficiency and enhance organizational competitiveness.

Sayilar (2017) viewed the fit of organizational contingencies can be used to evaluate the effectiveness of implemented strategies to improve competitiveness. The

implementation of organizational processes by the participants aligned with the concept of CT how the leader relates to situational events include managing and implementation organizational processes can influence the organizational characteristic of performance (Andersen, 2016).

Findings to the literature on effective business practice. Vidal, Campdesuner, Rodriguez, and Vivar (2017) opined organizational leaders require a process of influence is important for the attainment of organizational performance. Participants of the study were involved with the management and implementation of green innovation strategies in the organizations. Participants monitored the effectiveness of the strategies implemented and how the strategies impacted organizational performance.

Ortiz, Pellicer, and Molenaar (2019) stated construction organizational leaders should evaluate contingencies to effectively manage resources of construction processes. (Alves et al., 2017) stated organizational leaders must understand organizational changes and be able to implement strategies, control, and monitor the results for increased organizational performance. The abilities of a leader have an impact on the successful implementation of organizational strategies, can improve the resource utilization of organizational resources, and contribute to increased organizational performance (Song, Fisher, & Kwoh, 2019).

Theme 4: Education

Themes and findings. All the participants highlighted the need for all construction leaders and citizens to be more aware of the different types of green

innovation can be implemented during construction projects. The participants of the study revealed in the construction industry, only one person on the island was Leadership in Energy and Environment (LEED) certified. The participants mentioned they were involved in some aspect of education and training with employees on green innovation or environmental education. It was evident the organizational leaders supported education and training within their organizations.

Participant 1 mentioned “the approach we take is generally about enhancing the human resource capacity within the company. Continuing education. It’s one thing to learn about these strategies and technologies the best practices but businesspersons sometimes underestimate or have continual development on the update of technology and best practices and knowledge. So, the industry is changing. You must change with it and understand what out there you can use to make sure your organization is performing above standard. Persons need to be aware of green innovation, research, what is happening, training, opportunities, new ways and technologies of doing things and implement back into their home base.”

Participant 1 commented “customers should be made aware of the costs associated with building green and explained why it is financially viable in the long-term. Client awareness is needed as knowledge about green construction practices is limited.” Participant 1 emphasized the main impression of green innovation in construction is putting solar panels on homes. “There is an increase in awareness but there needs to be more. Awareness is created through our projects. When we construct buildings, we

encourage the client to support us getting the building LEED-certified." In Antigua, there are not many persons certified with LEED training and green construction practices.

Participant 2 mentioned organizational leaders educate employees about green initiatives they could use in the construction process and train them on how to perform the related tasks. "To train employees on how to assemble wood as it was a new initiative. Instructors were brought in from Miami to train workers. Employees learned fast."

Participant 3 responded management had training sessions about green practices as the construction industry produces a lot of waste. "Management does a lot of 'green education. Training is necessary – we hire people are like-minded in conservation practices." Participant 3 informed "there is the CSR part of it – social responsibility. We do a beach clean, road clean-ups. It is sometimes challenging to get the community involved. We have to train staff twice a year on different aspects of sustainability, why it is important to preserve the environment, how it can be damaged and about waste management." Participant 3 divulged, "I would present a powerpoint presentation to educate staff on how they can implement sustainable practices Sustainability is now the way of the world." Participant 3 mentioned "profit is a factor, but it is not the only focus. Educating staff has helped to increase organizational efficiency. There is a return on investment."

Participant 4 said "we have not caught up with some technology as yet. It takes the workers some time to pick up with the changes. We are just basically leaning towards

green practices more now than before." Participant 5 responded the organization is involved with staff education and training. The human resource department educates and has an orientation with staff about green practices, strategies, and the organization's green policies. Participant 5 commented, "getting people to learn. Getting people to understand things and you have a role to play. I have to pay a consultant to come in 2-3 times a year. I organize training for my staff."

Findings and literature. The participants revealed the education of staff was necessary for the implementation of green innovation strategies. The participants emphasized there was limited information on the implementation of green innovation strategies in construction. The participants' ability to strategize and educate staff and using experts to assist in the education of green innovation implementation, contributed to increased organizational performance. Participants' involvement and ability to expose staff to green innovative strategies resulted in staff success implementing green innovation strategies to increase organizational performance.

Liao (2017) discussed organizational leaders can increase employee education on implementing green innovation strategies through environmental education. Environmental education is vital for organizational leaders to develop green business opportunities and implement green innovative strategies to increase competitiveness green marketing strategies. The participants were able to increase their organization's competitiveness.

Organizational leaders can use green education to transfer information can help individuals to make decisions and contribute to changes in the environment. Organizational leaders can use green education to introduce the development of green innovation, skills, and technology to reduce environmental degradation (Wals & Benavot, 2017). Organizational leaders who implement green projects should engage in knowledge sharing to impart knowledge and skills of green innovation strategies. The implementation of green strategies requires collaborative partnerships and is necessary for the successful implementation of green strategies (Johnson, Tilt, Ries, & Shindler, 2019).

Construction leaders are challenged to manage the negative impact of the environment related to construction. The development and implementation of environmental strategy require time and investment managers must inject into the environmental orientation of the firm (Symeou, Zyglidopoulous, & Gardberg, 2019). Construction leaders can increase organizational performance through collaboration, education, and training programs (Parker et al., 2015). The ability of the construction organizational leaders who participated in the study to understand the significance of educating employees had an impact on organizational performance.

Kousar, Sabri, Zafar, and Akhtar (2017) perceived there is a need for the development of knowledge and training in green innovation can reduce environmental degradation and improve organizational performance. Organizational leaders should help to educate staff about green innovation and how to integrate green innovation into their

organizational systems (McCoy, O'Brien, Novak, & Cavelle, 2012; Petrusha, Kozlova, & Ivanova, 2019).

Relation of the theme to conceptual framework. The theme reinforces the application of the CT to understand the leader's ability to use education as a strategy to increase organizational performance. Education of green innovative strategies increased staff knowledge, capabilities, and effectiveness to manage, implement, and control green innovation in their organizations.

The findings of the study align with CT and support Yuen and Thai (2017) view researchers can use CT to analyze how leaders adopt externally oriented strategies to environmental changes in the organization. The participants aligned and implemented green innovation strategies by educating employees to achieve organizational goals and improved organizational performance. Feng et al. (2017) stated CT can be used to guide organizational leaders to align strategies to achieve organizational performance.

Findings to the literature on effective business practice. The results confirm education contributed to the increased application of green innovation strategies contributed for increased organizational efficiency and performance. Knowledge of the implementation of green innovation is vital for organizational leaders. Organizational leaders must be able to guide, innovate, and create an innovative culture is essential for the implementation of strategies and adaptation of changes in the external environment (Galbreath, 2019).

The change from traditional to green practices in construction requires the involvement of organizational leaders and construction stakeholders to increase the sharing of knowledge skills, technologies, and education of green innovation in construction (Petrusha et al., 2019). Organizational leaders can use education to increase employees' and citizens' knowledge capacity and understanding of the implementation and benefits of green innovation. Green education cultivates awareness and promotes social change (Griswold, 2017).

Cole (2019) stated green education may be evident in construction but is limited in the general public. Educating employees would increase their knowledge capacity to understand the leader's reasons for the implementation of green innovative strategies and support the organizational leader's decision thus promoting organizational efficiency in performing organizational processes. Organizational leaders can transfer education of green innovation and green education to employees and citizens to increase awareness and understanding of green innovative strategies and its benefits in construction. Cole (2019) opined green education is necessary as consumers and occupants are seeking knowledge on resource conservation and green construction.

Theme 5: Green Marketing

Themes and findings. Participant 1 mentioned, "there needs to more awareness of green construction products and services. The implementation of green innovation with the construction of homes was mostly client-driven. The organization may not

always push for green services or implement green innovation strategies for the customer may not want to incur the costs associated with green construction services." Participant 2 said, "We use green innovation strategies within the organization and in the creation of our products." However, it was not evident this was used as a marketing strategy. Participant 3 commented "The organization is marketed as a green organization. Persons are looking for a certain product and sustainability goes with the product. It is an expense for management we do it because it is the direction of the business."

Participant 3 mentioned "the increased marketing of green products has caused customers to request the type of service as they are aware it is available." From the discussion, participant 3 revealed "there is the CSR part of it – social responsibility. We assist in community development projects," The organizational leaders contribute to the local community and school by assisting in construction projects. This shows the corporate social responsibility taken by the organization.

Participants 3 and 5 mentioned staff is trained and involved in environmental activities as well as the organization's environmental policies. This helps to promote the organization as a 'green organization'. This supports Cankaya and Sezen (2019) views interdepartmental cooperation must is needed to support internal environmental management.

Participants 3 and 5 mentioned within the organization, management educates and involve employees who participate in the implementation of green initiatives. Cankaya and Sezen (2019) also shared organizations can engage in international environment

management with the creation of its own environmental policies. Participants 3 and 5 mentioned their organizations had purchasing policies as they related to environmental management. It is evident the organizations of Participant 3 and 5 communicate regularly with members of their supply chain.

Participant 4 viewed the challenges towards green strategies were dependent on cost. “As most clients are cost-sensitive. So it is difficult selling the idea that yes some of the green technology might cost more but it would benefit more in the long run.”

Participant 5 mentioned their organization contributes to community development. The organizational leaders believe by doing so, employees and citizens are made more aware of ‘living green’. Participant 5 explained although green marketing and implementation of green innovative strategies is an expense for management, the involvement of green activities strengthens the is the direction of the business towards green construction. The organization intends to have a website to market their services and allow clients to see their environmental policies. the participant mentioned members of the supply chain are aware of the organization’s environmental policies and adhere to the policies. Participant 5 shared “we also do from a marketing aspect. There is a website and we intend to have an environmental section on it. You can see our environmental policy, our purchasing policy. There is an increase in customer demands. My clients are more aware and require these services.”

According to Wu and Lin (2016) organizations integrate green products and marketing strategies can reduce environmental degradation and promote corporate image.

An efficient supply chain has the potential to create economic benefits for the organization and is key for the managerial adoption of green practices and allocation of resources (Kirchoff et al., 2016). Green organizations should target consumers who indicate individual interest in green construction (Davari & Strutton, 2014).

Findings and literature. The participants of the study discussed implementing green innovative strategies was used to market the organization's services. Organizational leaders can implement green marketing strategies to develop innovative products and services. The implementation of green marketing strategies can enhance organizational competitiveness and create new market opportunities (Song-Turner & Polonsky, 2016). Generally, there is a need for more marketing green construction practices by construction organizations. Participants 3 and 5 conducted extensive marketing of the organization's products and services. These participants (P3 and P5) mentioned green marketing increased the organization's competitiveness and increased profits. Consumers need to be aware and educated on green products and services are available in construction. Organizations can increase competitiveness and organizational performance when they adopt good strategies and promote information to its customers (Allio, 2015). An organization's performance is not only considered based on the quality of its product but also on its environmental characteristics as well as on society (Pipatprapa et al., 2017).

Cankaya and Sezen (2019) discussed organizations can use green marketing as a promotional strategy to market their products and services will not harm the environment.

The usage of green marketing by participants increased customer awareness. Cankaya and Sezen (2019) reiterated an increase in customer awareness can contribute to the organization increasing new markets which may increase revenue in the long term and thereby contribute to organizational performance.

Sadovnikova and Pujari (2017) viewed organizational leaders should implement green strategies across all of the organization's systems. Organizational leaders who may be interested in "greening" the organization's operations can decide to allocate organizational resources to green marketing or green technology organizational systems. When organizational leaders engage in corporate social responsibility (CSR) as a part of implementing green initiatives, organizational CSR activities complements the organization's green marketing strategies.

Participants 3 and 5 mentioned promoting CSR amongst employees contributed to enhancing corporate image and increased sales. The integration of CSR and green marketing by organizational leaders improve the organization's brand image which can have a positive effect on organizational performance (Papadas, Avlontis, & Carrigan, 2017).

Relation of the theme to conceptual framework. Prajogo (2016) stated leaders can use CT to apply and assess the effectiveness of innovative strategies. CT is applicable to assess how leaders can evaluate strategies and assess their impact to improve organizational competitiveness (Sayilar, 2017). Fiedler's (2006) extension of the CT model allows leaders to analyze the effectiveness of strategies to gain competitive

advantage, increase profits and organizational performance. The results of the study align with CT as participants of the study assess the feasibility of implementing green innovative strategies. Participants' ability to implement various strategies in the organizational process, contributed to increase customer awareness and competitiveness contributed to organizational performance. Participants made changes in their organizations suited to the external environment which challenged construction leaders to minimize environmental degradation.

Findings to the literature on effective business practice. The results from the study revealed there is limited awareness of green innovation in construction. Construction business leaders should utilize green marketing strategies to persuade customers to more green construction products. Organizational leaders can use environmental education to influence employees to integrate the organization's environmental policies into its marketing strategies and increase the green marketing of its products and services. Leaders can use green marketing as an organizational strategy to attract and target new customers (Cankaya & Sezen, 2019). The implementation of green marketing strategies can enhance organizational competitiveness and create new market opportunities (Song-Turner & Polonsky, 2016).

Applications to Professional Practice

The purpose of the qualitative multiple case study was to explore green innovation strategies implemented by construction business leaders to increase organizational performance. The sample consisted of five study participants who applied

green innovation in construction. The emergent themes from the study were innovative research and design, collaboration, leader involvement, education, and green marketing apply to professional practice.

The application of implementing new designs and technologies can assist construction business leaders to manage resources more effectively and increase organizational efficiency and competitiveness (Uvarova et al., 2016). Collaboration with employees can assist construction leaders to make decisions that would contribute to the effective implementation of strategies and promote organizational efficiency (Melander, 2017). Collaboration helps organizational leaders to harness knowledge, capabilities, and technical abilities to achieve organizational performance (Matthews et al., 2018). Construction business leaders can increase efficiency by applying new designs and technologies.

Leader involvement in the implementation of green innovation strategies supports the application and successful implementation of green innovation strategies within the organization (Song et al., 2019). Construction leaders who understand green innovative strategies better can improve organizational performance, minimize waste, improve efficiency, and minimize degradation effects in the environment. Construction business leaders who are involved had the ability to manage green innovation effectively have the potential to improve organizational performance (Ortiz, Pellicer & Molenaar, 2019).

Education increases knowledge and understanding of green innovation helps to improve productivity and increase overall organizational performance (Galbreath, 2019).

Education on green innovation promotes the efficiency of organizational processes. Organizational leaders who know and involved in green innovation have the capability to create effective management strategies that can improve performance results through efficient resource allocation and innovative techniques for the successful implementation of green innovation strategies (Uvarova et al., 2016).

Construction business leaders can use green marketing to create awareness and knowledge of green products and services. A leader's application of green marketing strategies can improve the organization's competitiveness, access to new markets, and contribute to increased profits which would improve organizational performance (Song-Turner & Polonsky, 2016).

Green innovation is evolving as new technologies and materials become available to organizational leaders to mitigate environmental degradation and climate issues (Melander, 2017). It is important for leaders to understand green innovation strategies they can use to increase organizational efficiency and project outcome. I identified themes related to the green innovative strategies construction business leaders implemented to increase organizational performance. I identified the importance of the leader's involvement in the successful implementation of green innovative strategies to increase organizational performance.

The findings can serve as a guide to researchers on the application of CT as the conceptual framework for the research question. The findings support the views of Andersen (2016) that organizational leaders can use CT to explore how strategies fit and

align with organizational goals. The findings of the study are relevant to professional practice as there is limited information on the implementation and development of green innovation in construction in Antigua.

The results of the study can be applied to increase knowledge for construction business leaders. The findings can help construction organizational leaders to identify what green innovation strategies can be used to increase organizational performance. Construction business leaders in other organizations can use the findings to develop and implement green innovation strategies to improve efficiency and organizational performance.

Implications for Social Change

The results from this study could benefit the Antiguan society by promoting social change and enhance the country's social and economic development. All the participants expressed the importance of educating citizens of green innovation and utilization in their lifestyles. The results of the implementation of green innovative strategies in the study can be used to increase awareness of green innovation and validate green innovation strategies used in construction organizations and processes. Information derived from the study can contribute to the efficient implementation of green practices and decrease the dependency on natural resources.

The findings of the study may contribute to positive social change through the recommendations can lead to improving organizational practices and understanding the benefits of implementing green innovation strategies in construction. The study can

contribute to positive social change by improving environmental sustainability and contribute to the improvement of Antigua's GDP. The results of the study can contribute to positive social change and Antigua's GDP by the improvement of labor resources, increase research and development of green innovation and improved standard of living.

The results from the study could assist construction business leaders in making decisions on the implementation of green innovation strategies. Increased awareness of green innovation strategies to construction business leaders and citizens can increase energy-efficient practices, conservation techniques of natural resources, waste management, and improve productivity (Alves et al., 2017). Increased awareness of green innovation can result in the education and training of construction stakeholders of the benefits of implementing green innovation. The findings contribute to social change by supporting theoretical literature on the benefits of construction organizational leaders implementing green innovation strategies to improve long term efficiency and be a catalyst for encouraging individuals to adopt green building in construction to conserve natural resources.

Recommendations for Action

I recommend construction organizational leaders use the findings of this study to review the benefits of implementing green innovative strategies, engage in collaborative discussions, resource conservation, and green marketing and how green innovative strategies contribute to organizational performance. A need exists for increased education

on the integration and implementation of green innovations into construction organizations' business processes.

The first recommendation for action is construction business leaders can engage in promoting green innovation strategies in construction by educating employees and citizens of green innovation in construction. The second recommendation is for construction business leaders to have training seminars on environmental sustainability in construction. Training seminars would enable construction business leaders to collaborate with construction stakeholders on the implementation of green innovation technologies.

The third recommendation is for construction business leaders to integrate green innovative strategies into organizational processes. The final recommendation is to promote green marketing in construction. The promotion of green marketing in construction by organizational leaders would contribute to increased awareness of new trends or changes in green innovation in construction.

I will use several methods to disseminate the results of the study. I will share the summary of the findings with participants who can contribute or confirm their understanding of the practices construction leaders use to remain successful. Designers, architects, construction leaders, construction engineers, and project managers may benefit from the results of the study. I will publish the study through the ProQuest/UMI dissertation database for future researchers to use. Finally, I plan to present the study at academic and professional conferences and publish this and similar research in peer-reviewed journals.

Recommendations for Further Research

The purpose of this qualitative multiple case study was to explore what green innovative strategies construction business leaders implemented to increase organizational performance. The findings of the study validate past and recent literature on the research phenomenon. I recommend conducting further research expands to other Caribbean regions on how the implementation of green innovative strategies can be used to increase organizational performance. A limitation was the selection of 5 construction organizations located in Antigua.

The findings of the study include the green innovation strategies construction business leaders implement in Antigua. The focus of the study was on the geographical location of Antigua. Researchers should consider conducting further studies outside the delimited geographical boundaries of the study.

I recommend further exploration of the green innovative strategies construction business leaders implement and how it contributes to organizational performance. I used qualitative research with a multiple case study design to conduct the study. Future researchers can use alternative methodologies and designers for further research on the green innovation strategies construction business leaders implement to increase organizational performance. Future researchers can consider conducting a quantitative examination to understand the relationship between green innovation strategies and organizational performance.

Reflections

I have several reflections on my experience in the Doctor of Business Administration program. I am thankful for the opportunity to increase my academic knowledge and skills. The interactive process with peers in the discussion forums and the doctoral study have challenged me to increase my reading on new research, explore research for content, and improve my writing skills. I am more cognizant of my research skills. I was aware of personal bias and learned how to mitigate other biases that can occur during data collection and analysis.

I have learned to balance work, family responsibilities, and time for studies. Balance is essential in life (Henderson, 2018). I have realized the importance of time for self, to relax, refocus, strategize to plan, and prepare for the next step. I increased my knowledge of the construction industry, specifically on the development of green innovation in Antigua. I gained this opportunity from the construction leaders who participated in the research and had experience in this area.

During the interviews, participants shared their experiences and gave constructive suggestions for the development of the construction industry in Antigua and strategies can be used to improve organizational performance. Although I had prior knowledge of some aspects of the construction industry in Antigua, to minimize research bias, I adhered to the interview protocol.

I am extremely thankful for my peers I interacted with especially those in my doctor study completion. After completion of this study, my knowledge and passion

increased in the concept of green innovation. I did not realize the level of strategic processes organizations engage in for the implementation of green innovation strategies. I learned social change is vital for the effective implementation of green innovation strategies.

I am still uncertain on the path I may take on completion. However, I intend to incorporate and share the knowledge and skills I have gained throughout my doctoral journey.

Conclusion

The purpose of this multiple case study was to explore green innovation strategies construction business leaders implement to increase organizational performance. The information from the study may be useful to construction business leaders who plan to implement green innovative strategies into their construction process. The study revealed 5 themes. The themes were *innovation, research and design, collaboration, leader's involvement, education,* and *green marketing.* The findings of the study aligned with the conceptual framework, review of the literature and current studies.

The findings from this multiple case study confirm construction business leaders who implement green innovative strategies can increase organizational performance. The findings relate to the CT as introduced by Fiedler (1964) that the effectiveness of leaders' strategies on situational or environmental factors to manage, increase competitiveness and increase organizational performance (Yuen & Thai, 2017). Organizational leaders can use CT to assess the impact of contingencies on organizational performance.

The findings confirm construction leaders need to increase awareness of green innovation to its customers and to increase or promote knowledge sharing of green innovation. Participants of this study revealed there is limited development of green innovation in construction in Antigua. The recommendation for further studies can contribute to positive social change of construction organizational leaders and citizens in Antigua.

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Appendix A: Interview Protocol

<table>
<tr><td colspan="2">Interview Protocol</td></tr>
<tr><td>Section</td><td>Purpose</td></tr>
<tr><td>Introduction of the interviewer and setting the stage for the interview.</td><td>To review informed consent and address any concerns the interviewee may have before the interview.</td></tr>
<tr><td>Ice breaker: What do you enjoy most about your role in the organization?</td><td>To minimize the nervousness of participants and create a comfortable atmosphere for communication with the interviewer.</td></tr>
<tr><td>Interview Questions:
1. What green innovative strategies do you use to increase organizational performance?
2. What green innovative strategies used are most effective to increase organizational performance?
3. How do you measure the effectiveness of green innovation strategies to increase organizational performance?
4. What, if any, external-oriented green innovative strategies have you adapted to keep pace with environmental changes that help to increase organizational performance?
5. What were the key challenges you encountered in implementing successful green innovative strategies to increase organizational performance?
6. How did your organization address the key challenges of implementing your successful green innovative</td><td>To obtain participants perspectives on the research question ‘What green innovative strategies do construction business leaders implement to increase organizational performance?’
During the Interview:
The interviewer will:
• Paraphrase if necessary
• Probe for follow-up for more in-depth responses or follow up questions based on the participant’s responses.</td></tr>
</table>

strategies to increase organizational performance? 7. What control mechanisms are implemented for execution and control of green innovation strategies to increase organizational performance? 8. What additional information can you share about your organization's green innovative strategies that have improved organizational performance?	
Conclusion	Participants will be given the opportunity to clarify any response.
Closure of Interview and thanking participant for time and information.	The interviewer will formally close the interview.
Schedule follow-up meeting for member checking.	To give the interviewer time to produce the data collection transcript for review with the participant.

Appendix B: Interview Questions

1. What green innovative strategies do you use to increase organizational performance?
2. What green innovative strategies used are most effective to increase organizational performance?
3. How do you measure the effectiveness of green innovation strategies to increase organizational performance?
4. What, if any, external-oriented green innovative strategies have you adapted to keep pace with environmental changes that help to increase organizational performance?
5. What were the key challenges you encountered in implementing successful green innovative strategies to increase organizational performance?
6. How did your organization address the key challenges of implementing your successful green innovative strategies to increase organizational performance?
7. What control mechanisms are implemented for execution and control of green innovation strategies to increase organizational performance?
8. What additional information can you share about your organization's green innovative strategies that have improved organizational performance?