

**DIFFUSION OF RENEWABLE ENERGY TECHNOLOGY (RET):
THE EFFECTS OF ABSORPTIVE CAPACITY (ACAP) IN
CONSTRUCTION**

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Abstract

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ABSTRACT

The following study sets out to investigate the effects of theories derived from Strategic Management & Planning, Resources Based View (RBV), Social Marketing, Absorptive Capacity (ACAP), and Diffusion of Innovation (DOI) and includes the following results of the investigation. After successfully being applied in other areas, the focus of DOI has rarely been a part of the energy policy query. After three decades of their promotion through policies and incentives, only 20-25% of the diffusion of RETs potential is achievable; changes in climate, as well as consumer cost savings, have not aided in the adoption of RET. RET is changing the environment, and, as a result, construction companies across the country are jumping on the opportunity of using RET as well. The construction industry of the United States has its sights set on renewable building practices. Responsible for a large part of energy consumption, the construction company has had a role in the production of materials and in the building process itself. According to a recent study by the U.S. Department of Energy, primary energy consumption makes up 40% of the country's building sector and 19% of the worldwide energy consumption. Besides, business construction comprises approximately 90% of all power usage used during a building's lifespan. Such waste of energy extends to its operations and services (Groff, 2018).

In more detail, this paper dissects the study into three chapters. The first study focuses on a global model, which a comprehensive exploratory literature review of the theories mentioned; there were propositions in the model which we study in the future. The second study focuses on the effects of organization absorptive capacity on the adoption of RET military construction (MILCON) projects by using secondary quantitative data. Finally, the third study focuses on the effects of individual absorptive capacity on the adoption of RET innovation. There will be a series of semi-structured interviews, which will include interview questions, communication with 31 respondents, and their perceptions of the diffusion model. At the end of the analysis of interview data, a defined statement of theories will exist.

Keywords: Renewable energy sources, public acceptance, emotional intelligence, green investments.

DEDICATION

I would like to thank my parents, Irvin and Yong, my brother Dustin, as well as my two sons Ian and Terrie. My family has been influential in my motivation to continue with my education and seeking knowledge to improve the renewable energy industry. I would also like to thank my friends from Texas, Auburn University, and those that I have served together with in the United States Air Force.

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CHAPTER 1. GLOBAL RET DIFFUSION MODEL AND FUTURE

RESEARCH PROPOSALS

Introduction

Renewable Energy Industry

Large quantities of natural resources that can help consumers save money and reduce the world's carbon footprint are now available. Still left to be thoroughly researched, if both objectives above are optimistic outcomes, why has the RET diffusion rate not reached its full potential (Ellabban, 2014)? According to Apple Inc., (2018), in addressing environmental concerns, the company announced its global facilities in 43 countries, and 32 manufacturing partners have agreed to use 100 % clean energy to power production. Due to air pollutants, there have been cases of hostile environmental effects including, but not limited to, acid rain, destruction of forests, and reduced atmospheric visibility. Likewise, the emissions of greenhouse gases from fossil fuel combustion are associated with the changes in the global warming of Earth's climate (Ellabban, 2014).

Energy Savings and Reduction of the Carbon Footprint

Air pollutants, including black carbon, not only contribute to global warming but are also believed to have an immediate effect on regional climates (Ellabban, 2014). Steps to effectively avoid or minimize the environmental impacts that affect such a large portion of the electric supply could begin through the understanding of the potential of what each renewable energy source offers. Within the diffusion of RET, some sectors, including wind, solar, geothermal, biomass,

and hydropower, have quite a significant environmental impact (Ellabban, 2014). The exact type and intensity of the ecological effects differ depending on multiple factors, including geographical location and the specific technology used.

Literature Review (Exploratory)

The purpose of the comprehensive literature review is to define the pathway for Diffusion of Innovation (DOI) of Renewable Energy Technology (RET) products or intellectual property. This research utilizes the exploratory research method, also known in academia, as an exploratory literature review. According to Saunders et al., “*Exploratory research, as the name implies, intends merely to explore the research questions and does not intend to offer final and conclusive solutions to existing problems.*” This type of conducted research is to study a problem that has not been clearly defined (Saunders et al., 2008). As a practitioner or a manager in the localized industry, one breakthrough technology use is a catalyst for better-refined technology from a future innovator; however, there is no framework to help set the diffusion of RET or innovation to the next strategic or global level.

Conceptual Background

The dissemination of Renewable Energy Technology (RET) is the primary node on a theoretical network that has been adopted partially or in some cases, entirely of technologies influenced by corporations, governments, and consumers. RET diffusion is applied to determine the usefulness of this type of model in evaluating the likelihood of success of different roll-out strategies at varied levels of government.

Diffusion of Innovation Theory

Diffusion, as defined by Webster's dictionary (2018), is the state of being spread out or transmitted, especially by contact. In the context of RET, diffusion is the form of a new idea, technique, behavior, or program being put in place by various organizations. Thus, the DOI theory provides a framework for understanding how the advancements of technology spreads. In terms of RET, it means incorporating groundbreaking ideas, products, or programs that have been proven successful in RET initiatives, specifically to behavior change.

Key Concepts of the Theory

Four critical concepts of diffusion of innovations are available, according to Rogers (1995). These concepts are *innovation, communication challenges, time, and social system*.

The first element is innovation, which may include ideas, policies, practices, and products that are perceived by the individual or unit of adoption as new or relatively unique.

Communication channels are the second key concept of the theory. The concept refers to how messages spread, including through mass media, interpersonal channels, and electronic communications. Today, mass media makes people aware of the existence of said innovation, referred to as "awareness knowledge;" interactions among people can be a way that individuals evaluate. The reception that the target population will likely exhibit concerning the innovation is much dependent on how similar their views are to those promoting the changes that will come (Rogers, 1995).

The third key element is time; for the process of diffusion is not an instantaneous operation. Due to several factors, innovations diffuse through populations at different rates. The change itself can influence time. Some innovations are manufactured for quick adoption, while others may require more complicated processes. Typically, the innovation-decision process impacts the rate of diffusion. The method of time includes five stages: *knowledge, persuasion, decision, implementation, and confirmation* (Rogers, 1995). The last essential concept is the social system, which is characterized by norms concerning the social structures within the community and established patterns of communication. Communication structures can be both formal and informal; the DOI can influence by understanding group norms and leadership (Rogers, 2003).

Characteristics of Individuals

According to Rogers (1995 & 2003), there is evidence of specific characteristics present amongst people who establish a readiness to accept innovation and adopt its new features. Consumers of technology are “adopters” and as *Innovators, Early adopters, Early majority adopters, Late majority adopters, and Laggards*. The five adopter categories plotted are on a bell-shaped curve distribution.

The innovators represent a small portion of the priority population and are among the first to adopt; these individuals tend to be viewed as adventuresome, independent, and may not be those leading with opinions.

The Early adopters have reliable communication channels, are respected in the social system, and are looked at as opinion leaders. They tend to be quick in acclimating to the process.

The Early majority adopters represent approximately one-third of the priority population and are often more likely to accept innovations once others whom they respect have done so.

The late majority adopters also represent one-third of the priority population. On the contrary, they will not adopt until most people within the social system have.

The laggards are individuals that lack specific communication networks and are slow to accept change and unfamiliar with new ideas.

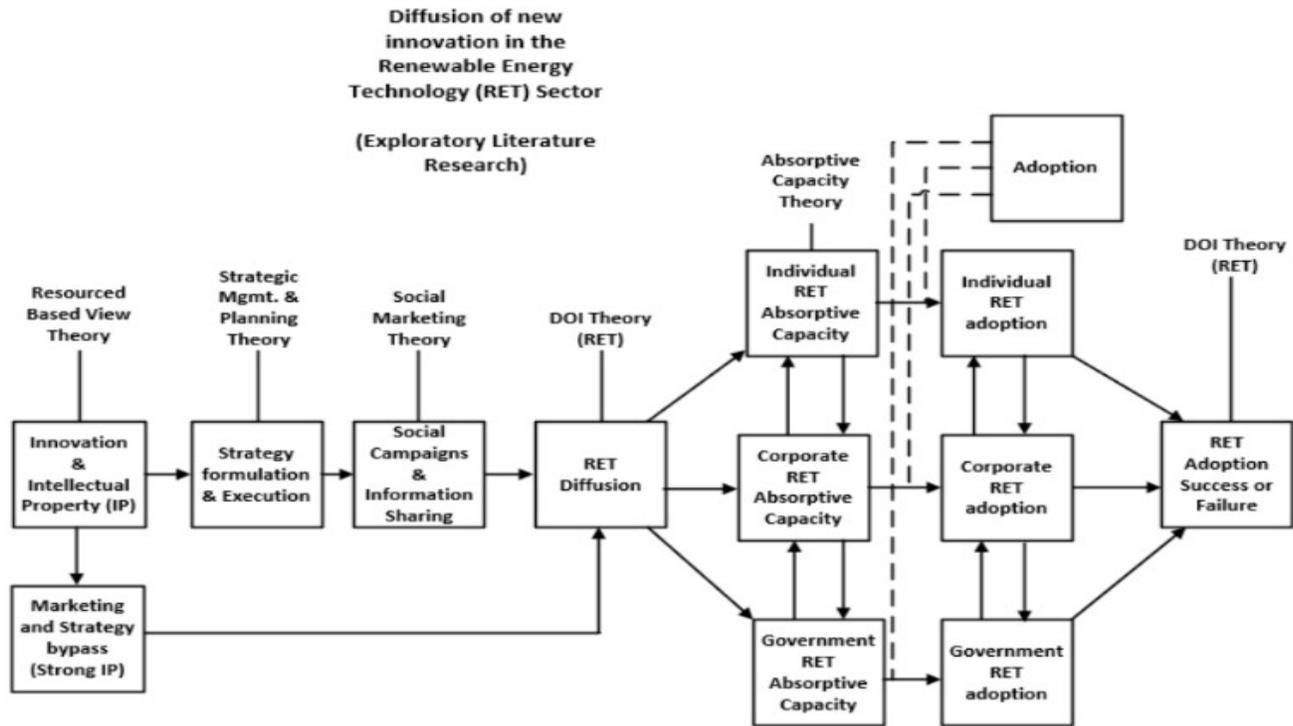
How can RET be introduced to execute 100% diffusion?

According to Gibbons (2004), a failed DOI does not mean that the technology not adopted in totality. A successful or failed spread initiated with the goal of the diffuser. For example, a sender of an email diffuses 100 emails, and their goal is to have 50% of the members read it; successful adoption applies to depend on whether at least half of the recipients read the email and, conversely, adoption is unsuccessful if it is less. The reason behind a failed diffusion can be one of many things; its weaknesses, RET innovations competition, or merely a lack of RET awareness. The process and the core capabilities needed to achieve both pre - and post - DOI in the renewable energy sector communicate through the exploratory model of its creation. The exploratory framework within the RBV, Strategic Management, and Planning, Social Marketing, DOI, and ACAP theories

represented through the causal model. The independent variables included in the model are innovation, intellectual property (IP), strategy formulation and execution, and social campaigns and information sharing. The central construct is RET diffusion, which also has a mediating effect. The secondary portion of the framework, which can cause RET diffusion success or failure, is illustrated through the causal relationship between the DOI, ACAP, and adoption.

Figure 1.

Conceptual DOI Model of RET



Research Propositions

A research proposition is, according to Cooper and Schindler (2014), a declaration about the ideas that can be real or false about observable events, the propositions, and its literature in (Table 1.) and the diffusion model in (Figure 1.) was derived from analyzing the literature.

Again, both the propositional development and conceptual model communicate both the process and the core capabilities needed to achieve pre and post DOI in the renewable energy sector. The causal model represents the conceptual framework within the RBV, Strategic Management, and Planning,

Social Marketing, DOI, and ACAP theories. The model identifies independent variables, which include innovation, intellectual property (IP), strategy formation and execution, and social campaigns and information sharing. RET diffusion is the main construct and has a mediating effect. The secondary portion of the model illustrates the causal relationship with the DOI, ACAP, and adoption, which in effect can cause RET diffusion success or failure.

The propositions featured are the presumptions from the entrepreneur about consumer's opinions of RET diffusion and the model. After the qualitative interviews and discussions, flexible pattern matching and analytics will determine if the propositions were correct or in the proximity of the presumptions.

Resources that are valuable and rare can lead to the creation of competitive advantage; the development of the first proposition discusses the causal relationship between innovation and IP within the RE sector. According to Johnstone, et al. (2010), due to high research and development (R&D), the investment in wind, solar photovoltaic, geothermal, and electricity from biomass and waste across 26 OECD (Organization for Economic Cooperation and Development) countries from 1991 to 2004 have increased. Using the PATSTAT (Worldwide Patent statistical) database, there's a comprehensive list of patents for each of these technologies throughout the world, assess the impact of technological change on investment in renewable energy capacity.

From an entrepreneur's standpoint, the consumers having innovation and resources concern could be moderate to low on their priority list. From reviewing the literature, consumers are more interested in the cost savings and environmental

concerns and not how the creation of technology. Again, we can presume that the consumer will have a moderate stance on resources (Johnstone et al., 2017).

Proposition 1: *Higher resource levels are relative to the greater competitive advantage and stronger strategic performance; we propose a (moderate) level of importance to consumers.*

Competitive advantage and diffusion can be successful if the technology introduced enforces the two characteristics mentioned previously. However, before proposition 2, we must review the bypass or acceleration of competitive RET and IP to diffusion. Research proposition 1a briefly describes the process defined in the conceptual model.

Innovative activity in RETs, as measured by patent filings, has increased significantly in recent years. Between 2006 and 2011, the annual growth rate of patent filings for four key mitigation technologies was 24%, compared to a global average of just 6% for all technology sectors, according to an earlier Global Challenges Report published by the World Intellectual Property Organization (WIPO).

Environmental innovation is largely concentrated in patents and can contribute a prominent role in the overall technology life cycle, from initial R&D and demonstration to diffusion stages, where competitive technologies can be protected with patents and licensed out to third parties with the intent to expand financial opportunity. Patent data can indicate global trends for technology transfer

(WIPO 2017). A patent granted in many countries suggests that the inventor foresees wide applicability.

A study by the OECD developed a proxy measure of technology transfer from the understanding that protection for the invention in several countries (Hascic et al., 2008). The global patenting activity is growing. World Intellectual Property Indicators reported that in 2011, the total number of patent filings worldwide exceeded 2 million for the first time, with a growth rate of 7.8% over 2010 (WIPO, 2017).

Again, from an entrepreneur's perspective, possessing a strong IP is very important for the diffusion process; however, once RET development has advanced, IP priority transitions from high to moderate for the owners. The priority level of IP is dependent on the ACAP level of the consumer and the type of disruptive capability. Again, for the practitioner, a strong IP is moderate to low on their priority listing (Lybecker, 2015; WIPO, 2017; Hascic et al., 2008).

Proposition 1a: *Patent protection and Strong IP of RET leads to accelerated diffusion; we propose a (moderate) level of importance to consumers.*

Per Cox, et al. (2012), strategic management is defined as the continuous process of determining the mission and goals of an organization within the context of its external environment and taking into account its internal strengths and weaknesses, and formulating and executing appropriate strategies in the pursuit of

attaining its goals. Additionally, the authors defined the strategy as the creation of a unique and valuable proposition, involving a different set of activities, that differentiates the firm from rivals. According to Seidel (2012), the author stated the need to pass through the process of strategic management; the competitors reach their forecast or react on changes in the market to ensure the survival or development of the RET firm.

A strategy is essential from an entrepreneur's perspective; however, for consumers, the level of strategy is not their top priority. Any endeavor before diffusion is mainly a concern for the researchers and developers. With the review of the literature and references to strategy, the presumption about the consumer's interest would be moderate to low (Cox, 2012; Seidel, 2012).

Proposition 2: *High strategy and execution will keep the organization competitive and aid in innovation; we propose a (moderate) level of importance to consumers.*

According to Bale et al. (2013), harnessing social networks for promoting the adoption of RET in the energy sector, the importance of social network influences on behavior is well recognized outside of the energy policy domain. Network interventions accelerate behavior change. In this paper, we define network interventions as persistent efforts to use social networks in the pursuit of accelerating the increase of adoption of RET in energy sectors.

By social network, we refer to all interactions that are relevant to energy either in-person or online. Network interventions have been used successfully for mitigating health-related issues; however, social network theory thus far been

under-exploited regarding energy policy. The role of social networks, network interventions, DOI of RET, behaviors, and the adoption rates of both, is a relatively new area for research (Bale et al. 2013).

The entrepreneur and consumer have affinity sharing information within the social network. From the literature and research, social network marketing has been underutilized, and the lack of marketing has lowered the adoption and ACAP levels of RET. The marketing strategy is highly influential to entrepreneurs and consumers, but the presumption of importance to consumers' needs is moderate (Bale et al. 2013).

Proposition 3: *Information sharing is a significant communication objective in the diffusion of RET; we propose a (moderate) level of importance to consumers.*

RET, no matter how advanced, is essentially useless until it is deployed and used. While the diffusion of such technologies in certain countries can mitigate the emissions caused in others that do not adopt them, a meaningful solution requires the world to embrace such technologies (Chu 2013) collectively.

ACAP at all levels is very important to the entrepreneur and the consumers. The importance of ACAP to the entrepreneur is imperative to research and RET diffusion. Diffusion can only occur if the recipient of the data has the knowledge capacity and transferability to others within their social network. From the literature reference, the presumption ACAP levels are a high priority to consumers is because the diffusion process has a positive or negative effect on their adoption;

education and awareness aid in making proper decisions of RET adoption from the individual to the national level (Chu 2013).

Proposition 4: *The diffusion of RET cannot be successful without the understanding of the DOI framework; we propose a (high) level of importance to consumers.*

According to Zahra et al. (2002), suggested that absorptive capacity is two subsets of processes:

Potential absorptive capacity, which refers to an organization's knowledge acquisition and assimilation capabilities.

Realized absorptive capacity, which focuses on knowledge transformation and exploitation. Identifying these absorptive capacity characteristics within corporate, government, and individual consumer sectors is imperative to the RET diffusion.

The inability of knowledge receivers to acquire new knowledge (low absorptive capacity) is one of the most often cited impediments to internal knowledge transfer. We argue that bypassing individuals from absorptive capacity models are incorrect and may create shortcomings in our understanding of the concept, for several reasons. First, individuals are primary actors in knowledge creation, and knowledge holders in organizations, as is agreed upon by several KBV (knowledge-based view of the firm) (Cohen and Levinthal 1990). For example, in chapter 3, the discussion will be made about the technicians, managers, and engineers of the organization. All ACAP information from any individual is essential for the process of diffusion or knowledge transfer.

Mutually, the entrepreneur and consumer should have a high affinity towards individual ACAP. The entrepreneur ultimately needs to identify which member (s) in the organization has the highest ACAP to aid in knowledge transfer. Self-knowledge reflection of RET is key to determining the strength of the individual in the diffusion of information socially through their personal or business network. From the literature reference, there is a presumption of the consumer having very high priority concerns on individual ACAP (Zahra et al., 2002; Cohen & Levinthal, 1990).

Proposition 5: *Low absorptive capacity at all levels create low knowledge transfer; we propose a (high) level of importance to consumers.*

Second, the individual level is essential, as a deeper understanding of intra-organizational knowledge processes. We argue that if the link between the organizational absorptive capacity and the intra-organizational knowledge transfer are to find at the individual level (Cohen and Levinthal 1990). Societies can create emission taxes, fiscal incentives (investment grants, tax credits, guaranteed prices for renewables), and use ethical persuasion by educating the public on social costs of using energy sources and can implement certificate trading programs (Johansson et al., 2002).

The study of individual ACAP is highly essential to entrepreneurs. For the consumer, education, experience, and knowledge assist them in understanding the cost benefits and environmental impacts RET has on them professionally and personally. Individuals are motivated to increase their understanding of RET innovation. From the reference of the literature, there is a presumption that

individual ACAP is considered a high priority on consumer's minds (Cohen & Levinthal, 1990; Johansson et al., 2002).

Proposition 5a: *An individual's absorptive capacity is the foundation of the RET diffusion; we propose a (high) level of importance to consumers.*

According to Zou et al. (2016), an organization's absorptive capacity will depend on the absorptive capacities of its members. To this extent, the development of an organization's absorptive capacity will build on prior investment in the event of its constituent, individual absorptive capacities, and, like individuals' absorptive capacities, organizational absorptive capacity will tend to develop cumulatively (Cohen et al. 1990). To understand the sources of a firm's absorptive capacity, we focus on the structure of communication between the external environment and the organization, among the subunits of the organization, and on the character and distribution of expertise within the organization (Cohen et al. 1990). The acceleration of the use of renewables includes setting targets, implementing renewable portfolio standards and certificates, and emissions trading programs. These options allow flexibility for companies to choose the way they increase the percentage of total renewables they produce and consume. Setting RET standards, such as vehicle emissions standards, ensure that companies develop cleaner technology, but also provide flexibility for their R&D (Johansson et al. 2002).

Understanding organizational ACAP is highly crucial to entrepreneurs. For the consumer, the environment in which they are employed or reside has impacts on their livelihoods. The individuals are the foundation of an organization, and enterprises must determine the ACAP levels of their employees. Organizations

are motivated by competition, innovation, resources, and cost savings, from the reference of the literature, there is a presumption that organizational ACAP is considered high on consumer priority concerns (Zou et al., 2016; Cohen et al., 1990; Johansson et al., 2002).

Proposition 5b: *The corporate or organizational RET absorptive capacity is another necessary variable needed for RET diffusion; we propose a (high) level of importance to consumers.*

Each country faces different barriers to mainstreaming renewable energy. The priority of developing nations priority is to increase energy access to all citizens while also encouraging economic development as well as sustainable lifestyles. Economies in transition must help competition in their energy markets to draw investment. Industrialized countries have established oil dependencies maintained by subsidies, corporate power, and the public's reluctance to change; encouraging competitive energy markets in all nations around the world will accelerate the use of renewables (Dechezleprêtre et al. 2011). The gap between exposure to new technologies and their diffusion, an economy must also possess an appropriate level of absorptive capacity. The ability to do basic and applied research to understand, implement, and adopt technologies arriving from other countries (Popp 2012).

In industrialized nations, which already have a saturation of investors and well-functioning markets, policies can concentrate on leveling the playing field for all competitors. Removing subsidies and internalizing the social costs of burning fossil fuels will help eliminate market price distortions.

Researching governmental or national ACAP is highly vital to entrepreneurs. The governments form policies and can mandate their citizens to utilize certain RET to aid in their strategic plan. Governments are motivated by geopolitical aspects and the priorities of their commonwealth; from literature reference, there is a presumption that governmental ACAP is considered moderate by consumer priority standards (Dechezleprêtre et al., 2011; Popp, 2012).

Proposition 5c: *The government RET absorptive capacity influences RET diffusion; we propose a (moderate) level of importance to consumers.*

According to Rogers (1995), the adoption, various reviews have conducted on the attributes of innovations most likely to affect the speed and extent of the adoption process. A substantial body of evidence is vital, including relative advantage, compatibility, complexity, trialability, and observability. The position of the corresponding attribute suggests that an innovation will only be adopted if it is better than the idea, product, or program that it replaces.

If an innovation is consistent with the users' values, norms, beliefs, and perceived needs, then it is considered compatible. Innovations that are deemed compatible tend to be more readily adopted. Innovations perceived as easy to use more readily adopted than those that are more complex, which refers to the complexity of the innovation. Innovations that can be adopted incrementally also are more likely to be adopted. The innovation on a limited basis can positively influence the adoption of an innovation. Finally, adoption increases when the benefits of an innovation are easily identified and visible to others, of which the adoption increases (Rogers, 1995).

Diffusion of RET is highly important to entrepreneurs in the industry. The governments form policies and can mandate their citizens to utilize certain RET to aid in their strategic plan. Governments are motivated by geopolitical aspects and the priorities of their commonwealth; from the literature reference, there is a presumption that diffusion of RET is considered moderate by consumer priority standards (Rogers, 1995).

Proposition 6: *Diffusion of RET has a positive effect on the adoption of innovation; we propose a (moderate) level of importance to consumers.*

According to Hyysalo et al. (2017), the most common consumer RET adoption occurs when the innovator uses its innovation. There are several outcomes from this common practice. The innovator becomes an entrepreneur, reveals RET to a company, adoption of innovation by peers, adoption through innovative adaptation by peers, and no diffusion. This adoption aligns with having a competitive RET and rare IP.

Diffusion of RET is highly important to entrepreneurs. For the diffusion process to be successful, they must research, adopt RET information, and transfer the knowledge to members. Individuals are the bedrock of knowledge transfer, and it is highly important entrepreneurs identify members and organizations with high ACAP levels. Without individual ACAP level identification, the adoption process ceases. From the literature reference, there is a presumption that the adoption of RET at the individual level is considered moderate by consumer priority standards (Hyysalo et al., 2017).

Proposition 6a: *The individual RET adoption is the foundational influencer*

to consumer adoption, we propose a (moderate) level of importance to consumers.

According to Lybecker et al. (2015), a growing number of businesses from emerging economies such as China, India, and Brazil engage in inter-company cooperation. Companies use various kinds of cooperative agreements, such as joint ventures, joint research and development, technology exchange agreements, direct minority investments, and sourcing relationships, but also restructurings to access technologies. In 2009, total global acquisitions, partnerships, and joint ventures by RE companies amounted to the sum of 33.4 billion USD (PwC 2009).

RET adoption at the organizational level is important to entrepreneurs. Organizations implement RET policies dependent on government mandates, which affect the organization. The cost efficiency and environmental regulations; affect consumers by their organizational agendas, and it's imperative to confirm or attain high RET ACAP to adapt organizational change. From the literature reference, there is a presumption that organization adoption is considered moderate by consumer priority standards (Lybecker et al.,2015).

Proposition 6b: *The corporate RET adoption is key in inter-company RET cooperation; we propose a (moderate) level of importance to consumers.*

According to Painuly, J. (2001), concerning political issues first and foremost, there should be stability and transparency in the political environment, with the notion of creating a country of a stable political atmosphere that will attract investors. Complete reform of the current policy on electricity generation and distribution to create a fair way for the entire group of stakeholders in the emerging power sectors.

Government investments: In countries where governments are major players in the energy sector, they have made national plans and strategies for the promotion of RETs. Governments have also made investments through specialized agencies created for RET development (Painuly, 2001).

Information and awareness campaigns: Several countries have initiated informative programs to promote RET. The stakeholders for such programs can be educated and supplied with the necessary tools to evaluate RETs and design implementation. The campaigns are both general in nature as well as targeting specific RET product promotion (Painuly, 2001).

Standards and regulations: Deregulation of the electricity industry to allow RE producer's access to the grid has carried out in several countries. Regulatory measures to provide a guaranteed market for RE have taken, as well as standards formulated to boost confidence in RET products (Painuly, 2001).

Environmental issues: When planning for the type of innovation for diffusion and adoption, the government should consider the environmental impacts of the technology before adoption (Painuly, 2001).

Economic and social issues: It is very appropriate to provide substantial capital for the promotion of RET, if the government has a strong desire for consumers to have access to electricity that is affordable and available. This capital should have a defined time frame to ensure efficiency improvement in RET and the enhancement of the nation's power industries. Therefore, to make electricity available to consumers, it will require the utilization of renewable energy resources in the country (Painuly, 2001).

To entrepreneurs, RET adoption at the government level has major implications with the implementation of RET policy and socioeconomic agendas; however, the entrepreneur's success or failure in the diffusion of RET is dependent on the national RE agenda. From the literature reference, there is a presumption that the diffusion of RET at the government level is considered moderate by consumer priority standards (Painuly, 2001).

Proposition 6c: *The government RET adoption has a significant influence on RET diffusion policies; we propose a (moderate) level of importance to consumers.*

Diffusion and Adoption are both main characteristics of DOI. Diffusion is the macro aspect of spreading information and knowledge, and Adoption is the micro-process of receiving data. Essentially, each component has a pre- and post-effect in the process of DOI. The DOI of RET determined by the innovation, strategy, marketing, diffusion, absorptive capacity, and adoption. Yes, there are competitive IP that can be diffused or accelerated; however, the process in the conceptual model should align for successful DOI (Popp, 2002).

RET diffusion and adoption revered to an entrepreneur as having the highest form of implications of global energy policy. The success of diffusion is dependent on the goals and plans from the individual, organizational, and national level developer. An indication of successful adoption varies on the different levels ACAP these groups or individuals possess. The adoption process is important in all aspects; however, the entrepreneur must identify the motivation of adoption and strategize accordingly. From the literature reference, there is a presumption that

RET Adoption success or failure at all levels is considered low by consumer priority standards (Popp, 2002).

Proposition 7: *A successful 100% RET diffusion does not guarantee successful adoption; we propose a (low) level of importance to consumers.*

Table 1.

Research Proposition and Literature

Research Proposition	Literature
Proposition 1: Innovation and Intellectual Property	Johnstone, N., Hascic, I., & Popp, D. (2017). Erratum to: Renewable Energy Policies and Technological Innovation: Evidence Based on Patent Counts. <i>Environmental and Resource Economics</i> , 68(2), 441-444.
Proposition 1a: <i>Marketing and Strategy Bypass</i>	Lybecker, K. and Lohse, S. (2015): Innovation and Diffusion of Green Technologies: The Role of Intellectual Property and Other Enabling Factors. <i>Global Challenges Report</i> , WIPO: Geneva.
Proposition 2: <i>Marketing</i>	Bale, Mccullen, Foxon, Rucklidge, & Gale. (2013). Harnessing social networks for promoting the adoption of energy technologies in the domestic sector. <i>Energy Policy</i> , 63(C), 833-844.
Proposition 3: <i>Strategy Formulation and Execution</i>	Cox, M., Daspit, J., McLaughlin, E., & Jones, R. (2012). Strategic Management: Is it an Academic Discipline? <i>Journal of Business Strategies</i> , 29(1), 25-42.
Proposition 4 (P3): <i>RET Diffusion</i>	Bale, Mccullen, Foxon, Rucklidge, & Gale. (2013). Harnessing social networks for promoting the adoption of energy technologies in the domestic sector. <i>Energy Policy</i> , 63(C), 833-844.
Proposition 5: <i>Absorptive Capacity</i>	Cohen, Wesley M., & Levinthal, Daniel A. (1990). Absorptive capacity: A new perspective on learning and innovation. (<i>Technology, Organizations, and Innovation</i>). <i>Administrative Science Quarterly</i> , 35(1), 128.
Proposition 5a: <i>Individual ACAP</i>	Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. <i>Academy of Management Review</i> , 27(2), 185–203.
Proposition 5b: <i>Corporate or Organizational ACAP</i>	Johnstone, N., Hascic, I., & Popp, D. (2017). Erratum to: Renewable Energy Policies and Technological Innovation: Evidence Based on Patent Counts. <i>Environmental and Resource Economics</i> , 68(2), 441-444.
Proposition 5c: <i>Governmental ACAP</i>	Popp, D. (2002): Induced Innovation and Energy Prices. <i>American Economic Review</i> 92(1), pp. 160-180
Proposition 6: <i>Adoption of RET</i>	Rogers, E. (1995). <i>Diffusion of innovations</i> (4th ed.). New York: Free Press.
Proposition 6a: <i>Individual RET Adoption</i>	Hyysalo, Johnson, & Juntunen. (2017). The diffusion of consumer innovation in sustainable energy technologies. <i>Journal of Cleaner Production</i> , 162(S), S70-S82.
Proposition 6b: <i>Corporate RET Adoption</i>	Lybecker, K. and Lohse, S. (2015): Innovation and Diffusion of Green Technologies: The Role of Intellectual Property and Other Enabling Factors. <i>Global Challenges Report</i> , WIPO: Geneva.
Proposition 6c: <i>Governmental RET Adoption</i>	Popp, D. (2002): Induced Innovation and Energy Prices. <i>American Economic Review</i> 92(1), pp. 160-180
Proposition 7: <i>RET Adoption, Success or Failure</i>	Gibbons, D (2004). "Network Structure and Innovation Ambiguity Effects on Diffusion in Dynamic Organizational Fields". <i>The Academy of Management Journal</i> . 47 (6): 947.

Research Results

Again, the researcher's conveying message, to the reader, is an exploratory framework should help execute diffusion of any technology and innovation. DOI is only successful with 100% contact with consumers or members of that industry, regardless of the adoption rate of the technology. Initially, the diffusion could confuse the audience; however, the reader should have an interest in the topic of RET for more dialogue. The top priority of new RET is the innovation and IP; however, this framework could be irrelevant dependent on the patent laws and copyright infringement rates of individual countries.

CHAPTER 2. STUDY OF ABSORPTIVE CAPACITY AND ITS EFFECTS ON THE DEPARTMENT OF DEFENSE RET CONSTRUCTION PROJECTS

(ORGANIZATIONAL ABSORPTIVE CAPACITY)

Introduction

An investigation on the effects of organizational absorptive capacity and the adoption of MILCON RET projects aided in accomplishing research by using secondary data. To reiterate, according to Gibbons (2004), a failed diffusion does not mean that the technology was not adopted; however, a failed distribution often refers to spread that does not reach or approach 100%. Failed diffusion can be due to its weaknesses, RET innovations competition, or a simple lack of RE awareness.

Again, according to Zahra et al. (2002), the author suggested that two subsets of processes make up absorptive capacity.

Potential absorptive capacity is an organization's knowledge acquisition and assimilation capabilities.

Realized absorptive capacity, on the other hand, focuses on knowledge transformation and exploitation. In this instance, there will be comparisons amongst high, medium, and low levels of absorptive capacity in the construction industry. The six variables that were validated were: Organizational position, education, funding appropriation, size of organization, R&D facilities, and R&D

personnel. The author chose both industries because of their parallel experience in the Department of Defense (DoD) construction and renewable energy industry.

Research Methodology part 1 (Quantitative)

Secondary statistical data for the six variables that were validated were: Organizational position, education, funding appropriation, size of organization, R&D facilities, and R&D personnel garnered from the following institutions:

Office of Secretary of Defense Comptroller (RET funding)

DCAA's mission is to provide the Department with uniform contract audit services, as well as accounting and financial advisory services for contracts and subcontracts for all DoD components responsible in procurement and contract administration. DCAA audited transactions in 2007 generated \$358 billion, which saved the agency \$2.4 billion (Office of Secretary of Defense, 2020).

Department of Defense Manpower Data Center (DMDC) (Manpower & Size)

Following 1974, DMDC became a world leader in the Department of Defense Identity Management, an expert in mutual information sharing and human resources collaboration. DMDC is the primary center for the identification, authentication, acceptance, and distribution of personnel records during and after the association with DoD (Defense Management Data Center, 2020).

U.S. Government Accounting Agency (GAO) (Renewable Energy Projects)

The U.S. General Accounting Office (GAO) is an autonomous, competent, non-partisan organization within the legislative branch, commonly referred to as the investigative arm of Congress. In the Budget and Accounting Act of 1921,

Congress created the GAO to assist in the discharge of its core constitutional powers - the power to investigate and monitor the operations of the executive branch (Government Accounting Office, 2019).

DOD Operations and Maintenance (O&M) Budget estimates

The DOD O&M projects begin the road to full-spectrum preparation across the Joint Force and accelerate the multi-year strategy of the Department to create a more effective and ready force through strategic expenditure in instruction, weapons, repairs, arms, modernization, and facilities (Comptroller.defense, 2020).

DoD Energy and Power Science and Technology

The goal of E&P Technologies is to provide technology to enhance intelligent power & energy management (Communities of interest/energy, 20). These enhancements include or not limited to the conversion of electromechanical power, energy storage, control of power and distribution, conversion of strength and power, and transport and control of heat.

Table 2.
Organizational ACAP Chart amongst departments

Executed Energy Projects	R&D laboratories	Construction and Infrastructure appropriations, 2019-2014	RDT&E 2019-2015	R&D Civilian Population 2019-2015	Civilian Population 2019-2015	Military population Officer 2019-2015	Military population Enlisted 2019-2015
<i>Department of the Army-6</i>	TARDEC - Ground Systems Power and Energy Laboratory (GSPEL)						
Fort Benning, Georgia	CERDEC - Soldier and Mobile Power and Energy Labs						
Fort Bliss Texas	ARL - Microfabrication Facility; High Voltage-Pulse Power Test Facility; Center for Research in Extreme Batteries (CREB)	\$724,000,000	\$29,000,000	19,000	194,000	91,000	391,000
Fort Campbell, Kentucky	ERDC-CERL - Center for the Advancement of Sustainability Innovations (CASI)	\$683,000,000	\$56,600,000	15,000	194,000	91,000	381,000
Fort Detrick, Maryland	NSRDEC - Doriol Climatic Chambers	\$276,000,000	\$51,200,000	16,000	191,000	96,000	379,000
Fort Drum, New York	Contingency Basing Integration Technology Evaluation Center (CBITEC, Ft. Leonard Wood)	\$543,560,000	\$95,000,000	16,000	189,000	91,000	378,000
Fort Huachuca, Arizona	Base Camp Integration Lab (BCIL, Ft. Devens)	\$780,343,000	\$44,900,000	20,000	193,000	94,000	392,000
		\$978,300,000					
<i>Department of the Navy/Marines-6</i>							
Navy and Marine Corp, HI	NSWC CD Philadelphia - DDG51 Land Based Engineering Site (LBES)						
Marine Corps Logistics, Albany, GA	Electric Ship Consortium - Hardware-in-the Loop M&S, High Voltage, Adv Prototyping						
Naval Air Weapons Stations China Lake, California	NRL Autonomous Systems Lab - Multiple test environments, R&D labs, prototyping	\$2,329,068,000	\$36,300,000	1,000	212,000	55,000	273,000
Marine Corps Air Station Miramar, California	NSWC Dahlgren - EM Rail Gun Facility	\$309,743,000	\$36,600,000	1,000	209,000	55,000	268,000
Camp Lejeune, North Carolina	NUWC Newport - Electric Propulsion System Testing Facility	\$1,587,219,000	\$37,000,000	721	206,000	55,000	268,000
Air Ground Combat Center Twentynine Palms, California	NAS Pax - Naval Power, Avionics, and Thermal (NPAT) Lab	\$1,533,990,000	\$35,000,000	1,000	201,000	54,000	268,000
		\$1,104,169,000	\$28,800,000	869	198,000	54,000	269,000
<i>Department of the Air Force-4</i>							
Nellis Air Force Base, Nevada	AFRL - Systems Integration Facility	\$1,565,919,000					
Edwards Air Force Base, California	AFRL - Advanced Power and Thermal Research Laboratory						
		\$1,301,630,000	\$0	21,000	189,000	64,000	265,000
		\$1,585,244,000	\$0	21,000	189,000	63,000	260,000
		\$1,307,476,000	\$0	10,000	187,000	63,000	264,000
		\$1,277,721,000	\$8,000	10,000	171,000	62,000	251,000
		\$524,383,000	\$9,000	10,000	166,000	61,000	251,000
		\$1,261,811,000					

Again, the six variables that were validated were: Organizational position, education, funding appropriation, size of organization, R&D facilities, and R&D personnel. In Figure 3., the variables that we measured were the number of research and development (R&D) funding appropriations, facilities, and staff in the military department. We utilized a simple regression model where we compared two variables for the absorptive capacity. These numbers depict 2015 to 2019 numbers from the Defense Comptroller Office and the number of R&D personnel in the department and the amount of R&D funds. As a result, in (Figure 4.), the regression model also helped explain why the Air Force had two research laboratories, compared to the Army's seven and the Navy's six depicted in (Figure 2).

In Figure 5., we use the same data and note that in the last five years, the Army's funding has decreased; however, the Navy's funding has increased by a small margin. The R&D funds and personnel of the Air Force have remained at a meager rate. From the initial absorptive capacity statistic, we can assume that the amount is the highest with the Army and then the Navy.

Figure 2.

DOD R&D Laboratories by Department

R&D laboratories by Military Department
Army
TARDEC – Ground Systems Power and Energy Laboratory (GSPEL)
CERDEC – Soldier and Mobile Power and Energy Labs
ARL – Microfabrication Facility (Clean Rooms); High Voltage-Pulse Power Test Facility; Center for Research in Extreme Batteries (CREB)
ERDC-CERL – Center for the Advancement of Sustainability Innovations (CASI)
NSRDEC – Doriot Climatic Chambers
Contingency Basing Integration Technology Evaluation Center (CBITEC, Ft. Leonard Wood)
Base Camp Integration Lab (BCIL, Ft. Devens)
Navy
NSWC CD Philadelphia – DDG51 Land Based Engineering Site (LBES)
Electric Ship Consortium – Hardware-in-the Loop M&S, High Voltage, Adv Prototyping
NRL Autonomous Systems Lab – Multiple test environments, R&D labs, prototyping
NSWC Dahlgren – EM Rail Gun Facility
NUWC Newport – Electric Propulsion System Testing Facility
NAS Pax - Naval Power, Avionics, and Thermal (NPATH) Lab
Air Force
AFRL – Systems Integration Facility
AFRL – Advanced Power and Thermal Research Laboratory

Figure 3.
DOD Absorptive Capacity by Department

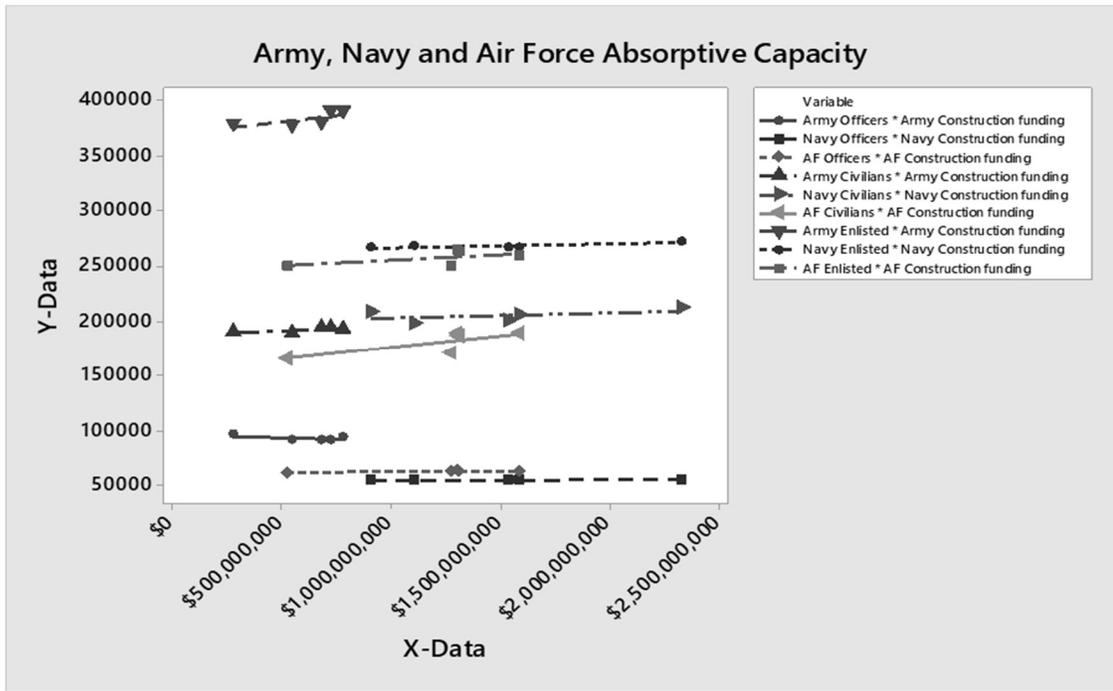
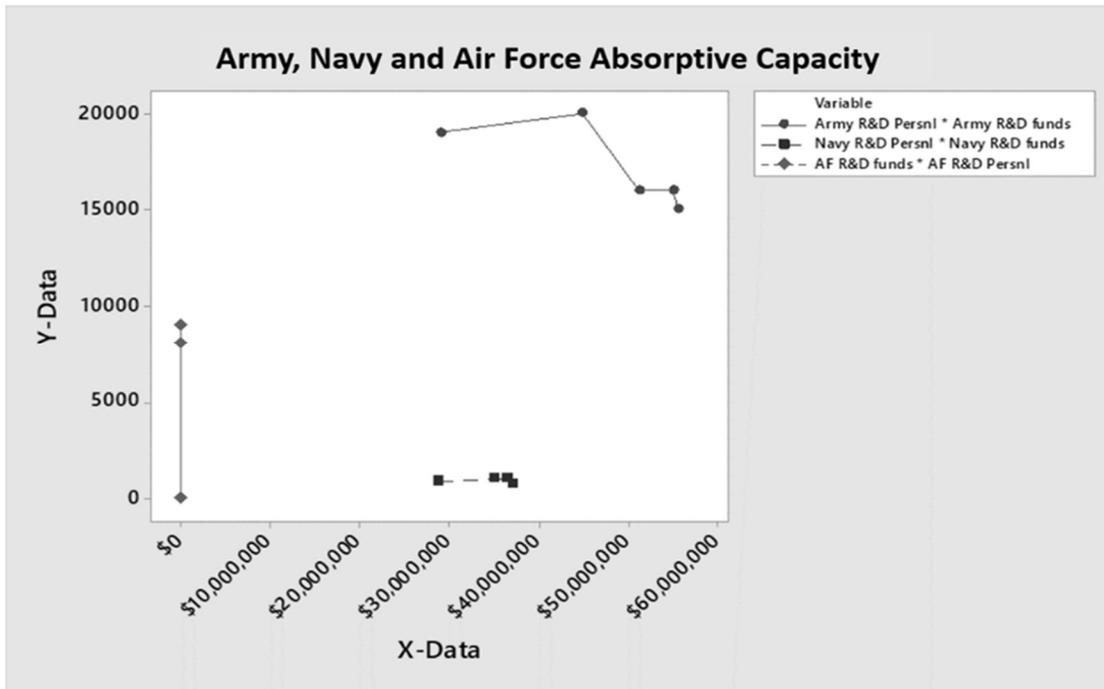


Figure 4.
DOD Absorptive Capacity by Department (continued)



In Figure 5., we compare the absorptive capacity levels of each department, which shows the Army and the Navy with the highest absorptive capacity levels with the Air Force trailing substantially.

Figure 5.
DOD Absorptive Capacity by Department (continued)

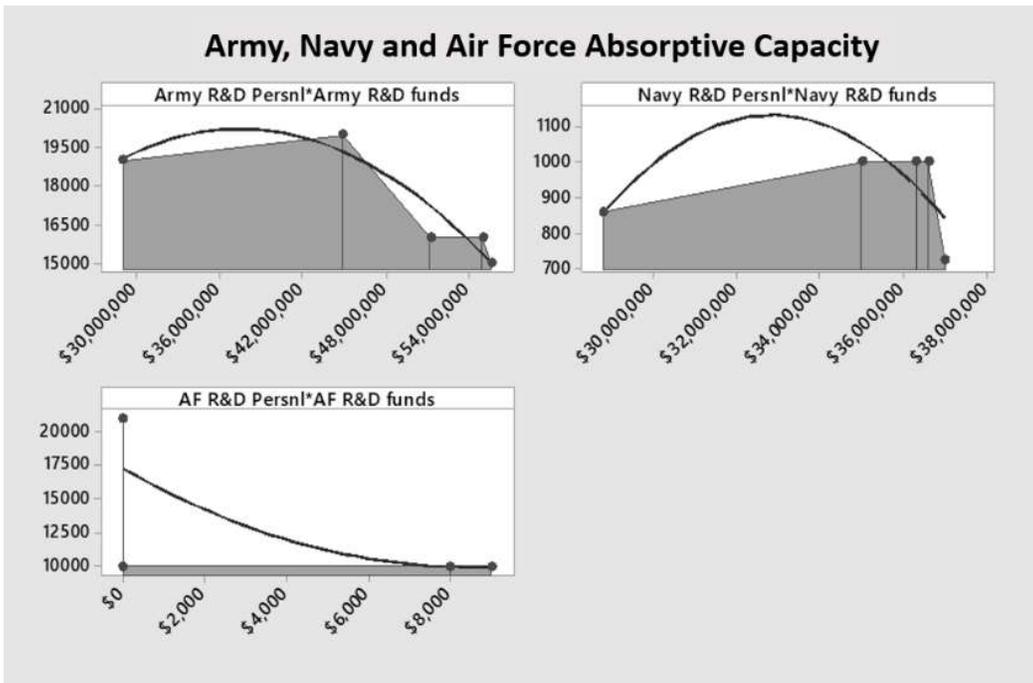
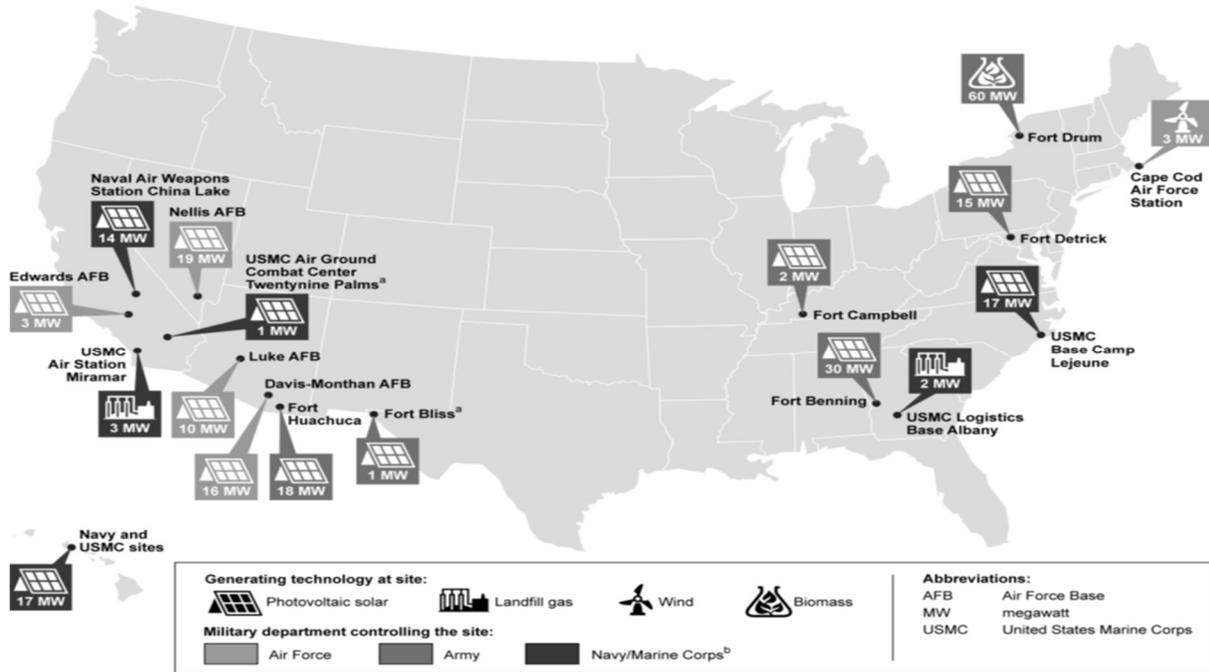


Figure 6.
DOD Renewable Energy Projects



Sources: Department of Defense; Map Resources (map). | GAO-16-487

Selected Department of Defense Renewable Energy Projects (GAO, 2016)

Also, to validate the absorptive capacity of each department, the author utilized the Government Accounting Office’s 2016 and 2017 accounting documents that show a map of the highest-rated generating RET projects in (Figure 6.) and in (Table 2.).

Finally, the future appropriated funds for RET MILCON project depictions are in (Table 3.). The Department of the Army had the highest Energy savings performance contracts with \$3.2 billion for the next 25 years. Also, the Army had the most Utility energy service contracts with \$278 million for the next 17 years. The data that we measured was for research and development (R&D) funding

appropriations, facilities, personnel in military department and future MILCON, and RET funding appropriations, and this secondary proves that the Department of the Army has the highest ACAP levels in virtually all construction and RET categories. The significance of these findings aid in the diffusion process by identifying the most resourceful military department for RET integration in construction.

Table 3.
Future Appropriated RET construction Projects

Alternative financing arrangement	Reported number of contracts identified ^a	Reported number of contracts with total contract costs identified	Estimated cost to the government based on total contract costs identified (then-year dollars) ^b
Energy savings performance contracts (ESPC)			
Army	131	89	\$3.2 billion
Navy	27	25	925 million
Air Force	38	30	722 million
Marine Corps	5	5	110 million
Total ESPC	201	149	\$5 billion over the next 25 years^c
Utility energy service contracts (UESC)			
Army	167	25	\$278 million
Navy	59	58	243 million
Air Force	8	7	77 million
Marine Corps	11	11	79 million
Total UESC	245	101	\$677 million over the next 17 years^c

Conclusion

When addressing the global challenge of climate change and energy conservation, diffusion of RET innovation is critical. Innovators afford the security to invest in the development of competitive RET as well as their transfer and distribution on an international scale to low- and middle-income countries when provided with competitive IP protection and a comprehensive enabling policy environment. The presence of environmental externalities and market and regulatory uncertainties, however, require complementary policy interventions. These measures aim to create the conditions that are necessary for the development, diffusion, and transfer of RETs. Policymakers need to take account of the local context and ensure transparency when defining their interventions. Proven to be the most effective is the combination of R&D and environmental policies.

Moreover, studies have shown that ecological strategies are more effective in competitive markets. The development and diffusion of RETs are funded principally by both public and private sectors. This exploratory conclusion is not the “Holy Grail” for the distribution of new RET. Still, a starting point for future entrepreneurs and current leaders to utilize a standard tool for dialogue. The more that RET is in discussion at office meetings, the C-suite, or at the dinner table, contributions to the ever-controversial climate change can occur accomplished. In

summation, the theory of higher absorptive capacity enables higher adoption rates; without a robust conceptual framework, the individual inventor or innovator would not know how to diffuse the next revolutionary technology.

CHAPTER 3. SEMI-STRUCTURED INTERVIEWS WITH MILITARY CONSTRUCTION (MILCON) EMPLOYEES:

Introduction

In terms of construction and renewable energy synergy, more environmentally friendly building practices are within many organizations. Multiple construction companies are relying on RET across the country. Starting with the design process, RET construction architects are designing energy-efficient homes and commercial structures. From rooftop solar panels, UV ray blocking smart windows, and ultra-energy-efficient HVAC systems and water heaters, RET construction promotes efficiency (Groff, 2018).

As previously mentioned, a large portion of the energy consumption equation is composed of manufactured construction material. Low-impact building materials, the United States construction industry is working on reducing the amount of energy that it takes for each building project (Groff, 2018). By using RET and its effectiveness regarding the construction industry, manufacturers are setting their sights on building materials that take little energy to produce or deliver; this, in turn, causes RET and green construction to no longer be a niche market. Additionally, waste-reduction generation and transportation associated with energy consumption in the construction industry are receiving help through the modular building (Groff, 2018). The RET diffusion process within the energy sector has a

history of extensive research readily available. ACAP levels of members and the revelation of their opinions of the diffusion model are the section focus within the Department of Defense construction organizations.

Conceptual Background

An organization's bedrock is absorptive capacity at the individual level; the individual can ultimately determine the capacity and rate of diffusion of the organizations (Cohen and Levinthal's, 1990). High absorptive capacity levels were favorably related to successful innovation and organizational performance, including economic development and enhanced levels of productivity. The vibrant nature of absorptive capacity, rooted in individual or organizational routines, eventually reinforces the ability of an organization to uncover and benefit from current information and new techniques (Lawrence et al., 2016).

Renewable energy technology within the Department of Defense (DoD) improves domestic security, strategic mission sustainability, and execution capacities. As the primary energy customer in the U.S. government, the DoD depends on the supply, distribution, and reliability of energy for the ocean, air, and land-based fuel activities (Government Accounting Office, 2019). During cuts in defense spending over the previous several years, the DoD recognizes the critical role energy plays in attaining mission success and has committed to a more cost-

effective and sustainable future of energy. The department is looking forward to reducing its overall energy demand, expanding its production base to renewables, and incorporating energy analysis into operational and strategic planning (Diorio, 2016).

According to Lawrence et al. (2016), construction has weak rates of absorptive capacity. Organizations can no longer depend on private sources to produce new expertise and technology within the construction industry due to technological changes and growing worldwide competition. Following an idea from Cohen & Levinthal (1990), the capacity to obtain, assimilate, convert, and utilize external knowledge and technology sources are essential to organizations to survive and grow on the market. In conclusion, Manley et al. (2014) revealed that construction customers have low capacities for absorption and exploitation and only mild capabilities for acquisition and conversion.

The "interview" is a managed verbal exchange (Newton, 2010), and therefore its efficacy depends strongly on the interviewer's communication skills. These include the capacity to structure questions, listen carefully to appropriate pause, assess, and prompt (Newton, 2010). The decision to interview implies personal language is valuable data, where the depth of significance is crucial, face-to-face interviewing may be suitable, and study centers on obtaining insight and

comprehension. The researcher who chooses to interview face-to-face recognizes the potential value of context (Newton, 2010). Semi-structured interviews enable people to reveal personal ideas and emotions; this technique is on the interviewer's interpersonal skills, the capacity to create relationships and social interactions. These characteristics are useful but very delicate in ethical terms; it is necessary to carefully evaluate and discuss the type of questions to ask because confidentiality and anonymity are often challenging. Trust is essential, as stated above, and must preserve through professionalism and respect for the interviewed; their views are distinctive and useful through this technique (Newton, 2010). With the semi-structured interviews, interviews need interviewees. The interviewees in this chapter derive from the following categories.

Engineer: An individual who properly uses their mathematical and scientific knowledge to solve practical problems, acquired by study and expertise, and practice is applied with judgment to develop ways to economically utilize the materials and forces of nature to benefit humanity (Gaafar, 2003).

Manager: Someone whose primary responsibility is to conduct management; allows for the use of resources (human, social, physical and information) to execute operations (including the preparation and decision-making, coordination,

command, and control) to achieve operational objectives efficiently and efficient (Gaafar, 2003).

Technician: A person trained in science and engineering with unique skills or knowledge. They have the technical know-how and are part of their respective workforces ' deployment, maintenance, and functional growth (Weisner, 2013).

In chapter 3, we utilize deductive and inductive reasoning (flexible pattern matching) techniques. The question we must ask is: *What are the individual ACAP levels of MILCON employees and their perceptions of the spread of RET innovation in their organizations and beyond?*

Methodology

To investigate the research question presented in this chapter, a qualitative method, which include inductive and deductive reasoning (flexible pattern matching) techniques in conjunction with semi-structured interviews, are used.

Figure 7.

DOD Interview Locations



The locations of the interviews were at Langley AFB, Hampton Virginia; Fort Eustis, Newport News, Virginia; Norfolk Naval Shipyard, Portsmouth Virginia; and Philadelphia, Pennsylvania. According to the semi-structured interview questionnaire (Appendix; Figure 8.), in addition to the questions, the global diffusion model was introduced to seek the importance of it.

Data Collection

Data collection was conducted until no new information was gained; data collection for the study was procured using in-depth, semi-structured interviews (Myers, 2013). All the data collected from the semi-structured interviews were processed on the transcription software TRINT; the information above was pinpointed for what is revealed (Appendix; Figure 3.) as the organizational absorptive capacity conceptual model.

The interviews were accomplished with 8 Engineers, 11 Managers, and 12 technicians within the various departments of the United States Armed Forces construction departments. In order to assess whether the challenges differed (or not) at several levels of the organizational structure, it was essential to talk to individuals at different points of their careers. The research found that high levels

of ACAP were strongly related to productive progress and an organization's efficiency, including economic growth and increased productivity. The interviewer needed to understand the degree of ACAP an employee had in their organization based on their characteristics and position; they performed an independent telephonic or in-person office interview with each participant, lasting between lowest at 9 minutes and highest at 59 minutes. The 9-minute interview was re-accomplished due to the interviewer's lack of experience with the process. Interview subjects were from four different MILCON departments within the Norfolk, Virginia, and Philadelphia, Pennsylvania area.

The interviewer utilized their extensive 20-year network to reach people for interviews; they contacted the Public Affairs department for each base and asked them to forward the student investigator's email (the interviewer), and instructed interested participants to contact the investigator to schedule an interview. The interviewees were selected based on their involvement with the organization and level of experience. The range of members had experience levels of 6 months to 40 years within the military construction industry. In each department, the interviewer tried to recruit the exact number of members. The Air Force had overwhelming responses to the recruitment; next, the Army, and lastly, the Navy having the lowest amount of responses. With persistence and follow-up, the interviewer was able to recruit an equal number of engineers, managers, and technicians.

Again, the interviewees had experience and background levels of 6 months to 40 years within the MILCON industry; it is reasonable to assume that their

experience or membership is representative of the MILCON industry. In this study, the argument in (chapter 2), was focused on the effects of organizational ACAP and the adoption of RET projects using quantitative data. The purpose of this analysis was to test a theory, using qualitative data, to verify which DoD members had the highest ACAP and test the feasibility of the conceptual model by demonstrating its efficacy on DoD RET programs.

The interviews focused on the member's experience, level of certification, and education. The interview questions focused on the position authority of the member, the likelihood of the member to diffuse RET information and their opinion on the interview, and the conceptual model. The discussions mentioned views of climate change and energy costs within the home, business, and environment as well.

The first interview lasted 9 minutes due to the lack of interest from the interviewee, and a second interview was performed after that; however, the recording was not saved at the beginning. The 9-minute interview was re-recorded for more content; the second interview was incorrectly recorded, but relevant data was retrieved from what was recovered. The more conversations that were conducted, the answers were extended and evolved due to the “nudging” technique learned from prior social-economic literature (Bazerman, 2013). The interviewees were encouraged to be open and honest; the study helped the author to devise further research. Again, the questionnaire for the interviews can be found in (Appendix; Figure 8.).

The desired trajectory of the interview was to implement dialogue and insight to gather perceptions and facts relative to their organizational ACAP and adoption of RET. The interviewer utilized interpersonal skills to establish and create rapport and kept the participant's information confidential while conducting a proper code of ethical behavior. The interviewer remained impartial and maneuvered the interviewee toward expressing relevant information that supported the overall context of the study. The interview continued impartiality, and at times impromptu questions were formulated to gain more data from the respondent (Newton, 2010).

Data Analysis

The average duration of the interview participation was between 25 to 30 minutes amongst MILCON employees. The study procedures consisted of documenting individual recipient's thoughts, feelings, and responses to questions. The interviews were mostly in person; the interviews were conducted in private, in conference rooms, and offices. A telephonic interview was optionally available, and both the student interviewer and the recipient were requested to conduct the study through this technique, given that the recipient is interviewed in a private or noise-reduced location. A phone with a password lock was utilized for audio recording; no names or personal information were used in the research; a blind study was conducted. The transcription service TRINT was used, which was mentioned in the New York Times as "By far the best-automated transcription service" (Lipton, 2018). The coding software that was initially selected was the

NVIVO software, but the decision to use the qualitative analysis application DEDOOSE (Dedoose, 2017) was used as an alternative.

There were two types of research techniques for this chapter. The interviewer utilized a deductive and inductive reasoning technique, which is considered flexible pattern matching. Data analyzed from interviews were derived from 31 military construction (MILCON) engineers, managers, and technicians. The entire study was considered exploratory research, and utilizing flexible pattern matching aided in formulating dimensions and theories.

Flexible pattern matching brings inductive reasoning and deductive techniques together. In chapter 1 and chapter 2, a deductive reasoning technique was derived from literature. In chapter 3, an inductive approach, from the interviews, was utilized, and concepts emerged that were not expected from reading the literature primarily, thus creating a combined flexible pattern matching process. Essentially, pattern matching means comparing the theoretical expected trend with an actual trend observed. It is believed that people make sense of the environment by comparing their experiences externally with internal conceptual structures (Sinkovics, 2018).

Table 4.
Concepts and Expected Patterns

Concepts	Expected Patterns
<i>Innovation and Intellectual Property</i> Johnstone et al. (2017).	Higher resource levels are relative to the more significant competitive advantage and more robust strategic performance, proposed as a (moderate) level of importance to consumers.
<i>Marketing and Strategy Bypass</i> Lybecker, K. (2015)	Patent protection and Strong IP of RET leads to accelerated diffusion; proposed as a (low) level of importance to consumers.
<i>Strategy Formulation and Execution</i> Cox, M. et al. (2012).	High strategy and execution will increase competitive advantage and aid in innovation, proposed as a (moderate) level of importance to consumers.
<i>Marketing</i> (Chu 2013).	Information sharing is a significant communication objective in the diffusion of RET, proposed as a (moderate) level of importance to consumers.
<i>RET Diffusion</i> Bale et al. (2013)	The diffusion of RET cannot be successful without the understanding of the DOI framework, proposed as a (high) level of importance to consumers.
<i>Individual ACAP</i> Zahra et al. (2002)	An individual's absorptive capacity is the foundation of the RET diffusion, proposed as a (high) level of importance to consumers.
<i>Corporate or Organizational ACAP</i> Johnstone et al. (2017)	The corporate RET absorptive capacity is another necessary variable needed for RET diffusion, proposed as a (high) level of importance to consumers.
<i>Governmental ACAP</i> Popp (2012)	The government RET absorptive capacity influences RET diffusion, proposed as a (moderate) level of importance to consumers.
<i>Adoption of RET</i> Rogers, E (1995)	The diffusion of RET has a positive effect on the adoption of innovation, proposed (moderate) level of importance to consumers.
<i>Individual RET Adoption</i> Hyysalo (2017)	The individual RET adoption is the foundational influencer to another consumer adoption, proposed as a (moderate) level of importance to consumers.
<i>Corporate RET Adoption</i> Lybecker (2015)	The corporate RET adoption is vital in inter-company RET cooperation; proposed a (moderate) level of importance to consumers.
<i>Governmental RET Adoption</i> , Popp (2002)	The government RET adoption has a significant influence on RET diffusion policies, proposed as a (moderate) level of importance to consumers.
<i>RET Adoption, Success or Failure</i> ; Gibbons (2004)	A successful 100% RET diffusion does not guarantee successful adoption.; proposed as a (low) level of importance to consumers.

Analyzing Individual ACAP levels

The method of deductive reasoning required that the interviewer use some ideas and applied them to a particular situation; they initialized the process with a few general ideas, called premises, and add them to a specific location. The interviewer recognized in chapter 2, flexible pattern matching was necessary for this chapter, and they utilized quantitative data rules, laws, and ACAP theories: Organizational position, education, funding appropriation, size of organization, R&D facilities, and R&D personnel. In this chapter, the factual, quantitative data were extracted: organizational position and education and synthesized it with experience to validate which MILCON position had the highest ACAP using semi-structured interviews. The concept of deductive reasoning was administered for the organizational to the present individual level using a top-down approach that narrowed a general idea into a specific conclusion (Wilson, 2016).

Analyzing perceptions of DOI model

The second portion of this chapter expresses how interviewer used inductive reasoning and semi-structured interviews to validate the importance of the diffusion model revealed in (chapter 1) by prioritizing the opinions of the members of the MILCON departments. Although the global diffusion model was designed prior to the inductive reasoning and semi-structured interview, the process was significant because the interviewer had enough years of experience to understand the practical implications and perceptions of the interviewees. The priority of the research was to understand the academic theories and concepts, and create a pattern of which gives way to a broad idea that is approximately accurate (Wilson, 2016).

Coding

Coding is the link between collecting data and theory that is emerging to explain what is happening in the data and gain insight on the message the data presented (Charmaz, 2006). The interviewer utilized, the coding process, (Charmaz, 1978) throughout the entire process of coding and citation. There were two processes that were utilized at least two main phases: A focused, selective process that utilized the frequent initial codes or phase selection that generated the most significant codes. Large amounts of data were gathered, and impartiality during the interviews were executed. Ultimately, the codes were sorted, synthesized, and then integrated to acquire an overarching narrative of the research. The interviewer also applied remnant, yet relevant, categories or codes that were created, but ultimately emerging codes were found that were not previously conceptualized before the semi-structured interviews. The initial concept was to exclusively code the information gathered from the interviewee's opinion of the conceptual model; additional research was initiated, and the ACAP characteristics of various position levels were coded as well. There were 312 quotations extracted and identified and 598 code applications of which, according to (Charmaz, 2006) is the process of axial coding. The information for coding was compiled and analyzed then the new codes were assigned into 33 different categories. This operation produced codes for the individual ACAP, premises of the conceptual model, 12 additional concepts, and two themes. Different layers of coding the "Root" and the "Child" code were developed; coding was only advanced to the child code layer, and then excerpts were added to the layer (Charmaz, 2006).

Autoethnography was utilized, the focus was not only on the accounts of experience and knowledge of the interviewer, but for others in the ecosystem to utilize the research to gain insight with greater depth. During the interviews, the autoethnographic concept was used to describe the intra- and inter-cultural experiences of the interviewer's own culture or at least of a culture currently integrated into their personal lifestyle (Sanne, 2015). This experience helped build a rapport between the interviewer, the interviewees, and the approving officials in accomplishing the task of knowledge transfer.

This section of this chapter comprises many theories, inductive, to draw information from the individual ACAP context. The goal of using grounded theory was to gain knowledge using inductive reasoning and ethnography from a certain location or environment. Many of the interviewees had questions about the selection of the Department of Defense as the field research. The answer was evident because the interviewer was familiar with the organization, and their networking channels, were helpful in overcoming the barriers of research, thus gaining overwhelming support. During the interview process, the trajectory of the process was not known, but from observations from the interviews increased intrigue and ACAP levels. The coding process was not the most challenging endeavor of the research process; the proofreading of the transcribed audio-to-words proved to be an arduous task. The interviewer was fortunate that they were able to hire a third-party to quality check the transcribed word document; they were able to utilize the coding application to concisely process the data without error.

The interview questionnaire essentially had its own hidden contextual coding as well. The questions that were generated were prodding codes to the interviewee to encourage qualitative data. As the interviews progressed, and the interview questioning techniques were refined, accurate, and objective data was gathered. The consensus, from the interviewees, was that the interviewer was prepared for the interviews, the questions were not vague, and the topic discussed was innovative. The experience that was conveyed, aided in their self-reflection on their contribution to lowering the carbon footprint and/or save energy costs.

Initial Concepts

As stated previously, after the interviews, transcribing audio recordings into wording and coding, 12 first-order concepts emerged. Six distinctive concepts emerged from the section relative to climate change. These concepts include climate change, environment, children, big picture, national security, and the term “renewable energy.” The second set of concepts that emerged was relative to the energy cost saving. This second section includes energy costs, maintenance, money, technology, energy power, and another term known as “alternative energy” (Figure 9.). With the review of the codes and documenting the audio recordings of the interviews, these concepts garnered significance from the emotional, impassioned testimonies involved, which validated the purpose of the research. The emotional intelligence expressed from the responses made it imperative for further research. These 12 concepts condensed into a smaller collection of broader factors(s) culminated in the discovery of two (second-order) driving RET themes: Prioritizing Sustainability and Profits (Bateman, 2012).

Themes

The two second-order themes referred to one dimension of aggregation, a sample of possible links generated to be accepted as constructs in the model (Figure 9.). During the interviews, answers in relation to the various concepts implicated the tension between Costs and Environment. Questions asked reference to climate change and energy savings in which two RET themes emerged, Prioritizing Environment and Profits (Bateman, 2012).

Prioritizing Profits is found upon the principle of smart development and ecological modernization, which implies that environmentally positive economic development is feasible through technical progress, business dynamics, resource utilization, and reduced pollution; according to (Dedoose, 2017) Prioritizing Profits represented 5.3% of concepts generated, and the results from the interviews indicated that 21 out of 31 interviewees felt Prioritizing Profits took precedence over Prioritizing Environment.

Engineer 2. A: *“Yeah, so saving energy costs is more important; I guess climate change, that's the lesser concern.”*

Engineer 7. A: *“Oh, as far as energy costs within the home, business, and environment. Yes, they're very important to me.” “Climate change is a different situation. Yes, the climate changing. Is man the sole contributor? No. You know, the Great Lakes were formed by glaciers. Okay, so what caused the global warming that melted the glaciers that were in the middle of the United States?”*

Manager 17. A: *“If you're going to offer me free electricity in my own home. I'll take it. As for climate change in the world, we will all be dead. It won't matter.”*

The theme of Prioritizing Profits represented 2.8% of concepts in the code applications section (Dedoose, 2017), and out of the 31 interviewees, the overwhelming majority of consumers prioritized energy savings over reducing the carbon footprint. A Prioritizing Environment agenda could seek the encouragement of democratization and engagement through democratically development, public community, and renewable energy systems. The agenda serves the public interest and provide tangible benefits for the community, and these include: jobs, public space, transport, and new public institutions (Burke, 2017).

Manager 9. A: *“I think they both go together. When you look at it, because climate change is driving a lot of energy costs. So, when you look at it, it's one of those paradigms that we must look deeper into because one affects the other, in some shape or fashion.”*

Technician 6. A: *“Climate change, it is something that is very undermined in today's society, and it's a very, very real thing; so seeing the weather when I was younger and how the world was then like Antarctica, there was snow there, was a lot of mass there, you know, and today you look at pictures, and it's melting away and was very visible. ”*

Technician 25. A: *“Both (climate change and saving energy costs, I think both are equal. You know, because it must be cost-effective. If it cost too much and it's not affordable then. We're not going to do it. But I mean, you*

have to weigh the balance of the two in order to make sure that, you know, you've been efficient and at home, you know, you just don't pay too much out of what it would cost for everyday energy.”

The concepts of the second order merged into the collective aspect of Tension with Sustainability and Profitability as the third order.

Aggregate Dimension

Statistical analysis shows a positive connection between the trait of emotional intelligence and a personal investment in energy sources. Significant statistical correlations have been identified between emotional intelligence and public opinion on the value of quality of life of renewables and environmental change (Haicta, 2017). During the interviews, the majority of the interviewees stated higher interest in saving energy costs. A significant portion of them were interested in reducing the carbon footprint; however, the majority of the members indicated they would be willing to invest in a product that reduced the carbon footprint and saved energy costs. The initial concepts, or codes generated, are listed and described below (Figure 9.).

In addition to coding other theories and questions, we again had to ask questions about energy cost savings and climate change. The first step included defining potential renewable energy adoption of interviewee comments, which included questions about cost savings and climate change (Bateman, 2012).

All transcribed interviews were analyzed separately, with considerable emphasis on the codes of which were relevant to cost savings and climate change. Those questions generated specific data on the interviewee's opinion of those

topics. In the second step of the chapter, the objective was to separately file interviewee comments by changing open coding into first-order categories. Data was transferred, from (Dedoose, 2017), into two types. The first category was about emotional intelligence, and the second category was cost savings utilizing RET. The goal was to gather codes and information from both sections and, using the results, to determine which themes would emerge from codes. Once the first order categories were organized, the themes naturally emerged from reading the transcripts and re-listening to the interview audio.

The third step of the study involved the pursuit in discovering commonalities and relationships between first-order concepts to assemble them into second-order themes, with the future possibility of generating overall dimensions to construct a more cohesive narrative for the entire data set

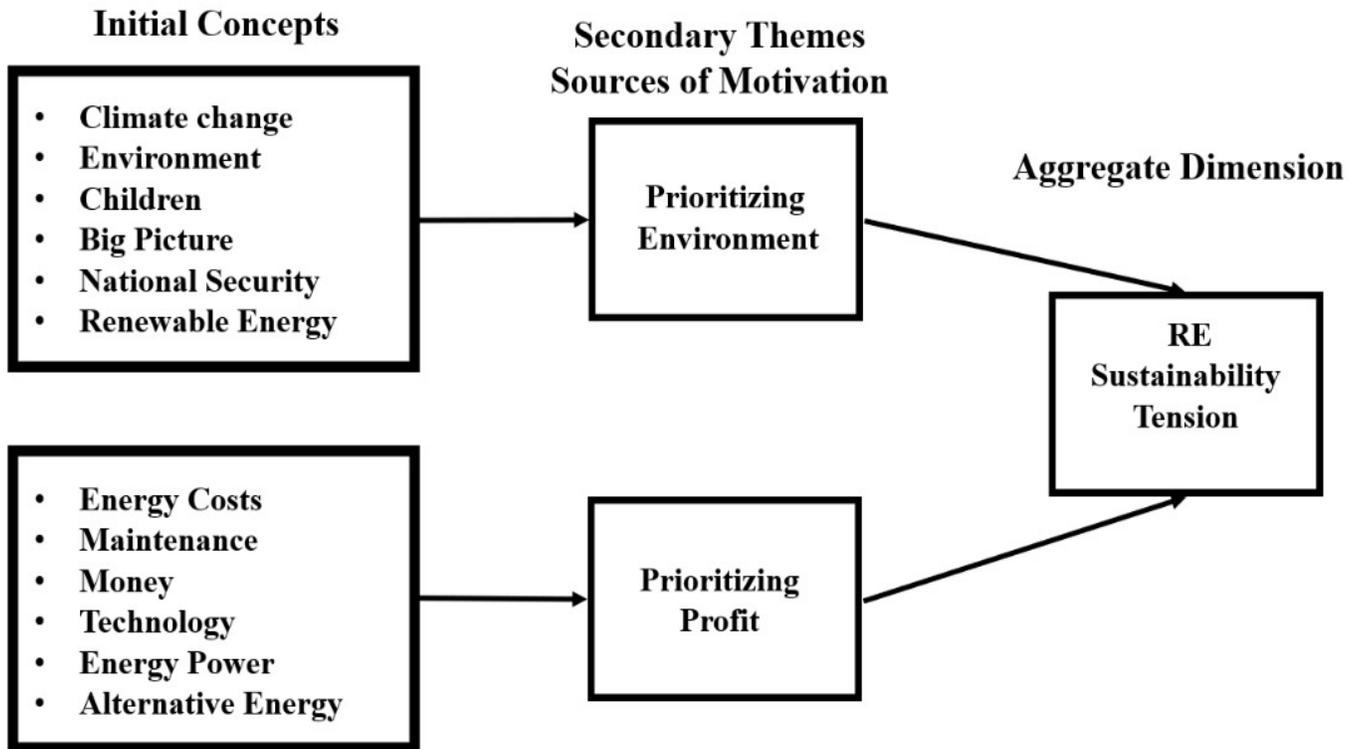
Finally, we considered and addressed comparisons. Among the two second-order themes in the process, this led to merging both themes to one aggregate dimension, as seen in (Figure 9.) (a third portion of the model) (Bateman, 2012).

Environment versus Profit dimension is a derivative from the themes of Prioritizing Environment and Prioritizing Profit, which is heavily involved with the spread of RET. Many Americans believe that the federal government is doing very little for crucial environmental issues, from protecting water or air quality to reducing the climate change impacts. Most believe the US will focus on developing renewable energy sources over growing fossil fuel sources (Pew Research Center, 2019).

Tensions in corporate sustainability are focused on the new, holistic view of corporate sustainability, which stresses the need to simultaneously incorporate the environmental, economic, and social dimensions (Hahn, 2014). As the interviews progressed, the implications of tension between RE sustainability and profit were genuinely evident when the topic of climate change reached, questions concerning the reduction of the carbon footprint, reducing energy costs as well as utilizing multiple energy sources. The questions were not intentionally attempting to illicit RE sustainability versus profit responses. Still, the tension between the two themes of renewable or alternative energy were the majority in the reactions. A small number of interviewees expressed impartiality to climate change and saving energy costs, but many of the interviewees showed exclusive partisanship. Of the 598 codes represented from the data, 7.5% of the codes generated political or emotional intelligence implications; again, the overarching aggregate dimension originated from a derivative of both themes, Prioritizing Sustainability and Profit (Bateman, 2012).

Figure 8.

Concepts, Themes and Dimension



In addition to the demographic data from the individual ACAP levels (Organizational Position, Education, and Experience) and contextual codes for the diffusion model, several emergent codes came to surface. From the questionnaire, data about the likelihood of transferring knowledge of RET, political, and emotional intelligence implications, the perception of the interview, and the resulting feedback on the diffusion model. The goal of the interviews was to create a framework to identify better the key factors influencing ACAP level and to clarify them to potential researchers. Defining approaches for more comprehensible data collection for the exchange of information is now made possible by applying this study.

Findings

The resulting critical themes and findings of the research study are now identifiable (Appendix, Table 4.) (Figure 9.). In order to create rapport between the interviewers and the interviewees, ACAP levels needed identity. Out of the 31 members interviewed, most of the members were supportive, and overwhelming positive feedback attained on the importance of the interviews. The interview questions were punctual and facilitated in asking fundamental questions about the position, education, and experience levels.

According to Minbaeva et al. (2003), individuals are key facilitators in the development of information and important information resource in companies; secondly, individual levels are relevant as a deeper insight into the intra-organizational knowledge process. Finally, the distinction comes from the personal knowledge and behavioral profiles of those within the business who utilize global resources for information, carry awareness to the organization, and use it for goods, procedures, and services. The information initially gathered from the interviews began with various employee demographics within MILCON; their responses were imperative for the visualization of ACAP levels that they attained. Their contribution and opinion on the reliability of the diffusion model was imperative, as well. The introduction of the questions asked to the engineers, managers, and technicians, invaluable data was garnered. In the following passages, you will observe the questions and answers from the interviews; also available are each member's information and nomenclature (Appendix; Table 3.; Demographics).

Pointed questions identified their level within their organizations. All members knew their positions, but some were confused due to their dual-titled jobs. For an example, the Energy Manager, for a specific base, conveyed to me that he was an engineer by degree, but manages a program. Another member stated that they were a manager of people but was a technician with front line supervisor duties. The interviewer was able to identify the positions by referencing a list provided by their executive leadership and the grade or rank that they possessed. In the following passage, the interviewer presents a sample size of the responses out of the 31 members.

Data, such as limited intelligence or education, has been identified to reduce the ability to process information and lower the ACAP knowledge transfer (Minbaeva et al., 2003). Eight members possessed high school diplomas, 12 members with AAs, nine members with BS, and 2 with MS. One of the two members possessed both a master's degree and a Professional Engineering (PE) certification, of which is the highest standard of competence, significant achievement, and quality in engineering; it is the most terminal certification a member can receive. During these interviews, the assumption carried out that education level directly correlated with ACAP level; during the process; however, other ideas were concluded. A significant number of interviewees possessed educational degrees, as well as years of experience, in the MILCON and construction industry (Appendix; Table 3.).

Limited education and absence of experience identified to reduce the ability to process information, as well as lowering the ACAP knowledge transfer

(Minbaeva et al., 2003). It was evident that experience level posed a significant determinate in gathering knowledge from the interviewees. Some interviewees did not have enough experience to give factual input from trial-and-error; however, the level of experience did not indicate the level of passion or emotional intelligence an interviewee had toward reducing the carbon footprint or saving the environment. The two interviewees that had both the highest and lowest experience level of 40 years to 6 months possessed the same emotional intelligence of “saving the planet” for future generations.

Potential Knowledge transfer of RET

Knowledge transfer accounted for 12.2% of the concepts generated (Dedoose, 2017). Knowledge transfer and the likelihood of spreading the RET information is the key premise in the Diffusion of Innovation. During the interview process, interviewers asked if interviewees were to invent a new RET hypothetically, and their product saved energy and reduced carbon footprint, how they would spread that information. The question after was an inquiry of the likelihood of knowledge transfer; many of the interviewees expressed a personal desire to communicate RET knowledge if several prerequisites garnered. Several examples of requirements offered included: the RET had to be made by a credible manufacturer, the concept or technology message derived from a reliable source, the RET was in reliable working order. The technician demographic of the interviewee body was concerned with the maintenance costs, as well as the ability to retrofit new RET with old technology.

The 31 interviewees were asked if they would highly likely or likely transfer the RET information in the questionnaire. Twenty-one interviewees responded that they would highly likely diffuse the information utilizing word of mouth, social media, multi-media, hire engineers, talk with family members, and use the email.

Perceptions of the Global Diffusion model

During the interview process, the inquiry was made on which theory and section were the most important in the diffusion model. The global diffusion model is the core mechanism of this project; the research would not be complete without the qualitative research. The interview process, the feedback of the diffusion model, and the interviews validated the trajectory of the study with the inductive reasoning and flexible pattern matching process. In this section, feedback of the diffusion model was obtained, and the selection of priority results.

Academic theory is considered as the foundation for empirical study, although some practitioners find it abstract and challenging to comprehend. Previous discussions on this topic often presented ideas and analysis in terms of rigor or significance with limited focal areas for scholars and practitioners to navigate. (Schneberger, 2009). For the 31 interviewee practitioners, the literature supporting the diffusion model theories was not available; therefore, each theory and their alignment in the model were clarified in detail. After a full explanation and offering concise information and analogies of the various theories, the interviewees concluded with confidence in their selection. The selections follow in the order of highest to lowest selection. The dimension of Innovation and Intellectual Property had eight interviewee selections, the Strategy Formulation and

Execution had seven interviewee selections, followed by Social Campaigns and Information Sharing with the equal amount of selections. The fourth dimension, Diffusion and Adoption, had five selections and finally ACAP with the lowest selection of 4.

Diffusion model revision from the outcome of interviews

Data from one of the two engineer interviewees that stated after offering information to individuals, corporations, and governments with consideration if being met with resistance, the first engineer interviewee suggested to perform a “strategy pivot,” re-strategize, and reset for a future diffusion process. According to Boudreau (2017), through a shared understanding of strategic turning points, leaders will aid their employees to ensure that all capital, including company and talent capital, are allocated concerning their strategic performance value. The second engineer interviewee claimed that once the RET was implemented by an individual, an organization, or a government, a “feedback loop” was necessary. According to Harvard Business Review (2017), feedback loops are integrated with plans that transition from concept to execution within the organization's competitive factors, of which are continually evolving, developing global players, transforming economic and regulatory conditions, and increasing expectations on consumers. Finally, after concluding the importance of the aggregate dimension “Sustainability Tension,” within the realm of Corporate Sustainability was added to the DOI model.

Figure 9.

Revised Diffusion Model

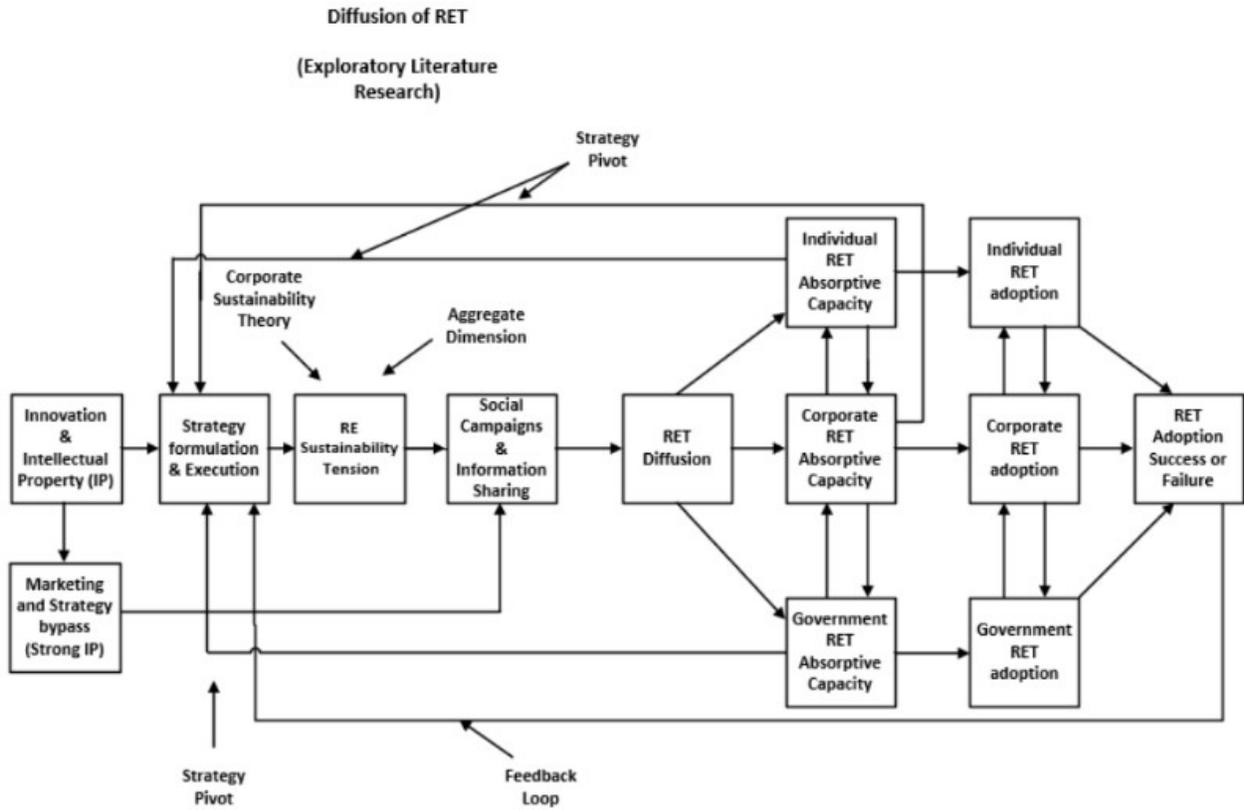


Table 5.

Flexible Pattern matching (Expected and Observed Patterns)

Concepts	Expected Patterns	Observed Patterns
<i>Innovation and Intellectual Property</i> Johnstone et al. (2017).	Higher resource levels are relative to the more significant competitive advantage and more robust strategic performance, proposed as a (moderate) level of importance to consumers.	Quality innovation and securing IP protection offer high technical and competitive advantages within the industry, observed as (highly) necessary to members of the industry.
<i>Marketing and Strategy Bypass</i> Lybecker, K. (2015)	Patent protection and Strong IP of RET leads to accelerated diffusion; proposed as a (low) level of importance to consumers.	The acceleration of diffusion is uncommon; however, acknowledgment of the utilization to the pathway exist. Observed as the (low) level of importance to members of the industry.
<i>Strategy Formulation and Execution</i> Cox, M. et al. (2012).	High strategy and execution will increase competitive advantage and aid in innovation, proposed as a (moderate) level of importance to consumers.	A developed idea and an execution plan moderate to a higher level of success, observed as (highly) necessary to members of the industry.
<i>Marketing</i> (Chu 2013).	Information sharing is a significant communication objective in the diffusion of RET, proposed as a (moderate) level of importance to consumers.	Without marketing and social campaigns, the visibility and communication objectives stifled, observed as (highly) necessary to members of the industry.
<i>RET Diffusion</i> Bale et al. (2013)	The diffusion of RET cannot be successful without the understanding of the DOI framework, proposed as a (high) level of importance to consumers.	The diffusion of RET cannot be successful without understanding the predecessors in the process; observed as (moderately) necessary to members of the industry.
<i>Individual ACAP</i> Zahra et al. (2002)	An individual's absorptive capacity is the foundation of the RET diffusion, proposed as a (high) level of importance to consumers.	An individual's increased ACAP level builds credibility; trust provides security in RET diffusion, observed as (moderately) necessary to members of industry.
<i>Corporate or Organizational ACAP</i> Johnstone et al. (2017)	The corporate RET absorptive capacity is another necessary variable needed for RET diffusion, proposed as a (high) level of importance to consumers.	Higher the organizational ACAP level, the increased level of adoption; observed as (moderately) necessary to members of industry
<i>Governmental ACAP</i> Popp (2012)	The government RET absorptive capacity influences RET diffusion, proposed as a (moderate) level of importance to consumers.	Higher the governmental ACAP, the increased level of adoption and lower the ACAP increases barriers for RET; observed as (moderately) necessary to members of industry
<i>Adoption of RET</i> Rogers, E (1995)	The diffusion of RET has a positive effect on the adoption of innovation, proposed (moderate) level of importance to consumers.	Adoption of RET is moderated by ACAP; observed as (moderately) necessary to members of the industry
<i>Individual RET Adoption</i> Hyysalo (2017)	The individual RET adoption is the foundational influencer to another consumer adoption, proposed as a (moderate) level of importance to consumers.	Individual adoption of RET has an influence on organizational adoption; observed as a (moderate) level of importance to members of the industry
<i>Corporate RET Adoption</i> Lybecker (2015)	The corporate RET adoption is vital in inter-company RET cooperation; proposed a (moderate) level of importance to consumers.	Organizational RET adoption does not guarantee enterprise adoption; observed as a (low) level of importance to members of the industry
<i>Governmental RET Adoption</i> , Popp (2002)	The government RET adoption has a significant influence on RET diffusion policies, proposed as a (moderate) level of importance to consumers.	Higher the governmental adoption, the increased level of policy implementation for RET diffusion; observed as (moderately) necessary to members of industry

<i>RET Adoption, Success or Failure; Gibbons (2004)</i>	A successful 100% RET diffusion does not guarantee successful adoption.; proposed as a (low) level of importance to consumers.	Success or Failure of RET adoption requires a feedback loop for strategy evolution; observed as (moderately) important to members of the industry
Flexible Pattern matching (continued)		Strategy Pivot was an unexpected pattern that emerged from the data. It aids in pivoting resources when barriers in RET occur.
		Sustainability Tensions was an additional pattern that emerged from the two themes, “Prioritizing Environment and Prioritizing Profit.”
		Feedback Loop was the final pattern that emerged, and its main attribute is to aid in the competitiveness and evolution of a firm.

General Discussion

In summation, the interviews were worth the rigor; the interviewer was able to gather data that otherwise would have been unobtainable. Results from the interviews were collected, with indications of code or excerpt data. Out of the 31 MILCON members interviewed, 21 interviewee selections were positive towards profits, or prioritized it in the litany of adopting renewable energy.

Second, many of the interviewees stated that they were “highly likely” to adopt new RET if the option was compatible with the old system. It served both the climate & energy savings aspect, posed low maintenance, and was manufactured from a credible and environment-friendly source. Finally, not only was the overall feedback of the diffusion model from chapter 1 “good,” but the interviewer was able to gather an essential item from a consensus with Innovation and Intellectual Property theory with eight selections as it being the top priority in

the diffusion process. Strategy and social marketing theories maintained a crucial role in prioritizing RET, as well. Surprisingly, absorptive capacity was moderately in between the other methods. The interviewer was able to validate the research query of defining the MILCON employees ACAP levels and identify the premise of the DOI model. The theory that derived from this research is that the integration of RET within infrastructure and construction is inevitable, hence “smart,” facilities.

Limitations and Lessons learned

The limitation and lessons learned from this research is imperatively fundamental. The analysis of this study, at its core, cannot be sound if it does not include human interaction and feedback. Initially, there was a plan to pursue performing another quantitative research proponent to expedite the research process, but, fundamentally, the research needed input from members of the industry; the results were favorable. The most significant limitation in qualitative research, from experience, is the resistance to accomplish it. The study is time-consuming; the process of getting the IRB to approve the research was rigorous, and the qualitative experts are sought out with near exclusiveness for input. There’s a newfound respect for those who have performed the interview or survey process. When the interviewer was an investigator in the United States Air Force, they

showed similar practices and exhibitions in this research. The research produced a near-typical discovery that the information from your sources were important, but the interviewer had to view the data directly. Qualitative research is undoubtedly arduous because one of the determining factors is time. In consideration of processing the documents for approval, scheduling the interviews, meeting deadlines, receiving timely feedback, coding, processing data, learning new terms to substantiate the data, and also being able to find time to accomplish the goal of completing the research. The interviewer learned, as an entrepreneur, doubt from the consumers, as well as the people intimate to them, can occur; however, interviewing members who have daily encounters of business and general construction gave more credibility to the research and hope for the future in renewable energy and infrastructure.

Besides time, the most substantial implication of this study was processing the documents and fulfilling other relevant operations well in advance, so that the process could be fluid. Fortunately, interviews were pre-scheduled, and support was gained from all the MILCON departments, except for one individual who respectfully declined to perform the meeting. A hindrance faced was an uncertainty of a participant's personal information would be disclosed with impunity from the interviewer; consent forms and approval form their leadership helped ease this

hesitation of the interviewees. Another limiting factor faced was getting authorization to perform the interviews from a public affairs standpoint. It would have posed significant easement to seek out the members that the interviewers had pre-introduction personal interactions. The process to interview confirmation took extensively too long in some organizations. There are no limits in qualitative research, except for the lack of experience in performing them. The interviewer gained more knowledge and validation in their study, as well as earned respect from the MILCON members of my community.

Conclusion

In chapter 1, I discuss the process of diffusion and how the DOI model can be utilized as a template for additional research in the RET and construction industry. During the study, the consensus on the model focused on an apparent complexity, with a small portion of interviewees viewing it as an electrical schematic diagram. As time progressed and the discussion of RET broached, the model became more relevant within academia as well as in the practical world. In discussing the expression of 100% diffusion process, each component is essential in achieving successful operating capacity; however, the theory of diffusion ultimately is possible if all aspects of the model are adopted. The initial draft of

the model is essential for dialogue but added theories in the final concept ultimately solidifies the diffusion model.

In chapter 2, we discuss the importance of the DOI model, pinpointing an area that offers the most contribution to our research. The research conducted on organizational ACAP is essential because the MILCON industry is an environment that I am familiar with, and the MILCON industry offers an optimal platform to analyze an area of the model. I had full access to data and, in turn, produced academic data in a realistic environment. The organizational ACAP offered a moderating effect on the diffusion process, and it became imperative to be able to conclude which department had the highest ACAP in terms of integrating RET with MILCON. With the objective familiarity I carried of the government construction industry, I researched the data for the highest ACAP and concluded that the Army had the highest levels of such. The results of the Army department having the highest ACAP and future appropriated funds are data primed for utilizing or integrating future MILCON projects.

Lastly, in the final chapter, I was able to conclude several questions about the overall research. Was there significant data to confirm the legitimacy of the diffusion model and identify individual ACAP levels? As I reached this to be the outcome, I gathered demographic information, which included education levels,

experiences, and positions in the organization as well. Finally, RET Diffusion is a novel process, and this study aided in solidifying the managerial and theoretical implications. This study, after the qualitative research, proved that it improves the decision-making process by practitioners. This study offers practitioners an opportunity to utilize academic research to improve understanding of the RET phenomenon, thus creating dialogue, process improvement, and reducing the sustainability and profit tension in the industry.

The theoretical contribution of RET diffusion was possible due to the utilization of an exploratory study within chapters 1 and 2 and flexible pattern matching in section 3. Specifically, an inductive approach aided in the evolution of a new diffusion model, which included attributes and a new dimension: RE Sustainability Tension, Feedback Loop, and Strategic Pivot to the model. The theoretical contribution to research, this study offered, was a refined blueprint for RET diffusion and a reference for practitioners and academic participants to contribute additional research to a novel method.

The construction industry has changed immensely over the past few decades, and with change comes new building standards. Such is the case with LEED-certified structures. LEED certification, or Leadership in Energy and Environmental Design, ensures all building practices use efficient resources and are

environmentally responsible (Groff, 2018). By referring to the RET diffusion model presented in this project, the expectations are to provide a blueprint for any member motivated to spread innovation technology from invention to adoption. An individual in an organization is the most valuable resource; the need to document their opinions and knowledge is significant. Absorptive capacity theory is the most overlooked theory that I have come across, and I believe more research is needed qualitatively to gather data in the RET and DOD construction sector. From an organizational standpoint, knowing the capabilities of the individual can ultimately affect the success of the firm. The goal is to research absorptive capacities at the organization, national and government levels; however, due to the lack of time, it will be accomplished post-dissertation.

During my doctoral program in business, I read a book named “Quirky,” written by Melissa A. Schilling. In her book, she gives an insight into the life of eight prominent serial innovators: Albert Einstein, Benjamin Franklin, Elon Musk, Dean Kamen, Nikola Tesla, Marie Curie, Thomas Edison, and Steve Jobs. Schilling, one of the world's leading technology specialists, invites us to define the characteristics and experiences that led them to create dramatic breakthroughs repeatedly (Schilling, 2018).

As stated previously, as a contractor for the Department of Defense and a RET entrepreneur, it is essential to be able to maneuver through business theories and processes to push new RET or innovation to the masses. The purpose of this paper was not what letter grade is received, or the three letters behind the last name of a person, but what I can do as a practitioner to bridge the gap between academia and practice. As an entrepreneur, it should not be challenging to learn the process of RET diffusion to revolutionize the way consumers utilize electricity effectively. The RET diffusion models presented in this project are fundamental locally and strategically. The expectations are to refine this literature with more research and provide a blueprint for any innovator, inventor, or practitioner to help them understand that any disruptive innovation starts with the individual's absorptive capacity. The understanding of their knowledge helps moderate the art of RET diffusion. My goal or expectation is for more dialogue about RET's and how we can integrate this research into not only DOD construction but in other industry's as well. The previous passage was more of a quantitative focus, but this half was focused on the people's details and opinions on how to make construction and RET integration better. It was to make dialogue to help reduce global climate change education, carbon footprint reduction, and reduced energy savings for any consumer in any continent.

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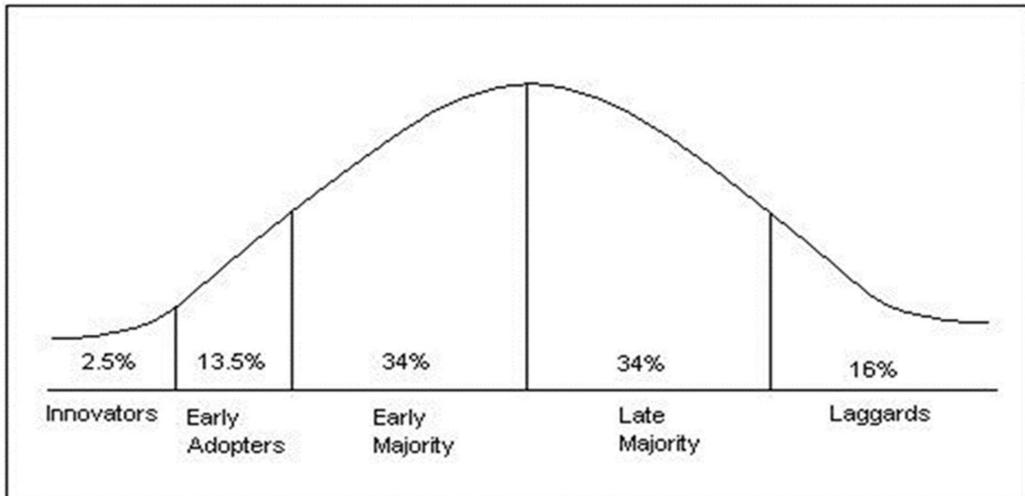
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APPENDICES

APPENDIX A.

CHARACTERISTICS OF ADOPTERS

Figure 10.



APPENDIX B.

IRB CONSENT FORM

Figure 11.

Informed Consent to take part in Human Research Study

Page 1 of 1

Title of the research study: Diffusion of renewable energy technology (RET): The moderating effects of absorptive capacity in RET construction

Names and Department of investigators:

Anthony Di Benedetto (Marketing & Supply Chain Management, Temple University, Fox School of Business)

Terry T. Namkung (Temple University, Philadelphia, PA, Fox School of Business doctoral student)

This study involves research. The purpose of the research is to understand the process of spreading the knowledge of renewable energy technology and gaining input on the importance of the process from department managers and technicians.

What you should know about a research study:

- Someone will explain this research study to you.
- You volunteer to be in a research study.
- Whether you take part is up to you.
- You can choose not to take part in the research study.
- You can agree to take part now and later change your mind.
- Whatever you decide, it will not be held against you.
- Feel free to ask all the questions you want before and after you decide.

The estimated duration of your study participation is **15-30 minutes**. The study procedures consist of writing about your thoughts/feelings and responding to questions. The interviews will mostly be in person; the interviews will be conducted in a private manner in a conference room or office. An over the phone interview can be an option and will ask both the student interviewer and the recipient to be in a private or noise reduced location. A phone with a password lock will be utilized for audio recording. **No names or personal information will be used in the research.**

The reasonably foreseeable risks or discomforts are N/A. *NOTE: You may be asked to look at a conceptual model showing the novel process of diffusion.* The benefit you will obtain from the research is knowing that you have contributed to the understanding and offering qualitative data to a very novel topic. The alternative to participating is not to participate.

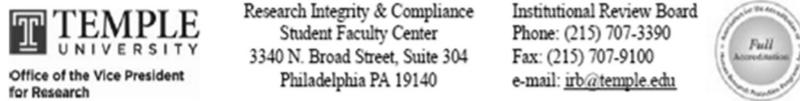
Please contact the research team with questions, concerns, or complaints about the research and any research-related injuries by e-mailing terry.namkung@temple.edu. This research has been reviewed and approved by the Temple University Institutional Review Board. Please contact them at (215) 707-3390 or e-mail them at: irb@temple.edu for any of the following: questions, concerns, or complaints about the research; questions about your rights; to obtain information; or to offer input. In addition, please contact Anthony Di Benedetto, the primary investigator, at tonvd@temple.edu if you have further questions about the research.

Confidentiality: Efforts will be made to limit the disclosure of your personal information, including research study records, to people who have a need to review this information. However, the study team cannot promise complete secrecy. For example, although the study team has put in safeguards to protect your information, there is always a potential risk of loss of confidentiality. The IRB, at Temple University will inspect and make copies of your information to make sure that the study team is following the rules and regulations regarding research and the protection of human subjects

APPENDIX C.

IRB CONSENT FORM

Figure 12.



Approval for a Project Involving Human Subjects Research that Does Not Require Continuing Review

Date: 14-Feb-2020

Protocol Number: 26275
PI: DIBENEDETTO, ANTHONY
Review Type: EXEMPT
Approved On: 14-Feb-2020
Committee: A1
School/College: BUSINESS SCHOOL (1500)
Department: BUSINESS RESEARCH OFFICE (15230)
Sponsor: NO EXTERNAL SPONSOR
Project Title: Diffusion of renewable energy technology (RET): The moderating effects of absorptive capacity in RET construction

The IRB approved the protocol 26275.

The study was approved under Exempt or Expedited review. The IRB determined that the research does not require a continuing review, consequently there is not an IRB approval period.

If applicable to your study, you can access your IRB-approved, stamped consent document or consent script through ERA. Open the Attachments tab and open the stamped documents by clicking the Latest link next to each document. The stamped documents are labeled as such. Copies of the IRB approved stamped consent document or consent script must be used in obtaining consent.

Note that all applicable Institutional approvals must also be secured before study implementation. These approvals include, but are not limited to, Medical Radiation Committee ("MRC"); Radiation Safety Committee ("RSC"); Institutional Biosafety Committee ("IBC"); and Temple University Survey Coordinating Committee ("TUSCC"). Please visit these Committees' websites for further information.

Finally, in conducting this research, you are obligated to submit the following:

- **Amendment requests** - All changes to the research must be reviewed and approved by the IRB. Changes requiring approval include, but are not limited to, changes in the design or focus of the research project, revisions to the information sheet for participants, addition of new measures or instruments, increasing the subject number, and changes to the research funding. Changes made to eliminate apparent immediate hazards to subjects and implemented prior to IRB approval must be promptly reported to the IRB.
- **Reportable New Information** - using the Reportable New Information e-form, report new information items such as those described in HRP - 071 Policy - Prompt Reporting Requirements to the IRB within 5 days.

APPENDIX D.

INTERVIEW GUIDE SEMI-STRUCTURED

Figure 13.

Interview Guide (Semi-Structured)

[Introduction and Welcome - 3 min]

Thank you for your participation in this study. We are examining people's experiences, education, and work levels within the Department of Defense construction and engineering departments. I will record your feedback on a sheet of paper. Please be as open and honest as possible; the results from this study will help me design further research into the diffusion of new technology in the Renewable Energy Technology (RET) sector. Do you have any questions before we begin the interview?

[History and knowledge of RET in military construction 10-15 min]

- Please tell me about your experience in military construction or engineering.
 - How long have you had experience in military construction and engineering?
 - Level of certification and education level?
 - Without getting into detail what level are you within your organization (technician, manager & etc.?)
 - If a new RET is available in your organization, what is the likelihood of spreading that information?
 - How important is climate change and saving energy costs within your home, place of business, and environment to you?
 - If you invented a new RET and it saved energy and reduced carbon footprint, how would you spread that information or technology? What would be your number one priority?

- Finally, please review the RET diffusion blueprint; which one is most important to you?
- Innovation and intellectual property
- Strategy formulation and execution
- Social campaigns and information sharing
- Diffusion (individual, corporate or government)
- Absorptive Capacity (individual, corporate or government)
- Adoption

APPENDIX E.
DEMOGRAPHICS

Table 6.

CURRENT POSITION	YEARS	ED LEVEL	GENDER
1. Engineer	24	BS Ele/MS. Mgt.	M
2. Engineer	2	BS in C Eng.	M
3. Engineer	34	BS in Elec. Eng.	M
4. Engineer	16	PE/MS Elec.	M
5. Engineer	39	BS in Arch/MPA	M
6. Engineer	30	MS Elect. Eng.	M
7. Engineer	28	PE/MS Elect.	M
8. Engineer	40	BS in Physic/MS	M
9. Manager	22	BS in Org. Mgt	M
10. Manager	34	BS/Const. Mgt	M
11. Manager	8	AA	M
12. Manager	15	AA	M
13. Manager	10	BS/Sports Sci.	M
14. Manager	9	HS Diploma	M
15. Manager	33	HS Diploma	M
16. Manager	27	AA Elect. Mech.	M
17. Manager	18.5	BS Project Mgt.	M
18. Manager	26	AA Elec/M. Cert	M
19. Manager	16	AA Ecology Sys.	M
20. Technician	7	AA Applied Sci.	M
21. Technician	20	HS Diploma	M
22. Technician	20	HS/HVAC cert	M
23. Technician	12	HS Diploma	M
24. Technician	8	HS Diploma	M
25. Technician	30	(2) AA's	M
26. Technician	21	HS Diploma	M
27. Technician	12	AA	M
28. Technician	6	AA	M
29. Technician	Six months	HS Diploma	M
30. Technician	8	AA	M
31. Technician	7	AA	M

APPENDIX F.
CODES AND THEMES

Table 7.

Prioritizing Environment	Codes	Quotations
	Energy Costs	<p><i>Number one is saving energy. I mean, energy costs.</i></p> <p><i>Oh, as far as energy costs within the home business and environment. Yes, they're very important to me.</i></p> <p><i>I would say saving energy costs.</i></p> <p><i>Yeah. Yeah, more so energy costs.</i></p>
	Maintenance	<p><i>I could learn about it, but my role as a maintenance and repair person.</i></p> <p><i>So, if it fits our bill, if it fits a need for us what we were doing, if it was something, it was just general conversation, you might talk about it.</i></p>
	Money	<p><i>So, in my home, it's high because it's my direct money that comes out, and I see it every day.</i></p> <p><i>So, in my place of business, with my position, it's high. So, because I've got to manage the budget for the organization. So, I'm making sure that we're spending our money wisely and effectively.</i></p> <p><i>I'm just saving you money because that's the key. If you can show people, you can save them money, and it's environmentally friendly.</i></p>
	Technology	<p><i>This type of technology is out there, and that the main reason for that is cost savings.</i></p> <p><i>Have bilingual translators that talk business and talk about energy, technology, and building.</i></p>
	Energy Power	<p><i>Renewable energy is a powerful strategy.</i></p> <p><i>The reason why is because those governmental agencies are and understand that we need it.</i></p>
	Alternative Energy	<p><i>Alternative energy. The same thing is renewable energy. You're renewing your earnings. Either it's alternative, you're renewing your energy.</i></p> <p><i>They try to use it as a political thing, but the underlying issue is, they are pushing it</i></p>

Prioritizing Profits	Codes	Quotations
	Climate Change	<p><i>But you know, if the climate change you know, I don't want to do anything to make it any worse. That's like I like to go in a positive direction.</i></p> <p><i>So, no matter what your belief is on climate change and the oceans rising and whatever, you're just a good steward of things.</i></p>
	Environment	<p><i>I think the environment should be the most important.</i></p> <p><i>You know, I want to make sure that, you know, my environment there, because you know without it, we're not going to be here, so.</i></p>
	Children	<p><i>Everything that we do now is just going to trickle effect and either make things better for our future, kids, grandkids, or whatever.</i></p> <p><i>I think well; environmental impacts are important to my family and me, my sense is that.</i></p>
	Big Picture	<p><i>I feel like if you look at the big picture, it's more important for climate change and the effects that it would have on the world for future generations.</i></p>
	National Security	<p><i>From a personal standpoint, I view it as it's going to be one of the most significant impacts on our national security, our way of life and economy in the coming years.</i></p>
	Renewable Energy	<p><i>The Army, Navy, and Air Force have already adopted concepts to utilize renewable energy technologies.</i></p> <p><i>Renewable energy gets more people on board then you know the better we can use energy than resources.</i></p>

Title: Manager 11
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>Well, I was a carpenter before I joined and then I've been in for six years here in March. So, say about eight years.</i>
Title: Manager 11
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>I'm a few credits away from my (Associates) CCAF.</i>
Title: Manager 11
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Probably between manager and technician.</i>
Title: Manager 11
Codes Applied: Highly Likely Knowledge Transfer
<i>I'd be highly likely that I would be doing it. And I would be promoting other people to do it.</i>
Title: Manager 11
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>Well, so I. I mean, the home is important. You know, but at the same time. You know, I want to make sure that, you know, my environment there, because you know without it, we're not going to be here, so.</i>
Title: Manager 11
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>In my opinion, I think, and you know, at the end of the day, if it costs more a little bit more money to reduce your carbon footprint can help the environment, help the next generation. Then we should do that. I feel like we shouldn't be charging more for something that's better.</i>
Title: Manager 11
Codes Applied: Communication Platform Knowledge Transfer
<i>So, I'd probably use the Internet. Facebook. You know, all the social media sites.</i>
Codes Applied: Social Campaigns and information sharing RET Conceptual Model Perception
<i>You're going to send it to everyone, and everybody is going to want it. But if you can't market it or can't get it out there so people can see through social campaigning and was going to know you have anything.</i>
Title: Manager 11
Codes Applied: Good Interview Feedback
<i>Pretty straight forward, not too hard.</i>

Title: Manager 11
Codes Applied: RET Conceptual Model Perception
<i>Yeah, I would. Yeah, definitely. Explain it as you go. But you make sense.</i>
Title: Manager 17
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>Okay, I have been in civil engineering for 17 years.</i>
Title: Manager 17
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>So, a bachelor's in project management.</i>
Title: Manager 17
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>I'm a manager.</i>
Title: Manager 17
Codes Applied: Likely Knowledge Transfer
<i>I would spread the information if it benefited, outweighed the technology.</i>
Title: Manager 17
Codes Applied: Communication Platform Knowledge Transfer
Pamphlets, e-mails
Title: Manager 17
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>If you're going to offer me free electricity in my own home, I'll take it. As for climate change in the world, we will all be dead. It won't matter.</i>
Title: Manager 17
Codes Applied: Strategy Formulation and Execution RET Conceptual Model Perception
<i>I think your strategic management planning theory.</i>
Title: Manager 17
Codes Applied: Good Interview Feedback
<i>No, I mean about an 8.</i>
Title: Manager 17
Codes Applied: RET Conceptual Model Perception

<i>I am keeping it at an 8.</i>
Title: Technician 24
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>So, I've been in the military now for a little less than five years.</i>
Title: Technician 24
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>Some college, high school degree.</i>
Title: Technician 24
Codes Applied: Likely Knowledge Transfer
<i>So, I think it would be likely.</i>
Title: Technician 24
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>But then if you look at the big picture, I feel like if you look at the big picture, it's more important for climate change and the effects that it would have on the world for future generations, because everything that we do now is just going to trickle effect and either make things better for our future, kids, grandkids, whatever</i>
Title: Technician 24
Codes Applied: Communication Platform Knowledge Transfer
<i>It seems like the biggest spread of information comes from social media.</i>
Title: Technician 24
Codes Applied: Social Campaigns and information sharing RET Conceptual Model Perception
<i>I feel like that may be the social-marketing theory.</i>
Title: Technician 24
Codes Applied: Good Interview Feedback
<i>I thought it was good.</i>
Title: Technician 24
Codes Applied: Good Interview Feedback
<i>I thought that it was put together well.</i>
Title: Technician 24
Codes Applied: RET Conceptual Model Perception

<i>Oh, after you explained it.</i>
Title: Engineer 8
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>Where I implemented a great deal of my renewable energy expertise within their master's program, mechanical engineering, and their material science program.</i>
Title: Engineer 8
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>I'm the energy manager, and I'm also the utility manager. I'm over energy, yes.</i>
Title: Engineer 8
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>I'm 57 now.</i>
Title: Engineer 8
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>About 40 years.</i>
Title: Engineer 8
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>I have patents, too. I have some publications as well.</i>
Title: Engineer 8
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>A bachelor's in physics concentration electric mechanical and master's environmental engineering.</i>
Title: Engineer 8
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>I have one patent and 10-11 publications and one pending patent pending.</i>
Title: Engineer 8
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>I'm an engineer.</i>
Title: Engineer 8
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>The title is the energy manager.</i>
Title: Engineer 8

Codes Applied: Social Awareness Emotional Intelligence/Politics Cost Savings
<i>I'm both.</i>
Title: Engineer 8
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>I'm just saving you money because that's the key. If you can show people, you can save them money, and it's environmentally friendly. That's your ticket home. People don't care. People don't care what you got. If you show them a graph of you had a hundred dollars here. Now you're only paying \$7 here. They'll start lining up.</i>
Title: Engineer 8
Codes Applied: Highly Likely Knowledge Transfer
<i>I would like me if they allow me to turn this base to a research base. I would like to see how we can implement your idea here.</i>
Title: Engineer 8
Codes Applied: Highly Likely Knowledge Transfer
<i>Why? The reason why is because those governmental agencies are and understand that we need it. Okay. Renewable energy is a power strategy.</i>
Title: Engineer 8
Codes Applied: Communication Platform Knowledge Transfer
<i>Alternative energy. The same thing is renewable energy. You're renewing your earnings. Either it's alternative, you're renewing your energy.</i>
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>It's a political thing. They try to use it as a political thing, but the underlying they are pushing it because the Army, Navy and Air Force have already adopted concepts to utilize renewable energy technologies.</i>
Title: Engineer 8
<i>It does make sense.</i>
Title: Engineer 8
Codes Applied: RET Conceptual Model Perception
<i>It does make sense.</i>
Title: Engineer 8
Codes Applied: Absorptive Capacity - ACAP RET Conceptual Model Perception

<i>Because what you had. You can start conceptual products to target different people if you, I mean that whole technology, you have it. I'm just turning right now on how many different types of things you can do with that from all different levels. So, you know, it depends on your product, who you're targeting.</i>
Title: Engineer 8
Codes Applied: Absorptive Capacity - ACAP RET Conceptual Model Perception
Yes.
Title: Manager 14
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>Save for eight years, almost nine years.</i>
Title: Manager 14
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>High school diploma.</i>
Title: Manager 14
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>It's more of a. I guess the manager kind of.</i>
Title: Manager 14
Codes Applied: Highly Likely Knowledge Transfer
<i>Highly likely, yes, if it was user friendly and it still did what we need it to do to get the results that we needed.</i>
Title: Manager 14
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>It's for the environment. If you think about the environment gets so messed up, there won't really be an earth, so you won't be a cost anymore.</i>
Title: Manager 14
Codes Applied: Communication Platform Knowledge Transfer
<i>That and I think just trying to find likeminded people. You know they're about the same things that you're about.</i>
Title: Manager 14
Codes Applied: Innovation and Intellectual Property RET Conceptual Model Perception
<i>I'd say just the idea of it. I was having the idea.</i>
Title: Manager 14
Codes Applied: Good Interview Feedback

<i>I liked it.</i>
Title: Manager 14
Codes Applied: RET Conceptual Model Perception
<i>Like how you went through it, you have to I mean, before you explained it, I never would even, I don't know how I could even wrap my mind around it, but I after you explained it to me, it makes sense, like you have to have an idea first, you need to protect your resources, which is your idea.</i>
Title: Technician 29
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>This will be my sixth month.</i>
Title: Technician 29
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>Yes, sir, High school.</i>
Title: Technician 29
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Not I do not believe so. I am Power Pro so.</i>
Title: Technician 29
Codes Applied: Highly Likely Knowledge Transfer
<i>It was effective. It would be almost immediately.</i>
Title: Technician 29
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>Climate change.</i>
Title: Technician 29
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>It is something that is very undermined today, and it's a very, very real thing.</i>
Title: Technician 29
Codes Applied: Communication Platform Knowledge Transfer
<i>Well, today, social media is one of the biggest platforms to get the word around. So, I would start there. It's easy to access and easy to spread.</i>
Title: Technician 29
Codes Applied: Absorptive Capacity - ACAP RET Conceptual Model Perception

I think it'd be the corporate.
Title: Technician 29
Codes Applied: Good Interview Feedback
<i>It was honestly; I eye-opening; I already had a mindset coming in mind of what I thought about renewable energy and the business side of it. And I'm leaving with a better perspective.</i>
Title: Technician 29
Codes Applied: RET Conceptual Model Perception
<i>I mean, when someone just looks at it like when you turn the paper over, I'm looking at, I see a bunch of boxes and a bunch of arrows. So, when you go through it step by step and explain each box, it makes total sense, and it's very realistic.</i>
Title: Technician 26
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>I don't know. I've been in civil engineering for I guess since 1999.</i>
Title: Technician 26
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>I have a high school education. And I probably got sixty hours of college.</i>
Title: Technician 26
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>I'm a technician.</i>
Title: Technician 26
Codes Applied: Highly Likely Knowledge Transfer
<i>I'd probably talk about it with maybe my coworkers or my family.</i>
Title: Technician 26
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>I think well; environmental impacts are important to my family and me, my sense is that.</i>
Title: Technician 26
Codes Applied: Communication Platform Knowledge Transfer
<i>I probably would go through maybe my boss or friends or other family members too.</i>
Title: Technician 26
Codes Applied: Absorptive Capacity - ACAP RET Conceptual Model Perception

<i>Because you go to an individual that you trust and then they're going to be able to help you maybe decide which way you want to go, and you want to go corporate or government.</i>
Title: Technician 26
Codes Applied: Good Interview Feedback
<i>Good.</i>
Title: Technician 26
Codes Applied: RET Conceptual Model Perception
<i>No, I well, I never saw one, never really thought about. But now that I see it, it looks it makes sense.</i>
Title: Manager 19
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>So, I just eclipsed 16 years of civil engineering, specifically on water and fuel maintenance.</i>
Title: Manager 19
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>Currently, associate degree</i>
Title: Manager 19
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>So right now, at this current standpoint, I'm more so a manager</i>
Title: Manager 19
Codes Applied: Highly Likely Knowledge Transfer
<i>Very likely. Okay</i>
Title: Manager 19
Codes Applied: Communication Platform Knowledge Transfer
<i>I'd probably try to attack it, attack it at multiple avenues. One. You know, today's social media platform, obviously, that's an easy form and free avenue of advertising. Number two, it must be on big faces, big names, as you know, conversation talking points like Elon Musk.</i>
Title: Manager 19
Codes Applied: Strategy Formulation and Execution RET Conceptual Model Perception
<i>I'm debating between the social campaigns and the strategy piece, but I think the strategy is probably.</i>
Title: Manager 19
Codes Applied: Good Interview Feedback
<i>Oh, overall, yeah. It was great. Appreciate it. Good questions.</i>

Title: Manager 19
Codes Applied: RET Conceptual Model Perception
<i>So, in theory, it makes sense. Yeah.</i>
Title: Engineer 7
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>Engineering graduated from Georgia Tech in 1977.</i>
Title: Engineer 7
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>So, since that point and I as far as military construction goes, I don't count working at the shipyard. So that would be from 1992 on so 28 years.</i>
Title: Engineer 7
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>I have a P.E.</i>
Title: Engineer 7
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Engineer.</i>
Title: Engineer 7
Codes Applied: Likely Knowledge Transfer
<i>Good.</i>
Title: Engineer 7
Codes Applied: Likely Knowledge Transfer
<i>Alright. Provided that it works.</i>
Title: Engineer 7
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>Oh, as far as energy costs within the home business and environment. Yes, they're very important to me.</i>
Title: Engineer 7
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>Climate change is a different situation. Yes, the climate changing. Is man the sole contributor? No. You know, the Great Lakes were formed by glaciers. Okay, so what caused the global warming that melted the glaciers that were in the middle of the United States.</i>

Title: Engineer 7
Codes Applied: Communication Platform Knowledge Transfer
<i>Yeah, that's I don't know. I. Probably would start reaching out to people that I like, like, for example, for Air Force Wide, I would reach out to the AFCEC energy team and say, hey, look here's this thing, you know? And, you know...</i>
Title: Engineer 7
Codes Applied: Diffusion RET Conceptual Model Perception
<i>I would probably go to the bypass first because I'm thinking that would be going to AFCEC? That would be attending the energy exchange.</i>
Title: Engineer 7
Codes Applied: RET Conceptual Model Perception
<i>I look at that, and it's, you know, like a whole bunch of arrows pointing at each other. But, you know, if I was to take, you know, time. You know, this is something that you would see in a PowerPoint presentation. And when the presenter walks through it, it makes perfectly good sense.</i>
Title: Engineer 1
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>I was just taking my EIT about 20 some years ago. I have not gotten a PE yet. I have a Bachelor of Science and electrical engineering and a master's degree and engineering management.</i>
Title: Engineer 1
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>I had 20 years before that with the Army agency that dealt with chemical and biological weapons.</i>
Title: Engineer 1
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>And I also put in 4 years in the Air Force.</i>
Title: Engineer 1
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
Engineer.
Title: Engineer 1
Codes Applied: Highly Likely Knowledge Transfer
<i>So, all of us this kind of work, at least half of us are very interested in that new renewable energy like some of these higher flow of batteries to kind of balance the grid or the types of solar panels. You know any kind of thing. We kind of keep up with some of the stuff happening in real-time. Not really that we can apply it directly, but to share an interest in that.</i>

Title: Engineer 1
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>From a personal standpoint, I view it as it's going to be one of the most significant impacts on our national security, our way of life, and the economy in the coming years? I take it very seriously. My coworkers take it very seriously. So yes, I have solar panels on my house. I've driven an electric vehicle for commuting to and from work; those things aren't cheap to have them because of that. That's important to me so.</i>
Title: Engineer 1
Codes Applied: Communication Platform Knowledge Transfer
<i>I guess it would start with word of mouth.</i>
Title: Engineer 1
Codes Applied: Diffusion RET Conceptual Model Perception
<i>Individual. Yeah, it might fall into diffusion.</i>
Title: Engineer 1
Codes Applied: Diffusion RET Conceptual Model Perception
<i>Individual. Yeah, it might fall into diffusion</i>
Title: Technician 22
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>20 plus years.</i>
Title: Technician 22
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>Education. High school. I'm an Apprentice Grad from Northrup Grumman HVAC Apprenticeship, Apprentice School.</i>
Title: Technician 22
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Technician.</i>
Title: Technician 22
Codes Applied: Highly Likely Knowledge Transfer
<i>Moneywise energy at home, highly. Now that that's something that I would be interested in</i>
Title: Technician 22
Codes Applied: Cost Savings Emotional Intelligence/Politics

<i>We have no effect on the on the current atmosphere of the planet. I think it's meant. I think it's minimal. I think it's so minute, you know, three volcanoes would probably pretty much, you know, explode stuff into the atmosphere or the...What's that park there. And it's got the guys at old faithful?</i>
Title: Technician 22
Codes Applied: Communication Platform Knowledge Transfer
<i>Word of mouth.</i>
Title: Technician 22
Codes Applied: Diffusion RET Conceptual Model Perception
<i>You could say government adoption. Now you can take that government and a government implementation and giving your idea to the government waste a freak in time unless it makes somebody money.</i>
Title: Technician 22
Codes Applied: Great Interview Feedback
<i>I don't know; it got my blood going, I'll give it a nine.</i>
Title: Technician 22
Codes Applied: RET Conceptual Model Perception
<i>No, the model is fine.</i>
Title: Manager 12
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>I would say 15 years.</i>
Title: Manager 12
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>Yeah, I would say what? Associates.</i>
Title: Manager 12
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Manager.</i>
Title: Manager 12
Codes Applied: Highly Likely Knowledge Transfer
<i>I would say high.</i>
Title: Manager 12
Codes Applied: Cost Savings Emotional Intelligence/Politics

<i>I try to be the techie, but in terms of the climate change thing, I don't deny it, but I feel like it's kind of overblown, sensationalized.</i>
Title: Manager 12
Codes Applied: Cost Savings Emotional Intelligence/Politics Social Awareness
<i>The best of both worlds, essentially saving energy and making it better for the environment.</i>
Title: Manager 12
Codes Applied: Communication Platform Knowledge Transfer
<i>Yeah, probably word of mouth.</i>
Title: Manager 12
Codes Applied: Communication Platform Knowledge Transfer
<i>Yeah. Just multiple avenues, really. Got to do your likes it Facebooks and kind of spread out as much. Because you're never going to address every single, there's always going to be those people that don't like one method over others, some people prefer verbal, that's just for learning style or whatever, so you're just going to kind of go with everything.</i>
Title: Manager 12
Codes Applied: Social Campaigns and information sharing RET Conceptual Model Perception
<i>I would probably say the social marketing.</i>
Title: Manager 12
Codes Applied: Good Interview Feedback
<i>I thought it was good, yeah.</i>
Title: Manager 12
Codes Applied: RET Conceptual Model Perception
<i>After you explained.</i>
Title: Technician 23
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>Since 2009.</i>
Title: Technician 23
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>4-year vocational training.</i>
Title: Technician 23
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP

<i>Technician.</i>
Title: Technician 23
Codes Applied: Highly Likely Knowledge Transfer
<i>Highly.</i>
Title: Technician 23
Codes Applied: Highly Likely Knowledge Transfer
<i>Renewable energy gets more people on board then you know the better we can use energy than resources.</i>
Title: Technician 23
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>Umm, I think it's happening, but not to the degree that our government leads us to believe it's happening. I believe there's a slight, you know, but that's just the way, you know, the way the world, you know, the cycle of life works.</i>
Title: Technician 23
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>Oh, yes, at home.</i>
Title: Technician 23
Codes Applied: Communication Platform Knowledge Transfer
<i>I guess you know, social media</i>
Title: Technician 23
Codes Applied: Strategy Formulation and Execution RET Conceptual Model Perception
<i>Yeah, I mean, that's with anything. You know you got to have a background in it, and you have somewhat a smart plan and execute that plan.</i>
Title: Technician 23
Codes Applied: Good Interview Feedback
<i>It was good. Yeah.</i>
Title: Technician 23
Codes Applied: RET Conceptual Model Perception
<i>Yes, it makes sense.</i>
Title: Technician 23
Codes Applied: RET Conceptual Model Perception

<i>When you explained it to me? Yes.</i>
Title: Technician 20
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>Five years with the government and probably six or seven years within construction, engineering.</i>
Title: Technician 20
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>Associates of applied science.</i>
Title: Technician 20
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Technician.</i>
Title: Technician 20
Codes Applied: Likely Knowledge Transfer
<i>Likely.</i>
Title: Technician 20
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>Not important.</i>
Title: Technician 20
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>Mother Nature is going to run its course. And it's more of not human evolution, but I'm looking for and of the way humans are doing things on earth is what's contributing to it.</i>
Title: Technician 20
Codes Applied: Likely Knowledge Transfer
<i>For myself? Yes. As long the initial costs are not too great, So I'd see my savings within say a year</i>
Title: Technician 20
Codes Applied: Communication Platform Knowledge Transfer
<i>Well, being of their family and friends, I will call them. Show them. Show them what they can save on it. And then they would have a word of mouth of other people as well, but also make flyers and soft post online social media just because that's a very quick way to spread information.</i>
Title: Technician 20
Codes Applied: Strategy Formulation and Execution RET Conceptual Model Perception
<i>The strategic formulation and execution.</i>

Title: Technician 20
Codes Applied: Strategy Formulation and Execution RET Conceptual Model Perception
<i>Because you can have something very good, but if you don't strategically market it or show it to the right people, then you're going to go nowhere with it.</i>
Title: Technician 20
Codes Applied: Ok Interview Feedback
<i>I've never really done interviews like this before. It was a different, I guess.</i>
Title: Technician 20
Codes Applied: Ok Interview Feedback
<i>It makes me think about things.</i>
Title: Technician 20
Codes Applied: Ok Interview Feedback
<i>You know, I understand you're using this for your doctorate, but is this something where my voice is going to be heard?</i>
Title: Manager 15
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>1987 is when I started. That's when I started when I came in. And I've been in civil engineers ever since.</i>
Title: Manager 15
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>Former education was high school education, and then if you don't include all my military's training and in all the schools for advancement in the career field that you go to and the technical schools that you would attend throughout my years...</i>
Title: Manager 15
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Manager, manager supervisor.</i>
Title: Manager 15
Codes Applied: Likely Knowledge Transfer
<i>So, we would spread out if it fit our bill, if it fits a need for us what we were doing, if it was something, it was just general conversation, you might talk about it. But if it had to do with our mission here, we would pass along to everybody.</i>
Title: Manager 15

Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>So, if you look at it like that, you must break it down a little bit. I think that the efficiency, the energy savings and the climate change kind of all go together,</i>
Title: Manager 15
Codes Applied: Communication Platform Knowledge Transfer
<i>I would go to organizations that go within my handheld pocketbook of people that I know that are in the industry. A nephew, for instance. He does research and development for Delphi. So, I would talk to him and say, hey, who's using this technology? And then I would go to that company, because you can only get it out but so much. You must have some juice behind it to push it. If it's a great idea, it's going to save money. It's going to be a game-changer.</i>
Title: Manager 15
Codes Applied: Innovation and Intellectual Property RET Conceptual Model Perception
<i>So, you must, number one, your most important thing is your innovation part. So, have the idea that nobody else has done wrong—rule number one. Rule number two is talking to the right people. Like I say, keeping your cards close to your chest until you are ready to do diffusion.</i>
Title: Manager 15
Codes Applied: Ok Interview Feedback
I like it. It's Alright.
Title: Manager 15
Codes Applied: RET Conceptual Model Perception
<i>You could look at that, and it would make sense to you, and anybody who knows how to read and comprehend should be able to understand. So very readable.</i>
Title: Manager 16
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>About twenty-seven years.</i>
Title: Manager 16
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>Associates.</i>
Title: Manager 16
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Manager.</i>
Title: Manager 16
Codes Applied: Highly Likely Knowledge Transfer

<i>I would think I would try to push it up as high as I could so that we get enough people to know, hey, this type of technology is out there, and that the main reason for that is cost savings.</i>
Title: Manager 16
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>This type of technology is out there, and that the main reason for that is cost savings.</i>
Title: Manager 16
Codes Applied: Communication Platform Knowledge Transfer
<i>Social media.</i>
Title: Manager 16
Codes Applied: Good Interview Feedback
<i>I think it was good. You know, from what I'm gathering, you know, you're getting a lot of different people's perspectives from different jobs. You know, you got some people who kind of have experience with this. So, you get their feedback. But like this is good. This what you might want to change some other ideas with what they've known about because they've dealt with it for a while. And then somebody on the outside who doesn't know a whole lot and they're just trying to understand it. So, you get their actual point of view on it.</i>
Title: Manager 16
Codes Applied: RET Conceptual Model Perception
<i>I will say for me it was after</i>
Title: Technician 21
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>I would say roughly around 20 years.</i>
Title: Technician 21
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>Over 30 years.</i>
Title: Technician 21
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>High school graduate, trade school graduate.</i>
Title: Technician 21
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>Yeah, I got a master's License.</i>
Title: Technician 21

Codes Applied: Educational Level	Absorptive Capacity - Individual ACAP
<i>I have a class-A contractor.</i>	
Title: Technician 21	
Codes Applied: Organizational Position	Absorptive Capacity - Individual ACAP
<i>At this point in time, a technician.</i>	
Title: Technician 21	
Codes Applied: Likely	Knowledge Transfer
<i>Much of it depends upon if we know it works. I would spread it.</i>	
Title: Technician 21	
Codes Applied: Cost Savings	Emotional Intelligence/Politics
<i>Saving energy costs is highly important.</i>	
Title: Technician 21	
Codes Applied: Cost Savings	Emotional Intelligence/Politics
<i>Climate change, I obviously haven't given a lot of thought to it because I haven't given a lot of thought to it.</i>	
Title: Technician 21	
Codes Applied: Knowledge Transfer	
<i>Social media.</i>	
Title: Technician 21	
Codes Applied: Knowledge Transfer	
<i>Word of mouth</i>	
Title: Technician 21	
Codes Applied: Absorptive Capacity - ACAP	RET Conceptual Model Perception
<i>Absorptive capacity.</i>	
Title: Technician 21	
Codes Applied: Good	Interview Feedback
<i>I honestly thought you came up with a very good presentation for sure.</i>	
Title: Technician 21	
Codes Applied: RET Conceptual Model Perception	
<i>After you explained it. Yes, yes. I can do that. I mean, I followed along a little bit. The marketing of strategy bypass, I guess I was a little bit confused at first as to why that was explained last.</i>	

Title: Engineer 3
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>I've been with the military D.O.D. as a civilian for over 30 years.</i>
Title: Engineer 3
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>Yeah, my degree coming into the DOD, I have a Bachelor of Science degree in electrical engineering. Then as I've gained the experience going through with the Association of Energy Engineers, I have a certified energy manager certification and a business energy professional certification with the AEE.</i>
Title: Engineer 3
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Normally, energy is in our engineering site. Here it's stayed within operations, basically because I work dual hats for a while.</i>
Title: Engineer 3
Codes Applied: Highly Likely Knowledge Transfer
<i>Well, as you said, your experience coming from an Air Force perspective, I'm not sure what level of experience that you ended up having with it is the old philosophy of if you have money, you can do it.</i>
Title: Engineer 3
Codes Applied: Likely Knowledge Transfer
<i>And so that's sort of critical to implement anything higher. Headquarters ends up looking at across the enterprise of the Air Force and looks at all the assets and what energy consumption. So, they have a portfolio of what technologies they're looking at and where they would be best implemented.</i>
Title: Engineer 3
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>The goal, if everyone had that philosophy, then you would have amplified what reductions you've got because every one of them is saying, hey, what can I do? This is the same philosophy that you see in training. No kids today in school on climate change or global warming, whichever one you're wanting classified under, everyone is a contributor to it. What can I do? And then when you look collectively, you've done even more than just 5 percent because everyone gave 5 percent.</i>
Title: Engineer 3
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>I mean, each area is important because it comes down to the cost of what it costs to operate. If I'm at home, I put in no LED lights and things; it reduced my utility costs. Same philosophy. It frees up money if I'm running now to go out to a movie or go out to dinner. It freed up money because I'm no longer paying the energy costs for it, and when you look from the standpoint of emissions and having to have new power plants built. It falls right into the idea of if I'm emitting less into the environment, I'm</i>

<i>helping. So, the actions that I take at home and the same things that I implement within an installation looking at are all tied together. So, no matter what your belief is on climate change and the oceans rising and whatever, you're just a good steward of things.</i>
Title: Engineer 3
Codes Applied: Social Campaigns and information sharing RET Conceptual Model Perception
<i>I find the biggest challenge is, are the social marketing that you have in your thing, because it directly affects people's choices outside the government, but also inside the government because the marketing you need to end up telling them why is it not going to change what they have to do?</i>
Title: Engineer 3
Codes Applied: Communication Platform Knowledge Transfer
<i>Is bilingual. She speaks Spanish, speak English. She could easily translate going either way. And I think that is at least in the quick snapshot of looking at it. That's probably the best. Have bilingual translators that talk business and talk energy, the technology, and building; those are the people that would talk to the one side; in other words, I'm speaking Spanish at that point.</i>
Title: Technician 27
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>I was twelve.</i>
Title: Technician 27
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>No, it was, I had graduated high school and went into community college, and then shortly after that, then I joined.</i>
Title: Technician 27
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Technician.</i>
Title: Technician 27
Codes Applied: Likely Knowledge Transfer
<i>Outside of squadron or emails or unit emails, obviously not that likely.</i>
Title: Technician 27
Codes Applied: Likely Knowledge Transfer
<i>Likely.</i>
Title: Technician 27
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>Not top priority.</i>

Title: Technician 27
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>Energy cost.</i>
Title: Technician 27
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>I'd say more energy conservation.</i>
Title: Technician 27
Codes Applied: Communication Platform Knowledge Transfer
<i>Okay. Multiple avenues.</i>
Title: Technician 27
Codes Applied: Communication Platform Knowledge Transfer
<i>Yes, the radio.</i>
Title: Technician 27
Codes Applied: Social Campaigns and information sharing RET Conceptual Model Perception
<i>The social marketing.</i>
Title: Technician 27
Codes Applied: Innovation and Intellectual Property RET Conceptual Model Perception
<i>So, I would say yes. So, if you were to get a patent for something and you have concrete.</i>
Title: Technician 27
Codes Applied: Good Interview Feedback
<i>It was good; it gets people right here the opportunity to get their opinion on stuff?</i>
Title: Technician 27
Codes Applied: RET Conceptual Model Perception
<i>If, kind of give my opinion on something, if I were to do something. You know, I would say, yeah, let's go through social media to get the word out there. But if I was doing something for myself, I would make sure that I have something concrete.</i>
Title: Manager 18
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>It started in 1994.</i>
Title: Manager 18
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>I have an associate degree in electronics or electrical technology.</i>

Title: Manager 18
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>And I hold a master's electrician's license and in the state of Virginia.</i>
Title: Manager 18
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Manager.</i>
Title: Manager 18
Codes Applied: Likely Knowledge Transfer
<i>If I think it's a good idea. I think it works. You know, I'd be all for it. I like sharing good ideas and new things.</i>
Title: Manager 18
Codes Applied: Highly Likely Knowledge Transfer
<i>I would say very likely.</i>
Title: Manager 18
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>I would say saving energy first.</i>
Title: Manager 18
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>But you know, if the climate change you know, I don't want to do anything to make it any worse. That's like I like to go in a positive direction.</i>
Title: Manager 18
Codes Applied: Communication Platform Knowledge Transfer
<i>I would think you get with the engineering side of the house. Because they're the ones that can, you know, spread the ideas out there.</i>
Title: Manager 18
Codes Applied: Diffusion RET Conceptual Model Perception
<i>I would say the diffusion.</i>
Title: Manager 18
Codes Applied: Good Interview Feedback
<i>I mean, I have literally gone to job interviews and. Well, you know, let's. Come on, man. You called me for an interview. I pretty much was expecting and hoping you were prepared.</i>

Title: Manager 18
Codes Applied: Good Interview Feedback
<i>I think you did a good job.</i>
Title: Manager 18
Codes Applied: RET Conceptual Model Perception
<i>But then for you to explain it, it made a lot more sense.</i>
Title: Engineer 6
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>30 years.</i>
Title: Engineer 6
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>Okay. Bachelor electrical engineering.</i>
Title: Engineer 6
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Engineer and manager both.</i>
Title: Engineer 6
Codes Applied: Highly Likely Knowledge Transfer
<i>Very high.</i>
Title: Engineer 6
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>Number one is saving energy. I mean, energy costs.</i>
Title: Engineer 6
Codes Applied: Communication Platform Knowledge Transfer
<i>So, they do that their annual conventions; they feature presentations on things.</i>
Title: Engineer 6
Codes Applied: Diffusion RET Conceptual Model Perception
<i>Probably I would say diffusion.</i>
Title: Engineer 6
Codes Applied: Good Interview Feedback

<i>That's good.</i>
Title: Engineer 6
Codes Applied: RET Conceptual Model Perception
<i>Yeah, it made sense.</i>
Title: Engineer 4
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>Meanwhile, we're told to put out whatever is most cost-effective for the highest financial stakes, etc. It's happened where we got to like arguments with the installation. We don't want this. So, I can't help you.</i>
Title: Engineer 4
Codes Applied: Communication Platform Knowledge Transfer
<i>Try to reach out to engineers' researchers laboratory see if they have any</i>
Title: Engineer 4
Codes Applied: Strategy Formulation and Execution RET Conceptual Model Perception
<i>If that's strategy formulation or execution of where you determine whether or not it's a viable solution for a given problem and how you execute that instead of just blindly saying yes, go do this, but you know again.</i>
Title: Technician 28
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>So that's six years in the career field through four different bases.</i>
Title: Technician 28
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>So have the credits for an associate degree.</i>
Title: Technician 28
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Technician.</i>
Title: Technician 28
Codes Applied: Highly Likely Knowledge Transfer
<i>As an example, he, you know, he just came out with his solar-powered roof. Yep. And we'd had that discussion at work. We talked about it. Pros and cons like the pricing going to be the same as solar. An actual roof. Lifespan. Like, how much time it would take to recoup on bills versus installation costs. That kind of thing.</i>

Title: Technician 28
Codes Applied: Highly Likely Knowledge Transfer
<i>I'm interested in that stuff.</i>
Title: Technician 28
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>We are saving energy costs.</i>
Title: Technician 28
Codes Applied: Communication Platform Knowledge Transfer
<i>Facebook, my wife's on Pinterest a lot, and she'll bring up stuff like that.</i>
Title: Technician 28
Codes Applied: Innovation and Intellectual Property RET Conceptual Model Perception
<i>Just because I mean, you got to if you have all this and you don't protect your intellectual property, then, I mean, somebody else can get here first and then after your model is useless.</i>
Title: Technician 28
Codes Applied: Good Interview Feedback
<i>I thought it was good.</i>
Title: Technician 28
Codes Applied: Good Interview Feedback
<i>I like the question about how like if I was in your shoes, what if, what would my priority be. I thought that was interesting in a good way.</i>
Title: Technician 28
Codes Applied: RET Conceptual Model Perception
<i>Like, after the explanation, it was a lot easier.</i>
Title: Manager 13
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>I've been doing military construction as an area for about nine and a half years now.</i>
Title: Manager 13
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>I came in with my bachelor's degree, and I finished my CCAF</i>
Title: Manager 13
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP

<i>Manager.</i>
Title: Manager 13
Codes Applied: Highly Likely Knowledge Transfer
<i>Yeah, it's highly likely.</i>
Title: Manager 13
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>I think the environment should be the most important.</i>
Title: Manager 13
Codes Applied: Communication Platform Knowledge Transfer
<i>I think I'd probably just get on multimedia.</i>
Title: Manager 13
Codes Applied: Strategy Formulation and Execution RET Conceptual Model Perception
<i>I would think to me the Strategic Management and Planning Theory section. It just seems like when you have a developed idea and then you create a plan on how to execute that, it just to me seems like you have higher success.</i>
Title: Manager 13
Codes Applied: Good Interview Feedback
<i>Okay, cool. The interview was fine.</i>
Codes Applied: RET Conceptual Model Perception
<i>I would have had to look at it a little bit longer, I think. I don't know that I fully would have understood it. But after you explained it, it makes sense to me as far as a flow.</i>
Title: Manager 10
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>So, in military construction? I've been since 1986. So, I retired in 2010. So that's 24 years there. The active-duty air force, all as an engineering technician, and then in two years in private industry working for a general contractor and then came back to government service in 2012, and I've been in ever since.</i>
Title: Manager 10
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>So, the highest formal education I got is an associate degree in construction technology from community college at the Air Force. I've taken energy courses and different construction type courses in association with, but never to a certification level, just for general knowledge and experience. And I've got like I said I've got my associates degree, but I've got 92 credits towards a bachelor's in construction management.</i>

Title: Manager 10
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>I'm a manager.</i>
Title: Manager 10
Codes Applied: Highly Likely Knowledge Transfer
<i>Highly likely.</i>
Title: Manager 10
Codes Applied: Communication Platform Knowledge Transfer
<i>Probably word of mouth. Maybe if they asked for more information through e-mail or whatever. But like I said, spreading the information is highly likely.</i>
Title: Manager 10
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>So, in my home, it's high because it's my direct money that comes out, and I see it every day.</i>
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>So, in my place of business, with my position, it's high. So, because I've got to manage the budget for the organization. So, I'm making sure that we're spending our money wisely and effectively.</i>
Title: Manager 10
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>With the environment, I'm not 100 percent on board with what the environmentalists that are like, oh, we can't cut down trees, or we can't do this, that's where the balance must come in.</i>
Title: Manager 10
Codes Applied: Diffusion RET Conceptual Model Perception
<i>Because and I think that is if I understand you correctly, then that would be the DOI theory.</i>
Title: Manager 10
Codes Applied: Good Interview Feedback
<i>It was more than what I expected.</i>
Title: Manager 9
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>I've been a civil engineer for 22 years.</i>
Title: Manager 9
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP

<i>So, the highest level of education I have a bachelor's degree in organizational management from Ashford University and I have an associate degree in applied science through the Community College of the Air Force and mechanical and electrical technology.</i>
Title: Manager 9
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>That would be a manager.</i>
Title: Manager 9
Codes Applied: Highly Likely Knowledge Transfer
<i>Highly likely.</i>
Title: Manager 9
Codes Applied: Cost Savings Emotional Intelligence/Politics Social Awareness
<i>I think they both go hand in hand. When you look at it, because climate change is driving a lot of energy costs. So, when you look at it, it's one of those paradigms that we must look deeper into because one affects the other. So, in some shape or fashion.</i>
Title: Manager 9
Codes Applied: Communication Platform Knowledge Transfer
<i>I think the social marketing</i>
Title: Manager 9
Codes Applied: Social Campaigns and information sharing RET Conceptual Model Perception
<i>Again, you know, a person's educational background and how it's perceived as, you know, if it's going to be advantageous to oppression, it's going to depend on probably the social campaign, information sharing</i>
Title: Manager 9
Codes Applied: Good Interview Feedback
<i>I never had interviews on it. Just kind of, you know, the information here and there. You know, it's always been, you know, just kind of. Talk in the coffee room. You know, in the break room</i>
Title: Manager 9
Codes Applied: RET Conceptual Model Perception
<i>No, once you explain that, it started to flow. And, you know, and then it makes sense, that's absorptive capacity theory, you know, once you got the product and you know, it's working, and that's been proven, then those sources within that a series of block. You know those are who they're going to benefit.</i>
Title: Technician 31
Codes Applied: Experience Absorptive Capacity - Individual ACAP

<i>I was in the military for seven years.</i>
Title: Technician 31
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>I have an associates in general, but not an associate of science. But not an engineer.</i>
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Technical.</i>
Title: Technician 31
Codes Applied: Highly Likely Knowledge Transfer
<i>Yes. Very likely to share the information.</i>
Title: Technician 31
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>I would say in that situation; I would choose between my money and the seals. I would take the seals.</i>
Title: Technician 31
Codes Applied: Communication Platform Knowledge Transfer
<i>Me personally. I don't use social media, but I would target social media.</i>
Codes Applied: Diffusion RET Conceptual Model Perception
<i>You think if somebody has a product that is good enough, it will eventually win out. That's kind of what capitalism is based around. It will eventually be adopted. But the government adoption of basically anything is guaranteed success because the government in most countries is the largest.</i>
Title: Technician 31
Codes Applied: Ok Interview Feedback
<i>If I were conducting the interview, I would assume that the person coming to my desk didn't know who I was.</i>
Title: Technician 31
Codes Applied: RET Conceptual Model Perception
<i>It made sense.</i>
Title: Technician 25
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>I think that's 30 years.</i>
Title: Technician 25

Codes Applied: Educational Level	Absorptive Capacity - Individual ACAP
<i>Associates in mechanical-electrical engineering in this career field.</i>	
Title: Technician 25	
Codes Applied: Organizational Position	Absorptive Capacity - Individual ACAP
<i>I'm a technician</i>	
Title: Technician 25	
Codes Applied: Highly Likely	Knowledge Transfer
<i>Highly likely, very likely.</i>	
Title: Technician 25	
Codes Applied: Cost Savings	Emotional Intelligence/Politics Social Awareness
<i>Both, I think, both ways equal? You know, because it must be cost-effective. If it cost too much and it's not affordable then.</i>	
Title: Technician 25	
Codes Applied: Communication Platform	Knowledge Transfer
<i>Networking is huge. I mean, that goes without saying. Networking is what I mean by word of mouth.</i>	
Title: Technician 25	
Codes Applied: Innovation and Intellectual Property	RET Conceptual Model Perception
<i>I think the innovation and technical portion is by far because you got to know what you're dealing with. But one of the things that didn't have maybe that concept.</i>	
Title: Technician 25	
Codes Applied: Good	Interview Feedback
<i>It's good. Good. You look like you're trying to get some good information for a product and a concept out there.</i>	
Title: Technician 25	
Codes Applied: RET Conceptual Model Perception	
<i>It made sense to me.</i>	
Title: Engineer 5	
Codes Applied: Experience	Absorptive Capacity - Individual ACAP
<i>Thirty-nine years. Well, thanks for your service.</i>	
Title: Engineer 5	
Codes Applied: Educational Level	Absorptive Capacity - Individual ACAP

<i>Bachelor of Architecture, Master of Public Administration, and masters in national security.</i>
Title: Engineer 5
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Manager.</i>
Title: Engineer 5
Codes Applied: Likely Knowledge Transfer
<i>I would think. I will tell you, I would probably do it if I could learn about it, but my role as a maintenance and repair.</i>
Title: Engineer 5
Codes Applied: Social Awareness Emotional Intelligence/Politics
<i>Climate.</i>
Title: Engineer 5
Codes Applied: Communication Platform Knowledge Transfer
<i>That kind of rolled out by word of mouth from executives to executives.</i>
Title: Engineer 5
Codes Applied: Innovation and Intellectual Property RET Conceptual Model Perception
<i>I really think it comes down to quality products.</i>
Title: Technician 30
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>Eight years.</i>
Title: Technician 30
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>So, I mean, I have my you know, my technical information from the electrical power pro, but I also have my associates.</i>
Title: Technician 30
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>So primarily a technician. I do oversee all the generators that we have in our sections.</i>
Title: Technician 30
Codes Applied: Likely Knowledge Transfer
<i>Yeah, highly likely.</i>
Title: Technician 30

Codes Applied: Likely Knowledge Transfer
<i>I think it is kind of; it's interesting because it's new. You know, newer technology. Yeah.</i>
Title: Technician 30
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>I would say saving energy costs.</i>
Title: Technician 30
Codes Applied: Communication Platform Knowledge Transfer
<i>I would probably primarily start with social media.</i>
Title: Technician 30
Codes Applied: Strategy Formulation and Execution RET Conceptual Model Perception
<i>I would probably say strategy, formulation, and execution.</i>
Codes Applied: Strategy Formulation and Execution RET Conceptual Model Perception
<i>I think if you're doing something that is groundbreaking, you probably need to plan it out. Have a way forward.</i>
Title: Technician 30
Codes Applied: Good Interview Feedback
<i>It was good. Yeah. I mean, it's a. Yeah. I mean, I thank you did good.</i>
Title: Technician 30
Codes Applied: RET Conceptual Model Perception
<i>As long. Yeah. If you explain as you go. You know, you move along the way that...</i>
Title: Engineer 2
Codes Applied: Experience Absorptive Capacity - Individual ACAP
<i>I started undergraduate education six years ago, I have a four-year degree and been here in the military doing military construction for two years.</i>
Title: Engineer 2
Codes Applied: Educational Level Absorptive Capacity - Individual ACAP
<i>I have a Bachelor of Science in Civil Engineering.</i>
Title: Engineer 2
Codes Applied: Organizational Position Absorptive Capacity - Individual ACAP
<i>Manager.</i>

Title: Engineer 2
Codes Applied: Highly Likely Knowledge Transfer
<i>I'd be very interested in spreading information. I'm going with what's most beneficial for my organization.</i>
Codes Applied: Cost Savings Emotional Intelligence/Politics
<i>Yeah. Yeah, more so energy costs.</i>
Title: Engineer 2
Codes Applied: Communication Platform Knowledge Transfer
<i>Yeah, definitely. I think social media campaigns are good, you know talking about it in the news like trying to get on whatever, you know, try the news, whatever you know</i>
Title: Engineer 2
Codes Applied: RET Conceptual Model Perception
<i>Oh, that makes perfect sense. I was going to say, depending on how good it is, sometimes you don't even need to like.</i>
Codes Applied: Absorptive Capacity - ACAP RET Conceptual Model Perception
<i>Yeah, I think that that's one of the strengths because individuals make up corporations and individuals make up governments, you know. So, I think that it really comes down to the individual level.</i>
Title: Engineer 2
Codes Applied: Good Interview Feedback
<i>I think it was a good interview. You know, I'm honestly not good at reading this.</i>

**APPENDIX G.
REFERENCE TABLE**

Table 10.

Academic Discipline	Author and Year	Construct Definition	Construct Measure	Data Source	Insight
Business	Apple Inc 2018	Fortune 500 Diffusion of RET	Corporate RET adoption within RE sector	Apple Inc, Website	Gathered corporations are committed to changing environment
Science	Bale et.al,2013	DOI theory	Harnessing social networks	Energy Policy	Gained knowledge on marketing within DOI
Law	Chu, 2013	Developing and Diffusing Green Technologies	Intellectual Property Rights and their Justification	Journal of Energy, Climate, and the Environment	Importance of IP rights to reach diffusion in RET
Science	Cohen et al. 1990	Absorptive capacity	A new perspective on (Technology, Organizations, and Innovation)	Administrative Science Quarterly	AC in the RE sector. Using the theory for DOI
Strategic Mgmt.	Cox et. Al. 2012	Strategic Management	Measures comparisons to other academic constructs	Journal of Business Strategies	RET Strategic Management is necessary for RET AC

Science	Dechezleprêtre et al. 2009	Invention and Transfer of Climate Change Mitigation RET on a Global Scale	Investigation on IP patent data	Fondazione Eni Enrico Mattei, Milan (international research center)	Patent data that shows an increase in RET
Science	Ellabban 2014	RE sector resources	Status and future of the sector	Science Direct	RET that affect climate change and the future
Management	Gibbons 2004	Network Structure and Innovation Ambiguity Effects on Diffusion	Dynamic Organizational Fields	The Academy of Management Journal	Marketing Network in the RE sector
Management	Hascic et. Al. 2004	Environmental Policy Stringency and Technological Innovation	Evidence from Patent Counts	European Association of Environmental and Resource Economists	Importance of Patents in RET and diffusion process
Science	Helm 2014	RET	Evolution and Policy Implications – Evidence from Patent Literature	Global Challenges Report. WIPO, Geneva	IP and patent policies that enhance marketing and trade
Science	Hyysalo et al., 2017	DOI	Diffusion in RE sector	Journal of Cleaner Production	Scientific process of DOI in RET
Science	Johansson et al., 2017	RE policy and innovations	RE diffusion in the mainstream	International Energy Agency Renewable Energy Working Party	DOI in the public sector with policy for mainstream adoption

Economics	Johnstone et al. 2017	RE policy and innovations	Evidence-Based on Patent Counts	Environmental and Resource Economics Journal	Patent counts that lead to the popularity of
Engineering	Lawrence et al. 2016	Absorptive Capacity as a Basis for Construction	Lawrence, K, Chan, P W and James, A (2016) Absorptive Capacity as a Basis for Construction	Association of construction management	Basis for Construction
Science	Lybeker, 2015	Innovation and Diffusion of RET	IP and enabling factors	Global Challenges Report, WIPO: Geneva.	The importance of IP in RET
Psychology	Mani 2012	DOI of consumer behavior	India RET acceleration by consumer	Renewable Energy Journal	Blueprint to adjust to market with consumers
Science	Painuly 2001	Barriers to RET Diffusion	RET DOI analysis	Renewable Energy Journal	Barriers that can lead to a failed adoption
Economics	Popp 2002	RET induction	RET and Energy prices analysis	American Economic Review	RET and cost comparisons
Science	Price water house Coopers,2009	RET Negotiations	RET Mergers and Acquisitions	Pricewaterhouse Coopers Report	MNA in the RET market to accelerate DOI
Sociology	Rogers, E., 1995	Diffusion of innovations	Theory on DOI	NY Free Press	Defined theories that aid DOI

Sociology	Rogers, E., 2003	Diffusion of innovations	Recent information on DOI	NY Free Press	Same information above
Management	Seidel 2007	Strategic Management	Analysis of theory in RE	Munich, GRIN Verlag,	Strategy in RET and gained knowledge of the process of innovation, marketing, and diffusion
Language	Webster 2018	N/A	N/A	N/A	N/A
Management	Zahra et al. 2002	Absorptive capacity	A review, reconceptualization, and extension.	Academy of Management Review	Gained individual and corporate AC knowledge in RET
Management	Zou et al. 2016	Absorptive capacity	Technological innovation, and product life cycle	Springer Plus Journal	Absorbed AC information for RET cradle to grave cycle