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Factors Explaining Remote Work Adoption in the United States

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FACTORS EXPLAINING REMOTE WORK ADOPTION IN THE UNITED STATES

by

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ABSTRACT

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In the early 21st century, advances in information and communications technology have enabled organizations to fundamentally shift traditional work functions away from place, or *where* work is accomplished to *how* work is accomplished (i.e., task facilitation). These technological breakthroughs have led to the widespread adoption of remote work as a modern workplace practice. Considering the rise in remote work, namely the awareness and implementation of the practice, there was a need to examine the factors explaining the process of remote work adoption by organizations in the U.S. Given that the practice of remote work is considered an innovation (i.e., a new idea or practice), this quantitative study was guided by the theory of diffusion of innovations which has been used to explain social change since the 1960s.

This study followed a nonexperimental design with a correlational analysis, collecting cross sectional data from a sample of 1,259 organizational leaders in the U.S. The target population of leaders was recruited through the use of opt-in panels

administered by Centiment, a market research company. The results of this study provide a description of where U.S. organizations range in the innovation-decision process of remote work adoption and categorize organizations based on their level of innovativeness with respect to the time of adoption. Additionally, this research investigated how organizational characteristics and the attributes of remote work relate to the likelihood of remote work adoption by various types of organizations.

Results of this study demonstrate how COVID-19 has played a significant role in precipitating the rapid implementation of remote work by organizations seeking to maintain business operations while mitigating infection rates. Findings also hold implications for organizational leaders exploring the decision to adopt remote work as a formal workplace practice and can assist them in making more informed operational decisions.

(202 pages)

PUBLIC ABSTRACT

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Paul A. Hill

The Rural Online Initiative program at Utah State University Extension supported this quantitative study investigating the factors explaining the process of remote work adoption by organizations in the U.S. Given the potential for remote work with respect to technological advances, shifts in traditional work arrangements, and its impact on organizational/operational efficiency, there was a need to investigate how organizational characteristics and leaders' perceptions of remote work relate to its adoption. This study was guided by Rogers' theory of diffusion of innovations where research objectives were to (1) determine where organizations range in the innovation-decision process of remote work adoption, (2) categorize organizations' level of innovativeness with respect to remote work adoption over time, (3) describe how organizational characteristics relate to remote work adoption, (4) describe how the attributes of remote work relate to the likelihood of remote work adoption among organizations, and (5) describe the extent to which organizations have implemented remote work in response to COVID-19 and their favorability towards the practice.

This study followed a non-experimental design with a correlational analysis, collecting cross sectional data from a sample of 1,259 organizational leaders recruited through the use of opt-in panels. Data collection was facilitated by an online survey instrument using Qualtrics software, and principles of the Tailored Design Method were

used to substantiate construct and face validity.

Results showed that the practice of remote work has been implemented by most organizations in the U.S. Findings indicated organizational leaders perceived the practice of remote work positively and international organizations were twice as likely to adopt remote work compared to those operating only domestically.

Results also demonstrated how remote work has become a widespread workplace practice that is becoming increasingly standard across organizations in the U.S. Leaders can use the results to develop formal remote work arrangements in their organizations and should consider training existing employees and leaders in the best practices of remote work operations. Findings from this study also provide the Cooperative Extension System with insights into how it should respond to the widespread adoption of remote work with relevant, research-based educational programming in their local communities.

DEDICATION

To my wife, Katie Hill, and my sons, Taft, Brady, Reece, and Miles. Thank you for your unconditional love, support, sacrifice, and patience through this journey. We can do hard things.

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Paul A. Hill

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CHAPTER I

INTRODUCTION

Background

A Brief History of Remote Work

Organizations have traditionally operated in physical work environments since the industrial revolution (Koehler et al., 2013; May et al., 2005). Over this time, commercial real estate prices have steadily increased (Nichols et al., 2010). The work environment of the traditional office has shifted away from place—where employees congregate for set hours during weekdays to work at assigned stations—and towards task facilitation (i.e., how work gets done; Blok et al., 2009; Croon et al., 2005; E. J. Hill et al., 2003).

The concept of remote work originated in the U.S. during the 1973-74 oil crisis (Avery & Zabel, 2001). This crisis came as a direct result of the decision by Arab members of the Organization of Petroleum Exporting Countries (OPEC) to institute an oil embargo, halting the exportation of oil to the U.S. and other countries. Thereafter, gas prices surged due to the decrease in petroleum supply, which ultimately stagnated economic growth for a time because people had less disposable income to spend. During this period, organizational leaders were compelled to develop creative solutions to conserve energy while maintaining efficiency levels. Fuel-saving ideas ranged from carpooling, bicycling, and using public transportation to avoid working from home (Avery & Zabel, 2001). Bennis and Nanus (1997) defined organizational leaders as figureheads within an institution that seek to influence other individuals by developing a

vision and taking risks that challenge the status quo. Similarly, Kotter (2001) explained that while managers focus on maintaining stability in the structure and systems of an organization, organizational leaders promote change by finding new approaches to work and by motivating people to take action that aligns with their vision.

Overview of Remote Work

Many terms have been used to describe *remote work*: telework, telecommuting, flexiplace, flexwork, virtual work, distributed work, distance work, working from home, working from anywhere, mobile work, and flexible work arrangements. These terms essentially describe work done away from a central workplace. However, they represent different approaches to work away from a central office.

Fried and Hansson (2013) provide a straightforward description of remote work, stating, "Remote just means you're not in the office 9am–5pm, all day long" (p. 108). Although, in an extensive review of remote work literature, T. D. Allen et al. (2015) contributed the following definition to provide further clarification regarding the broad concept of remote work:

> …a work practice that involves members of an organization substituting a portion of their typical work hours (ranging from a few hours per week to nearly full-time) to work away from a central workplace—typically principally from home—using technology to interact with others as needed to conduct work tasks. (p. 44)

The definition provided by T. D. Allen et al. (2015) was informed by Nilles' (1994) original definition, which attributes the following characteristics particular to remote workers.

- They replace time spent working in a central office with time spent working at home, or elsewhere, physically distant from colleagues.

- They are members of a larger organization, as opposed to freelancers (i.e., independent contractors) or those who are part of an outsourced labor pool.
- They work primarily from their home during work time, with infrequent times possibly spent elsewhere.
- They use multiple forms of information and communications technology (ICT) to interact with others, both within and external to their central office during work time.

As a rocket scientist to the U.S. Air Force Space Program in Washington, DC, Jack Nilles performed his job responsibilities from his home in Los Angeles, CA, in the early 1960s. Influenced by his own remote work experience, Nilles expanded the concept as a method for distributing "work to workers" as opposed to "workers to the work" as a solution for lessening traffic congestion and decreasing energy consumption (Avery & Zabel, 2001). He coined the terms "telecommuting" and "telework" in 1973 and began proclaiming the value and importance of the idea, which started the telework movement (Joice, 2000; Nilles, 1973). Nilles' telework research was originally funded as a project by the National Science Foundation; however, limited interest from the federal government did not allow the concept to be explored further (Joice, 2000). Nevertheless, Nilles' work inspired economist Frank Schiff, who in the late 1970s challenged the federal government to evaluate the facilitation of federal employees working from home as a way of improving productivity, reducing costs, and conserving energy.

Schiff's recommendation to pilot a work-from-home program within the federal government led to a study commissioned by the U.S. Office of Personnel Management where his term "Flexiplace" was first used to encompass all flexible working arrangements (Joice, 2000). The moniker eventually became the name of the first governmentwide remote work program in the early 1980s, which made way for federal

and state governments to begin funding feasibility studies. These studies ranged from investigation into the effectiveness of remote work for improved efficiency, as well as emergency response through distributed operations (Joice, 2000).

In the private sector, American Express, Control Data Corporation, JCPenney, General Electric, The Hartford, IBM, Levi Strauss & Co., and Sears Holdings were only a few of the innovative organizations motivated to explore remote work in the 1980s. The logic behind their adoption decision was largely focused on conserving energy as well as addressing workforce issues, such as talent acquisition and retention (Avery & Zabel, 2001; Caldow, 2009; Reynolds, 2017).

In 1993, the U.S. Office of Personnel Management and General Services Administration conducted the largest remote work research project to that point in history. The study was called "The Federal Flexible Workplace Pilot Project Work-At-Home Component." Findings from over 500 federal employee participants uncovered such benefits as increased productivity, decreased overhead costs, and reduced need for office buildings (Joice, 1993). After this historic report, the U.S. Congress appropriated ongoing funding to the Federal Flexiplace Project in 1997, which led to the expansion of flexible workplace arrangements and additional studies, which reported improved quality of life and morale among federal employees (Reynolds, 2017).

By the turn of the century, over 10,000 federal government employees were working remotely, and studies were published regarding the advantages and challenges of the innovative practice (e.g., productivity, communication, flexibility, talent retention; Kurland & Bailey, 1999; Venkatraman, 1994). In the first decade of the new century,

advances in ICTs, such as project management software, smartphones, video conferencing, and high-speed wireless internet propelled the adoption of remote work. From 1997 to 2010 the U.S. Census Bureau (2013) reported a 46% increase (from 9.2 to 13.4 million) in people working from home. As recently as 2019, the total number of eligible federal employees working remotely increased to over 480,000 in 87 agencies, an increase of 8% since 2012 (Cabaniss, 2019). However, this figure pales in comparison to the worldwide shift to remote work in response to the COVID-19 pandemic and the end of office centricity where millions of organizations worldwide were compelled to adopt the practice of remote work (Cabaniss, 2019; Dingel & Neiman, 2020; Guyot & Sawhill, 2020; Kurland & Bailey, 1999; Lutke, 2020). While a spontaneous decision, this peculiar catalytic transition to remote work provided organizations with the rare opportunity to experience the remote workplace on a trial basis, when most may not have considered this modality of working (Clancy, 2020). According to Rogers (2003), the "trialability of an innovation...is positively related to its rate of adoption" (p. 258) because it allows individuals, and decision-making groups, to discover the value of the innovation and learn how it works, thus dispelling uncertainty.

Problem Statement

Shifts in traditional work arrangements and how people are generating income in the 21st century is forcing organizations to adapt. Technological developments remain an obstacle for organizational leaders to overcome in their efforts to adapt in a rapidly evolving technological world (B. Collins et al., 2019; Kuhn & Galloway, 2019).

The most recent data from the U.S. Bureau of Labor Statistics (BLS) indicates that 24% of the total American workforce (more than 26 million people) now work remotely at least part-time (U.S. BLS, 2020a; note that these data were collected prior to the COVID-19 pandemic). Global Workplace Analytics (Lister, 2020), a research-based consulting company, further reports how the practice of remote work has increased 173% since 2005, with almost 90% of the U.S. workforce indicating a preference for working remotely (at least on a part-time basis). According to additional BLS (2018) data, 10.6 million people reported gig work (i.e., temporary, short-term) to be their primary source of income, constituting 7% of total employment in the U.S. For employers, the advantages of hiring gig workers range from the ability to hire on-demand experts for short-term services to the flexibility of regulating their workforce to quickly align with business demand (Friedman, 2014).

Dingel and Neiman's (2020) research found that less than 40% of jobs in the U.S. can be accomplished remotely. As technology has allowed for more jobs to become compatible with remote work, certain jobs are inherently unsuited with the practice (e.g., airline mechanics, construction workers, or chefs). However, changes in work environments and how people choose to generate income are forcing organizations to innovate, which can be challenging for organizational leaders.

Liñán et al. (2019) acknowledge the increased pressure on organizational leaders, citing heightened competition arising from technological advances. Leaders reported feeling increased levels of stress to meet profitability, productivity, and cost management demands (Liñán et al., 2019). Talent acquisition and retention has recently been identified

as a cause of anxiety among organizational leaders (M. S. Mitchell et al., 2018), but rather than hiring full- or part-time employees, technological developments have simplified the process for organizations to source talent from anywhere in the world to perform specific tasks on a temporary basis. Yet utilizing technological developments remains an obstacle for organizational leaders to overcome in their efforts to adapt in a rapidly evolving technological world (B. Collins et al., 2019; Kuhn & Galloway, 2019).

Given the potential for remote work, with respect to technological advances and its impact on organizational/operational efficiency, there is a need to investigate the factors explaining the process of remote work adoption by organizations in the U.S. (Clancy, 2020; Katz & Krueger, 2019; Martínez-Sánchez et al., 2008; Pérez Pérez et al., 2005; Vrchota et al., 2019). The theory of diffusion of innovations (DOI) was applied in this study to identify the factors related to remote work adoption in the U.S. (Rogers, 2003). DOI was selected as the theoretical framework because the practice of remote work can be perceived as new by organizational leaders; therefore, it is considered an innovation under Rogers' (2003) definition.

Purpose and Objectives

The purpose of this study was to analyze the factors explaining the adoption process of remote work by organizations in the U.S. As few studies have concentrated on these factors, this research focused on describing how organizational characteristics and leaders' perceptions of remote work relate to its adoption through Rogers' (2003) DOI theory. Specific objectives of this study were as follows.

1. Determine where organizations range in the innovation-decision process of remote work adoption.

2. Categorize organizations' level of innovativeness with respect to remote work adoption.

3. Describe how organizational characteristics relate to remote work adoption.

4. Describe how the attributes of remote work relate to the likelihood of remote work adoption among organizations.

5. Describe the extent to which organizations have implemented remote work in response to the COVID-19 pandemic and explain their favorability towards the practice.

Research Questions

Since the 1960s, Rogers' (2003) DOI theory has been used to explain social change. In particular, the adoption of new ideas or practices (i.e., innovations) as a "process by which alteration occurs in the structure and function of a social system" (p. 6). The application of DOI is fitting for this study considering the need to explore the details in the process of remote work adoption by organizations in the U.S.

The following research questions are addressed in this study.

1. Where do organizations range in the innovation-decision process of remote work adoption?

2. What are the primary adopter categories for remote work among organizations?

3. How do organizational characteristics relate to remote work adoption?

4. How do the attributes of remote work relate to the likelihood of its adoption among organizations?

5. To what extent have organizations practiced remote work in response to COVID-19? What are organizations' favorability towards the practice of remote work?

Research Design

This study followed a nonexperimental research design with a correlational analysis, collecting cross sectional data from a sample of 1,259 organizational leaders in the U.S. The target population of leaders was recruited through the use of opt-in panels administered by Centiment, a market research company. Opt-in panels consist of members that have previously consented to respond in various surveys in order to receive a financial incentive from Centiment. Data collection was facilitated by an online survey instrument using Qualtrics software, and principles of the Tailored Design Method (Dillman et al., 2014) were used to substantiate construct and face validity.

Descriptive statistics and crosstabulations were used to answer research questions one and two. A logistic regression was used to address research questions three and four (Ary et al., 2013). Descriptive statistics, crosstabulations, analysis of variance (ANOVA), and a *t* test were utilized to answer research question five. In addition, Pearson's chi-squared correlation was used to identify correlations between variables in research questions 1, 2, 3, and 5. Statistical significance was assumed at $p < .05$.

Limitations

As Rogers' (2003) DOI theory defines the factors described as attributes of innovations, the framework itself was a limitation in this study. DOI theory cannot control for all variables that can possibly influence adoption of remote work. In addition, DOI theory has been criticized for its pro-innovation bias, which suggests "an innovation should be diffused and adopted by all members of a social system" (Rogers, 2003, p.

106). However, the major limitations of this study were the use of a nonexperimental research design and a convenience sample in the data collection process. Consequently, the results of this study are not generalizable across the population and caution needs to be exercised in making inferences.

Notwithstanding, steps were performed to minimize coverage and sampling error. Thus, an estimation of relative sector employment served as the basis for the target population of organizational leaders in the U.S. The most recent BLS (2020b) employment sector data available as of September 1, 2020, reports the proportion of public sector (e.g., government, education) employment at 14%, private sector (e.g., for profit business) at 76%, and not-for-profit (e.g., arts, social advocacy, health services, education, etc.) at 10%. The sample population included a commensurate ratio of organizational leaders from each sector to ensure representativeness. A stratified convenience sample was utilized to establish that one sector was not overrepresented or underrepresented, nor had disproportionate weight in the sample. This representative balancing reduced the effect of limitations (e.g., selection, nonparticipation bias, and exclusion) in the nonprobability sampling (Baker et al., 2013).

Assumptions

While remote work is a common workplace practice today, the process of its adoption by organizations in the U.S. is unclear. This study assumed the target population of organizational leaders was familiar with the concept of remote work, and whether or not the practice was currently utilized within their organization. This study also assumed

the target population was concerned with the development of the organization that employs them, specifically related to the advantages and disadvantages of remote work. It was also assumed that participants would provide honest and truthful survey responses.

Delimitations

The focus of this study was to investigate the factors explaining the process of remote work adoption by organizations in the U.S. As the target population of interest in this study was organizational leaders in the U.S., survey participants were accepted based on responses to discrete qualifying questions chosen by the researcher. These questions served to determine whether potential respondents manage employees and had influence in their organization's hiring process.

This moderating process intended to narrow the target population to certain organizational leaders who were capable of providing the most authentic data depicting the characteristics and insights related to their organization's experience with the practice of remote work. For the purposes of this study and the research questions outlined herein, the personal experiences of employees and managers related to the practice of remote work were not of interest. In addition, as the research design for this study was quantitative, the insights only qualitative research can uncover were beyond the scope of what this study analyzed and discussed.

Significance of Study

Understanding the factors influencing organizations' adoption of remote work can

assist leaders in making more informed decisions. Particularly, as it relates to how their organization will adopt or reject remote work as a workplace practice. Insights from this study serve to guide the development of remote work as a formal workplace arrangement or policy so common obstacles that lead to setbacks, frustration, and eventually retraction can be mitigated.

The results of this study provide a description of where U.S. organizations are situated in the innovation-decision process of remote work adoption and categorize organizations based on their level of innovativeness with respect to remote work adoption. Additionally, this research investigated how organizational characteristics and the attributes of remote work relate to the likelihood of remote work adoption by various types of organizations. Therefore, this study holds implications for organizational leaders in multiple sectors (e.g., private, public, not-for-profit) who are exploring the decision to adopt remote work as a formal workplace practice. Results are targeted towards enhancing leaders' knowledge of the factors influencing adoption of remote work as a modern workplace practice.

Knowledge gained from this study is also of value to the Cooperative Extension System, a non-formal educational program in the U.S. that is designed to help people and community leaders use research-based knowledge to improve lives and create positive change. Results will serve to inform the efforts of Extension professionals in their development of educational programming responsive to the widespread implementation and adoption of remote work in the U.S. Utah State University Extension's Rural Online Initiative is one example of an innovative program that provides specialized remote work

training to prepare rural residents for career success in a rapidly changing economy (Gillmor, 2018; P. A. Hill et al., 2020; Reese et al., 2018).

Definition of Terms

The following terms are used throughout the chapters of this study.

Organizational leader: Bennis and Nanus (1997) define organizational leaders as innovators within institutions that seek to influence other individuals by developing a vision for the future and taking risks (e.g., the adoption of remote work) to accomplish their vision over the long-term. Kotter (2001) distinguished management from leadership by explaining that leaders advance new approaches to work (i.e., change) by motivating individuals, while managers maintain the status quo by organizing, coordinating, and monitoring the routine activities. This study uses the term "organizational leader" in referencing those with influence in the hiring process or operations within their respective organizations.

Information and communications technology (ICT): McNamara et al. (2017) broadly define the term ICT as "any device, tool, or application that permits the exchange or collection of data through interaction or transmission...[including] anything from radio to satellite imagery to mobile phones or electronic money transfers" (p. 3). This study uses the term "information and communications technology" when referring to software and hardware tools that enable the practice of remote work.

Remote work: D. A. Owens (2017) provides the following dual description of remote work as "work outside the traditional office setting, conducted through

technology or other computer-based resources" and "work interactions that take place outside of the traditional office work concept" (p. 14). This study references the term "remote work" to be inclusive of income-based work performed outside of a traditional (i.e., central) office setting.

Theory of Diffusion of Innovations (DOI): In defining his theory, Rogers (2003) described diffusion as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). Additionally, Rogers explains diffusion as "a special type of communication in which the messages are about a new idea," further describing it as "a kind of social change...by which alteration occurs in the structure and function of a social system" (p. 6). This study will reference the term "diffusion of innovations" to be inclusive of Rogers' renowned theory which explains the adoption process of new products or ideas (i.e., innovations), in this study the innovation is remote work.

CHAPTER II

REVIEW OF LITERATURE

Chapter Overview

This chapter provides an overview of Rogers' (2003) theory of DOI that guides the research objectives, particularly the elements of diffusion, the innovation-decision process, attributes of innovations, and adopter categories. The review of literature discusses the factors affecting organizations' adoption of remote work as a formal workplace practice and describes the categorization of organizational leaders on the basis of time with respect to remote work history. Finally, a conceptual model demonstrates the connections between research objectives and DOI theory.

Theoretical Framework

Rogers (2003) developed DOI theory in the early 1960s to describe the process of diffusion—a unique category of communication in which messages are focused on new ideas. DOI theory explains the process by which a new idea (i.e., an innovative product or practice) is communicated through various channels over time and between members of a social system. Diffusion is a class of social change explained as "the process by which alteration occurs in the structure and function of a social system" (Rogers, 2003, p. 6). Because the practice of remote work can be perceived as a new concept or practice, it can be considered an innovation. Therefore, this study uses the DOI theory (Rogers, 2003) to describe the factors explaining remote work adoption by organizations in the

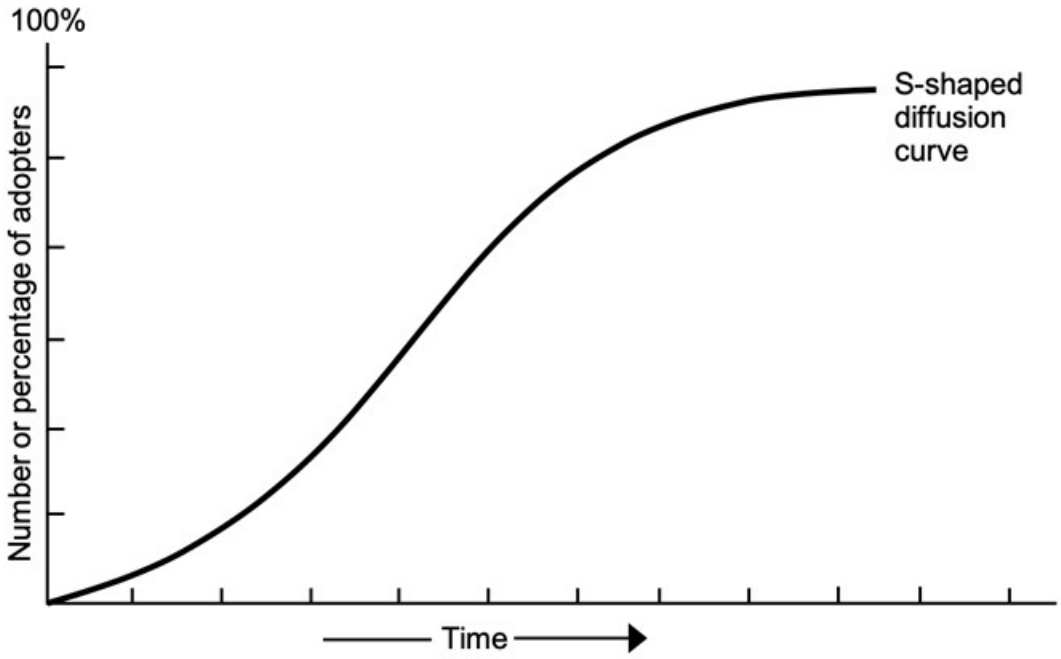
U.S.

Ryan and Gross' (1943) hybrid seed corn study was pivotal in shaping Rogers' (2003) framework of DOI theory. Through this groundbreaking research, they observed how the decision to adopt an innovative product or practice was indeed a process—taking place over time and involving a sequence of steps. The decision was not merely impulsive. Rogers went on to relate adoption as a process of cognition, whereby an individual commits to mitigating the uncertainties surrounding the benefits and drawbacks of the innovation.

Another diffusion scholar who significantly contributed to Rogers' (2003) DOI theory was the European social scientist Gabriel Tarde. In the early 1900s, Tarde originated the "laws of imitation," which later became recognized as reliable generalizations explaining why most ideas fail to spread (Tarde, 1969; Toews, 2003). In his written works, Tarde used the term "imitation," which is synonymous with what Rogers describes as the adoption of an innovation, and "a crucial outcome variable in diffusion research" (Rogers, 2003, p. 41). Tarde recognized imitation as a social process of interpersonal networks, mainly because one cannot imitate another without first observing their use of the innovation. Further, he discerned that over time new ideas followed a rate of adoption resembling an S-shaped curve (see Figure 1), with adoption swiftly increasing over time as influential leaders in a social system are observed using an innovation. Ultimately, adoption would taper off at the top of this S-shaped curve and eventually flatten as the innovation reached the majority of the population. In addition to Tarde's contributions to diffusion theory, sociologist Elihu Katz (1957) described the

Figure 1

Rogers' S-Shaped Curve of Adoption



Note. From DIFFUSION OF INNOVATIONS, 5E by Everett M. Rogers. Copyright © 1995, 2003 by Everett M. Rogers. Copyright © 1962, 1971, 1983 by The Free Press.

process of diffusion as a result of time through his two-step flow of communication theory. He also was first in explaining the significant contributions of opinion leaders and media in the process. After this development, Rogers (2003) modified the S-shaped curve of adoption to correlate with the curve of normal distribution in his illustration and description of adopter categories, which were his original conceptualizations introduced in DOI theory.

Elements of Diffusion

Central to Rogers' (2003) DOI theory are the four main elements: the innovation, communication channels, time, and the social system. Each of these elements are distinct

and play an integral role within every planned, or spontaneous, diffusion effort.

Innovation

The innovation itself is the first element. An innovation can be an idea, a practice (i.e., procedure), or tangible artifact. Even if an innovation is mature, if a potential adopter perceives it to be new, then it is an innovation for them. Diffusion scholars commonly use the term "technology" interchangeably with "innovation" (Rogers, 2003). Rogers clarifies that "a technology is a design for instrumental action that reduces the uncertainty" (p. 13). As every technology is one part "hardware" and another part "software," the hardware is the actual physical object while the software is the instruction for how it is to be used, or the codebase that allows it to function (Rogers, 2003). Inherent to every innovation is uncertainty or the unpredictability of desirable consequences. Moreover, it merely takes awareness of an innovation to induce uncertainty, which is a critical barrier to adoption that can only be lessened with further information concerning the advantages and disadvantages of all consequences. Once an innovation exists, communication is required for it to diffuse (Rogers, 2003).

Communication Channels

Communication channels are the second element of DOI theory. While communication is the process by which individuals produce and distribute information to understand one another, diffusion is a special type of communication, wherein the exchanging of dialogue centers on an innovation (i.e., new idea). The connecting of individuals necessitates a communication channel. These can be interpersonal channels

(e.g., face-to-face) between two or more people or mass media channels (e.g., social media, podcasts, TV, radio, magazines, newspapers), which allow one to reach a near-limitless audience (Carr & Hayes, 2015). Rogers (2003) insists interpersonal channels are more powerful than mass media channels at convincing other individuals to adopt an innovation. He supports this assertion on the grounds that interpersonal channels connect two or more individuals who are often homophilous—having similar attributes, such as religious beliefs, educational attainment, and socioeconomic status. In addition, Rogers asserts that based on other studies of diffusion, most people do not consult scientific literature when analyzing an innovation prior to adoption. Most individuals place reliance on others similar to themselves, who have previously adopted the innovation under inquiry. Accordingly, the process of diffusion is distinctly social, relying heavily on interpersonal relationships.

Time

Time makes up the third element of DOI theory. Undeterred by the fact that other behavioral research scholars have dismissed the extent of time, Rogers (2003) recognizes this variable as a virtue of diffusion research. Time is connected to the innovation-decision process, whereupon individuals advance from a knowledge of an innovation to its eventual adoption or rejection. Time is also the rationale (i.e., relatively early, or late) by which adopters are compared to other members in a system and subsequently categorized by their level of innovativeness. Finally, time is the basis for the rate of adoption within a social system, which explains the proportional speed by which members adopt an innovation over a given period.

Social System

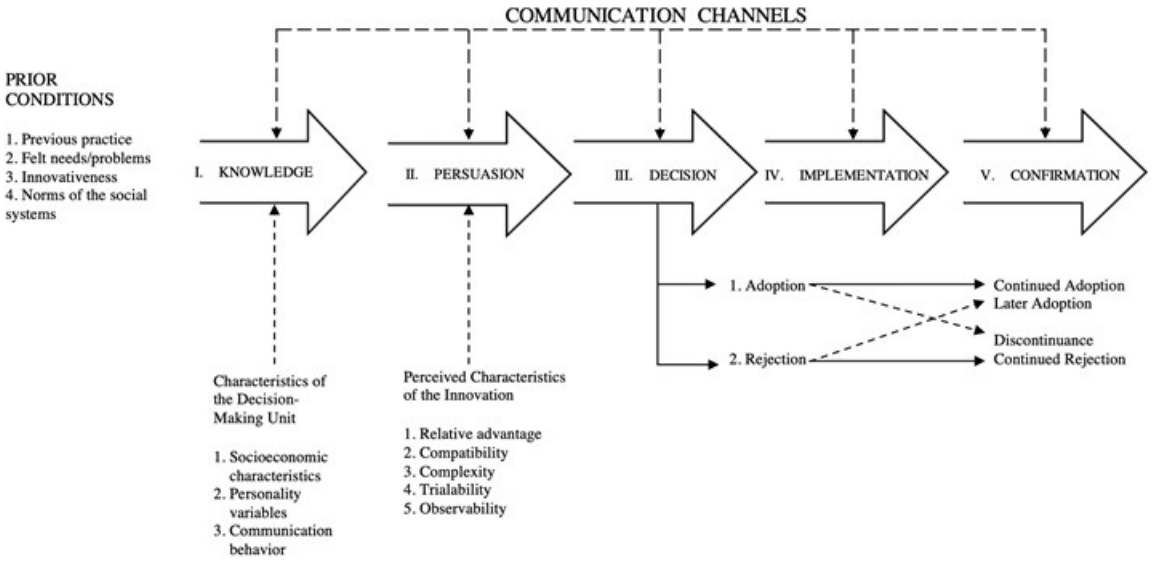
The social system is the fourth and most tangled element of Rogers' (2003) DOI theory. Members of a social system comprise individuals, nonformal groups, organizations, and even subsystems—all working conjointly to achieve a common goal. It is this shared goal, or purpose, which knits the system together. As the diffusion of innovations occurs within the bounds of social systems, the effects of the structure are considerable (Rogers, 2003). For instance, the accepted "norms" of a system inform expectations related to a member's behavior, which impacts their innovativeness, the gauge for categorizing adopters, and the overall adoption rate within a system. Effectively, it is the structure which expedites or hampers adoption.

The Innovation-Decision Process

Rogers' (2003) describes the innovation-decision process as a progressive experience of five stages which takes place over time (see Figure 2). As Ryan and Gross (1943) recognized, adoption is not an impulse decision. The process begins with an individual, or a decision-making group, first becoming aware of an innovation (stage 1: knowledge), forming an opinion of it (stage 2: persuasion), and then deciding whether to adopt or reject (stage 3: decision). Adoption is followed by applying the innovation in practice (stage 4: implementation) and later resolving to continue using the innovation or not (stage 5: confirmation). The entire innovation-decision process is made up of a sequence of choices and actions in which potential adopters make judgments regarding whether to put an innovation into practice or not. Inherent to this process is the aspect of uncertainty. Upon being exposed to the existence of an innovation and starting the

Figure 2

The Innovation-Decision Process



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innovation-decision process, potential adopters must contend with the uncertainty of choosing to go with a new alternative or continue with the status quo.

Knowledge

The innovation-decision process is initiated through the knowledge stage, which begins when a potential adopter becomes aware of the existence of an innovation and learns how it works. Individuals can enter the knowledge stage in different ways. Rogers (2003) points out that exposure to a new idea early in the innovation-decision process is more likely to occur through the mass media communication channel. If an individual is searching for a solution to a need, exposure is intentional, but it can also happen by accident. No matter how exposure occurs, a potential adopter will not continue to

investigate an innovation, thus progressing to the persuasion stage, unless it is deemed relevant (Rogers, 2003).

Persuasion

During the persuasion stage, the potential adopter forms a positive or negative attitude towards the new idea. Throughout this stage, the potential adopter interprets information and begins to develop a basic perception of the innovation. Rogers (2003) stresses how the attributes of relative advantage, compatibility, and complexity are particularly significant at this stage; explaining that they are mainly influenced through interpersonal communication channels. For at this stage, mass media messages are too broad and lack the type of validation only peers can supply. As potential adopters seek out information regarding the innovation, it is the opinions of peers that effectively reduce the uncertainty of expected consequences more effectively (Rogers & Shoemaker, 1971).

Decision

Rogers (2003) defines adoption as "the decision to make full use of an innovation as the best course of available action" (p. 177). Inevitably, rejection is the decision not to adopt an innovation and can still occur after a previous decision to adopt. The decision stage begins when a potential adopter engages in certain activities that lead to adoption or rejection of an innovation. Observing other's use of an innovation is considered an activity of the decision stage. In practice, demonstrations are effective, especially if the demonstrator is an opinion leader (i.e., influential) within the social system of the

potential adopter (Rogers, 2003). However, in describing adoption as a process and not an impulse decision, Ryan and Gross (1943) report how, in the 1930s, crop salesmen would provide free sample bags of hybrid seed corn to Iowa farmers. The acceptance and planting of the sample seeds is an example of an activity that instigates the decision stage. Noting the critical role trialability plays in this stage, Rogers explains how trying out an innovation leads to more rapid adoption because individuals need time to ascertain its utility in their unique situation, which works to reduce uncertainty.

Implementation

The implementation stage is underway once an individual makes full use of an innovation (Rogers, 2003). As a 'potential' adopter in prior stages, the individual has changed his or her behavior by choosing to put the innovation into practice, thus moving beyond mental activities such as thinking and deciding. Uncertainty surrounding the consequences of adoption does not disappear upon implementation, but rather continues to linger at a marginal level. However, when the decision to implement an innovation is made at the organizational level, the greater number of people involved causes problems to be increasingly severe (Rogers, 2003). This is especially the case when the decision to implement is made by an individual or group that is separate from those who will be implementing. In this situation, the risk of resistance to the innovation is high. While the stage of implementation can be prolonged and end at a certain point in time, usually the innovation "becomes institutionalized as a regularized part of an adopter's ongoing operations" (Rogers, 2003, p. 180). When a new idea finally becomes the status quo, the implementation stage is over, marking the end of the innovation-decision process. Yet,

for some, the process continues to the final stage of confirmation (Rogers, 2003).

Confirmation

The innovation-decision process does not necessarily end after the decision to adopt or reject an innovation. Rogers (2003) explains that adopters will often continue to seek information following their decision to make full use of an innovation. During the confirmation stage, the adopter pursues information to support his or her previous decision and avoid dissonance. However, if confronted with conflicting messages, the individual could conceivably retract the adoption decision, thus rejecting the innovation (Rogers, 2003). Such discontinuance could also come as a result of adopting a more novel innovation that replaces the prior, or by becoming dissatisfied with the innovation. The entire innovation-decision process is a cognitive effort by which an individual, or decision-making group, works towards reducing uncertainty inherent in every innovation under investigation (Rogers, 2003).

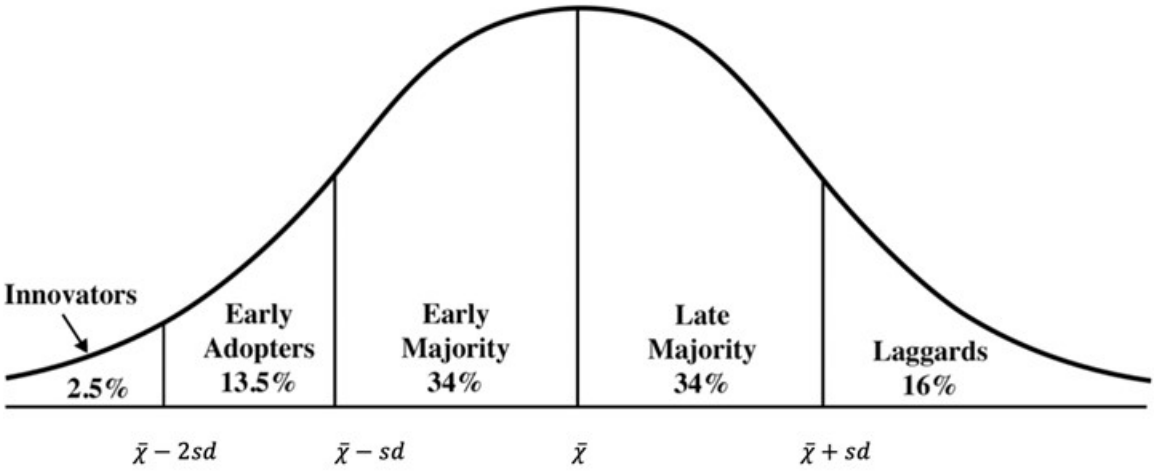
Attributes of Innovations

Rogers (2003) depicts the overall diffusion process as being one of "uncertainty reduction" (p. 232), wherein the attributes of innovations are defined as perceived properties that work to reduce a potential adopter's level of risk (see Figure 3). It is uncertainty that affects the rate of adoption of an innovation, or the "relative speed with which an innovation is adopted by members of a social system" (Rogers, 2003, p. 221).

For instance, this would be the measurable number of individuals, or organizations, that adopt a new idea or practice (e.g., remote work) over a set period of

Figure 3

Adopter Categorization on the Basis of Innovativeness



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time. Rogers (2003) identified the attributes of an innovation as considerable predictors (between 49% to 87%) responsible for explaining the rate of adoption. In order of their predictive magnitude, these are: relative advantage, compatibility, complexity, trialability, and observability.

Relative Advantage

Relative advantage is defined by Rogers (2003) as "the degree to which an innovation is perceived as better than the idea it supersedes" (p. 229). The two primary aspects of this attribute are cost and social status; while the cost of an innovation is economic, social status is psychological and involves benefits such as social prestige, satisfaction, and convenience (Rogers & Shoemaker, 1971). Furthermore, it was first

Tarde (1969) who promulgated the significant function of social status (i.e., prestige) in explaining why imitation occurs among some individuals. Overall, Rogers and other diffusion scholars have found relative advantage to be one of the most influential and positive predictors related to adoption. Yet, apart from the various aspects of relative advantage, superior innovations can still experience slow rates of adoption. As innovations are classified into two types, preventive and incremental (i.e., nonpreventive), Rogers attributes slow rates to the immediacy of reward, which is associated with the former. A preventative innovation is "a new idea that an individual adopts now in order to lower the probability of some unwanted future event" (Rogers, 2003, p. 233). Typically, preventative innovations experience slower rates of adoption because their perceived relative advantage is substantially more uncertain as a result of a delay in reward. In contrast, incremental innovations deliver relative advantages more immediately. Other scholars, Tornatzky and Klein (1982) have found the attribute of relative advantage to be conditional upon situational circumstances, making it a distinctly personal attribute of innovation.

Compatibility

The attribute of compatibility is described as "the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters" (Rogers, 2003, p. 240). When an innovation is considered to be compatible, it is familiar to the potential adopter, and thus perceived as less risky. The compatibility of all innovations is based on sociocultural values and beliefs, prevailing ideas, and adopter's needs at a given time (Rogers & Shoemaker, 1971). Therefore, if an

innovation is compatible with a potential adopter's needs, uncertainty would be expected to decrease as the innovation's rate of adoption increases. (Rogers, 2003). Also, the extent to which an innovation satisfies a felt need would be considered an indication of compatibility. Thus, it is common for potential adopters to be unaware of their need for an innovation until they become cognizant of it. However, as an attribute of innovations, Tornatzky and Klein (1982) have described how highly subjective compatibility can be due to the nature of social circumstances.

Complexity

Complexity is "the degree to which an innovation is perceived as relatively difficult to understand and use" (Rogers, 2003, p. 257). Unlike the previous attributes described, complexity is negatively correlated with adoption. By force of circumstance, any immoderately complex innovation would expect to encounter a slower rate of adoption. Rogers theorized how innovations could conceivably be indexed on a complexity-simplicity continuum. In this instance, an innovation that leans towards simplicity would experience a more rapid rate of adoption, where conversely, a more complex innovation would see the barrier to adoption intensify (Rogers, 2003).

Trialability

Rogers (2003) defined trialability as "the degree to which an innovation may be experimented with on a limited basis" (p. 258). If a potential adopter has an opportunity to test or experience an innovation, this will lead to the increased likelihood of adoption—making trialability an effective method for allowing the potential adopter to

establish meaning with an innovation and recognize previously unfelt needs. Diffusion scholars have explained that the trial phase works to reduce uncertainty and thus positively influence adoption (Rogers & Shoemaker, 1971; Tornatzky & Klein, 1982).

Observability

While Rogers (2003) described the attributes of trialability and observability as being positively associated with adoption, these relationships have considerably less predictive power compared to relative advantage and compatibility described previously. Observability is the last of Rogers' attributes of innovations, which he defined as "the degree to which the results of an innovation are visible to others" (p. 258). As hardware innovations (i.e., physical objects) are more easily observable, software (i.e., code, instructions, ideas) are not, and as a result have slower rates of adoption (Rogers, 2003).

Rogers' (2003) attributes of innovations (i.e., relative advantage, compatibility, complexity, trialability, and observability) are strong predictors that explain a large portion of the adoption decision. Innovations with greater perceived relative advantage that are viewed as more compatible and simpler will be adopted more rapidly over time. The adoption rate will swiftly increase with the opportunity to try the innovation on a limited basis and observe others using it. However, other factors also play a role in interpreting predictability as it relates to an innovation's rate of adoption. These include the innovation-decision type (i.e., optional, collective, or authority), communication channels (i.e., mass media or interpersonal channels), social system (i.e., norms or network interconnectedness), and change agent efforts (Rogers, 2003). For example, optional innovations tend to be adopted more rapidly than the innovations involving an

organizational, or collective innovation-decision, because in this instance the adopter is not the decision-maker. As a result, Rogers identified relative advantage as the strongest predictor of innovation adoption.

Adopter Categories

Adoption by individuals or organizations does not happen simultaneously. As previously described, Ryan and Gross (1943) interpret adoption as a decision process, not an impulse decision. Thus, adoption across a system occurs chronologically, allowing for categorizing adopters to be explained over time—specifically, when they first begin utilizing an innovation (Rogers, 2003). Moreover, Rogers encourages the practice of classifying individuals, or organizations, into adopter categories as an expedient way of setting apart members of a system with similar levels of innovativeness. Rogers defined innovativeness as "the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system" (p. 280), reinforcing the concept that while adopter categories are defined by characteristics (e.g., innovativeness), they are dependent upon time (i.e., when they first begin using the new idea).

Upon noticing the disorder related to adopter categories across diffusion research in the 1960s, especially the techniques used for categorization, Rogers (2003) developed the S-shaped curve of adoption as one distinct method of adopter categorization. When the total number of adopters are graphed, the effect is that of an S-shaped curve which starts with a flat, slowly inclining line that steeply rises nearly vertical very quickly before tapering off flat again (see Figure 1). This type of S-shaped curve is common

because of the exponential power of peer networks, where 10% to 20% of adoption happens over a short period of time when diffusion steeply rises. This same data for the total number of adopters may also be represented over a normal frequency distribution (i.e., bell-shaped curve). The normal distribution of adopters, as shown in Figure 3, serves to standardize adopter categories on the basis of innovativeness. The five adopter categories are innovators, early adopters, early majority, late majority, and laggards. In this study, organizational leaders within the U.S. are of primary interest and will be categorized based on their individual levels of innovativeness. As such, primary characteristics and values of each adopter category's primary characteristics and values will be outlined under socioeconomic status, personality values, and communication behavior.

Innovators

Adopting new ideas can be very costly. Therefore, access and oversight of substantial resources (i.e., budgets, personnel) allow innovators to deal with potential sunk costs related to the adoption of innovations that might fail or become discontinued (Rogers, 2003). Innovators must be technical and "venturesome," a term Rogers uses to describe their fixation on learning and testing out new ideas, which can often be elaborate. Such a characteristic must be fully developed to withstand the high level of uncertainty associated with implementing new ideas and coping with the inevitable setbacks that can ensue. Innovators are the individuals that seek out risks and are undeterred by failure (Rogers, 2003). Prompted by the attractiveness of new ideas, innovators commonly associate with their contemporaries worldwide. Through these

cosmopolite relationships, innovators learn of new ideas which they can introduce within their local social systems (Rogers, 2003). Nilles (1973) alludes to the appeal of international relationships as a motivating aspect in the development of remote work as a business practice by its early pioneers. As information and communication technologies (ICTs) enable remote work, they also facilitate social relationships outside of one's locale, which Rogers explains is the typical communication pattern among innovators. Ultimately, while innovators may not be as highly regarded within their local social system as they are by their international peers, they fulfill a vital role of leveraging cosmopolite relationships for the introduction of new ideas within a system (Rogers, 2003).

Early Adopters

Local social systems rely on early adopters for their wise decisions related to the utilization of innovations. Early adopters are generally well-established in local systems and often maintain a highly respected position because they exemplify the epitome of success in the adoption of new ideas (Rogers, 2003). Unlike innovators, they are not as connected outside of their local system, but within it, they are considered experts—sought out for their distinct opinions and proficiency. As they are fully aware of their reputation as role models, early adopters work to reduce the level of uncertainty surrounding an innovation by being first to adopt it and providing what Rogers refers to as a "public evaluation" for peers and other potential adopters throughout their interpersonal networks. By publishing their evaluation of an innovation, early adopters exert their influence by endorsing new ideas, and giving rise to increased rates of

adoption which precipitate critical mass throughout a local social system (Rogers, 2003).

Early Majority

Members of the early majority, the largest adopter category within a system, rely on the public evaluation of an early adopter before eventually deciding to make use of an innovation. Their decision to adopt a new idea, while methodical, is much slower compared to innovators and early adopters. According to Rogers (2003), the indecisiveness of the early majority is telling, given their tendency to follow as opposed to leading out. Nevertheless, the early majority "provide interconnectedness in a system's interpersonal networks" (Rogers, 2003, p. 284), routinely sharing new ideas learned from early adopters before the average member of a system will eventually adopt.

Late Majority

The limited resources of the late majority cause them to doubt the relative advantages of an innovation and any opinion leader attempting to influence their adoption decision (Rogers, 2003). While their innate skepticism derives from their lack of abundance, nearly all apprehension must be dispelled before they feel secure in their adoption decision, for the late majority do not take leisurely risks with unpredictable innovations (Rogers, 2003). As the average members of a system, their slow and careful adoption decisions, being primarily influenced by their peers, are commonly at the tail end of all those benefitting from adoption of an innovation (Rogers, 2003). Rogers clarifies that the late majority needs to observe others benefitting from an innovation before they will feel confident in their adoption decision.

Laggards

Rogers (2003) categorizes the last in a social system to adopt an innovation as laggards. Due to the unpredictable nature of their economic position, laggards are characteristically wary throughout their considerably long innovation-decision process. The interpersonal relationships of laggards are predominantly bound to their local system. Still, it would not be uncommon for them to be considered reclusive by peers, who would also be included in this same category. Rogers explains laggards' reliance on tradition, describing dependence on experience as the primary basis in their adoption decision. Consequently, they are suspicious of anyone who attempts to persuade them to explore a new idea. In the end, laggards must be certain an innovation will work before they adopt it. Therefore, from their vantage point, it is entirely appropriate to resist any and all innovations (Rogers, 2003).

The Innovation of Remote Work

Apart from these five adopter categories, Rogers (2003) expounded upon their characteristics in greater detail by providing generalizations of earlier adopters and later adopters. These divisions consisted of innovators, early adopters, and early majority as earlier adopters and late majority and laggards comprising later adopters. Rogers resolves the major differences between the divisions with regard to socioeconomic characteristics, personality variables, and communication behavior, which tend to be positively associated with innovativeness (Rogers & Shoemaker, 1971). For example, in describing how socioeconomic status and innovativeness vary together, Rogers generalizes, "Earlier adopters have larger-sized units (farms, schools, companies, and so on) than do later

adopters" (p. 288).

Since the industrial revolution, organizations have planned business operations within the bounds of physical environments where employees convene to perform work in close proximity (Koehler et al., 2013; May et al., 2005). Considering how the nature of work has evolved away from gathering in a traditional office space and towards task facilitation, work duties can routinely be performed anywhere there is an internet connection and access to information and communication technologies (ICTs; Blok et al., 2009; Clancy, 2020; Croon et al., 2005; E. J. Hill et al., 2003). In this study, remote work refers to the practice of "working outside the conventional workplace and communicating with it by way of telecommunications or computer-based technology" (Bailey & Kurland, 2002, p. 384). The innovation of remote work differs from traditional work in many respects, most notably in the concept of work and the workplace—where one works is of less importance than how it is performed and the level of its quality. Guided by DOI theory, this study will analyze how Rogers' (2003) attributes of innovations relate to the likelihood of remote work adoption among various types of organizations. Further, it will describe how organizational characteristics relate to remote work adoption, determine where organizations range in their innovation-decision process of remote work adoption, and categorize leaders' level of innovativeness with respect to remote work.

Developments in Information and Communications Technology

The innovation of remote work is dependent on ICTs, which include any type of gadget, machine, or software that allows the accumulation or transmission of data

(McNamara et al., 2017). Croon et al. (2005) describe how organizations discovered more flexible ways of organizing work processes with the application of new ICTs. Developments in high-quality video conferencing, team collaboration and management software, as well as cloud computing and network security now enable completion of tasks outside the traditional office environment (Federal Communications Commission [FCC], 2010; Rajaraman, 2018). As a result of utilizing new ICTs, Shapiro (2019) illustrates how organizations have achieved efficiency, which has allowed them to become more competitive.

An example of organizations achieving efficiency and competitiveness is illustrated in Fuller et al.'s (2019) explanation of how the labor market for short-term, independent work, referred to as the gig economy, has reshaped global business. Contingent work arrangements, or gig work, consists of any type of income-generating activity outside of the conventional long-term employer-employee relationship. Examples include transcribing an audio transcript, designing a logo, or editing a video (Cappelli & Keller, 2012; Connelly & Gallagher, 2004).

Lister and Harnish (2011) convey the importance of utilizing ICTs for remote work operations, not only for a competitive advantage in the global economy (i.e., technological efficiency impacting labor and capital), but for continuity of business operations. Remote work can also serve as an adaptability strategy during situations involving terrorism, extreme weather events, or pandemic threats such as COVID-19 (Castells, 2000; Clancy, 2020; Martin, 2012).

Attaining higher levels of productivity and supporting employee well-being have

been the primary advantages related to remote work (Pitt-Catsouphes et al., 2007). Organizations instituting formal remote work policies (i.e., plans and procedures) demonstrate increases in productivity, reductions in absenteeism and turnover, as well as improved organizational loyalty and performance (Rogers, 2003). Choudhury et al. (2019) also found evidence for increased productivity being associated with the practice of remote work. In their meta-analysis of 46 studies, Gajendran and Harrison (2007) associated remote work with greater perceived levels of autonomy and job satisfaction among employees, in addition to increased productivity. Moreover, employees from these studies further associated remote work with lower perceived levels of work-family conflict, stress, and turnover intent. Likewise, traffic, air pollution, and contagious diseases are potentially reduced when fewer people are travelling to and working from a co-located, physical work environment (Lister & Harnish, 2011).

The disadvantages of remote work (e.g., isolation, burnout, lack of team cohesion, lack of employee engagement, micromanagement, and envy) continue to be documented as scholars learn more about implementing this modern workplace practice (M. Collins, 2005; Gebhart, 2020; Greer & Payne, 2014; D. A. Owens, 2017). Regardless, leaders have the burden of contemplating all possible factors and implications when deciding to adopt or reject remote work as a formal workplace arrangement or policy in their organizations.

Literature Review Summary

The literature outlines many benefits and drawbacks of remote work (T. D. Allen

et al., 2015; Bailey & Kurland, 2002; Palucha, 2017). When considering remote work adoption, there are several factors that organizational leaders must consider when implementing remote work as a formal workplace arrangement or policy. While some obvious factors relate to capacity of technology, this may not fully account for an organization's decision to adopt remote work as a formal practice. Research to date has continuously unified managerial and employee perspectives on remote work (M. Collins, 2005; Golden, 2006; Greer & Payne, 2014; Martin, 2012; Martin & MacDonnell, 2012; D. A. Owens, 2017; Sardeshmukh et al., 2012).

In addition, research in the field of remote work frequently centers on results attributed to its implementation and effectiveness within organizations, often determining whether the practice was positive or negative for employees and/or the organization (Boell et al., 2016). Furthermore, a limited number of studies have focused on the decision to adopt the practice of remote work after a pilot project. These studies were not guided by DOI theory and took place outside the U.S. (Bloom et al., 2015; M. Collins, 2005; Martínez-Sánchez et al., 2008; Mayo et al., 2009; Pérez Pérez et al., 2005). Above all, findings across remote work studies are often unsettled. Recommending more in-depth explorations to explain inconsistent and opposing results related to issues of employee job satisfaction, job performance, and work-life balance (T. D. Allen et al., 2015; Bailey & Kurland, 2002; Boell et al., 2016). Finally, the research literature conducted in the U.S. lacks exploration into the factors influencing organizations' decision to adopt remote work as a formal workplace practice or arrangement (Boell et al., 2016; Clancy, 2020; D. A. Owens, 2017).

Organizations' Adoption of Remote Work

Organizations in the U.S. began adopting remote work in the early 1970s out of necessity for energy conservation as national oil supplies became limited due to OPEC's embargo (Avery & Zabel, 2001). While some researchers have reported the adoption of remote work to be comparatively slow in relation to the development of ICTs (Bailey & Kurland, 2002; Martin, 2012), its utilization among organizations ranges widely. In the decades leading up to the 21st century, adoption of remote work was rather onerous, constrained by the capabilities of ICTs and limitations of the internet. However, recent advances in these areas have allowed remote work to be more fully realized (Gajendran & Harrison, 2007).

As the underlying promise of remote work enables the operations of an organization to become more asynchronous, this innovative practice shifts priority away from *where* and *when* work takes place, and towards task facilitation, or *how* work happens (Blok et al., 2009; Croon et al., 2005; Fried & Hansson, 2013; E. J. Hill et al., 2003). This foundational change in the modality of work requires organizations to alter traditional methods of administration upon resolving to adopt remote work as a formal workplace practice. For example, M. Collins (2005) explains how employees should be managed based on their performance as opposed to their presence in a physical environment. Furthermore, Greer and Payne (2014) detail that while remote work "eliminates a physical boundary between work and home, it creates a new physical boundary between coworkers" (p. 91), which forms new sets of obstacles organizations must overcome to achieve success.

While there have been studies exploring many essential aspects related to the adoption, barriers, and organizational utilization of remote work, many have taken place outside the U.S., and few have been guided by DOI theory (Bloom et al., 2015; M. Collins, 2005; Martínez-Sánchez et al., 2008; Mayo et al., 2009; Pérez Pérez et al., 2005; Vilhelmson & Thulin, 2016). Consequently, organizational utilization of remote work as a modern workplace practice in the U.S. is unclear. From the perspective of DOI theory, the literature points to several broad factors affecting organizations' adoption of remote work as a formal workplace practice.

Relative Advantage Related to Remote Work

Establishing the relative advantage for the practice of remote work continues to be the primary objective of most literature on the topic (T. D. Allen et al., 2015; Bailey & Kurland, 2002; Greer & Payne, 2014). Remote work has been recognized for providing distinct advantages in the modern workplace, is positively associated with increases to individual employee productivity, greater organizational loyalty, decreased absenteeism, financial savings related to overhead and space costs, and an overall improvement in organizational performance (Bloom et al., 2015; Choudhury et al., 2019; Gebhart, 2020; Greer & Payne, 2014; E. J. Hill et al., 2003; Kelliher & Anderson, 2010; Kurland & Bailey, 1999; Martin, 2012; Martin & MacDonnell, 2012; Martínez-Sánchez et al., 2008). Karnowski and White (2002) identified talent retention and acquisition, cost savings related to space and operations, and improved productivity, morale, and organizational competitiveness as the primary advantages of implementing the remote work among a national sample (n = 87) of organizational leaders. Also, it was reported that 92% of these

leaders initiated the innovative practice in direct response to employees' needs related to caregiving responsibilities, lifestyle, disabilities, or partial retirements (Karnowski & White, 2002).

As productivity is of utmost concern for organizational leaders, employees working remotely are often compared to those working from a physical location or headquarters (T. D. Allen et al., 2015; Gajendran & Harrison, 2007). Bloom et al. (2015) reported similar results from their remote work pilot program studied within a Chinese organization, describing a 20% to 30% increase in productivity, which equated to an annual savings of approximately $2,000 per employee working remotely over those working from the central office. From meta-analytical findings, Martin (2012) also found remote work to be positively associated with productivity; however, the study identified weak support for retention and organizational commitment. In another study investigating this very issue, M. Collins (2005) found that when performing similar functions, employees working remotely were 23% more productive.

In addition to investigating productivity, M. Collins (2005) found that remote workers (n = 52) reported higher levels of job satisfaction and work-life balance, however, despite these significant relative advantages, downsides such as lower perceived career trajectory and fewer learning opportunities were found (M. Collins, 2005). It should be understood that the effect of working remotely relative to job satisfaction is complicated by several mediating variables. Apart from M. Collins' findings, a meta-analysis by T. D. Allen et al. (2015) also found remote work to be positively associated with job satisfaction. Likewise, Schall (2019) identified perceived

autonomy, reduced work-family conflict, and intensity of remote work (i.e., frequency) as significant mediating variables between remote work and job satisfaction. Further, Golden (2006) found remote work to have a diminishing effect on job satisfaction in relation to frequency, submitting that the relationship was positive, to a certain point. Therefore, while M. Collins found remote work to be positively associated with job satisfaction, Golden noted that the relationship was limited. Accordingly, as adoption of remote work may be broadly advanced as a possible course of action to increasing job satisfaction among employees (Schall, 2019), such a recommendation should be made with caution.

In the previous correlational study between remote work and job satisfaction, Golden (2006) also investigated the impact of remote work on work-family conflict. Findings from this study indicated that employees participating in the practice encountered lower levels of work-family conflict, which is positively correlated with job satisfaction and reduced turnover intent (Golden, 2006). These results suggest that individuals working from home have more ideal circumstances for blending roles between family and work (Golden et al., 2006). Golden et al. acknowledged the "contradictory perspectives in the literature as to whether [remote work] positively or negatively impacts work-family conflict" (p. 1346). As remote work has shown to improve work-life balance among employees—where researchers often point to the additional time saved from not commuting—the demands of family responsibilities can subsequently encroach on work as well, thus negatively affecting productivity (T. D. Allen et al., 2015; Bailey & Kurland, 2002; Golden, 2006).

In their study of work-family supportiveness among employees (n = 454) inside a high-tech organization with an established remote work policy, Golden et al. (2006) found that the practice of remote work led to increased expectations in individual family responsibilities. In turn, these heightened family responsibilities resulted in increases in family participation and expectations, which worked to interrupt employees' work. While Golden et al. contend that the findings are not settled on whether remote work "provides individuals with the opportunity to cope with the competing demands of work and family domains, thereby reducing conflict" (p. 1340), the practice maintains a popular reputation related to work-life balance (Bloom et al., 2015; Greer & Payne, 2014). Previously, Bailey and Kurland (2002) had substantiated the impact of remote work on work-family conflict to be largely inadequate; however, Golden et al. inform that remote workers are "faced with a zero-sum trade-off such that as they reallocate the additional time, attention, and emotional energy made available by [remote work] to accommodate family pressures, work interfered less with family, but family interferes more with work" (pp. 1346-1347).

Although the practice of remote work changes the physical environment where employees perform their work, typically from a central office to a home setting, the function of their work often remains unchanged. This duality is worth highlighting as researchers have commonly attributed positive results from the implementation of remote work entirely to the change in environment without considering how job functions may have been altered (T. D. Allen et al., 2015; Golden & Gajendran, 2019; Martin & MacDonnell, 2012). In a study examining the extent to which remote work impacts job

performance, Golden and Gajendran measured the effect of the altered work environment through hierarchical regression analysis. Results demonstrated that the extent to which an employee works remotely is positively associated with job performance. Golden and Gajendran also sought to understand whether the relationship between the extent of working remotely and job performance was moderated by job complexity. Ancillary results from their analysis revealed how increased job complexity moderates the relationship between the extent of remote work and job performance, explaining that the more complex an employee's job is, the better they will perform in a remote work environment (Golden & Gajendran, 2019).

From a cross-sectional study of 417 remote workers at a midwestern supply chain organization in the U.S., Sardeshmukh et al. (2012) studied the impact of remote work on job engagement and employee exhaustion. While it was reported that the exclusion of a daily commute served to reduce employee exhaustion and stress levels, this advantage by itself is insufficient when evaluated against certain adverse impacts of remote work adoption (Sardeshmukh et al., 2012). Even though Golden et al. (2006) reported how the practice of remote work was attributed to reduced levels of pressure and stress among employees commuting to the workplace, Sardeshmukh et al. found the effect to be rather small. Sardeshmukh et al. warned that because remote work alters job demands, which successively affects exhaustion and engagement, remote workers could potentially experience more stress. They found remote workers had decreased interaction between colleagues and experienced lower levels of feedback. It was also found that with decreased social support from colleagues and management, remote workers were more

likely to experience lower levels of involvement and engagement in their jobs (Sardeshmukh et al., 2012).

Meta-analyses on the subject of remote work have not consistently addressed the issue of overworking (T. D. Allen et al., 2015; Bailey & Kurland, 2002; Gajendran & Harrison, 2007). While some organizational leaders may consider overworking an advantage, Sardeshmukh et al. (2012) found that remote workers often feel a sense of obligation to their organization for the advantage of time savings from not being required to commute to a designated workplace. As a result of the increased loyalty and desire to reciprocate, Sardeshmukh et al. explained that remote workers, "may feel pressured to produce more for their [organization], in order to be perceived as valuable and dispel any suspicions from office-based colleagues that they are loafing at home" (p. 202). Regardless of any short-term productivity gains from overworking, organizational leaders were cautioned regarding this issue as the intrinsic pressure to overwork can lead to feelings of isolation and burnout among employees working remotely (Church, 2015; Greer & Payne, 2014; Schall, 2019).

Karnowski and White (2002) reported that of the organizational leaders in their study, the majority agreed that the practice of remote work could isolate employees. From M. Collins (2005) case study, isolation was found to be an issue among remote employees who did not feel a sense of belonging in relation to team members and colleagues working at a central location or headquarters. Furthermore, Kurland and Cooper (2002) identified professional isolation as a primary concern among employees who frequently work remote; they also reported a concern that their professional

development would suffer long-term. While these studies have reported isolation as a major challenge for organizational leaders seeking to maintain team cohesiveness, Pérez Pérez et al. (2005) found that remote workers frequently utilized ICTs. In this study, researchers found the issue of isolation was largely addressed through the regular use of video conferencing software applications (Pérez Pérez et al., 2005). Although Sardeshmukh et al. (2012) found remote work to be negatively related to job engagement, having a negative emotional impact on some employees, the researchers assert that organizational leaders have the opportunity to ensure that the remote workers they oversee are not isolated.

Several studies have recommended the intentional design of richer communication experiences between employees (Greer & Payne, 2014; Kelliher & Anderson, 2010; Kurland & Cooper, 2002; Mahler, 2012; Martínez-Sánchez et al., 2008; Sardeshmukh et al., 2012). Whether employees work remotely or on-site, these improvements start with "using clearer job design, better communication to mitigate job ambiguity and better human resource development practices, [so organizations] can benefit from the positive effects of [remote work], while keeping the negative aspects to a minimum" (Sardeshmukh et al., 2012, p. 202).

As Rogers (2003) defined relative advantage as "the degree to which an innovation is perceived as being better than the idea it supersedes" (p. 229), the nature of remote work is what influences the type of relative advantage (e.g., economic or social) important to an organization. As organizational leaders learn the relative advantages of remote work, they seek to decrease uncertainty and understand the degree to which this

particular innovation is better than their existing practice (Rogers, 2003). While there are clear advantages to the adoption of remote work as a formal workplace arrangement or policy, they are still relative to each organization's unique challenges. For example, if an organization is challenged with talent acquisition and retention or cutting costs, the literature outlined in this section distinctly explains the advantage for remote work adoption. However, there still remains conflicting perspectives and unsettled findings in the literature for organizations considering remote work as a solution for improving job satisfaction, performance, and workplace culture. Nevertheless, if an organization is constrained to focus on continuity of business operations in the face of a global pandemic, then the circumstances will largely drive the innovation-decision process over any advantages or disadvantages related to the innovation (Clancy, 2020; Greer & Payne, 2014). Ultimately, the relative advantage of practicing remote work comes with trade-offs, making the adoption decision a compromise.

Compatibility Related to Remote Work

Studies have investigated the differences in resources between organizations that adopted remote work and those that did not. Pérez Pérez et al. (2005) analyzed whether organizational resources influenced leaders' perceived compatibility with remote work as a predictor of adoption, holding culture constant. While findings from their study of 479 Chief Executive Officers (CEOs) of small and medium-sized Spanish organizations substantiated DOI theory, even though only 53 companies (11%) had adopted remote work, Pérez Pérez et al., (2005) found that larger organizations with more resources had a greater likelihood of adopting the practice of remote work. The characteristics of these

organizations include greater: (1) distribution of knowledge workers (e.g., salespeople, attorneys, software developers, researchers, and designers, etc.), (2) use of ICTs, (3) investment in research and development, (4) employee engagement, and (5) participation in international markets. In a later study investigating organizational compatibility with remote work in Spain, Mayo et al., (2009) surveyed 122 CEOs to identify which characteristics explain the likelihood of adoption. Results indicated that organizations competing in the service sector and with a higher proportion of international employees, had an increased likelihood of adopting remote work (Mayo et al., 2009). These results align well with the statement by Pérez Pérez et al. (2005), explaining that "those industries where knowledge is a competitive resource are an ideal environment for [remote work] adoption" (p. 1478). However, while Mayo et al. hypothesized that larger organizations would be more compatible with remote work, they found the inverse to be true. Conflicting with the findings of Pérez Pérez et al., the results of Mayo et al. provided evidence supporting smaller organizations being more compatible with the practice of remote work. While both studies sought to explain the adoption of remote work among organizations in Spain, neither was guided by DOI theory. However, the development of ICTs during the early 2000s could explain the lower perceived compatibility levels with the practice of remote work. Large organizations may have been reluctant to adopt remote work due to the high cost of ICTs at time when their capabilities were limited (Gajendran & Harrison, 2007).

In their meta-analysis of 80 remote work studies, Bailey and Kurland (2002) concluded that the effects of organizational size on the decision to adopt the innovative

practice were unsettled and required further research. However, Bailey and Kurland did find that the majority of remote workers tend to be skilled professionals, which is consistent with results from a recent study reporting that "37% of jobs in the U.S. can be performed entirely at home…and account for 46% of all US wages" (Dingel & Neiman, 2020, p. 1). Literature from Spain also supports greater compatibility with the practice of remote work among organizations with higher proportions of knowledge workers (Martínez-Sánchez et al., 2008; Mayo et al., 2009; Pérez Pérez et al., 2005). In addition, these scholars identified an organization's existing flexible work practices, willingness to train employees in the use of ICTs, and make investments in software as barriers to adoption in regard to compatibility with remote work (Bailey & Kurland, 2002). At the time of Bailey and Kurland's study, Gajendran and Harrison (2007) explained that ICTs were more expensive and undeveloped, supporting the notion of cost as a being a barrier to adoption. Also, in a rare study of remote work adoption guided by DOI theory, Karnowski and White (2002) found that organizational leaders rated compatibility higher than relative advantage among the factors explaining remote work adoption, explaining the need for remote work to fit within the organizational culture and be suitable for the types of jobs within the organization. This finding is in contrast with Rogers (2003), who described relative advantage as the strongest attribute influencing the decision to adopt an innovation. However, the time of Karnowski and White's study should be considered as this contrast with DOI theory could be explained by the cost of ICTs, their early stages of development, and limited access to internet in the early 2000s (Gajendran & Harrison, 2007).

Literature related to organizational compatibility with the adoption and implementation of remote work has also discussed the effect of leadership style. As the innovative practice of remote work requires organizational leaders to shift from managing for performance over presence, studies have found that leadership style moderates the decision to adopt remote work as a formal workplace practice (M. Collins, 2005; Greer & Payne, 2014; Martin & MacDonnell, 2012; Mayo et al., 2009). Moreover, Mayo et al. discovered that as leaders focus more on managing for performance over presence (i.e., contingent reward leadership), their organization's likelihood of remote work adoption increases. However, from a meta-analysis of 45 remote work studies, Martin (2012) acknowledged the limited research on the impact of remote work at the organizational level by asserting that resistance to adoption may be explained by latent bias for business as usual (i.e., the status quo) over attributes such as compatibility and relative advantage. Describing the power of this bias, Martin states it is "so powerful that it implicitly inhibits decision-makers from seriously considering [remote work] as a rational choice" (p. 68). As bias impacts the perception of remote work as an innovation, it can supplant how an organizational leader assigns meaning to a new idea (Rogers, 2003). Therefore, while employee performance (i.e., outcomes) is important to organizational leaders, whether they work on-site or remote, adopting the practice of remote work is a drastic change, and further research is needed to specifically explain leader's resistance to remote work as it pertains to organizational compatibility (Martin, 2012). Recognizing the difficulty involved in learning new management practices related to remote work, Bloom et al. (2015) support Martin's claims, verifying an intrinsic

resistance to change among organizational leaders.

Further findings by Mayo et al. (2009) revealed how younger organizations were more likely to adopt remote work when leaders placed greater emphasis on managing for performance over presence. In addition, higher percentages of international employees also positively correlated with the likelihood to adopt remote work. Thus, findings from Mayo et al. showed strong support for international-oriented organizations being more compatible and more likely to adopt remote work if they are led by leaders with high levels of managing for performance over presence.

"Although there is a plethora of [remote work] research at the individual and societal levels, somehow the organizational level has been largely missed" (Martin, 2012, p. 31). Mayo et al. (2009) noted that the practice of remote work has been rarely studied despite its growing prevalence over recent years. Likewise, D. A. Owens (2017) further recommended a large-scale study of remote work adoption by organizational leaders in the U.S. to better understand their perspectives towards remote work, precisely their reluctance to adopt the practice.

Complexity Related to Remote Work

In their qualitative study, Brown et al. (2016) investigated the perceived factors explaining the rejection of remote work by organizational leaders in the federal government. The most significant factor identified as a justification for disallowing the practice among these leaders was lack of trust. Results from this research suggested that establishing trust in a remote work environment is a matter of complexity related to the adoption of remote work (Brown et al., 2016).

In their mixed methods study examining outcomes of successful remote work strategies among 86 high-performing remote workers and their respective supervisors, Greer and Payne (2014) studied the complexities related to remote work adoption, uncovering common challenges faced by organizations implementing remote work as a formal workplace practice. While Rogers (2003) recognized the research was not conclusive in every respect, he characterized complexities as being negatively correlated with the adoption of an innovation and a critical barrier in the decision to adopt an innovation. Greer and Payne discovered six complexities related to the innovative workplace practice. Determined by top-performing organizational leaders in sequence of complexity, they are (1) lack of face-to-face communication; (2) interdependency of teamwork; (3) managing and monitoring remote worker performance; (4) distractions in the home environment; (5) non-remote worker issues; and (6) lack of adequate work-related resources. Although these challenges represented the complexity of remote work and negative forces in the rate of its adoption, Greer and Payne noted that becoming an effective remote worker is a learned skill. In addition, the scholars observed that only 21% of the managers had been formally trained in how to manage remote workers, and only 17% of remote workers have been trained in how to successfully work remote. Ultimately, the study concluded that overcoming the complexities of remote work requires proactive investment in training programs and management support for successful implementation (Greer & Payne, 2014). In separate studies, both D. A. Owens (2017) and Church (2015) reported findings supporting the lack of face-to-face communication as a critical element of complexity resulting in hesitation by

organizations to adopt remote work as a formal workplace arrangement or policy.

In addition to the complexity derived from the lack of face-to-face communication, Boell et al. (2016) identified performance monitoring of remote employees to be a complex challenge for organizational leaders to overcome in their adoption of remote work. Moreover, Brice et al. (2014) found that organizational leaders' inability to monitor the performance of the remote employees they supervise as a valid rationale in resisting the adoption of the innovative practice. Further, it was noted that a sense of trepidation and uncertainty among organizational leaders regarding remote work was a repercussion of losing control over team members who function outside the traditional office setting (Brice et al., 2014).

According to the results of a qualitative study by Mahler (2012), the practice of remote work was shown to improve employees' ICT skills, increase productivity, and generate financial savings. However, it was not perceived to be fair by all employees—especially those in the organization not working remotely (Mahler, 2012). Among the organizational leaders Mahler surveyed, the complexity surrounding remote work's effects on team cohesion, relationships, and communication were all factors negatively associated with their adoption decision. Both M. Collins (2005) and D. A. Owens (2017) also report how the advantages of remote work are limited to those who engage in the practice, even pointing to non-remote workers bearing a measure of envy towards their colleagues who are permitted to engage in the practice.

In research evaluating the advantages and disadvantages associated with the practice of remote work in Finland, Pyöriä (2011) analyzed outcomes from the

implementation of the innovative practice by surveying both organizational leaders and employees. Similar to studies previously mentioned, Pyöriä identified reduced social relations and team cohesion as a barrier to remote work adoption. Noting the complexity of establishing policies and procedures that adequately outline how the practice of remote work will function within an organization, Pyöriä recommended organizational leaders co-create formal policies with employees.

According to the studies mentioned above, there are a variety of apparent complexities encircling the organizational utilization of remote work as a modern workplace. As Rogers (2003) noted, "complexity is a very important barrier to adoption" (p. 257), and while he negatively associated this attribute with the adoption of an innovation, complexities often slow rather than halt the decision to adopt remote work as a formal workplace practice (T. D. Allen et al., 2015; Martin, 2012). Bailey and Kurland (2002) described the collective worry organizational leaders have expressed in relation to the adverse impact adoption of remote work on job performance. Golden and Gajendran (2019) report that the findings from their study "suggest that there are significant performance upsides for many employees with little downsides for the remainder—at worst, the extent of telecommuting neither helps nor harms performance" (p. 66). Researchers agreed, training employees in the use of ICTs and in the best practices of remote work is expected to reduce the uncertainty and complexity associated with the adoption of remote work (Kurland & Cooper, 2002; Martínez-Sánchez et al., 2008; Pérez Pérez et al., 2005).

Trialability Related to Remote Work

In the first randomized experimental study of remote work, Bloom et al., (2015) analyzed results between onsite and remote employees within the call center of a Chinese organization. While not informed by Rogers' (2003) DOI theory, this randomized control trial of 996 employees over nine months yielded results that led to the decision to formally adopt remote work across the organization. Researchers found that remote employees' satisfaction with their work had improved, as did their performance, which increased 13%, while turnover was reduced by half. However, at the end of the trial period, nearly 50% of the treatment group chose to go back to the office, even though the decision meant the loss of time and financial costs saved from not commuting (Bloom et al., 2015). According to Rogers, if decision-makers can experiment with the innovation on a trial basis, the likelihood of adoption increases. While Rogers understood trialability to have a weaker effect than the other attributes, the results of this remote work trial were so meaningful that organizational leaders decided to adopt remote work by making the arrangement available to all employees working in departments they deemed compatible with the practice (Bloom et al., 2015).

Due in part to the limits of observability related to the practice of remote work, scholars have highlighted the value of temporary pilot programs (Karnowski & White, 2002; Pérez Pérez et al., 2005). As Rogers (2003) identified the function of experimentation in reducing the uncertainty of a new idea, Pérez Pérez et al. explained how organizations would benefit from piloting short-term remote work programs by becoming more aware and knowledgeable regarding the intricacies of the practice prior to

formal adoption.

Research results from remote work experiments provide organizational leaders with critical insights they likely would not have learned otherwise. In one example, Bloom et al. (2015) reported the astonishment of organizational leaders upon learning that half of the employees in the treatment group preferred to return to the office even though they had reported having positive experiences working remotely. Upon further investigation, it was uncovered that employees missed having social interactions with colleagues and at times, felt lonely and isolated by working from home. Without conducting a remote work experiment, organizational leaders would not have realized the extent to which employees value social interactions within a traditional office setting (Bloom et al., 2015).

In another example of a remote work case study, M. Collins (2005) sought to identify knowledge deficiencies related to the practice of remote work among employees (n = 52) within an organization based in the United Kingdom. Comparing employees working remotely to those performing similar tasks in an office, M. Collins found that those working remotely exhibited higher levels of satisfaction with their jobs and work-life balance, reported lower levels of absenteeism and turnover, and were more productive. Upon further financial analysis, M. Collins found immaterial evidence to suggest that one arrangement was more or less costly than another. M. Collins learned of several unintended consequences that organizational leaders were able to include in their review, thus serving to reduce uncertainty related to formally adopting the practice of remote work. The organizational leaders in M. Collins' study did not anticipate in-group

conflict and envy by employees working in the central office towards those working remotely. Neither did they expect negative customer perceptions towards remote work, which were based on customer service feedback from phone conversations with employees working from home (Collins, 2005).

Bloom et al. (2015) described their experiment as a significant learning experience that challenged the assumptions of both organizational leaders and employees regarding the advantages and costs associated with the practice of remote work. Initially, organizational leaders considered the practice would likely reduce operational costs, but worried employees may not be as productive if they were working from their residence. Analysis conducted after the experiment revealed that remote work was indeed more cost-effective, but instead of being distracted and lazy, employees were more productive. Moreover, Bloom et al. noted the problematic transition for organizational leaders who had to adjust their method of work as a result of their employees being geographically dispersed. However, while leaders within the Chinese organization applauded the success of the experiment, choosing more rapidly to adopt remote work as a formal workplace practice, Bloom et al. recommended further exploration and experimentation.

While some prominent organizations have publicly abandoned remote work (e.g., Best Buy, Hewlett-Packard, and Yahoo), citing challenges and disadvantages commonly described in existing literature (Boell et al., 2016; Brown et al., 2016; Scott et al., 2012; Weinert et al., 2014), the practice continues to diffuse globally throughout organizations, primarily through pilot programs (Boell et al., 2016; Clancy, 2020; Karnowski & White, 2002). Disadvantages of remote work such as declines in innovation and creativity

(Brown et al., 2016), increases in work-related stress and exhaustion (Weinert et al., 2014), work-family conflict (Golden et al., 2006), and social isolation (Kurland & Cooper, 2002; Pérez Pérez et al., 2005; Sardeshmukh et al., 2012) are still challenges for organizations that have adopted, and will eventually adopt the innovative workplace practice. Notwithstanding the clear advantages of remote work that have been described previously, leaders should not assume that the innovation by itself will solve any and all problems if organizational operations are substandard. From remote work experiments, organizations have learned of the complex realities associated with implementation before making the innovation-decision (Bloom et al., 2015; M. Collins, 2005; Karnowski & White, 2002; Pérez Pérez et al., 2005).

Observability of Remote Work

Based on Rogers' (2003) definition of observability, the practice of remote work has a low degree of visibility before others. Apart from being difficult to observe, due to the nature of the practice, it is not easily transmitted either. Observability still positively influences adoption, despite being weaker than the other attributes of innovations such as relative advantage and compatibility, and having a lesser effect than complexity (Rogers, 2003). Rogers also explained that innovations with significant software elements experience slower rates of adoption due to their lack of observability. As this study is concerned with explaining the process of remote work adoption by organizations, the practice of the innovation relies excessively upon software elements (e.g., enterprise software, internet). In this regard, observability of remote work happens to a lesser degree compared to innovations with foremost hardware aspects (e.g., ICTs or hybrid seed corn

via Ryan & Gross, 1943). However, if the effect of remote work adoption becomes apparent to others, then the innovation will be adopted more rapidly (Rogers, 2003). For example, during the COVID-19 pandemic organizations publicized their adoption of remote work across social media platforms (Clancy, 2020). To this effect, the likelihood of organizational leaders adopting the practice of remote work increases if they can observe the benefits of its use (e.g., continuity of business operations during a pandemic).

Upon implementing a remote work experimental study, M. Collins (2005) found that an increasing number of employees desired to adopt the practice after observing their colleagues working from home, even becoming envious of those in the experimental group. Additionally, Pérez Pérez et al. (2005) described how adoption of remote work has been explained by observability of certain types of positions (e.g., sales, software engineering) where performance can be easily measured by organizational leaders. Therefore, if employees observe their colleagues working remotely, then they might be more willing to ask permission to do the same. Likewise, if organizational leaders observe that certain positions are more compatible with remote work, then they may be willing to adopt the innovation for that particular set of positions, and possibly others.

Remote Work Adopter Categorization in the U.S.

Guided by Rogers' (2003) adopter categories outlined in DOI theory, one objective of this study is to categorize organizations on the basis of innovativeness with respect to remote work. In connection with historical events that have played a role in reducing uncertainty surrounding remote work adoption in the U.S., the variable of time

will serve as the rationale for categorizing organizations. As Ryan and Gross' (1943) historical hybrid seed corn study served to inform Rogers' development of the adopter categories, their research specifically explained the decision to adopt an innovation as a process, taking place over time and involving a sequence of steps. Thus, time is the basis (i.e., whether adopters are relatively early or late) by which adopters will be compared against other members in a system and categorized by their level of innovativeness.

As the innovation of remote work prioritizes how work is accomplished over where it is performed, it is no surprise that this precedence is accompanied by various degrees of uncertainty. In describing the uncertainty related to the adoption decision of remote work, Brice et al. (2014) reported how organizational leaders felt a sense of agitation over potential loss of control. Rogers (2003) understood uncertainty to be a fundamental factor of every innovation, explaining that barriers to adoption exist because desirable consequences from adoption are unpredictable. Thus, uncertainty affects an innovation's rate of adoption and can only be reduced with additional information concerning the advantages and disadvantages of all consequences (Rogers & Shoemaker, 1971). Accordingly, remote work adoption can be explained by a historical decline in uncertainty over time; attributable to research studies and advances in ICTs which have allowed for decreases to perceived risks associated with the modern workplace practice.

Innovators

Organizations categorized as innovators would have adopted the practice of remote work prior to, or during the year 1999 given the legislation requiring all federal agencies to institute remote work policies (U.S. Office of Personnel Management, n.d.).

Further rationale for this categorization dates back to the clean air movement in the early 1970s which caused organizational leaders to consider ways of reducing employees' commute times (Mokhtarian, 1991). Also, during the 1970s, personal computers (PCs) entered the consumer market and the concept of working from home was publicized in the media as a way to reduce oil consumption in response to the prolonged OPEC oil embargo (Dutton et al., 1987; Hamilton, 2011). Seeking to experiment with the new idea of distributed operations and flexible working arrangements, IBM allowed five employees to work from home (Useem, 2017). By the time the internet was born in 1983, IBM had nearly 2,000 employees work remotely (Useem, 2017), then a few years later AT&T followed by experimenting with employees working from home (Apgar, 1998). Remote work began to catch on in the late 1980s when it was reported that the number of people working remotely, or "telecommuting," reached 1.5 million in the U.S. (Knobelsdorff, 1987). As internet availability and connectivity improved (e.g., dial-up networks and download speeds) and the computing power of PCs increased, the federal government began to experiment with remote work (Joice, 1993), which resulted in the U.S. Congress appropriated ongoing funding in 1995 for "flexiplace" ICTs for federal employees to maintain at home (U.S. Office of Personnel Management, n.d.).

To engage in the practice of remote work prior to 1999, an organization would have to first be aware of the practice and "be able to cope with a high degree of uncertainty" (Rogers, 2003, p. 282). To adopt the highly risky practice of remote work during this time, an organization would need a substantial budget to purchase expensive PCs, in addition to risk-taking authority to experiment on a project that might not work.

Adopting remote work at this time would have meant that an individual, or decision-making group, would have had to be well respected in their organization to be trusted to experiment with such an unheard-of practice, especially before the internet. Only a very small percentage (2.5%) of organizational leaders would comprise this category, as it would have been rare for anyone to consider distributed operations before the technological infrastructure (e.g., internet and ICTs) was in place to allow for communication and productive work to occur. Organizations categorized as innovators recognized what the future had in store and were willing to accept setbacks if their experiments did not work out.

Early Adopters

Organizations categorized as early adopters would have adopted the practice of remote work between the years 2000 to 2004. The rationale for this categorization dates back to the U.S. Department of Transportation (DOT) Appropriations Act of 2000, which required all federal agencies to institute remote work policies (U.S. Office of Personnel Management, n.d.). By 2004, most federal agencies had policies in place to permit employees to work remotely as long as the practice did not inhibit their performance. During this time, influential organizational leaders within the federal government and in the private sector rapidly adopted remote work after learning of its relative advantages from innovators and through studies that began to be published in scholarly journals (Bailey & Kurland, 2002; Karnowski & White, 2002; Kurland & Cooper, 2002).

To engage in the practice of remote work between the years 2000 to 2004, an organization would have been in a respected and influential position, exceptionally well-

connected throughout a system (Rogers, 2003). Because early adopters are slightly ahead of those in average adopter categories, they can be considered exemplary members of a social system and "help to trigger the critical mass when they adopt an innovation" (Rogers, 2003, p. 283). While organizational leaders during this time would have felt a considerable degree of risk concerning the practice of remote work, they would mitigate the uncertainty by adopting the practice, documenting their experience, and carefully disseminating what they learned with colleagues in their interpersonal networks (Rogers, 2003).

Early Majority

Organizations categorized in the early majority would have adopted the practice of remote work between the years 2005 to 2014. The rationale for this categorization aligns with the diffusion of wireless router connectivity to the internet and broadband access across the U.S., providing remote employees with the infrastructure to perform their work from anywhere (Campbell & Ling, 2020; Horrigan, 2008; Perrin & Duggan, 2015). Faster internet speeds also improved the quality of video conference technologies such as Skype and GoToMeeting, leading to widespread adoption by organizations as well as consumers (Rao, 2011). During this time, some software development organizations launched without having any physical locations. Automattic is one example of a completely distributed organization with no central office, where all employees work remotely from around the world (Mullenweg, 2015). In addition to working from home, remote workers also had the option of working from coworking spaces, the first of which launched in San Francisco in 2005 (Di Risio, 2019). The new coworking space

environment provided remote workers from difference organizations to share office space, allowing for social interactions in a convenient professional work environment. As coworking spaces typically charge monthly memberships, organizations chose to utilize this alternative environment along with working from home during in an effort to cut costs during the Great Recession from 2007 to 2009 (Molla, 2019). ICT development progressed amid the increased adoption of remote work during the Great Recession as the need for project management and team communication software solutions became more apparent (Andre, 2015). Moreover, the U.S. Census reported in 2010 that nearly 60% of remote workers were employed in the private sector and in this same year the Telework Enhancement Act was signed into law requiring "each Executive agency to establish a policy under which eligible employees are authorized to telework" (U.S. Office of Personnel Management, 2010).

To engage in the practice of remote work between the years of 2005 to 2014, an organization would have relied on the documented experience of an early adopter to reduce uncertainty before making use of the innovative practice (Rogers, 2003). After taking some time to contemplate the decision to adopt remote work, an organization in this category would eventually follow the early adopter. However, for organizations in this category, the risk of leading out in the practice of remote work would be far too great. Nevertheless, the leaders in organizations of the early majority play a role in helping spread the innovation of remote work to their peers with similar or less tolerable risk levels (Rogers, 2003).

Late Majority

Organizations categorized in the late majority would have adopted the practice of remote work between the years 2015 to 2019. The rationale for this categorization is founded in the widely accepted practice of remote work, due in part to an even larger portion of the U.S.' workforce (70%) that works remotely a minimum of one day per week (Dixon, 2019). As remote workers regularly use video conferencing software, Zoom entered the market in 2017 and quickly reported a 500% increase in users, reaching over 50,000 in just two years (Walia, 2019). Further, the number of fully distributed companies in the U.S. surpassed 170 in 2018, providing additional evidence supporting the practicality of remote work as a common workplace practice and its compatibility with an increasing number of organizations (Caminiti, 2018).

To engage in the practice of remote work between the years 2015 to 2019, an organization would have previously doubted any relative advantages or have recently formed a new organization (Audretsch, 2019). In the former category, the organization needed an endorsement by opinion leaders attempting to advocate for the practice. It would be expected that these late adopting organizations would use the same skeptical arguments regarding productivity used by their contemporaries of the 1970s. Rogers (2003) explained that the intrinsic skepticism among organizations in this category stems from their lack of abundance and limited resources. As such, nearly all uncertainty must be removed before these organizations would feel a sense of assurance in their adoption decision because they would not risk adopting an innovation as unpredictable as remote work (Rogers, 2003). The slow and cautious innovation decision by late adopting

organizations is predominantly influenced by their peer organizations of the same category. These organizations must be observed benefitting from remote work before others will feel confident in following suit (Rogers, 2003).

Laggards

Organizations categorized as laggards would have been forced to adopt the practice of remote work during the year 2020 or later. The rationale behind this categorization revolves around the COVID-19 global pandemic, which resulted in organizations practicing remote work in order to comply with social distancing guidelines by allowing employees to work from home in an effort to circumvent the spread of the virus (Dingel & Neiman, 2020). After the Center for Disease Control reported over 4,000 deaths in the U.S. on March 16, 2020, state officials began announcing mandatory 14-day quarantines which were eventually extended over a period of several additional months in an effort to reduce transmission rates (U.S. Department of Defense, 2020). During this time, organizations immediately began practicing remote work for continuity of business operations, whether or not they had previously experimented with the practice. For laggards, this transition was complex and inefficient during a time of great stress and anxiety (Brynjolfsson et al., 2020).

To first engage in the practice of remote work during the year 2020 or later, organizations would have relied heavily on traditional workplace practices. Up until this time, organizations would have avoided adoption in preceding years when uncertainty was relatively low. However, from a laggard's perspective, it is entirely appropriate to resist all innovations (Rogers, 2003). Therefore, being last in a social system to adopt

remote work is characteristic of laggards, as they must be certain an innovation will work before they adopt it (Rogers, 2003). However, practicing remote work under the forced circumstances of COVID-19 does not genuinely constitute adoption, as organizations categorized as laggards did not have the choice of going through the innovation-decision process. Rather, they are implementing and adapting out of pure necessity.

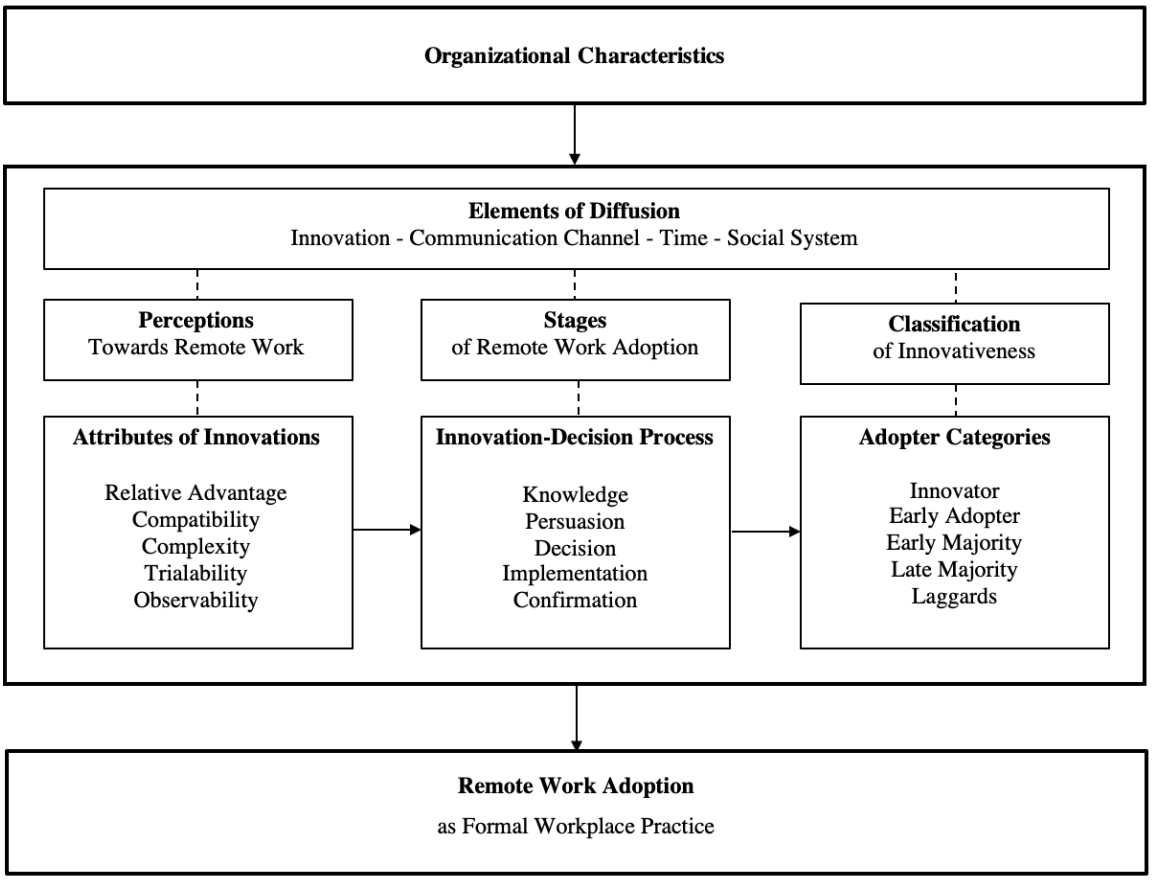
Conceptual Framework

Figure 4 provides an overview of the connections between research objectives and the elements of DOI theory which leads to a remote work adoption model adapted to organizations in the U.S. Organizational characteristics (e.g., sector, industry, years in operation, size in terms of budget and personnel) and organizational leaders' perceptions of the attributes of remote work are factors related to adoption. Therefore, it is expected that these factors will explain the adoption of remote work among different types of organizations in the U.S.

According to DOI theory (Rogers, 2003), organizational leaders' perceptions towards remote work can be explained through the attributes of innovations, which are relative advantage, compatibility, complexity, trialability, and observability. In addition, it is hypothesized that the attributes of remote work correlate with the likelihood of remote work adoption as a formal workplace practice. The conceptual model assumes organizational leaders' perceptions towards remote work are established prior to the classification of organizations with respect to the stages of remote work adoption. Therefore, DOI theory provides a system for determining where organizations range in

Figure 4

Conceptual Framework Explaining the Diffusion of Remote Work



the innovation-decision process of remote work adoption, with the stages being knowledge, persuasion, decision, implementation, and confirmation. This is important because organizational leaders involved in the innovation-decision process cannot be categorized based on their level of innovativeness unless the decision to adopt the practice of remote work has been made.

Finally, leaders who report that their organization has made the innovation-decision to adopt remote work can be categorized on the basis of their innovativeness.

DOI theory (Rogers, 2003) describes innovativeness through adopter categories, which are innovators, early adopters, early majority, late majority, and laggards. A resulting distribution of adopter categories (see Figure 3) will explain the rate of remote work adoption in the U.S. Further, a clearer understanding of remote work adoption as a formal workplace practice in the U.S. can be demonstrated by understanding the characteristics of organizations, their stage in the adoption process, their leaders' perceptions towards remote work, and their level of innovativeness.

Chapter Summary

While a variety of studies have explored the adoption and practice of remote work, perspectives from employees and managers have commonly been consolidated in their research findings. In addition, studies investigating the implementation of remote work often limit their conclusions to whether the execution was successful or not. This analysis is often followed by discussions of only employee perspectives. Moreover, findings across remote work studies have been inconsistent, calling for more in-depth explorations to explain contradictory results associated with perceived advantages and organizational compatibility. Ultimately, the literature on remote work lacks examination into the factors influencing organizations' decision to adopt remote work as a formal workplace practice. Guided by Rogers' (2003) DOI theory this study will attempt to explain the process of remote work adoption by organizations in the U.S. through a quantitative analysis.

CHAPTER III

METHODOLOGY

Purpose and Objectives

This study analyzes the factors that explain the process of remote work adoption by organizations in the U.S. Objectives of the study were to (1) determine where organizations range in the innovation-decision process of remote work adoption, (2) categorize organizations' level of innovativeness with respect to remote work adoption over time, (3) describe how organizational characteristics relate to remote work adoption, (4) describe how the attributes of remote work relate to the likelihood of remote work adoption among organizations, and (5) describe the extent to which organizations have implemented remote work in response to COVID-19 and their favorability towards the practice.

Descriptive statistics, crosstabulations, and chi-squared tests were used to answer research question one, (1) where do organizations range in the innovation-decision process of remote work adoption? and research question two, (2) what are the primary adopter categories for remote work among organizations? A logistic regression model was created to determine relationships between organizational characteristics and remote work adoption and to explain the relationships between the perceived attributes of remote work and adoption likelihood to answer research question three, (3) how do organizational characteristics relate to remote work adoption? and research question four, (4) how do the attributes of remote work relate to the likelihood of its adoption among

organizations? Descriptive statistics, crosstabulations, analysis of variance (ANOVA), and a *t* test were utilized to answer research question five, (5) to what extent have organizations practiced remote work in response to COVID-19 pandemic? What are organizations' favorability towards the practice of remote work?

Methods

Research Design

This study followed a nonexperimental design with a correlational analysis and gathered cross-sectional data from a convenience sample of organizational leaders. As cross-sectional studies are observational in nature (Ary et al., 2013), the selected design was appropriate because it allows for an explanation of the prevailing circumstances related to remote work adoption by organizations in the U.S.

Population and Sample

The target population of interest in this study is described as organizational leaders in the U.S. with influence in the hiring process of their respective organizations. The sample size consisted of questionnaire responses from 1,259 organizational leaders (n = 1,259). A proportionate stratified convenience sampling approach was employed to improve the sample's representation relative to sector employment in the U.S. (Ary et al., 2013). The most recent employment sector data from the U.S. Bureau of Labor Statistics (2020b), available as of September 1, 2020, reported the proportion of public sector (e.g., government, education) employment at 14% (n = 140), private sector (e.g., for-profit business) at 76% (n = 760), and not-for-profit (e.g., arts, social advocacy, health services,

education, etc.) at 10% (n = 100). The convenience sample was stratified to ensure that one employment sector is not over- or underrepresented, nor has disproportionate weight in the sample (Cooper, 2017). While this method allows the sample to be matched to the population based on pre-defined population parameters, it does not change the limits of using a convenience sample (e.g., sampling bias, low external validity). Despite an improved ability to generalize results, convenience sampling remains inferior to a stratified (i.e., proportionate) random sample (Ary et al., 2013).

Assuming maximum variability in the population, the minimum sample size was determined to be 385, using an error margin of +/- 5%, confidence interval of 95%, and a standard deviation of 0.5 (Ary et al., 2013; Israel, 2003; Johnson & Christensen, 2017). As sample size is directly related to statistical power, larger samples reduce the likelihood of a Type II error (Johnson & Christensen, 2017). The aim was for a sample size of 1,000 participants, and the final sample consisted of 1,259.

A nonprobability convenience sample was used to select participants from opt-in panels provided by Centiment, a market research company. While participants from opt-in panels have previously consented to respond in various surveys, Centiment's panels do not allow individuals within a population the same probability of being selected and are restricted to persons with internet access. It is also known that Centiment utilizes an assortment of monetary incentives to encourage participants' contributions to opt-in panels and surveys.

Data Collection Tools

After the study was approved by the Utah State University (USU) Institutional

Review Board (IRB), data collection was facilitated by an online, structured, researcher-made questionnaire (Ary et al., 2013), through Qualtrics (see Appendix A). The survey followed the conceptual framework that was guided by DOI theory and context-specific factors from the literature review.

The questionnaire was reviewed by a panel of experts with proficiency in extension education, evaluation, questionnaire design, and DOI theory in order to verify construct validity of innovation attributes (Ary et al., 2013). The expert panel consisted of six doctoral-level researchers from three land grant universities in the U.S. Panel members were identified by committee members of this study and other USU faculty. Recommendations of expert panelists were based on their extensive experience teaching DOI topics in graduate courses and also publishing research articles guided by the theory. Expert panelists were invited to review the questionnaire over a period of two weeks, and all completed their review in this time frame. The instrument's item design was informed by the guidelines for writing closed-ended questions and designing web and mobile questionnaires detailed in the Tailored Design Method (Dillman et al., 2014) to verify face validity. For Likert-scale items, response options were based on a five-point scale and evenly spaced with a clear mid-point. Additionally, items were grouped together by constructs for the purpose of avoiding disparate comparisons across distinct constructs. These actions served to establish consistency in item flow and increased the face validity of the instrument (Dillman et al., 2014).

Guided by the conceptual framework (see Figure 4), this study assessed levels of favorability with statements relating to remote work within participants' organizations.

These statements were organized by constructs following DOI theory and certain factors from the literature review.

Data Collection Procedures

The target population was filtered based on survey responses to two questions which determined whether potential participants (a) manage employees and (b) have influence in their organization's hiring process.

Cognitive interviews are a method for understanding the manner in which individuals mentally process and respond to survey questionnaires (Ary et al., 2013; Egger-Rainer, 2019). Furthermore, as cognitive interviews serve as a valuable approach to uncovering problems in an instrument that threaten face validity. Therefore, five members of the target population (i.e., organizational leaders with influence over the hiring process) reviewed the questionnaire and were interviewed via video call to assess the questionnaire for face validity.

Following these interviews, and after the USU IRB determined the study exempt, a pilot study was conducted with 125 participants (n = 125) of the target population to check for face validity. The purpose of the pilot was to provide reliability scores for constructs used in statistical analysis and ensure a straightforward data collection process. Data from the pilot study was used for this study as there were no changes to the items in the instrument. Cronbach's alpha was used to assess internal consistency of the pilot data. Following the pilot study, minor errors were corrected, and improvements were made to enhance readability and reliability. Minor changes consisted of alphabetizing response options and providing clarifications in parenthesis under certain items. No new questions

or response options to existing questions were added to the instrument.

The questionnaire was administered to the sample via an online survey by Centiment from November 24 to December 5, 2020. Participants of Centiment's targeted opt-in panels were granted access to complete the full survey based on responses to qualifying survey questions regarding whether they (a) manage employees and (b) have influence in their organization's hiring process. If the response was yes, then they were permitted to complete the full survey. The instrument took approximately eight minutes to complete.

Cronbach's alpha (i.e., coefficient alpha) was assessed post-hoc to establish internal consistency and reliability of each construct. An initial analysis revealed inadequate construct reliability. Therefore, upon closer item analysis, reverse-coded variables were removed and new variables computed to maintain construct reliability: relative advantage = .86, compatibility = .86, complexity = .81, trialability = .79, and observability = .80. The internal consistency for each construct was deemed acceptable based on an alpha value of 0.7 or higher (Johnson & Christensen, 2017).

Constructs of the Attributes of Innovations

The five attributes of innovations with respect to remote work were operationalized on a five-point Likert scale (relative advantage = 4 items, compatibility = 3 items, complexity = 3 items, trialability = 3 items, and observability = 3 items). All constructs were measured on a five-point Likert type agreement scale.

The construct of relative advantage was designed to assess the extent to which organizational leaders perceived the practice of remote work as better than working in the

traditional, co-located, office environment. This construct had four statements relating to the adoption of remote work in their organization. Organizational leaders were asked to indicate their level of agreement with the following statements: (1) adoption of remote work could potentially improve work arrangements for employees in my organization, (2) adoption of remote work could potentially attract talented employees to my organization, (3) adoption of remote work could potentially provide my organization with financial savings, and (4) adoption of remote work could potentially increase my organization's competitiveness. For this construct, a high mean score indicates organizational leaders perceived high favorability with relative advantage of remote work, whereas a low mean score demonstrates low favorability.

The construct of compatibility was designed to assess the extent to which organizational leaders perceived the practice of remote work as consistent with the existing culture and norms, past experiences, and needs of their organization. This construct had three statements relating to the adoption of remote work in their organization. Organizational leaders were asked to indicate their level of agreement with the following statements: (1) adoption of remote work is easy to integrate into my organization's existing policies, (2) adoption of remote work is consistent with my organization's culture, and (3) adoption of remote work is well suited for the type of jobs that exist in my organization. For this construct, a high mean score indicates organizational leaders perceived high favorability towards the compatibility of remote work, whereas a low mean score demonstrates low favorability.

The construct of complexity was designed to assess the extent to which

organizational leaders perceived the practice of remote work as difficult to implement and manage within their organization. This construct had three statements relating to the adoption of remote work in their organization. Organizational leaders were asked to indicate their level of agreement with the following statements: (1) I believe implementing remote work arrangements could be easy for my organization, (2) I believe the steps to implementing remote work arrangements in my organization could be easy to understand, and (3) I believe it could be easy to trust remote employees in my organization. For this construct, a high mean score indicates organizational leaders perceived high favorability towards the complexity of remote work, whereas a low mean score demonstrates low favorability with the construct (Rogers, 2003).

The construct of trialability was designed to assess the extent to which organizational leaders perceived the practice of remote work can be experimented with on a trial basis. This construct had three statements relating to the adoption of remote work in their organization. Organizational leaders were asked to indicate their level of agreement with the following statements: (1) I could implement remote work arrangements on a trial basis in my organization, (2) I could convert existing positions to short-term remote work arrangements in my organization before committing fully, and (3) I could engage in managing remote employees on a trial basis in my organization. For this construct, a high mean score indicates organizational leaders perceived high favorability for the trialability of remote work, whereas a low mean score demonstrates low favorability.

The construct of observability was designed to assess the extent to which

organizational leaders perceived the value, results, and benefits of practicing remote work within their organization. This construct had three statements relating to the adoption of remote work in their organization. Organizational leaders were asked to indicate their level of agreement with the following statements: (1) it is easy to observe remote work occurring in my organization, (2) it is easy to observe conflicts related to remote work in my organization, and (3) it is easy to observe employee satisfaction related to remote work in my organization. For this construct, a high mean score indicates organizational leaders perceived high favorability towards the observability of remote work, whereas a low mean score demonstrates low favorability.

Response categories for each item were: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree nor disagree*, 4 = *agree*, and 5 = *strongly agree.* The construct means for each attribute of innovation will be rendered as follows: 1.00 – 1.49 = *very low favorability*, 1.50 – 2.49 = *somewhat low favorability*, 2.50 – 3.49 = *moderate favorability*, 3.50 – 4.49 = *somewhat high favorability*, and 4.50 – 5.0 = *very high favorability* (Narine et al., 2019).

Measuring the Innovation-Decision Process

The innovation-decision process with respect to remote work was operationalized through seven scenarios in a single question designed to ascertain an organization's current stage in the process. The two knowledge stage scenarios were designed to frame an organization's familiarity with the concept of remote work and awareness with how the innovative practice functions. The persuasion stage scenario was designed to frame an organization's exploration into the concept of remote work and opinions (i.e., perceived

attributes) formed towards the practice, either favorable or unfavorable. The two decision stage scenarios (e.g., adopt or reject) were designed to frame an organization's engagement in early activities that lead to the adoption or rejection of remote work. The implementation stage scenario was designed to frame an organization's practice of remote work after a decision was made to adopt the concept. Finally, the confirmation stage scenario was designed to frame an organization's internal evaluation of implementing remote work and whether to continue offering the alternative workplace arrangement to employees. Response categories for each item were: 1 = *knowledge*, 2 = *persuasion*, 3 = *decision (accept or reject)*, 4 = *implementation*, and 5 = *confirmation.* Respondents answer to this question reflects the organizations' position within the innovation-decision process (Celik et al., 2014). Organizational leaders were asked to select one statement that best reflects their organization's current position regarding remote work: (1) my organization has no knowledge regarding remote work, (2) my organization is aware of remote work and understands how it functions, (3) my organization explored the advantages and disadvantages of remote work and has formed opinions towards the practice, (4) my organization has adopted remote work, (5) my organization has rejected remote work, (6) my organization currently allows employees to work remotely, and (7) remote work is an established part of my organization's culture.

Organizational Characteristics

Organizational characteristics were captured based on sector, industry, years in operation, annual budget, number of employees, location of headquarters, number of

locations operated, and extent of international operations. Survey questions were modeled after similar studies examining how organizational characteristics relate to adoption of innovations (J. D. Allen et al., 2017; Lu et al., 2019; Seo & Vu, 2020). The list of industries was informed by the U.S. Bureau of Labor Statistics' (2020b) *Industries at a Glance* report outlining the North American Industry Classification System (NAICS) code order. These organizational characteristics (e.g., sector, industry, years in operation, size in terms of budget and personnel) provided insights into the size and scope of different types of organizations in the U.S. that adopt or reject the practice of remote work.

Data Analysis

Results of this study were presented as descriptive statistics, crosstabulations, and chi-square to answer research questions 1, 2, and 5, determining where organizations range in the innovation-decision process of remote work adoption, identifying the foremost adopter categories of organizations, and describing the extent to which organizations have implemented remote work in response to COVID-19 and their favorability towards the practice. A logistic regression was used to address research questions 3 and 4, describing organizational characteristics related to remote work adoption and explaining organizational leaders' perceptions towards remote work and how the attributes of innovations relate to the likelihood of remote work adoption among organizations. Statistical significance was assumed at $p < .05$. All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) software version 26.

Research Question 1: Where do organizations range in the innovation-decision process of remote work adoption? Descriptive statistics were used to determine where organizations range in the innovation-decision process of remote work adoption. Organizations' positions in the five-stage innovation-decision process (e.g., knowledge, persuasion, decision, implementation, and confirmation) were then compared by organizational characteristics using crosstabulations. The Pearson's chi-squared test was conducted with Cramer's V for effect size to determine whether the relationships between the stages of the innovation-decision process and organizational characteristics were statistically significant. Chi-squared was deemed an appropriate statistical method due to the large sample size and the presence of frequency data for the categorical variables being analyzed (Ary et al., 2013). Cramer's V and adjusted residuals were considered suitable in measuring the strength of these associations. A Cramer's V in the range of 0 to .3 was considered weak, .3 to .7 was considered medium, and .7 or higher was considered strong (Johnson & Christensen, 2017).

Research Question 2: What are the primary adopter categories for remote work among organizations? Descriptive statistics were used to categorize organizations by level of innovativeness (i.e., adopter categories) with respect to remote work adoption. The variable of time served as the independent variable based on when remote work was adopted within the organization. Historical events in the context of DOI theory as outlined in the literature review provided the rationale for categorizing organizations into adopter categories. The remote work adopter categories based on time are: (a) innovators (i.e., venturesome): earlier than 1999, (b) early adopters (i.e., respect): between 2000 to

2004, (c) early majority (i.e., deliberate): between 2005 to 2015, (d) late majority (i.e., skeptical): between 2015 to 2020, (e) laggards (i.e., traditional): 2020 or later.

Organizations' classification in the five adopter categories (e.g., innovators, early adopters, early majority, late majority, and laggards) were compared by organizational and communication characteristics using crosstabulations. Pearson's chi-squared test was conducted with Cramer's V for effect size to determine whether the relationships between adopter categories and communication characteristics were statistically significant.

Research Question 3: How do organizational characteristics relate to remote work adoption? A logistic regression model was created to explain how organizational characteristics relate to the likelihood of remote work adoption. This measurement demonstrated how the independent variables of organizational characteristics (e.g., sector, industry, years in operation, size in terms of budget and personnel) relate with remote work adoption in the U.S. Descriptive statistics such as frequencies, measures of central tendency, dispersion, and crosstabulations were also utilized to explain the size and scope of remote work adoption among various types of organizations (e.g., industry categories). The organization's status in regard to remote work adoption was a binary dependent variable.

Research Question 4: How do the attributes of remote work relate to the likelihood of its adoption among organizations? The logistic regression model in research question three was used to describe how the attributes of remote work relate to the likelihood of remote work adoption among organizations. Moreover, descriptive statistics such as frequencies, measures of central tendency, and dispersion were used to

explain organizational leaders' perceptions towards the practice of remote work. Favorability with respect to each of the five attributes of innovation (i.e., independent variable) were described using mean scores and standard deviation. The organization's status in regard to remote work adoption was the nominal outcome (i.e., dependent) variable.

Research Question 5: To what extent have organizations practiced remote work in response to COVID-19? What are organizations' favorability towards the practice of remote work? Descriptive statistics were utilized to explain the extent to which organizations have implemented remote work in response to COVID-19 and their favorability towards the practice. A repeated measures ANOVA was utilized to determine if a significant difference in remote work practices existed before, during, and after COVID-19. A paired samples *t* test was used as a post-hoc analysis to identify significant differences between each point in time.

Organizations' classification in the five adopter categories were compared by favorability using crosstabulations. The Pearson's chi-squared test was conducted with Cramer's V for effect size to determine whether the relationships between adopter categories and remote work favorability were statistically significant.

Research Ethics

This study was approved by IRB and deemed exempt as no personal identifiers of program participants were collected. Moreover, participants were informed of the details of the research and allowed to withdraw at any point in time. All IRB guidelines involving human subjects were followed. No minors participated in the survey (see

Consent Letter in Appendix B).

Assumptions

Despite the practice of remote work becoming more common in the workplace, the process of its adoption by organizations in the U.S. is speculative. As noted in the introduction, this study assumed that the target population of organizational leaders were acquainted with the concept of remote work and would know if the practice was being implemented within their respective organizations. This study also assumed the target population was interested in improving the efficiency of their organization as it pertains to workplace and human resource practices and the benefits and drawbacks of remote work. Finally, it was assumed that participants provided honest responses to survey items.

Limitations

Rogers' (2003) DOI theory describes attributes of innovation; however, the framework has some limitations. DOI theory cannot control for all variables that might possibly affect adoption of remote work by an organization. The primary limitation in this study was the use of a nonexperimental research design and convenience sample in the data collection process. Therefore, this study's results related to the target population of organizational leaders in the U.S. are not generalizable across the population, and caution is exercised in making inferences about its results (Johnson & Christensen, 2017).

Despite the use of quotas, which limits the sample to the population based on pre-established population parameters and improves capacity to generalize results, it cannot

affect the limits of convenience sampling, which is inferior to a stratified random sample (Ary et al., 2013). Notwithstanding, steps were taken to minimize coverage and sampling error after data collection. The U.S. Bureau of Labor Statistics (2020b) provided an estimation of employment sector data, as well as industry proportions in the private sector, and the population of management professionals employed in each state. A stratified convenience sample was utilized to ensure that employment sectors are not overrepresented or underrepresented, which corrects for disproportionate weight in the sample.

Centiment's opt-in panels added further limitations to this study because they did not allow individuals within a population the same probability of being selected and they were restricted to persons with internet access. In addition, because the chances of being selected for Centiment's internal opt-in panels is unknown, responses cannot reflect the population. Therefore, this limitation presents a coverage error wherein the target population may not coincide with the population being sampled. Furthermore, Centiment's use of incentives presents the issue of response bias which affects the quality of data collected. As participants may respond inaccurately to the questionnaire items to earn the incentive for completing the survey, quality control questions were utilized to mitigate this limitation (Hsieh & Kocielnik, 2016).

CHAPTER IV

RESULTS

Sample Characteristics

Survey participation quotas were previously established so the sample (n = 1,259) would be reflective of the actual sectors and industries comprising the U.S. economy (U.S. Bureau of Labor Statistics, 2020b). Accordingly, 76% (n = 952) of organizations were from of the private sector, with 16% (n = 194) from the public sector, and 8% (n = 100) from the not-for-profit sector.

Overall, most organizations in this study had been in operation for 10 years or less (34%, n = 411) and had an annual budget from $1,000,000 to $4,999,999 (34%, n = 408) with 100 to 499 employees (24%, n = 293). The headquarters of most organizations were located in the Northeast region (32%, n = 378) of the U.S. (i.e., CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT) with 31% (n = 372) of the organizations operating in two to 10 states and 32% (n = 379) comprising two to 10 branches (i.e., offices, sites). With respect to operations outside the U.S., most organizations (55%, n = 661) reported operating internationally (Table 1).

Objective 1: Determine where organizations range in the innovation-decision process of remote work adoption.

While the majority of organizations reported already having remote employees (91%, n = 933), the divide between nonadoption and adoption stages in the innovation-decision process was evenly split (Table 2). This inconsistency could be explained by the forced implementation of remote work in response to the COVID-19 pandemic. Given

Table 1

Organizations by Characteristics

Characteristics	*n*	%
Sector		
Public	194	16
Private	952	76
Not-for-profit	100	8
Years in operation		
Under 10	411	34
11 to 20	360	29
21 to 30	150	12
31to 40	73	6
41 to 50	66	5
Over 50	139	11
Annual budget	*n*	%
$0 to $999,999	283	24
$1,000,000 to $4,999,999	408	34
$5,000,000 to $9,999,999	94	8
$10,000,000 to $49,999,999	174	15
$50,000,000 to $99,999,999	56	5
$100,000,000 to $999,999,999	114	9
Over $1,000,000,000	61	5
Employees		
Under 100	236	20
100 to 499	293	24
500 to 999	270	23
1,000 to 4,999	222	18
5,000 to 9,999	95	8
Over 10,000	83	7
Location of headquarters		
Midwest	208	17
Northeast	378	32
Southeast	299	25
Southwest	93	8
West	221	18

(*table continues*)

Characteristics	*n*	%
States in operation		
Only 1	305	25
2 to 10	372	31
11 to 20	177	15
21 to 30	110	9
31 to 40	69	6
41 to 50	147	12
I do not know	19	2
Branches in operation		
Only 1	209	18
2 to 20	578	49
21 to 40	209	18
Over 40	176	15
International operations		
Yes	661	55
No	538	45

Table 2

Organizations' Stage in the Innovation-Decision Process by Classification

Stage	Classification	*n*	%	Cum. %
Knowledge	Non-adoption	424	35	
Persuasion	Non-adoption	154	13	
Decision - Reject	Non-adoption	28	2	50
Decision - Adopt	Adoption	194	17	
Implementation	Adoption	269	22	
Confirmation	Adoption	127	11	50

these circumstances, leaders could report being in a nonadoption stage (e.g., knowledge) within the innovation-decision process despite having remote employees in their organization.

Table 3 provides a descriptive summary of where organizations in the U.S. range

across the innovation-decision process of remote work adoption. Results indicated 35% (n = 424) of organizations were in the knowledge stage of the innovation-decision process, with 15% (n = 173) of leaders in this stage reporting that their organizations had no knowledge regarding remote work and 20% (n = 251) indicating that their organizations were aware of the practice and understood how it functions. For the persuasion stage, 13% (n = 154) of leaders reported that their organization had explored the advantages and disadvantages of remote work and formed opinions towards the practice. Further, of organizations in the decision stage (19%, n = 222) of the innovation-decision process, only 2% (n = 28) rejected remote work while 17% (n = 194) adopted remote work. Moreover, 22% (n = 269) of organizations comprising the implementation stage reported allowing employees to work remotely with 11% (n = 127) in the confirmation stage indicating that remote work was an established part of their workplace culture.

Table 3

Organizations' Stage in the Innovation-Decision Process

Stage	*n*	%
Knowledge	424	35
Persuasion	154	13
Decision	222	19
Implementation	269	22
Confirmation	127	11

The Pearson chi-squared test of association was performed to determine whether a relationship was present between economic sector (i.e., private, public, not-for-profit) and stages of the innovation-decision process of remote work adoption. Results revealed a

statistically significant relationship between economic sector and stages of the innovation-decision process ($\chi^2 = 23.39$, $p = .003$). The effect size was categorized as weak based on Cramer's V ($\phi_c = .10$). As can be seen in Table 4, the majority of organizations across all sectors were in the early stages of the innovation-decision process (i.e., knowledge, persuasion, decision). Most private (37%, $n = 341$) and public sector (33%, $n = 61$) organizations reported being in the knowledge stage, while the majority of the not-for-profit sector (31%, $n = 30$) reported being farther along the process in the decision stage. Although public sector organizations (17%, $n = 31$) made up the highest relative segment of the persuasion stage, not-for-profit sector organizations (30%, $n = 29$) reported the highest proportion of organizations in the implementation stage. Interestingly, while the confirmation stage consisted of the lowest number of total organizations, the majority were from the private sector (12%, $n = 105$).

Results of the Pearson chi-squared test indicated a statistically significant relationship between organizations' years of operation and stages of the innovation-decision process ($\chi^2 = 65.67$, $p < .001$). The effect size was categorized as weak based on Cramer's V ($\phi_c = .12$). Descriptive frequencies show older organizations were farther along in the innovation-decision process than younger organizations (Table 4). For organizations in operation 10 years or less, only 24% ($n = 100$) were in the stages of implementation and confirmation, while organizations with over 50 years in operation had 39% ($n = 54$) in these later stages of the adoption process.

A Pearson chi-squared test showed a statistically significant relationship between organizations' annual budget and stages of the innovation-decision process ($\chi^2 = 104.27$,

Table 4

Organizations' Stage in the Innovation-Decision Process by Characteristics

	Knowledge (*n* = 424)		Persuasion (*n* = 154)		Decision (*n* = 222)		Implementation (*n* = 269)		Confirmation (*n* = 127)	
Characteristics	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual
Sector										
Public	33	-.7	17	1.8	18	-.4	24	.5	8	-1.2
Private	**37**	**2.3**	12	-.8	18	-1.8	21	-1.6	12	1.7
Not-for-profit	**23**	**-2.7**	9	-1.1	**31**	**3.3**	30	1.8	7	-1.1
Years in operation										
Under 10	**44**	**4.2**	15	1.9	17	-1.1	**17**	**-3.2**	**7**	**-2.7**
11 to 20	38	1.3	13	.0	16	-1.7	21	-.7	12	1.2
21 to 30	**23**	**-3.5**	13	-.1	18	.0	**30**	**2.4**	**16**	**2.3**
31 to 40	36	.0	12	-.1	14	-1.1	27	1.0	11	.1
41 to 50	25	-1.7	8	-1.3	**29**	**2.2**	27	1.0	11	.0
Over 50	**23**	**-3.2**	9	-1.6	**29**	**3.3**	**29**	**1.9**	10	-.2
Annual budget										
$0 to $999,999	**51**	**6.2**	14	1.1	17	-1.0	**13**	**-4.3**	**5**	**-3.7**
$1,000,000 to $4,999,999	37	.9	13	.3	18	-.4	21	-1.0	11	.1
$5,000,000 to $9,999,999	36	.1	10	-1.0	19	.1	29	1.5	6	-1.3
$10,000,000 to $49,999,999	**25**	**-3.2**	11	-.6	21	.8	**30**	**2.6**	13	1.1
$50,000,000 to $99,999,999	27	-1.4	9	-.9	**29**	**2.0**	30	1.4	5	-1.3
$100,000,000 to $999,999,999	**15**	**-4.8**	13	.1	20	.4	28	1.5	**24**	**4.9**
Over $1,000,000,000	28	-1.2	13	.1	13	-1.1	29	1.1	17	1.6
Employees										
Under 100	**43**	**2.6**	11	-.7	22	1.5	**15**	**-3.1**	9	-1.0
100 to 499	39	1.3	11	-.9	19	.0	21	-.6	10	-.2
500 to 999	37	.8	**19**	**3.1**	**13**	**-2.7**	23	.4	8	-1.7
1,000 to 4,999	**26**	**-3.3**	12	-.3	22	1.7	25	.9	**15**	**2.1**
5,000 to 9,999	31	-.7	9	-1.3	16	-.7	**33**	**2.5**	11	.0
Over 10,000	27	-1.8	10	-.6	19	.2	28	1.2	16	1.5
International operations										
Yes	**40**	**4.0**	13	.5	**13**	**-5.9**	22	-.8	12	1.7
No	**29**	**-4.0**	12	-.5	**26**	**5.9**	24	.8	9	-1.7

Note. To show where percentages vary from expectation, cells with adjusted residual AR greater or less than +/- 1.96 are bolded.

$p < .001$). The effect size was categorized as weak based on Cramer's V ($\phi_c = .15$). As shown in Table 4, organizations with larger budgets were farther along in the innovation-decision process than organizations with smaller budgets. For organizations with annual budgets over $1 billion, 46% ($n = 27$) were in the stages of implementation and

confirmation, while only 18% (n = 50) of organizations with less than $1 million were in the same stages.

Results of the Pearson chi-squared test found a statistically significant relationship between the number of employees within an organization and stages of the innovation-decision process ($\chi^2 = 51.00$, $p < .001$). The effect size was categorized as weak based on Cramer's V ($\phi_c = .10$). Organizations with more employees were farther along in the innovation-decision process than organizations with fewer employees (Table 4). For organizations with under 100 employees, 76% (n = 180) were in the early stages of the innovation-decision process (i.e., knowledge, persuasion, decision), while organizations with over 10,000 employees had 44% (n = 36) in the later stages (i.e., implementation, confirmation).

Results of a Pearson chi-squared test indicated the relationship between organizations that operate internationally, and the stages of the innovation-decision process was statistically significant ($\chi^2 = 42.04$, $p < .001$). The effect size was categorized as weak based on Cramer's V ($\phi_c = .19$). The descriptive frequencies show that in general, while organizations were evenly split, those operating internationally were farther along in the innovation-decision process of remote work adoption than those that only operate in the U.S. Results of three other Pearson chi-squared tests found no significant relationships with stages of the innovation-decision process of remote work adoption. The first being the number of branches organizations operate, the second being region where an organization's headquarters were located, and the third being the number of states in which organizations operate.

Objective 2: Categorize organizations' level of innovativeness with respect to remote work adoption.

Table 5 displays the frequency statistics of organization's adoption of remote work categorized over time. Organizations categorized as innovators (i.e., venturesome), which adopted remote work in 1999 or earlier consisted of only 7% (n = 62) of organizations in the sample. The largest adopter category was the late majority (i.e., skeptical), which adopted remote work between 2015 to 2019 consisted of 38% (n = 355) of organizations in the sample.

Table 5

Organizations' Adopter Category Frequency Statistics Over Time

Adopter category	Time	*n*	%
Innovators	1999 or earlier	62	7
Early adopters	Between 2000 to 2004	86	9
Early majority	Between 2005 to 2014	217	23
Late majority	Between 2015 to 2019	355	38
Laggards	2020 or later	212	23

The Pearson chi-squared test of association was performed to determine whether a relationship was present between economic sector (i.e., private, public, not-for-profit) and organizations' level of innovativeness (e.g., adopter categories). Results (Table 6) revealed a statistically significant relationship between the economic sector and adopter categories ($\chi^2 = 44.78$, $p < .001$). The effect size was categorized as weak based on Cramer's V ($\phi_c = .16$). The majority of organizations across all sectors were later adopters (i.e., late majority, laggards). While most private sector (41%, n = 295) organizations were categorized in the late majority, most public (32%, n = 46) and not-

for-profit sector (43%, *n* = 29) organizations were categorized as laggards. However, not-for-profit organizations (15%, *n* = 10) also comprised the largest sector in the innovators category.

Table 6

Organizations' Adopter Categories by Characteristics

	Innovators (*n* = 62)		Early adopters (*n* = 86)		Early majority (*n* = 217)		Late majority (*n* = 355)		Laggards (*n* = 212)	
Characteristics	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual
Sector										
Public	9	1.2	8	-.4	22	-.4	**29**	**-2.5**	**32**	**2.8**
Private	**5**	**-2.8**	10	1.0	**25**	**2.0**	**41**	**3.4**	**19**	**-4.9**
Not-for-profit	**15**	**2.8**	6	-1.0	**10**	**-2.6**	**26**	**-2.0**	**43**	**4.1**
Years in operation										
Under 10	**3**	**-3.4**	8	-1.0	25	1.0	**44**	**2.5**	20	-1.2
11 to 20	5	-.7	12	1.7	26	1.6	40	.6	**17**	**-3.0**
21 to 30	9	1.0	7	-.8	22	-.3	36	-.5	26	.8
31 to 40	9	.7	12	.9	15	-1.6	44	.9	20	-.5
41 to 50	**15**	**2.6**	4	-1.4	21	-.4	27	-1.7	33	1.8
Over 50	**12**	**2.6**	10	.2	**15**	**-2.2**	**23**	**-3.4**	**40**	**4.5**
Employees										
Under 100	6	-.5	8	-.6	19	-1.3	34	-1.1	**33**	**3.3**
100 to 499	7	.3	8	-.7	23	.0	38	-.2	24	.6
500 to 999	6	-.3	**14**	**2.7**	27	1.8	34	-1.5	19	-1.8
1,000 to 4,999	5	-.9	8	-.8	24	.2	**45**	**2.3**	18	-1.8
5,000 to 9,999	4	-1.1	7	-.6	26	.5	40	.4	23	.1
Over 10,000	**17**	**3.5**	8	-.4	**13**	**-2.1**	39	.2	23	.1
Location of headquarters										
Midwest	8	.8	7	-1.1	21	-.7	36	-.6	28	1.8
Northeast	7	-.1	9	-.1	**28**	**2.7**	40	.7	**16**	**-3.5**
Southeast	6	-.2	12	1.8	**18**	**-2.2**	40	.5	24	.5
Southwest	10	1.0	15	1.7	18	-.9	**27**	**-2.0**	30	1.5
West	5	-1.1	**5**	**-2.0**	25	.5	40	.6	25	.9
States in operation										
Only 1	8	.8	**5**	**-2.4**	**13**	**-4.2**	**28**	**-3.3**	**46**	**9.3**
2 to 10	5	-1.8	10	.4	26	1.9	**44**	**2.5**	**15**	**-4.0**
11 to 20	6	-.4	7	-.9	23	.0	**48**	**2.6**	**16**	**-2.1**
21 to 30	6	-.1	**19**	**3.5**	**33**	**2.3**	**28**	**-2.0**	**14**	**-2.2**
31 to 40	2	-1.4	10	.1	32	1.6	45	1.1	**11**	**-2.0**
41 to 50	**13**	**2.6**	9	.2	22	-.3	36	-.6	20	-.8
I do not know	19	1.5	9	.0	18	-.4	18	-1.4	36	1.1
Branches in operation										
Only 1	8	.6	8	-.4	**13**	**-3.1**	**29**	**-2.4**	**42**	**5.8**
2 to 20	6	-.3	10	.6	25	1.2	41	1.5	**18**	**-3.2**
21 to 40	4	-1.4	12	1.5	29	1.9	37	-.4	18	-1.7
Over 40	9	1.3	**5**	**-2.1**	21	-.8	41	.7	24	.6
International operations										
Yes	7	-.1	**12**	**3.5**	**29**	**5.1**	37	-.6	**15**	**-6.8**
No	6	.1	**6**	**-3.5**	**15**	**-5.1**	39	.6	**34**	**6.8**

Note. To aid in interpretability, cells with AR greater or less than +/- 1.96 are bolded to show where percentages vary from expectation.

A statistically significant relationship between organizations' years of operation and adopter categories was found ($\chi^2 = 66.58$, $p < .001$). The effect size was categorized as weak based on Cramer's V ($\phi_c = .13$). The descriptive frequencies (Table 6) indicate that in general, older organizations were categorized as earlier adopters more often than younger organizations. In addition, the late majority and laggards categories were the most prevalent across all ranges of years of operation.

Results of the Pearson chi-squared test found a statistically significant relationship between the number of employees an organization had and adopter categories ($\chi^2 = 40.91$, $p = .004$). The effect size was categorized as weak based on Cramer's V ($\phi_c = .11$). Organizations with fewer employees were categorized as later adopters (e.g., late majority, laggards) more often than organizations with more employees (Table 6). Organizations with under 100 employees comprised the largest category of laggards (33%, $n = 47$) while those with over 10,000 employees made up the largest category of innovators (17%, $n = 11$).

The relationship between the organizations' location of headquarters and adopter categories was found to be statistically significant ($\chi^2 = 32.16$, $p = .010$). The effect size was categorized as weak based on Cramer's V ($\phi_c = .10$). The descriptive frequencies show that organizations headquartered in the Northeast were the smallest category of laggards (16%, $n = 49$), with the Southwest being the largest (30%, $n = 22$). The Southwest also had the largest category of innovators (10%, $n = 7$) while the West had the lowest concentration of earlier adopters (i.e., innovators, early majority) of all the regions (10%, $n = 19$).

The relationship between the number of states where organizations operated and the adopter categories was found to be statistically significant ($\chi^2 = 130.79$, $p < .001$). The effect size was categorized as weak based on Cramer's V ($\phi_c = .19$). The descriptive frequencies highlight that in general, organizations operating in fewer states were categorized as later adopters more often than organizations with operations in many states. Organizations operating in only one state made up the largest category of laggards (46%, $n = 99$), while organizations operating in 41 to 50 states consisted of the largest category of innovators (13%, $n = 14$).

Results of the Pearson chi-squared test found a statistically significant relationship between the number of branches organizations operate and adopter categories ($\chi^2 = 49.90$, $p < .001$). The effect size was categorized as weak based on Cramer's V ($\phi_c = .14$). The descriptive frequencies indicated that in general, organizations operating fewer branches were categorized as later adopters (i.e., late majority, laggards) more often than organizations operating many branches. Organizations operating over 40 branches consisted of the largest category of innovators (9%, $n = 13$), while organizations operating only one branch made up the largest category of laggards (42%, $n = 55$).

The final relationship to be analyzed was between international operations and adopter categories. The Pearson chi-squared revealed statistical significance ($\chi^2 = 67.49$, $p < .001$) and a weak effect size ($\phi_c = .27$). In general, the descriptive frequencies found that organizations operating internationally were categorized as earlier adopters (i.e., innovators, early adopters, early majority) more often than those that do not. Furthermore, organizations without international operations had more than twice the

number categorized as laggards (34%, n = 135), compared to organizations that did (15%, n = 77). No significant association was found between organizations' annual budget and adopter categories based on the Pearson's Chi-squared test.

Communication Channels

A Pearson chi-squared test found a statistically significant relationship between communication channels and adopter categories (χ^2 = 14.48, p = .006). The effect size was categorized as weak based on Cramer's V (ϕ_c = .13). The descriptive frequencies in Table 7 indicate that most organizations categorized as innovators (55%, n = 34), adopting remote work in 1999 or earlier, received information about the practice through mass media communications channels. In addition, most organizations categorized in the late majority (62%, n = 221), adopting remote work between 2015 to 2019, also received information about the practice through mass media communications channels. The remaining adopter categories (i.e., early adopters, early majority, laggards) were evening split between interpersonal and mass media communication channels.

Table 7

Organizations' Adopter Categories by Communication Channels

	Innovators (n = 62)		Early adopters (n = 86)		Early majority (n = 217)		Late majority (n = 355)		Laggards (n = 212)	
Communication channel	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual
Interpersonal relationships	45	.0	50	.9	**52**	**2.3**	**38**	**-3.7**	50	1.4
Mass media	55	.0	50	-.9	**48**	**-2.3**	**62**	**3.7**	50	-1.4

Note. To aid in interpretability, cells with AR greater or less than +/- 1.96 are bolded to show where percentages vary from expectation.

Objective 3: Describe how organizational characteristics relate to remote work adoption.

Table 8 provides a summary of the logistic regression of organizational characteristics on the likelihood to adopt remote work. At Step 0, the constant-only model predicted the likelihood of remote work adoption 91.5% of the time. At Step 1, the null hypothesis that the constant-only model sufficiently predicted adoption was rejected (-2LL = 372.38, $p < .05$). This indicated that the final model at Step 1, with all predictors, was better than the constant-only model at predicting adoption. With a non-significant Hosmer-Lemeshow statistic $\chi^2 = 9.75$, $p > .05$, and an overall accuracy rate of 94% at Step 1, the estimated model proved to be an acceptable fit.

A logistic regression was performed to assess the impact of a number of factors on the likelihood that organizations would adopt remote work. This model contained 28 independent variables (e.g., economic sector, years in operations, annual budget, number of employees, international operations, relative advantage, compatibility, complexity, trialability, observability) after transforming categorical variables to dummy variables. Only the categorical variables (i.e., organizational characteristics) with statistically significant relationships with adoption in initial chi-squared analyses were included in the model. The full model, containing all predictors, were statistically significant, χ^2 (28, n = 1,259) = 208.90, $p < .001$, indicating that the model was able to distinguish between organizations that reported and did not report remote work adoption. The model, as a whole, explained between 19% (Cox and Snell R square) and 43% (Nagelkerke R squared) of the variance in remote work adoption, and correctly classified 94% of cases.

Results indicated that while most organizations already had remote workers (91%,

n = 933), only one organizational characteristic played an important role in predicting the likelihood of remote work adoption (Table 8). With an odds ratio of 2.46, international operations was the only predictor of remote work adoption. This indicated that organizations operating internationally were over two times more likely to adopt remote work than organizations only operating domestically, controlling for all other factors in the model.

Table 8

Relationship Between Organizational Characteristics on Likelihood of Adoption

					95.0% C.I. for odds ratio	
Organizational characteristics	*B*	*S.E.*	Wald	Odds Ratio	Lower	Upper
Economic sector – Private	-.42	.43	.97	.66	.28	1.52
Economic sector – Not-for-profit	-.67	.51	1.77	.51	.19	1.37
(as compared to the public economic sector)						
Years in operation – Under 10	.55	.46	1.40	1.73	.70	4.29
Years in operation – 11 to 20	.74	.47	2.53	2.10	.84	5.25
Years in operation – 21 to 30	.39	.52	.55	1.47	.53	4.07
Years in operation – 31 to 40	.18	.58	.10	1.20	.39	3.75
Years in operation – 41 to 50	.23	.58	.16	1.26	.41	3.90
(as compared to over 50 years in operation)						
Annual budget – $0 to $999,999	-1.16	.93	1.53	.32	.05	1.96
Annual budget – $1,000,000 to $4,999,999	-.72	.92	.63	.49	.08	2.91
Annual budget – $5,000,000 to $9,999,999	-.38	1.02	.14	.71	.09	5.04
Annual budget – $10,000,000 to $49,999,999	-.48	.93	.26	.61	.10	3.86
Annual budget – $50,000,000 to $99,999,999	.36	1.34	.07	.79	.10	19.82
Annual budget – $100,000,000 to $999,999,999	.48	1.02	.22	.64	.22	11.83
(as compared to over $1,000,000,000)						
Number of employees – Under 100	.48	.57	.73	1.62	.54	4.89
Number of employees – 100 to 499	.89	.58	2.39	2.44	.79	7.52
Number of employees – 500 to 999	.99	.62	2.53	2.70	.79	9.17
Number of employees – 1,000 to 4,999	.82	.62	1.75	2.26	.67	7.57
Number of employees – 5,000 to 9,999	.88	.73	1.46	2.41	.58	10.02
(as compared to over 10,000 employees)						
International operations – Yes	.90	.35	6.64*	2.46	1.24	4.87
(as compared to no international operations)						

* $p < .05$.

In the private sector (Table 9), the largest category represented in the survey was the information industry (e.g., publishing industry, motion picture and sound recording industries, internet publishing and broadcasting, telecommunications, data processing, hosting, and related services; 32%, *n* = 307) with 97% adoption, followed by financial activities (e.g., finance and insurance, real estate, rental and leasing services; 15%, *n* = 143) with 95% adoption. The lowest categories were leisure and hospitality (e.g., entertainment, recreation, performing arts, spectator sports, museums, historical sites, amusement, gambling, food services, and drinking places; 3%, *n* = 31) with 75% adoption, transportation and warehousing (e.g., air, rail, water, truck, transit, and scenic transportation, couriers and messengers, warehousing and storage; 2%, *n* = 21) with 94% adoption, mining and natural resources (e.g., establishments that extract naturally occurring resources such as coal, ores, crude petroleum, and natural gas; 1%, *n* = 5) with 100% adoption, wholesale trade (e.g., merchant wholesalers, wholesale electronic markets and agents and brokers; 1%, *n* = 9) with 100% adoption, and utilities (e.g., electric power, natural gas, steam supply, water supply, and sewage removal; 0%, *n* = 3) with 67% adoption (Table 9).

In the public sector (Table 9), the largest industry category represented in the survey was education (33%, *n* = 64) with 92% adoption, followed by infrastructure (14%, *n* = 26) and healthcare (13%, *n* = 25) with 100% and 95% adoption respectively. The lowest industry categories represented were fire service (0%, *n* = 0), postal service (0%, *n* = 1), gas and oil (2%, *n* = 3), public transit (2%, *n* = 4), and waste management (2%, *n* = 3).

Table 9

Industry Categories by Remote Work Adoption

Industry category	*n*	Sample %	Adoption %
Private Sector			
Agriculture	34	4	92
Construction	77	8	90
Educational services	44	5	97
Financial activities	143	15	95
Health care and social assistance	62	7	100
Information	307	32	97
Leisure and hospitality	31	3	75
Manufacturing	56	6	84
Mining and natural resources	5	1	100
Professional and business services	89	9	89
Retail trade	63	7	70
Transportation and warehousing	21	2	94
Utilities	3	0	67
Wholesale trade	9	1	100
Other	3	0	100
Public sector			
Education (e.g., Schools, libraries)	64	33	92
Electricity	7	4	100
Emergency services	8	4	83
Environmental	11	6	89
Fire service	0	0	0
Gas and oil	3	2	100
Healthcare	25	13	95
Infrastructure	26	14	100
Law enforcement and police services	10	5	86
Postal service	1	0	100
Public transit	4	2	100
Social services	17	8	100
Waste management	3	2	67
Other	13	7	92
Not-for-profit sector			
Arts and culture	7	7	71
Civic and environmental advocacy	4	4	100
Education	11	11	80
Health services	36	37	81
Social and legal services	19	19	82
International relations and development	4	4	67
Other	18	18	63

Note. Upon further analysis of the "Other" category, data were reviewed, and comments were categorized appropriately. For example, a comment such as "Legal" in the private sector was recategorized as "Professional and business services."

In the not-for-profit sector (Table 9), the largest industry category represented in the survey was health services (37%, *n* = 36) with 81% adoption, followed by social and legal services (19%, *n* = 19) with 82% adoption. The lowest industry categories represented were civic and environmental advocacy (4%, *n* = 4) with 100% adoption and international relations and development (4%, *n* = 4) with 67% adoption.

Within the public sector level of government, survey participants were mostly represented by state level government (39%, *n* = 75) with 98% adoption, followed by the federal government (30%, *n* = 57) with 91% adoption, and local governments (21%, *n* = 41) with 90% adoption. The lowest level represented was regional governments (9%, *n* = 18) with 88% adoption (Table 10).

Table 10

Public Sector Level by Remote Work Adoption

Private sector	*n*	Sample %	Adoption %
Federal	57	30	91
State	75	39	98
Regional (e.g., District or territory)	18	9	88
Local (e.g., Municipal or county)	41	21	90

Objective 4: Describe how the attributes of remote work relate to the likelihood of remote work adoption among organizations.

Results indicated that organizational leaders tended to agree that remote work had favorable relative advantage (*M* = 4.15, *SD* = .77; Table 11). Most leaders agreed remote work could improve work arrangements for employees (85%), attract talented employees (82%), provide financial savings (81%), and increase organizational competitiveness (76%; Table 11).

Table 11

Organization's Perceptions Toward the Favorability of Relative Advantage

	%				
Items	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Adoption of remote work could potentially improve work arrangements for employees in my organization.	2	4	9	37	48
Adoption of remote work could potentially attract talented employees to my organization.	1	4	13	42	40
Adoption of remote work could potentially provide my organization with financial savings.	1	5	13	41	40
Adoption of remote work could potentially increase my organization's competitiveness.	1	5	18	36	40
Relative advantage [Mean (SD)]			4.15 (.77)		

Leaders tended to agree that remote work had favorable compatibility (M = 3.97, SD = .93), with most leaders agreeing remote work was easy to integrate into existing organizational policies (80%), consistent with organizational culture (73%), and as well suited for the type of work existing in their organizations (74%; Table 12).

Table 12

Organization's Perceptions Toward the Favorability of Compatibility

	%				
Items	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Adoption of remote work is easy to integrate into my organization's existing policies.	3	6	11	41	39
Adoption of remote work is consistent with my organization's culture.	3	8	16	38	35
Adoption of remote work is well suited for the type of jobs that exist in my organization.	3	8	15	40	34
Compatibility [Mean (SD)]			3.97 (.93)		

Organizational leaders tended to agree that remote work was favorable with respect to complexity, meaning that leaders did not think remote work adoption was overly complex (M = 4.04, SD = .83). In other words, while complexity is inversely associated with adoption (Rogers, 2003), results showed that leaders did not perceive remote work to be complex. Most leaders agreed implementing remote work arrangements could be easy to carry out (80%), the steps of remote work implementation could be easy to understand (82%), and that it could be easy to trust remote employees in their organizations (83%; Table 13).

Table 13

Organization's Perceptions Toward the Favorability of Complexity

	%				
Items	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I believe implementing remote work arrangements could be easy for my organization.	4	5	10	39	42
I believe the steps to implementing remote work arrangements in my organization could be easy to understand.	2	4	12	46	36
I believe it could be easy to trust remote employees in my organization.	3	6	18	43	30
Complexity [Mean (SD)]			4.04 (.83)		

With respect to organizational leaders' perceptions towards trialability and remote work, results indicated leaders tended to agree that remote work had favorable trialability (M = 4.03, SD = .81). Most leaders agreed they could implement remote work arrangements on a trial basis (84%), convert existing positions to short-term remote arrangements (77%), and engage in managing remote employees on a trial basis in their organizations (77%; Table 14).

Table 14

Organization's Perceptions Toward the Favorability of Trialability

	%				
Items	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I could implement remote work arrangements on a trial basis in my organization.	3	4	9	46	38
I could convert existing positions to short-term remote work arrangements in my organization before committing fully.	3	6	14	45	32
I could engage in managing remote employees on a trial basis in my organization.	3	6	14	46	31
Trialability [Mean (SD)]			4.03 (.81)		

Regarding organizational leaders' perceptions towards observability and remote work (Table 15), findings indicated organizational leaders tended to agree that remote work had favorable observability (M = 3.88, SD = .88). Most organizational leaders agreed it was easy to observe remote work occurring (76%), observe conflicts related to remote work (67%), and observe employees' satisfaction related to remote work in their organizations (72%).

Table 15

Organization's Perceptions Toward the Favorability of Observability

	%				
Items	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
It is easy to observe remote work occurring in my organization.	3	9	12	39	37
It is easy to observe conflicts related to remote work in my organization.	3	11	19	40	27
It is easy to observe employee satisfaction related to remote work in my organization.	3	7	18	42	30
Observability [Mean (SD)]			3.88 (.88)		

Table 16 provides a summary of the logistic regression of attributes on the likelihood to adopt remote work. Of the five attributes of remote work, two played an important role of predicting the likelihood of adoption. Controlling for the effects of organizational characteristics, the logistic regression model indicated compatibility and relative advantage were statistically significant factors explaining remote work adoption. As the favorability of compatibility number increases, the odds of remote work adoption increased by 2.50 ($W = 13.19$, $p < .05$). Further, as the favorability of relative advantage increased, the odds of remote work adoption increase by 2.00 ($W = 7.68$, $p < .05$).

Table 16

The Relationship Between Attributes of Remote Work on Likelihood of Adoption

					95.0% C.I. for odds ratio	
Attributes of remote work	*B*	*S.E.*	Wald	Odds ratio	Lower	Upper
Relative advantage	.69	.25	7.68*	2.00	1.23	3.27
Compatibility	.92	.25	13.19*	2.50	1.53	4.10
Complexity	-.38	.30	1.62	.69	.38	1.23
Trialability	.13	.25	.28	1.14	.70	1.86
Observability	.03	.24	.01	1.03	.64	1.64

Note. These results were part of the logistic regression model presented in Table 8.

* $p < .05$.

Objective 5: Describe the extent to which organizations have implemented remote work in response to the COVID-19 pandemic and explain their favorability towards the practice.

Based on the number of employees working remotely before, in response to, and after (anticipated) COVID-19, 24% ($n = 281$) of the organizations in the sample reported having under 10% of employees working remotely prior to the pandemic and only 4% (*n*

= 52) of organizations reported having over 90% of employees working remotely. However, in response to COVID-19, 13% (*n* = 152) of organizations reported having over 90% of employees working remotely and those reporting under 10% of employees working remotely dropped to 9% (*n* = 102). After COVID-19, organizations estimate an increased number of employees will continue to work remotely. Altogether, the number of organizations with over 50% of employees working was reported to be 34% (*n* = 407) prior to the pandemic; however, organizations estimated this portion to increase by 10% to 44% (*n* = 502; Table 17).

Table 17

Frequency Percentages of Employees Working Remotely

Items	% before COVID-19 (*n* = 1,156)	% during COVID-19 (*n* = 1,158)	% after COVID-19 (*n* = 1,130)
Under 10%	24	9	14
10% to 19%	8	6	7
20% to 29%	12	7	10
30% to 39%	11	8	14
40% to 49%	10	10	10
50% to 59%	10	13	13
60% to 69%	7	10	10
70% to 79%	7	12	9
80% to 89%	6	12	7
Over 90%	4	13	5
Mean (*SD*)	4.38 (2.83)[a]	6.08 (2.81)[b]	5.04 (2.69)[c]

Note. "I don't know" responses were coded as missing. Post-hoc tests: a ≠ b ≠ c.

Results of a repeated measures ANOVA indicated there were statistically significant differences in remote work practices before, during, and after (anticipated) COVID-19 (Greenhouse-Geisser = 215.50, $p < .001$). A paired sample *t* test was

conducted post-hoc, which found a statistically significant difference in organizations' practice of remote work before and during COVID-19 (t = -18.93, p < .001), before and after COVID-19 (t = -8.42, p < .001), and during and after COVID-19 (t = 13.82, p < .001). Therefore, in response to COVID-19, there was a statistically significant increase in the practice of remote work followed by an anticipated statistically significant decrease after COVID-19. This resulted in a statistically significant increase in organizations' overall practice of remote work before and after COVID-19.

Remote Work Favorability as a Result of COVID-19

A descriptive analysis of organizations' favorability towards the practice of remote work as a result of COVID-19 can be seen in Table 18. As organizational leaders implemented remote work in response to COVID-19, the majority (71%, n = 820) rated the experience as somewhat or very favorable.

Table 18

Frequency Statistics of Favorability Toward Remote Work After COVID-19

Favorability level	*n*	%
Very favorable	412	36
Somewhat favorable	408	35
Indifferent	141	12
Somewhat unfavorable	111	9
Very unfavorable	106	8

A Pearson chi-squared test found a statistically significant relationship between the practice of remote work and adopter categories (χ^2 = 50.74, p < .001). The effect size was categorized as weak based on Cramer's V (ϕ_c = .12). The descriptive frequencies in

Table 19 show that, in general, the majority of organizations across all adopter categories reported high levels of favorability towards remote work as a result of COVID-19. Organizations with the highest level of favorability towards the practice were those categorized as innovators (46%), while those with the lowest were categorized as laggards (27%).

Table 19

Organizations' Adopter Categories by Favorability

	Innovators (*n* = 61)		Early adopters (*n* = 84)		Early Majority (*n* = 216)		Late majority (*n* = 351)		Laggards (*n* = 208)	
Characteristics	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual
Very favorable	46	1.3	39	.3	41	.8	42	1.7	**27**	**-3.7**
Somewhat favorable	28	-1.8	33	-1.1	36	-.9	39	.3	**46**	**2.3**
Indifferent	10	-.1	16	1.7	8	-1.0	**7**	**-2.4**	**15**	**2.8**
Somewhat unfavorable	**1**	**-2.0**	5	-1.3	**12**	**2.1**	8	-.2	9	.1
Very unfavorable	**15**	**3.9**	7	1.1	3	-1.1	4	-.8	3	-1.0

Note. To aid in interpretability, cells with AR greater or less than +/- 1.96 are bolded to show where percentages vary from expectation.

A Pearson chi-squared test found a statistically significant relationship between the practice of remote work and stages of the innovation-decision process ($\chi^2 = 129.01$, $p < .001$). The effect size was categorized as weak based on Cramer's V ($\phi_c = .17$). The descriptive frequencies in Table 20 indicated that in general, most organizations across all stages of the innovation-decision process also indicated having high levels of favorability towards remote work as a result of COVID-19. Organizations with the highest level of favorability towards the practice were from the confirmation stage (69%), while organizations with the highest level of unfavorability were from the knowledge stage (16%).

Table 20

Organizations' Stage in the Innovation-Decision Process by Favorability

	Knowledge (*n* = 419)		Persuasion (*n* = 152)		Decision (*n* = 219)		Implementation (*n* = 266)		Confirmation (*n* = 122)	
Characteristics	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual	%	Adjusted residual
Very favorable	**29**	**-3.0**	**27**	**-2.2**	**28**	**-2.3**	38	1.3	**69**	**8.3**
Somewhat favorable	**29**	**-3.1**	**42**	**2.1**	**42**	**2.5**	**41**	**2.5**	**18**	**-4.1**
Indifferent	**15**	**2.4**	11	-.3	11	-.5	12	-.2	**5**	**-2.5**
Somewhat unfavorable	11	1.6	14	2.0	10	.1	6	-1.9	**4**	**-2.1**
Very unfavorable	**16**	**5.8**	6	-1.4	9	.1	**3**	**-4.1**	**4**	**-2.0**

Note. To aid in interpretability, cells with AR greater or less than +/- 1.96 are bolded to show where percentages vary from expectation.

Chapter Summary

Most organizations in this study reported having remote employees. However, the knowledge stage of the innovation decision process accounted for the largest number of organizations in the sample. Identifying with the knowledge stage indicated that the organization was only aware of remote work and understood how it functions. In addition, non-adoption and adoption stages in the innovation-decision process were evenly split. Such an inconsistency might be explained by the implementation of remote work necessitated by COVID-19. Under the pandemic circumstances, leaders could report being in a non-adoption stage (e.g., knowledge, persuasion) within the innovation-decision process while also having remote employees in their organization. This logic is further supported by the high level of organizations categorized as laggards that adopted remote work in the year 2020 or later.

Statistically significant relationships were found between all organizational characteristics and their stage in the innovation-decision process of remote work

adoption, with the exception of the number of branches an organization operates, the region an organization's headquarters is located, and the number of states in which organizations operate. The only organizational characteristic to significantly explain the likelihood of remote work adoption was whether an organization operates internationally. The odds of an international organization adopting remote work was higher compared to an organization operating only domestically (Table 8).

Statistically significant relationships were also found between all organizational characteristics and adopter categories, with the exception of the size of an organizations' annual budget. In addition, a statistically significant relationship between communication channels and adopter categories was found, showing that the majority of innovators and late majority remote work adopter categories received information the practice through mass media communication channels.

Compatibility and relative advantage were two of the five perceived attributes of remote work found to be statistically significant factors explaining the likelihood of remote work adoption. As the favorability of relative advantage increased, the odds of remote work adoption also increased. Additionally, as the favorability of compatibility increased, the odds of remote work adoption also increased.

Differences in remote work practices before, during, and after (anticipated) COVID-19 were found to be statistically significant. In addition, most organizational leaders who implemented remote work in response to the pandemic considered the experience favorable. Organizations categorized as innovators had the highest level of favorability while laggards had the lowest. Moreover, organizations from the

confirmation stage had the highest level of favorability towards remote work as a result of COVID-19, while organizations from the knowledge stage had the highest level of unfavorability.

CHAPTER V

DISCUSSION

During the early 21st century, advances in ICTs enabled organizations to shift traditional work functions away from geographic location (i.e., the office), or *where* work is accomplished to *how* work is accomplished (Blok et al., 2009; Croon et al., 2005; E. J. Hill et al., 2003). Technological advancements have led to the accelerated adoption of remote work as a modern workplace practice in recent years (Cabaniss, 2019; Lister, 2020; U.S. Bureau of Labor Statistics, 2020a; U.S. Census Bureau, 2013). In addition, this study found that the COVID-19 pandemic has also played a significant role in the rapid implementation of remote work by organizations seeking to maintain business operations while reducing infection rates (Cabaniss, 2019; Clancy, 2020; Dingel & Neiman, 2020; Guyot & Sawhill, 2020; Lutke, 2020).

Considering the rise of remote work, namely the awareness and widespread implementation of the practice, there was a need to examine the factors explaining the process of remote work adoption by organizations in the U.S. (Clancy, 2020; Martínez-Sánchez et al., 2008; Pérez Pérez et al., 2005; Vrchota et al., 2019). Because remote work is considered an innovation according to Rogers' (2003) definition, this research applied the theory of DOI to describe the factors related to its adoption. This study focused on describing how organizational characteristics and leaders' perceptions of remote work relate to its adoption. Research objectives were as follows.

1. Determine where organizations range in the innovation-decision process of remote work adoption.
2. Categorize organizations' level of innovativeness with respect to remote work

adoption.

3. Describe how organizational characteristics relate to remote work adoption.
4. Describe how the attributes of remote work relate to the likelihood of remote work adoption among organizations.
5. Describe the extent to which organizations have implemented remote work in response to the COVID-19 pandemic and explain their favorability towards the practice.

While many studies explored remote work adoption and implementation, the insights of organizational leaders and employees have often been merged in research findings (M. Collins, 2005; Golden, 2006; Greer & Payne, 2014; Martin, 2012; Martin & MacDonnell, 2012; D. A. Owens, 2017; Sardeshmukh et al., 2012). Furthermore, studies focusing on remote work implementation mainly explore the extent to which the trial was beneficial to the organization(s) or not, with discussions limited to the perspectives of employees (Boell et al., 2016). Ultimately, findings across remote work studies have fluctuated extensively, often calling for future research to account for conflicting results associated with perceived advantages and compatibility with the practice (T. D. Allen et al., 2015; Bailey & Kurland, 2002; Boell et al., 2016). However, factors influencing organizations' decision to adopt remote work as a formal workplace practice were not adequately investigated in the literature (Boell et al., 2016; Clancy, 2020; D. A. Owens, 2017). This study explains the process of remote work adoption by organizations in the U.S. through a quantitative analysis guided by DOI theory (Rogers, 2003).

Objective 1: Determine where organizations range in the innovation-decision process of remote work adoption.

This study indicated most organizations in the sample already had remote employees. As a reminder, this data was collected in the fall of 2020 during the COVID-

19 pandemic. Therefore, it was expected that the majority of organizations would range between the decision and confirmation stages of the innovation-decision process. While adoption takes place in the decision stage (Rogers, 2003), the majority of organizations were still in the knowledge stage. According to DOI theory, the innovation-decision process is a progression of choices and actions that takes place over time, initiated at the knowledge stage with awareness of the innovation (Rogers, 2003). Yet, findings show organizational leaders reported high rates of remote work implementation (i.e., having remote employees) while simultaneously reporting that their organization was only aware of the practice and how it functioned. This inconsistency is most likely explained by the unanticipated and rapid implementation of remote work as organizations reacted to the COVID-19 pandemic. Under these conditions, it is possible for an organization to identify as being in the early pre-decision stages of the innovation-decision process, while having remote employees in their organization.

With respect to time, the results of this study align with both DOI theory and the literature that reports adoption occurring slowly over a number of years (Bailey & Kurland, 2002; Martin, 2012). As remote work was introduced in the public sector in the late 1970s, the practice expanded gradually across the private sector in succeeding decades due in part to the limitations of ICTs and internet access (Gajendran & Harrison, 2007). This explains why public and private sector organizations range widely from the knowledge to confirmation stages of remote work adoption. Although the not-for-profit sector was the smallest of all economic sectors, it made up the largest proportion of organizations in both the decision and implementation stages. According to the results,

not-for-profits were the most advanced sector in the innovation-decision process of remote work adoption.

Results from this study shows older, more established organizations in the sample were the most advanced in the innovation-decision process of remote work adoption. These results address the concerns of Bailey and Kurland's (2002) who indicated the effects of organizational size on the decision to adopt remote work were unsettled and required further research. In addition, organizations in the implementation and confirmation stages of the innovation-decision process of remote work adoption had more substantial budgets and employees. The organizations operating internationally were also in the later stages of the innovation-decision process compared to those operating only in the U.S.

Results suggest COVID-19 accelerated the implementation of remote work in the U.S. through mass media, specifically social media. While most organizations reported already having remote employees, mere implementation of a practice does not equate to adoption. According to Rogers (2003), if an innovation can be experimented with on a limited basis, its rate of adoption should increase. Consistent with DOI theory, findings showed the process of remote work adoption to be slow (Rogers, 2003). Consequently, organizations' progression through the innovation-decision process of remote work adoption should be expected to significantly advance in the years succeeding the pandemic.

Objective 2: Categorize organizations' level of innovativeness with respect to remote work adoption.

Results of this study indicated that organizations in the sample adopted remote

work in a pattern consistent with Rogers' S-shaped Curve of Adoption (Figure 1). While the adopter categorizations conducted in this study align closely with DOI theory (Rogers, 2003), the sample's distribution across all economic sectors was slightly disproportional towards later adopter categories (i.e., late majority, laggards). This corresponds with literature reporting the adoption of remote work occurring slowly over time, despite being introduced in the late 1970s (Bailey & Kurland, 2002; Dutton et al., 1987; Gajendran & Harrison, 2007; Hamilton, 2011; Martin, 2012; Mokhtarian, 1991; Useem, 2017). Findings from the first research objective are also consistent with the majority of organizations being categorized as later adopters, as most public and private sector organizations made up the majority of the decision and implementation stages of the innovation-decision process. Not-for-profits were the most advanced economic sector in the innovation-decision process, these organizations were also the largest sector of the sample in the innovators category.

Despite organizations becoming aware of remote work long before the turn of the century, this study's findings further demonstrate the gradual nature of remote work adoption. Moreover, results emphasize time as a major factor of adoption (Rogers, 2003). Rogers and Shoemaker (1971) explained the negative impact of uncertainty on an innovation's rate of adoption, which explains the slow rate of remote work adoption prior to the year 2020. These results are also consistent with Brice et al. (2014), who reported a high level of uncertainty involved in the decision to adopt remote work due to feelings of anxiety and perceived loss of control.

Results of this study indicate older organizations with more employees, branches,

and operating in more states, as well as internationally were among the majority of earlier adopters (i.e., innovators, early adopters, early majority) of remote work. These findings are compatible with DOI theory, which explains how socioeconomic status affects innovativeness, as "earlier adopters have larger-sized units (farms, schools, companies, and so on) than do later adopters" (Rogers, 2003, p. 288). Rogers also stated earlier adopters must "be able to cope with a high degree of uncertainty" (p. 282) and doing so requires substantial resources from the organization.

With respect to mass media channels, Rogers (2003) explained that later adopters had less exposure to mass media channels and sought less information. In addition, later adopters also had less exposure to change agents and opinion leaders through interpersonal relationships compared to early adopters. While the majority of organizations in this study were categorized as later adopters, most organizational leaders reported receiving information about remote work through mass media communication channels over interpersonal relationships. Rogers noted "earlier adopters have greater exposure to mass media communication channels than do later adopters" (p. 291), but only a small number of organizations in the innovator category reported receiving their information about remote work from mass media communication channels. In addition, Rogers also stated that "earlier adopters are more highly interconnected through interpersonal networks in their social system than are later adopters" (p. 290). However, fewer organizations in the innovators category reported receiving their information about remote work through interpersonal relationships.

Consistent with DOI theory (Rogers, 2003), most organizations categorized as

innovators received information about remote work through mass media communication channels. However, a larger part of organizations categorized in the late majority also received their information about remote work through mass media instead of interpersonal communication channels, which is contrary to DOI theory. Despite inconsistencies between communication channels and adopter categories outlined in DOI theory, Rogers predicted the internet would change communication and the nature of the diffusion process. Therefore, Rogers stated that "the world in which we live today is a different one than that of sixty years ago, when the study of the diffusion process began" (p. 216).

These findings demonstrate that adoption of remote work occurred in line with organizations' level of innovativeness (i.e., adopter categories), and consistent with the element of time. However, the communication channels in which information was received were somewhat inconsistent with DOI theory. As communication channels have evolved, it appears social media could be considered a product of mass media and interpersonal communication channels (Carr & Hayes, 2015). Through social media, both earlier and later adopters can have the same mass media access to change agents and opinion leaders at scale, when in the past their information was only communicated through interpersonal communication channels (Baruah, 2012; Carr & Hayes, 2015; Kibe & Kamunyu, 2014).

Objective 3: Describe how organizational characteristics relate to remote work adoption.

The only significant organizational characteristic predicting the likelihood of remote work adoption was international operations. Findings in this study are similar to

those found in Spain by Mayo et al. (2009). Their findings showed more employees working internationally was positively correlated with the likelihood of remote work adoption. Another international study conducted by Pérez Pérez et al. (2005) also analyzed how organizational characteristics and resources affected leaders' perceived compatibility with remote work adoption. Pérez Pérez et al. also found that larger organizations with more resources, including participation in international markets, had a greater likelihood of remote work adoption. While not all findings between this study and those of Pérez Pérez et al. were consistent, the variable of international operations served as a stable predictor of remote work adoption.

Results indicated that international organizations were twice as likely to adopt remote work compared to those operating only domestically. Barriers related to geographic dispersion of business operations can be avoided through remote work. Therefore, based on previous research it appears the barriers to international operations and subsequent expansion to new global markets may be reduced through the adoption of remote work as a modern workplace practice (Martínez-Sánchez et al., 2008; Mayo et al., 2009; Pérez Pérez et al., 2005). Other organizational characteristics of economic sector, years in operation, annual budget, and number of employees had no significant relationship to remote work adoption. These findings demonstrate that nearly all organizational characteristics from this sample are unlikely related to the practice of remote work. The sample being stratified at the level of economic sector is a limitation of this study. Therefore, it cannot be determined if a relationship exists between remote work adoption and industry category.

Objective 4: Describe how the attributes of remote work relate to the likelihood of remote work adoption among organizations

Results of this study indicated the practice of remote work has been implemented by most organizations, either gradually through the innovation-decision process or rapidly in response to COVID-19. Results also indicated organizational leaders had a positive perception towards the practice of remote work, and generally agreed that remote work had favorable relative advantage, compatibility, complexity, trialability, and observability. However, only compatibility and relative advantage were found to significantly influence the likelihood of remote work adoption. Likewise, Rogers (2003) described relative advantage and compatibility as having the highest predictive power on adoption compared to all other attributes. This suggests most leaders believed remote work could improve the employee experience, attract talent, save money, and increase competitiveness within their organizations. In addition, these leaders believed the practice was also consistent with the type of work performed in their organization, its culture, and a fit with existing policies.

Findings from the study were consistent with the literature recognizing the benefits of remote work as increased productivity and financial savings, improved employee loyalty and performance, and decreased absenteeism (Bloom et al., 2015; Choudhury et al., 2019; Gebhart, 2020; Greer & Payne, 2014; E. J. Hill et al., 2003; Kelliher & Anderson, 2010; Kurland & Bailey, 1999; Martin, 2012; Martin & MacDonnell, 2012; Martínez-Sánchez et al., 2008). With respect to compatibility, the type of work performed within the organization must be performed through ICTs. As such, results of this study align with findings from Bailey and Kurland (2002) who noted

that remote workers are mostly skilled professionals. In addition, results from several Spanish studies also reported significant relationships between remote work and organizations with higher ratios of knowledge workers (Martínez-Sánchez et al., 2008; Mayo et al., 2009; Pérez Pérez et al., 2005).

Similar to Karnowski and White (2002), findings show compatibility was a more considerable predictor of remote work adoption compared to relative advantage. These results further indicate the importance of the type of work performed on the adoption of remote work. However, this finding contrasts DOI theory, which describes relative advantage as the attribute with the highest predictive magnitude influencing adoption (Rogers, 2003). Based on these results, the gradual and widespread adoption of remote work in the U.S. was explained by the attributes of compatibility and relative advantage. For organizations to progress past the decision stage of the innovation-decision process of remote work adoption, leaders must perceive the practice as "consistent with the existing values, past experiences, and needs" of their organization and "better than the idea it supersedes" (Rogers, 2003, pp. 265-266). Therefore, before confirmation, leaders must comprehend how remote work relates to the existing systems and provides economic benefits in the context of their specific organization.

Objective 5: Describe the extent to which organizations have implemented remote work in response to the COVID-19 pandemic and explain their favorability towards the practice.

Results showed an increase in remote work adoption in response to COVID-19. In addition, most organizational leaders who implemented remote work in response to the pandemic considered the experience favorable. Organizations in the sample estimate that

some employees will continue to work remotely after COVID-19. Results of this study also point to the effect of COVID-19 in the rapid implementation of remote work by organizations attempting to reduce the spread of the virus. While studies on workplace practices during pandemics is limited, findings in this study were consistent with literature pointing to remote work as a useful practice for circumventing the spread of infectious diseases (Cabaniss, 2019; Clancy, 2020; Dingel & Neiman, 2020; Guyot & Sawhill, 2020; Lutke, 2020).

According to DOI theory, the unanticipated implementation of remote work does not represent adoption; however, Rogers (2003) explained that a positive experience with an innovation on a trial basis increases the likelihood of adoption in the future. Based on the high favorability levels of remote work in response to COVID-19, it is expected that organizations will continue to progress through the innovation-decision process of remote work adoption (Rogers, 2003).

Discussion and Implications

Based on the history of remote work outlined in Chapter I and the literature review in Chapter II, findings of this study provide clarification on the process of remote work adoption by organizations in the U.S. This study focused on self-reported perceptions of organizational leaders and was guided by DOI theory to address gaps in the existing literature on remote work and its adoption. It described organizations' range across the innovation-decision process of remote work adoption, and their level of innovativeness with respect to adoption of the practice. Further, the attributes of remote

work were explained and used to explain adoption by different types of organizations.

Findings demonstrated that the process of remote work adoption has been slow. These findings are consistent with those of Bloom et al. (2015) who also reported organizational leaders being slow to change business operations, due in part to the foundational shift in how work is performed in a distributed environment. Rogers (2003) also explained that the immediacy of reward is another reason innovations (such as remote work) experience slow rates of adoption. These notions are associated with aspects of remote work being considered preventive as opposed to incremental (Rogers, 2003), preventative due to the perceived relative advantages being more uncertain. Slow adoption rates of remote work found in this study also align with Martin's (2012) findings from a meta-analysis of 45 remote work studies, which attributes slow adoption rates to latent bias for business as usual (i.e., the status quo) over various advantages (e.g., productivity, cost savings, talent retention) and even compatibility with the practice. Results of this study found COVID-19 has played a significant role at increasing the implementation of remote work which, based on DOI theory, is expected to accelerate adoption in the coming years.

This study revealed not-for-profit organizations are the most advanced across the innovation-decision process of remote work adoption, as well as and the most innovative based on the adopter categories. These findings could be explained by the nature of how these organizations must use resources more efficiently than those in other sectors (Liket & Maas, 2015; G. E. Mitchell, 2013; Privett & Erhun, 2011). Further, larger organizations (in both size and scope) which are more established and have more

resources appear to adopt remote work more rapidly and frequently than others. These results conflict with those of Mayo et al. (2009) that reported evidence in favor of smaller organizations being more compatible with the practice of remote work. Nevertheless, these insights will help leaders as the evaluate their organization's compatibility with remote work in making the decision to adopt or reject the practice.

Results also showed that social media allows interpersonal communication about remote work to function similar to mass media. As inconsistencies have emerged between the relationships that connect communication channels and adopter categories, it would be useful to replicate this study to determine if findings continue to vary. Further, it appears there is potential for the Cooperative Extension System to respond to the widespread adoption of remote work with research-based, non-formal educational programs for residents of their communities.

Finally, due to the influence of international operations as a significant factor explaining remote work adoption in the U.S., it could be beneficial for organizations to adopt this practice if they currently operate, or plan to expand internationally. Given the costs of international operations and global expansion (e.g., relocation, travel, taxes), adoption of remote work has the potential to reduce such barriers while opening up opportunities in new global markets.

Recommendations

Organizational Leaders

This study highlights implications for leaders, especially those within

organizations compatible with the practice of remote work. Leaders who understand the adoption process of remote work, as well as the factors influencing the adoption decision, will be more proficient in making informed decisions regarding how their organization evaluates the practice. Organizational leaders can use these results in the development of remote work as a formal workplace arrangement (or policy) and overcome common obstacles that cause untimely rejection of the innovation.

The results of this study demonstrated how remote work has become a widespread workplace practice and is becoming a norm in the operations of organizations in the U.S., now and in the planned future. Therefore, leaders within organizations compatible with remote work should carefully assess their current implementation of the innovation, then make decisions on policies for continuation. In addition, organizations compatible with remote work that have not adopted the practice should begin to investigate how it may be piloted within their specific context. If remote work is determined to be incompatible with an organization's business model, then it should be rejected as a formal workplace practice.

It is critical for organizations to recruit employees with competencies necessary to function in a remote work environment/culture. Therefore, organizations should consider training existing employees and leaders in the best practices of remote work operations. Specialized remote work training will be essential due to the significant change required to shift business operations from a physical environment that is centrally located to a distributed environment that is geographically dispersed. However, employees and leaders will need training based on the nature of their roles in a remote work

environment. Employees will need training in areas such as communication, productivity, workflows, and teamwork while leaders will also need training in areas such as communicating vision, managing performance, developing culture, resolving conflict, and driving change.

As the traditional work environment shifts away from office centricity and towards task facilitation (Katz & Krueger, 2019), leaders will need to evaluate and update the technical infrastructure (i.e., software and hardware) within their organizations. To ensure compatibility with the practice of remote work, communication systems and policies may need to be modernized for the innovation to be effective. Initially, organizational leaders could form a task force focused on auditing and revising existing policies then carry out a series of pilot programs as part of the implementation stage before moving to the confirmation stage of the innovation-decision process of remote work adoption.

Cooperative Extension System

Results from this study provide the Cooperative Extension System with insights into how it should respond to the widespread implementation and adoption of remote work in the U.S. Findings suggest the practice of remote work is enduring and Extension professionals have the opportunity to respond to this shift in workplace practices with relevant, research-based educational programming. Utah State University Extension's Rural Online Initiative program is the first example of how Extension professionals are responding to the needs of their communities to reduce unemployment and improve economic diversity (P. A. Hill et al., 2020; Noel & Hinkins, 2018; D. R. Owens &

Albrecht, 2021; Reese et al., 2018). Social isolation, burnout, mental health, team collaboration and cohesion, and employee engagement are a few of the challenges related to remote work outlined in this study's literature review. These issues serve as both community and individual needs Extension professionals could promptly address.

While the results of this study should inform Extension professionals as they seek to develop relevant educational programs for their communities, findings can also inform leaders at land grant universities. These leaders should look internally to evaluate their organization's own compatibility with remote work as they explore the implications of adoption. Results from this study, and those from the review of literature, point to Extension's compatibility with remote work as Extension professionals primarily engage in knowledge work (Bailey & Kurland, 2002; Dingel & Neiman, 2020; Mayo et al., 2009; Pérez Pérez et al., 2005). In addition, as Extension programs see rising demand for digital content and virtual engagement, it must be acknowledged that such content can be produced and consumed without geographic requirements (White, 2021). To remain competitive and relevant, Extension leaders should also consider remote work as an effective benefit for improving workplace flexibility in efforts to recruit and retain top talent. Adoption of remote work in Extension would ultimately require land grant universities to modernize their technical infrastructure (i.e., software, hardware), and provide training for personnel, administrators, and stakeholders to facilitate a shift in mindset regarding how professionals traditionally work and engage with clientele. Finally, Extension's current funding structure presents a critical barrier for the adoption of remote work as expectations surrounding in-person access by stakeholders in local

county governments must be addressed.

Recommendations for Future Research

Future research is needed to understand the long-term impacts of COVID-19 on remote work adoption in the U.S. Replicating this study in the next three to five years can provide additional insights that further explain how the unanticipated implementation of remote work in response to COVID-19 influenced the decision to adopt or reject the practice. Further analysis into how the sudden implementation of remote work aligned with DOI theory would be of particular interest.

As the research design for this study was quantitative, qualitative research may reveal deeper understanding regarding how remote work is perceived, while also identifying uncommon barriers to its adoption. Investigation into the personal experiences of organizational leaders, as well as employees, would be useful in explaining why the practice of remote work was accepted or rejected within their respective organizations, especially after COVID-19. Future research should also look to explain organizational leaders' resistance to remote work as it pertains to compatibility with the practice. Specifically, the type of jobs that could be compatible with the practice as well as the barriers to adoption relative to economic sectors and industries in the U.S. In addition, examining competencies for remote work, among employees and leaders, would be fitting as the widespread adoption of remote work brings attention to a whole new competency domain for employee and organizational success.

This study was limited by the use of opt-in panels and did not collect

demographic data on organizational leaders in the sample. Future studies could collect demographic data to determine how factors such as age, gender, education, income, race, and ethnicity influence remote work adoption among different types of organizational leaders and employees. This information would provide the Cooperative Extension System with insights needed to develop relevant educational programs based on the emerging needs of communities. This research demonstrates that remote work is becoming the norm across several industries. As a result, organizational leaders are strategically navigating the adoption of the practice to improve efficiencies and provide more flexible work environments.

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APPENDICES

Appendix A

Questionnaire

Qualifying Questions

Do you manage employees in your organization?

○ Yes

○ No

Do you have influence over who your organization hires?

○ Yes

○ No

Section 1: Organizational Characteristics

This section focuses on the organizational characteristics of your current employer. Please answer all questions in this section.

Please identify the type of organization you work for.

○ Private sector (e.g., for profit business)

○ Public sector (e.g., government, education)

○ Not-for-profit (e.g., arts, social advocacy, health services, education, etc.)

[Display question if "Private sector"]
Please identify the category that best describes your organization's industry.

○ Agriculture (e.g., establishments primarily engaged in growing crops, animal husbandry, harvesting timber, and harvesting fish and other animals from a farm, ranch, or their natural habitats)

○ Construction (e.g., construction of buildings, heavy and civil engineering construction, specialty trade contractors)

○ Educational services (e.g., establishments providing instruction and training in various subjects)

○ Financial activities (e.g., finance and insurance, real estate, rental and leasing services)

○ Health care and social assistance (e.g., ambulatory health care services, hospitals, nursing and residential care services, social assistance)

○ Information (e.g., publishing industry, motion picture and sound recording industries, internet publishing and broadcasting, telecommunications, data processing, hosting, and related services)

○ Leisure and hospitality (e.g., entertainment, recreation, performing arts, spectator sports, museums, historical sites, amusement, gambling, food

services, and drinking places)

○ Manufacturing (e.g., food, beverage, or tobacco manufacturing, textile mills, printing activities, apparel, wood, leather, paper, plastics, chemical, petroleum, metal, furniture, computer, or electronics products manufacturing)

○ Mining and natural resources (e.g., establishments that extract naturally occurring resources such as coal, ores, crude petroleum, and natural gas)

○ Professional and business services (e.g., professional, scientific, and technical services, administrative and support services)

○ Retail trade (e.g., gasoline stations, motor vehicle, furniture, electronics, building materials, food and beverage, health and personal care, sporting goods, and general merchandise stores)

○ Transportation and warehousing (e.g., air, rail, water, truck, transit, and scenic transportation, couriers and messengers, warehousing and storage)

○ Utilities (e.g., electric power, natural gas, steam supply, water supply, and sewage removal)

○ Wholesale trade (e.g., merchant wholesalers, wholesale electronic markets and agents and brokers)

○ Other (please specify)

[Display question if "Public sector"]
Please indicate the level of your organization.

○ Federal

○ State

○ Regional (e.g., District or territory)

○ Local (e.g., Municipal or county)

○ Other (please specify)

[Display question if "Public sector"]
Please identify the category that best describes your organization's industry.

○ Education (e.g., schools, libraries)

○ Electricity

○ Emergency services

○ Environmental

○ Fire service

○ Gas and oil

○ Healthcare

○ Infrastructure

○ Law enforcement and police services

○ Postal service

○ Public transit

○ Social services

○ Waste management

○ Other (please specify)

[Display question if "Not-for-profit"]
Please identify the category that best describes your organization's industry.

○ Arts and culture

○ Civic and environmental advocacy

○ Education

○ Health services

○ Social and legal services

○ International relations and development

○ Other (please specify)

Please indicate the number of years your organization has been in operation. (Example: 12)

[Text entry]

Please indicate the estimated annual budget of your organization. (Example: 1,200,000)

[Text entry]

What is the estimated total number of employees in your organization? (Example: 120)

[Text entry]

In which region of the country is your organization's headquarters located?

○ Midwest - IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, WI

○ Northeast - CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT

○ Southeast - AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV

○ Southwest - AZ, NM, OK, TX

○ West - AK, CA, CO, HI, ID, MT, NV, OR, UT, WA, WY

In how many states does your organization operate?

○ Only 1

○ 2 to 10

○ 11 to 20

○ 21 to 30

○ 31 to 40

○ 41 to 50

○ I do not know

Overall, how many branches (i.e., offices, sites) does your organization have throughout the country?

○ Only 1

○ 2 to 10

○ 11 to 20

○ 21 to 30

○ 31 to 40

○ 41 to 50

○ Over 50

○ I do not know

Does your organization operate internationally?

○ Yes

○ No

[Display question if "Yes"]
In how many countries outside the United States does your organization operate?
[Text entry]

Section 2: Innovation-Decision Process

This section asks about your organization's involvement with remote work (i.e., work outside the traditional office setting conducted through technology or other computer-based resources). Please answer all questions in this section.

Please select one statement that best reflects your organization's current position regarding remote work:

○ My organization has no knowledge regarding remote work. [skip to Section 5 if selected]
○ My organization is aware of remote work and understands how it functions.
○ My organization explored the advantages and disadvantages of remote work and has formed opinions towards the practice.
○ My organization has adopted remote work.
○ My organization has rejected remote work.
○ My organization currently allows employees to work remotely.
○ Remote work is an established part of my organization's culture.

Choices are affected by context. We are interested in whether you are taking the time to read each question. To show that you are paying attention, please select only the "None of the above" option as your answer to this question.

○ Excited [Skip to end if selected]
○ Upset [Skip to end if selected]
○ Strong [Skip to end if selected]
○ Guilty [Skip to end if selected]
○ Scared [Skip to end if selected]
○ Hostile [Skip to end if selected]
○ Enthusiastic [Skip to end if selected]
○ None of the above [Continue to next question]

Section 3: Adopter Categories

This section asks about your personal involvement with remote work (i.e., work outside the traditional office setting conducted through technology or other computer-based resources). Please answer all questions in this section.

Does your organization have remote employees (e.g., full-time, part-time, seasonal)?

○ Yes

○ No

[Display question if "Yes"]
In your current organization, please estimate the year in which your organization established remote work arrangements?

○ 1999 or earlier

○ Between 2000 to 2004

○ Between 2005 to 2014

○ Between 2015 to 2019

○ 2020 or later

Where do you receive your information about remote work?

○ Interpersonal relationships (e.g., family members, friends, colleagues, acquaintances)

○ Mass media (e.g., social media, website, search engine, mass email newsletter, mass text message, radio, TV, podcast, newspaper, magazine, book, course)

[Display question if "Interpersonal relationships" is selected]
Please indicate your primary source of information about remote work.

○ Family members

○ Friends

○ Colleagues

○ Acquaintances

○ Other (please specify)

[Display question if "Mass media" is selected]
Please indicate your primary source of information about remote work.

○ Social media

○ Website

○ Search engine
○ Email (e.g., mass newsletter)
○ SMS (e.g., mass text message)
○ Radio
○ TV
○ Podcast
○ Newspaper
○ Magazine
○ Book
○ Course
○ Other (please specify)

Section 4: Attributes of Innovations

This section asks about your level of agreement or disagreement with statements relating to remote work (i.e., work outside the traditional office setting conducted through technology or other computer-based resources) in your organization. All questions in this section relate to the adoption of remote work in your organization. Please answer all questions.

Relative Advantage

Please indicate your level of agreement or disagreement with the following statements relating to the adoption of remote work in your organization.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Adoption of remote work could potentially improve work arrangements for employees in my organization.	○	○	○	○	○
Adoption of remote work could potentially attract talented employees to my organization.	○	○	○	○	○
Adoption of remote work could potentially reduce employee productivity in my organization. [Reverse coded]	○	○	○	○	○
Adoption of remote work could potentially provide my organization with financial savings.	○	○	○	○	○
Adoption of remote work could potentially increase my organization's competitiveness.	○	○	○	○	○

Compatibility

Please indicate your level of agreement or disagreement with the following statements relating to the adoption of remote work in your organization.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Adoption of remote work is easy to integrate into my organization's existing policies.	○	○	○	○	○
Adoption of remote work is consistent with my organization's culture.	○	○	○	○	○
Adoption of remote work does not align with my organization's leadership strategy. [Reverse coded]	○	○	○	○	○
Adoption of remote work is well suited for the type of jobs that exist in my organization.	○	○	○	○	○

Choices are affected by context. We are interested in whether you are taking the time to read each question. To show that you are paying attention, please select only the "None of the above" option as your answer to this question.

○ Excited [Skip to end if selected]

○ Upset [Skip to end if selected]

○ Strong [Skip to end if selected]

○ Guilty [Skip to end if selected]

○ Scared [Skip to end if selected]

○ Hostile [Skip to end if selected]

○ Enthusiastic [Skip to end if selected]

○ None of the above [Continue to next question]

Complexity

Please indicate your level of agreement or disagreement with the following statements relating to the adoption of remote work in your organization.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I believe implementing remote work arrangements could be easy for my organization.	○	○	○	○	○
I believe the steps to implementing remote work arrangements in my organization could be easy to understand.	○	○	○	○	○
I believe it could be difficult to manage remote employees in my organization. [Reverse coded]	○	○	○	○	○
I believe it could be easy to trust remote employees in my organization.	○	○	○	○	○

Trialability

Please indicate your level of agreement or disagreement with the following statements relating to the adoption of remote work in your organization.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I could implement remote work arrangements on a trial basis in my organization.	○	○	○	○	○

I could convert existing positions to short-term remote work arrangements in my organization before committing fully.	○	○	○	○	○
I could not hire new remote employees in my organization on a trial basis. [Reverse coded]	○	○	○	○	○
I could engage in managing remote employees on a trial basis in my organization.	○	○	○	○	○

Observability

Please indicate your level of agreement or disagreement with the following statements relating to the adoption of remote work in your organization.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
It is easy to observe remote work occurring in my organization.	○	○	○	○	○
It is easy to observe conflicts related to remote work in my organization.	○	○	○	○	○
It is difficult to observe productivity related to remote work in my organization. [Reverse coded]	○	○	○	○	○

It is easy to observe employee satisfaction related to remote work in my organization.	○	○	○	○	○

Section 5: COVID-19

This section asks about your organization's practice of remote work (i.e., work outside the traditional office setting conducted through technology or other computer-based resources) before and in response to COVID-19. Please answer all questions.

Please estimate the percentage of employees in your organization working remotely prior to COVID-19 (before March 1, 2020).

- ○ Under 10%
- ○ 10% to 19%
- ○ 20% to 29%
- ○ 30% to 39%
- ○ 40% to 49%
- ○ 50% to 59%
- ○ 60% to 69%
- ○ 70% to 79%
- ○ 80% to 89%
- ○ Over 90%
- ○ I do not know

Please estimate the maximum percentage of employees in your organization working remotely in response to COVID-19 (after March 1, 2020).

- ○ Under 10%
- ○ 10% to 19%
- ○ 20% to 29%
- ○ 30% to 39%
- ○ 40% to 49%
- ○ 50% to 59%
- ○ 60% to 69%
- ○ 70% to 79%
- ○ 80% to 89%
- ○ Over 90%
- ○ I do not know

Please estimate the percentage of employees in your organization who will continue working remotely after COVID-19.

- ○ Under 10%
- ○ 10% to 19%
- ○ 20% to 29%
- ○ 30% to 39%
- ○ 40% to 49%
- ○ 50% to 59%
- ○ 60% to 69%
- ○ 70% to 79%
- ○ 80% to 89%
- ○ Over 90%
- ○ I do not know

As a result of COVID-19, please rate your organization's favorability towards the practice of remote work.

- ○ Very unfavorable
- ○ Somewhat unfavorable
- ○ Indifferent
- ○ Somewhat favorable
- ○ Very favorable

Appendix B

Informed Consent

Factors Explaining Remote Work Adoption in the United States

You are invited to participate in a dissertation research study conducted by Principal Investigator Dr. Debra Spielmaker, a professor in the School of Applied Sciences, Technology, and Education, and Co-Principal Investigator Paul Hill, an Extension professor and doctoral student, at Utah State University.

The purpose of this research is to explore your experiences and opinions related to remote work within your organization. Specifically, we are interested in analyzing the factors explaining the adoption process of remote work by organizations in the United States. You are being asked to participate in this research because your response will help inform our understanding of remote work adoption in organizations such as yours.

Your participation in this study is voluntary and you may withdraw your participation at any time for any reason.

If you take part in this study, you will be asked to participate in one online survey, which should take 15 minutes to complete.

The possible risk of participating in this study includes the loss of confidentiality. Although you will not directly benefit from this study, it has been designed to learn more about remote work adoption by organizations in the United States. We cannot guarantee that you will directly benefit from this study, but it has been designed to learn more about the practice of remote work.

We will make every effort to ensure that the information you provide remains confidential. Your identity will not be revealed in any publications, presentations, or reports resulting from this research study.

We will collect your information through Qualtrics from Centiment. Online activities always carry a risk of a data breach, but we will use systems and processes that minimize breach opportunities. This survey data will be saved as SPSS files. SPSS is a data analysis software program used for social science research. These files will then be securely stored in a restricted-access folder on box.com, an encrypted, cloud-based storage system. This SPSS data files will be kept for 3 years and will be destroyed in December 2023.

For your participation in this research study, you will be compensated according to the terms and amount you agreed upon when entering into the survey with the panel company (i.e., Centiment).

You can decline to participate in any part of this study for any reason and can end your participation at any time.

If you have any questions about this study, you can contact Dr. Debra Spielmaker at debra.spielmaker@usu.edu or Paul Hill at paul.hill@usu.edu. Thank you again for your time and consideration. If you have any concerns about this study, please contact Utah State University's Human Research Protection Office at 435-797-0567 or irb@usu.edu.

By continuing to the survey, you agree that you are 18 years of age or older, and wish to participate. You agree that you understand the risks and benefits of participation, and that you know what you are being asked to do. You also agree that if you have contacted the research team with any questions about your participation, and are clear on how to stop your participation in this study if you choose to do so. Please be sure to retain a copy of this form for your records.

CURRICULUM VITAE

PAUL ALLEN HILL

339 South 5500 West
Hurricane, UT 84737

435-634-5706
paul.hill@usu.edu

EDUCATION

***Doctor of Philosophy,* Career and Technical Education** **2021**
Utah State University
Dissertation: Factors Explaining Remote Work Adoption in the United States
Advisor: Dr. Debra Spielmaker

Master of Business Administration **2011**
Southern Utah University

***Bachelor of Science*, Business Administration, Magna Cum Laude** **2010**
Dixie State University

EXPERIENCE

Extension Professor **2020 - Present**
Utah State University Extension
Washington County, UT

Program Director (Rural Online Initiative) **2018 - Present**
Utah State University Extension
Washington County, UT

County Director (Washington) **2017 - Present**
Utah State University Extension
Washington County, UT

Extension Associate Professor **2016 - 2020**
Utah State University Extension
Washington County, UT

Economic Development Business Partner **2014 - Present**
Washington County Commission
Washington County, UT

Associate Director **2016 - 2018**
Innovation Lab, Extension Foundation Remote

Community Strategy Leader **2014 - 2018**
Educational Technology Learning Network, Extension Foundation Remote

Extension Assistant Professor **2011 - 2016**
Utah State University Extension
Washington County, UT

Graduate Teaching Assistant **2010 - 2011**
Southern Utah University
Cedar City, UT

General Manager **2007 - 2011**
Johnson & Hill, LLC
Hurricane, UT

Optician **2001 - 2007**
Costco Wholesale Corporation
St. George, UT, Mira Loma, CA, & Lancaster, CA

Grocery Clerk **2000 - 2001**
Raley's Supermarkets
Fairfield, CA

GRANTS, CONTRACTS & IN-KIND CONTRIBUTIONS

Total Secured [External]: $4,076,920 | Total In-kind: $304,250
Total Secured [Internal]: $77,500

External Funding

Hill, P. A. & Eves, J. (2020). Co-Principal Investigator. Establishing a Computer Science Pathway for Underserved Students in Hildale, Utah. Utah STEM Action Center. Salt Lake City, UT. Value: $150,000

Hill, P. A. & Wilber, S. (2020). Co-Principal Investigator. Hurricane Cone Site Computer Science Program. Utah STEM Action Center. Salt Lake City, UT. Value: $286,000

Schmutz, A. & **Hill, P. A.** (2019). Principal Investigator. Making the Future Education Program. Cognizant Technology Solutions Corporation. Teaneck, NJ. Value: $25,000

Francis, D. W., **Hill, P. A.**, & Schmutz, A. (2019). Co-Principal Investigator. Growing a CS Pathway for America's Youth. National 4-H Council & Google [Lead State]. Chevy Chase, MD. Value: $251,720

Felshaw, N., Gull, S., Bingeman, B., & **Hill, P. A**. (2018). Intergenerational Poverty Implementation Plan. Department of Workforce Services. State of Utah. Salt Lake City, UT. Value: $150,000

Hill, P. A. (2018). Principal Investigator. House Bill 327: Rural Online Initiative [Pilot Program]. State of Utah. Salt Lake City, UT. Value: $2,272,000
Available at le.utah.gov/~2018/bills/static/HB0327.html

Hill, P. A. (2018). Principal Investigator. USDA Outreach Training & Technical Assistance Program. Western Rural Development Center. Logan, UT. Value: $12,000

Hill, P. A. (2017). Principal Investigator. Maker Town Hall. Washington County Commission. St. George, UT. Value: $1,500

Hill, P. A. & Richins, W. L. (2017). Co-Principal Investigator. Establishing a Computer Science Pathway for Underserved Students at Coral Canyon Elementary School. Utah STEM Action Center. Salt Lake City, UT. Value: $100,000

Hill, P. A. & Wilber, S. (2017). Co-Principal Investigator. Three Falls Elementary School Computer Science Pilot Program. Utah STEM Action Center. Salt Lake City, UT. Value: $60,000

Francis, D. W. & **Hill, P. A.** (2017). Co-Principal Investigator. Establishing a CS Pathway for America's Youth. National 4-H Council & Google [Lead State]. Chevy Chase, MD. Value: $181,700

Hill, P. A. (2017). Principal Investigator. Making the Future Education Program. Cognizant Technology Solutions Corporation. Teaneck, NJ. Value: $25,000

Francis, D. W. & **Hill, P. A.** (2016). Co-Principal Investigator. eXtension Volunteer Innovation Session. eXtension Foundation. Kansas City, MO. Value: $10,000

Hill, P. A. (2016). Principal Investigator. eXtension Educational Technology Learning Network. eXtension Foundation. Kansas City, MO. Value: $26,000

Hill, P. A. (2016). Principal Investigator. Making the Future Education Program. Cognizant Technology Solutions Corporation. Teaneck, NJ. Value: $25,000

Hill, P. A. (2015). Principal Investigator. eXtension Fellowship. University of Nebraska - Lincoln. Lincoln, NE. Value: $20,000

Hill, P. A. (2015). Principal Investigator. eXtension Educational Technology Learning Network. The Ohio State University. Columbus, OH. Value: $35,000

Hill, P. A. (2015). Principal Investigator. STEM Competition Grant. Utah STEM Action Center. Salt Lake City, UT. Value: $16,000

Francis, D. W., **Hill, P. A.**, & Garcia, Z. (2015). Co-Principal Investigator. Department of Defense Camp Grant [Statewide]. Kansas State University. Manhattan, KS. Value: $33,500

Francis, D. W., **Hill, P. A.,** & Banks, K. (2015). Co-Principal Investigator. Making the Future Education Program. Cognizant Technology Solutions Corporation. Teaneck, NJ. Value: $25,000

Francis, D. W., & **Hill, P. A.** (2014). Co-Principal Investigator. Operation: Military Kids Grant [Statewide]. United States Army. Washington, DC. Value: $47,500

Hill, P. A. (2014). Principal Investigator. eXtension Educational Technology Learning Network. The Ohio State University. Columbus, OH. Value: $40,000

Hill, P. A. (2014). Principal Investigator. LEGO Mindstorms EV3 robotics kits for *FIRST*® LEGO® regional qualifier event. LEGO Care for Education. Salt Lake City, UT. Value: $3,000

Hill, P. A. (2014). Principal Investigator. STEM Action Center. Governor's Office of Economic Development. Salt Lake City, UT. Value: $2,000

Hill, P.A. (2013). Principal Investigator. GEAR-TECH 21. University of Nebraska. Lincoln, NE. Value: $1,000

Francis, D. W., & **Hill, P. A.** (2013). Co-Principal Investigator. Operation: Military Kids Grant [Statewide]. United States Army. Washington, DC. Value: $95,500

Hill, P. A. (2013). Principal Investigator. LEGO Mindstorms EV3 robotics kits for *FIRST*® LEGO® regional qualifier event. LEGO Care for Education. Salt Lake City, UT. Value: $9,000

Hill, P. A. & Ence, T. T. (2013). 4-H Bicycle Program. 2013 Elks National Foundation Cornerstone Grant. Chicago, IL. Value: $500

Francis, D. W., **Hill, P. A.**, & Peterson, G. (2013). Co-Principal Investigator. Making the Future Education Program [Statewide]. Cognizant Technology Solutions Corporation. Teaneck, NJ. Value: $25,000

Francis, D. W., & **Hill, P. A.** (2013). Co-Principal Investigator. Utah Operation: Military Kids Grant [Statewide]. United States Army. Washington, DC. Value: $47,750

Francis, D. W., **Hill, P. A.**, Parent, V.C. (2012). Co-Principal Investigator. Operation: Military Kids Grant [Statewide]. Kansas State University. Manhattan, KS. Value: $47,750

Hill, P. A. (2012). LEGO Mindstorms NXT robotics kits for *FIRST*® LEGO® regional qualifier event. LEGO Care for Education. Salt Lake City, UT. Value: $1,000

Hill, P. A. (2012). Principal Investigator. GEAR-TECH 21. University of Nebraska. Manhattan, KS. Value: $1,500

Francis, D. W., **Hill, P. A.**, Parent, V. C. (2011). Co-Principal Investigator. Operation: Military Kids Supplemental Camp Grant [Statewide]. Kansas State University. Manhattan, KS. Value: $50,000

Internal Funding

Hill, P. A. (2021). Principal Investigator. Summer Internship Program. Utah State University. Logan, UT. Value: $4,000

Hill, P. A. (2020). Principal Investigator. Summer Internship Program. Utah State University. Logan, UT. Value: $4,000

Hill, P. A. (2019). Principal Investigator. Summer Internship Program. Utah State University. Logan, UT. Value: $4,000

Hill, P. A. (2018). Principal Investigator. Summer Internship Program. Utah State University. Logan, UT. Value: $4,000

Hill, P. A. (2017). Principal Investigator. StartSTG Entrepreneurial Conference. Utah State University. Logan, UT. Value: $1,900

Hill, P. A. (2017). Principal Investigator. Summer Internship Program. Utah State University. Logan, UT. Value: $4,000

Brain-McCann, R., **Hill, P. A.**, Heflebower, R., Hinkamp, D. & Davies, R. (2016). Co-Principal Investigator. Extension Climate Science Essentials: Online Training. Utah State University. Logan, UT. Value: $5,000

Hill, P. A. (2016). Principal Investigator. Summer Internship Program. Utah State University. Logan, UT. Value: $4,000

Hill, P. A. (2015). Principal Investigator. Summer Internship Program. Utah State University. Logan, UT. Value: $4,000

Frey, S. N., Parent, V. C. & **Hill, P. A.** (2014). Co-Principal Investigator. Extension Mini Grants Program: Evaluating the Effectiveness of Color Country Natural Resource Camp. Utah State University. Logan, UT. Value: $10,000

Hill, P. A. (2014). Principal Investigator. Extension Mini Grants Program: 4-H Code Clubs Project. Utah State University. Logan, UT. Value: $8,700

Hill, P. A., Francis, D.W., & Read, N.A. (2014). Principal Investigator. USU Extension Technology Grant Program: Mobile Arduino Lab. Utah State University. Logan, UT. Value: $3,400

Hill, P. A. (2014). Principal Investigator. Summer Internship Program. Utah State University. Logan, UT. Value: $4,000

Hill, P. A. (2013). Principal Investigator. Summer Internship Program. Utah State University. Logan, UT. Value: $4,500

Hill, P. A. (2012). Principal Investigator. Summer Internship Program. Utah State University. Logan, UT. Value: $3,000

Hill, P. A. & Dart, P.C. (2012). Principal Investigator. Washington County 4-H Adventure Leadership Program. Utah State University. Logan, UT. Value: $3,000

Francis, D. W., **Hill, P. A.**, Parent, V. C., & Upton, S. (2012). Co-Principal Investigator. Building Capacity for 4-H Science, Technology, Engineering and Math (STEM) [Statewide]. Utah State University. Logan, UT. Value: $6,000

In-Kind Contributions

Hill, P. A., Ivie, D., & Schmutz, A. T. (2020). Used Lenovo laptop computers for 4-H members in rural counties. Broadcom Inc. Draper, UT. Value: $137,000

Hill, P. A. (2019). Food, facility, and prizes for Code Camp competition. Private Sector Sponsors. St. George, UT. Value: $21,200

Hill, P. A. (2018). Food, facility, and prizes for Code Camp competition. Private Sector Sponsors. St. George, UT. Value: $19,700

Hill, P. A. (2018). Economic Development Fund. Anonymous Donor. St. George, UT. Value: $50,000

Hill, P. A. (2017). Food, facility, and prizes for Code Camp competition. Private Sector Sponsors. St. George, UT. Value: $12,500

Hill, P. A. (2016). Food, facility, and prizes for Code Camp competition. Private Sector Sponsors. St. George, UT. Value: $14,600

Hill, P. A. (2015). Food, facility, and prizes for Code Camp competition. Private Sector Sponsors. St. George, UT. Value: $12,750

Hill, P. A. (2015). *FIRST*® LEGO® League competition field tables. Johnson Family. Diamond Valley, UT. Value: $800

Hill, P. A. (2015). *FIRST*® LEGO® League challenge sets. University of Utah, Graduate Center of St. George. St. George, UT. Value: $600

Hill, P. A. (2014, November). Food, facility, and prizes for Code Camp competition. Private Sector Sponsors. St. George, UT. Value: $11,350

Hill, P. A. (2014). *FIRST*® LEGO® League challenge sets. University of Utah, Graduate Center of St. George. St. George, UT. Value: $600

Hill, P. A. (2013). Food, facility, and prizes for Code Camp competition. Private Sector Sponsors. St. George, UT. Value: $9,500

Hill, P. A. (2013). Maker Camp Super Affiliate Program. Google. Mountain View, CA. Value: $2,100

Hill, P. A. (2013). *FIRST*® LEGO® League competition field tables. Ence Brothers Straw. Diamond Valley, UT. Value: $500

Hill, P. A. (2013). 4-H STEM Education Program. National 4-H Council – STEP UP! To the Challenge Video Facebook Contest. Chevy Chase, MD. Value: $1,250

Hill, P. A. (2013). *FIRST*® LEGO® League challenge sets. University of Utah, Graduate Center of St. George. St. George, UT. Value: $400

Hill, P. A. (2012). Food, facility, and prizes for Code Camp competition. Private Sector Sponsors. St. George, UT. Value: $7,800

Hill, P. A. (2012). LEGO Mindstorms Robotics Kit for ASL Robotics Club. GK Consulting. Hurricane, UT. Value: $350

Hill, P. A. (2012). *FIRST*® LEGO® League competition field tables. Ence Brothers Straw. Diamond Valley, UT. Value: $500

Hill, P. A. (2011). *FIRST*® LEGO® League challenge sets. University of Utah, Graduate Center of St. George. St. George, UT. Value: $750

RESEARCH ACTIVITIES

Refereed Journal Articles (25 published, 2 pending)

Hill, P. A., Ali, A. D., Narine, L. K., Schmutz, A. T., Riskas, T. M. & Spielmaker, D. M. (2021). Evaluating Utah's Rural Online Initiative: Empowering Organizational Leaders Through Remote Work. *Journal of Extension.* (Accepted for publication)

Hill, P. A. & Schmutz, A. T. (2021). Remote: Office Not Required – A Book Review. *Journal of Extension*. (Accepted for publication)

Narine, L. K., Ali, A. D., & **Hill, P. A.** (2021). Assessing Community Assets and Needs to Inform Extension Program Planning. *Journal of Human Sciences & Extension*. jhseonline.com/article/view/1012

Hill, P. A., Ali, A. D., Narine, L. K., Spielmaker, D. M., & Schmutz, A. T. (2020). Evaluating Utah's Rural Online Initiative: Empowering Rural Communities Through Remote Work. *Journal of Extension*. joe.org/joe/2020october/rb4.php

Narine, L. K., Ali, A.D., & **Hill, P. A.** (2020). Application of a Three-Phase Needs Assessment Framework to Identify Priority Issue Areas for Extension Programming. *Journal of Extension.* joe.org/joe/2020august/a1.php

Hill, P. A. & Schmutz, A. T. (2019, October). The Problem with Teaching Science, Technology, Engineering, and Math as Inquiry by Inquiry. *Journal of Extension*. joe.org/joe/2019october/comm2.php

MacArthur, S. S., Christensen, A. H., Garcia, Z., Memmott, M., **Hill, P. A.,** & Swadley, E. A. (2018). Impacts of Youth Financial Literacy Education Through 4-H TRY Teams. *The Forum Journal.* theforumjournal.org/issues

Wolfe, D., Seger, J., Raison, B., Dallin, J. J., Doll, A., Edmunds, B., **Hill, P.A .**, Francis, D. W., & Bertsch, B. (2018, September). Innovate Events: Creating Space for Innovation in Extension. *Journal of Extension.* joe.org/joe/2018september/a6.php

Garcia, Z. A., Francis, D. W., Christensen, A. H., MacArthur, S. S., Memmott, M., & **Hill, P. A.** (2017, December). The Money Mentors Program: Increasing Financial Literacy in Utah Youth. *Journal of Extension*. joe.org/joe/2017december/iw1.php

Francis, D. W., **Hill, P. A.**, Graham, D., Swadley, E. A., & Esplin K. C. (2017, June). Building and Managing Makerspaces in Extension. *Journal of Extension*. joe.org/joe/2017june/iw5.php

Seger, J., **Hill, P. A.**, Stafne, E., & Swadley, E. A. (2017, April). Twitter Chats: Connect, Foster, and Engage Internal Extension Networks. *Journal of Extension.* joe.org/joe/2017april/tt3.php

Hill, P. A., Swadley, E. A., & Esplin K. C. (2017, April). Crowdfunding in Extension: Leveraging Relationships to Offset Declines in Traditional Funding. *Journal of Extension.* joe.org/joe/2017april/tt6.php

Barton, E. T., Barton, E. A., Barton, S., Boyer, C. R., Brosnan, J., **Hill, P. A.**, Hoyle, J., Reid, J., Seger, J., & Stafne, E. (2017, April). Using Technology to Enhance Extension Education and Outreach. *American Society for Horticulture Science - HortTechnology.* horttech.ashspublications.org/content/27/2/177.full

Hill, P. A., & Hino, J. (2016, December). Big Data and the Internet of Things: A Litmus Test for Extension. *Journal of Extension*. joe.org/joe/2016december/comm1.php

Seger, J. & **Hill, P. A.** (2016, October). The Future of Extension Leadership is Soft Leadership. *Journal of Extension.* joe.org/joe/2016october/comm1.php

Mills, R., **Hill, P. A.**, & Saunders, K. (2016, February). Finding the Motivation, Time, Personal Techniques, and Confidence to Write. *Journal of Extension.* joe.org/joe/2016february/comm2.php

Hill, P. A., Francis, D. W., & Petersen, G. (2015, October). 4-H and the Maker Movement. *Journal of Extension.* joe.org/joe/2015october/comm1.php

Christensen A. H., **Hill, P. A.**, & Horrocks, S. (2015, August). The Social Media Marketing Map (Part 1): A Tool to Empower the Digital Leaders of Extension. *Journal of Extension.* joe.org/joe/2015august/tt3.php

Hill, P. A., Francis, D. W., & Petersen, G. (2015, February). Extension and the Maker Movement. *Journal of Extension*. joe.org/joe/2015february/iw3.php

Hill, P. A., MacArthur, S. S., & Read, N. A. (2014, October). Google Search Mastery Techniques. *Journal of Extension*. joe.org/joe/2014october/tt3.php

Hill, P. A., MacArthur, S. S., Read, N. A., & Nelson, C. (2014, August). Google Search Mastery Operators. *Journal of Extension*. joe.org/joe/2014august/tt1.php

Hill, P. A., MacArthur, S. S., & Read, N. A. (2014, June). Google Search Mastery Basics. *Journal of Extension*. joe.org/joe/2014june/tt2.php

Hill, P. A. & Francis, D. W. (2014, April). Responding to the Needs of Geographically Dispersed Military Youth. *Journal of Extension*. joe.org/joe/2014april/a4.php

Hill, P. A. (2014, April). 'Connecting' with Your Clients [on Facebook]. *Journal of Extension*. Available at joe.org/joe/2014april/comm2.php

Hill, P. A., Mills, R., Petersen, G., & Smith, J. (2013, April). Breaking the Code: The Creative Use of QR Codes to Market Extension Events. *Journal of Extension*. joe.org/joe/2013april/tt4.php

Hill, P. A. (2013, February). Real, Fast, Feedback. *Journal of Extension*. joe.org/joe/2013february/iw4.php

Hill, P. A., Hino, J. & Rader, H. P. (2012, December). The Search for Extension: Helping People Find Research-Based Information on the Internet. *Journal of Extension*. joe.org/joe/2012december/iw1.php

Refereed Curricula (6)

Hill, P. A. & MacArthur, S. S. (2017). Discover 4-H: LEGO Robotics EV3. Utah State University, Logan, UT. Available at utah4h.org/htm/discover4hclubs

Hill, P. A., Jimenez, L., Garcia, Z. A., & MacArthur, S. S. (2015). Discover 4-H: Computer Science (Beginners). Utah State University, Logan, UT. Available at utah4h.org/htm/discover4hclubs

Hill, P. A., Jimenez, L., Garcia, Z. A. & MacArthur, S. S. (2015). Discover 4-H: Computer Science (Scratch). Utah State University, Logan, UT. Available at utah4h.org/htm/discover4hclubs

Hill, P. A. & MacArthur, S. S. (2014). Discover 4-H: Computer Science (Python). Utah State University, Logan, UT. Available at utah4h.org/htm/discover4hclubs

Hill, P. A. & MacArthur, S. S. (2013). Discover 4-H: LEGO Robotics NXT. Utah State University, Logan, UT. Available at utah4h.org/htm/discover4hclubs

Hill, P. A., Kitchen, B., Patterson, R. & MacArthur, S. S. (2013). Discover 4-H: Shooting Sports. Utah State University, Logan, UT. Available at utah4h.org/htm/discover4hclubs

Referred Factsheets (15)

Hill, P. A., Farrer, L., & Pollack, S. (2019). *Profile of a Sales Representative*. Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/1965/

Hill, P. A., Farrer, L., & Safran, T. (2019). *Profile of a Web Developer.* Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/1962/

Hill, P. A., Farrer, L., & Peters, B. (2019). *Profile of a Social Media Manager.* Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/1964/

Hill, P. A., Farrer, L., & Koenigs, C. (2019). *Profile of a Virtual Assistant.* Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/1963/

Hill, P. A., Farrer, L., & Kirrane, T. (2019). *Profile of an E-Commerce Seller* (Shop Owner). Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/1961/

Hill, P. A., Swadley, E. A., Isom, M., & Terry, K. (2019). *Selling Creative Products Online.* Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/1967/

Hill, P. A., Swadley, E. A., Isom, M., & Terry, K. (2018). *Operating Your AI Personal Assistant*. Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/1867/

Hill, P. A., Jensen, N., MacArthur, S. S., & Read, N. A. (2013). *Google Search Basics: Part I.* Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/357/

Hill, P. A., Jensen, N., MacArthur, S. S., & Read, N. A. (2013). *Google Search Operators: Part II.* Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/358/

Hill, P. A., Jensen, N., MacArthur, S. S., & Read, N. A. (2013). *Google Search Techniques: Part III.* Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/356/

Hill, P. A., O'Toole, A., Heaton, K., & Jensen, N. (2012). *Tips for Beginning a Livestock Project: Market Steers.* Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/1484/

Jensen, N., Heaton, K., **Hill, P. A.**, & O'Toole, A. (2012). *Tips for Beginning a Livestock Project: Market Hogs.* Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/1482/

Heaton, K., **Hill, P. A.**, O'Toole, A., & Jensen, N. (2012*). Tips for Beginning a Livestock Project: Market Lambs.* Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/1483/

Hill, P. A. (2012). *Real, Fast, Feedback: A Guide to Using Survey Websites.* Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/1568/

Hill, P. A. (2011). *Back-Up, Access and Share Your Files From Anywhere, Anytime.* Utah State University. Logan, UT. Available at digitalcommons.usu.edu/extension_curall/1488/

Books (2)

Smith, K. L. & **Hill, P. A.** (2019). *The Innovation Imperative: Can Extension Change?* Extension Committee on Organization and Policy (ECOP). Available at usuextensionstore.com/the-innovation-imperative-can-extension-change

Hill, P. A. et al. (2018). *We've Tried ~~That~~ Before: 500 Years of Extension Wisdom.* eXtension Foundation. Available at usuextensionstore.com/weve-tried-that-before

Mobile Application

Wiebers, J., Chamberlin, B., **Hill, P. A.**, Garey, S., & Wright, J. (2014). 4-H Livestock Record. National 4-H Council. Chevy Chase, MD. Available at itunes.apple.com/us/app/4h-livestock-record/id898568078?mt=8

Professional Report Contributions (3)

Smith, K. L. et al. (2016, September). Extension Task Force Innovation Report. Extension Committee on Organization and Policy (ECOP). Available at aplu.org

Freeman, A., Adams-Becker, S., Cummins, M. et al. (2016, October). NMC Technology Outlook for Cooperative Extension 2016-2021: A Horizon Project Sector Report. Austin, Texas: The New Media Consortium. Available at nmc.org/publication/nmc-technology-outlook-cooperative-extension-2016-2021/

Narine, L. K., Ali, A. D., & **Hill, P. A.** (2019). *Rural Online Initiative*. Abstract published in American Evaluation Association (AEA) Extension Education Evaluation Inaugural Topical Interest Group (TIG) Newsletter.

Online Courses (4)

Pedersen, E. **& Hill, P. A.** (2020, July). Tech Startup Launchpad. Utah State University Extension. Logan, Utah. Available at remoteworkcertificate.com

Hill, P. A. (2020, August). Remote Job Search: Skills for Success. Utah State University Extension. Logan, Utah. Available at remoteworkcertificate.com

Hill, P. A. (2020, January). Master Remote Work Leader. Utah State University Extension. Logan, Utah. Available at remoteworkcertificate.com

Hill, P. A. (2018, October). Master Remote Work Professional. Utah State University Extension. Logan, Utah. Available at remoteworkcertificate.com

Hill, P. A., Brain-McCann, R., Hinkamp, D., Davies, R., & Heflebower, R. (2017, March). Extension Climate Change Science Essentials. Utah State University Extension. Logan, Utah. Available at extension.learn.usu.edu/browse/climate-essentials/courses/climate

Conference Presentations (135)

Walker-Bravo, A., Brower, N., Christensen, A. H., & **Hill, P. A.** (2021). Customizable Impact Templates for Successful Program Communication. Public Issues Leadership Development (PILD) Conference. Washington, DC.

Gallardo, R., **Hill, P. A.**, Whitener, K., de Leon Sinatz, M., & Spangler, C. (2021) Broadband's Role in Rural Economic Development: The Digital Ready Workforce. Association of Public Land Grant Universities (APLU) Conference. Online.

Ali, A. D., Narine, L. K., & **Hill, P. A.** (2021). Developing and Piloting an Index to Assess Program Fidelity in Extension. Association for International Agricultural and Extension Education (AIAEE) Annual Conference. Online.

Ali, A. D. & **Hill, P. A.** (2020) Formative Evaluation of a Remote Work Program for Utah Organizational Leaders. National Association of Extension Program and Staff Development Professionals (NAEPSDP) Conference. Online.

Walker-Bravo, A., Narine, L. K., & **Hill, P. A.** (2020) Extension Faculty's Ability to Address Complex Problems of Clientele. National Association of Extension Program and Staff Development Professionals (NAEPSDP) Conference. Online.

Hill, P. A., Ali, A. D., Narine, L. K., Goodrich, R., & Swadley, E. A. (2020). Utah's Rural Online Initiative: Training Urban Business Leaders to Manage Remote Workers from Rural Counties. Epsilon Sigma Phi (ESP) National Conference. Online due to COVID-19.

Hill, P. A. (2020). The Story and Impact of Utah's Rural Online Initiative Program. National Association of Extension Program and Staff Development Professionals (NAEPSDP) Webinar. Online.

Hill, P. A. (2020). The Impact of Utah's Rural Online Initiative Program. North Central Cooperative Extension Association Administrator's Meeting. Online.

Narine, L. K., **Hill, P. A.,** & Walker-Bravo, A. (2020). Extension Educators' Ability to Address Complex Problems of Clientele in Utah. National Association of Extension Program and Staff Development Professionals (NAEPSDP) Conference. Online.

Hill, P. A. (2020). Stimulating Utah's Rural Economies Through Remote Work. Utah Farm Bureau - FUSION Conference. Saint George, UT.

Hill, P. A. (2020). Community-Based Programming in the COVID-19 Age: National Action Dialogue. eXtension Foundation. National Webinar.

Ali, A. D., **Hill, P. A.,** Swadley, E. A., & Narine, L. K. (2020). Rethinking Communication in Extension: A Hybrid Model for Engaging with Rural Audiences. National Association of Community Development Extension Professionals (NACDEP) Annual Conference. Online due to COVID-19.

Ali, A. D., **Hill, P. A.**, & Narine, L. K. (2020). Fine-tuning the Evaluation Protocols for an Innovative Educational Program in Rural Communities. Association for International Agricultural and Extension Education (AIAEE). St. Petersburg, FL.

Hill, P. A. (2020). Innovation in Extension: The Best Time to Innovate Was 20 Years Ago, the Second Best Time is Now. Oklahoma State University Extension Annual Conference. Stillwater, OK.

Hill, P. A. (2019). Innovation in Extension: Your Greatest Risk is Maintaining the Status Quo. Kansas State University Extension Annual Conference. Manhattan, KS.

Hill, P. A., Fausett, S. & Mossburg, N. (2019). The Future of Remote Work. Western Governors Association (WGA). Santa Fe, NM.

Hill, P. A. (2019). Innovation Through Lean Experimentation. Western Extension Leadership Development (WELD). Regional Webinar.

Hill, P. A., Goodrich, R., Swadley, E., & Ali, A. D. (2019). Utah's Rural Online Initiative: Connecting Rural Communities to Remote Work. United Nations 68th Civil Society Conference. Salt Lake City, UT.

Hill, P. A., Ali, A. D., & Narine, L. K. (2019). Evaluating Utah's Rural Online Initiative: Empowering Rural Communities with Remote Work. Epsilon Sigma Phi (ESP) National Conference. Colorado Springs, CO.

Hill, P. A., Ali, A. D., & Narine, L. K. (2019). Assessing Perceived Competency Improvements of Participants in the Rural Online Initiative of Utah. National Association of Extension Program and Staff Development Professionals (NAEPSDP) Conference. Savannah, GA.

Narine, L. K.**,** Ali, A. D., & **Hill, P. A.** (2019). Examining Utah Residents' Patterns of Social Media Use to Inform Extension Program Delivery. National Association of Extension Program and Staff Development Professionals (NAEPSDP) Conference. Savannah, GA.

Hill, P. A. (2019). Innovation Through Lean Experimentation. Public Issues Leadership Development (PILD). Washington, DC.

Hill, P. A. (2019). Utah's Rural Online Initiative: Connecting Rural Communities with Remote Work. Joint Council of Extension Professionals (JCEP). San Antonio, TX.

Walker-Bravo, A. & **Hill, P. A.** (2019). Introduction to Design-a-thon. USU Annual Conference. Logan, UT.

Hill, P. A. (2019). Funding Economic Development Through Grants. Utah Alliance for Economic Development – Annual Meeting. St. George, UT.

Hill, P. A. & Bushman, D. (2018). An Introduction to the Rural Online Initiative: Funded by House Bill 327. Utah Rural Economic Summit. Cedar City, UT.

Hill, P. A. (2018). An Introduction to the Rural Online Initiative: Funded by House Bill 327. Governor's Rural Partnership Board. Nephi, UT.

Hill, P. A., & McCann-Brain, R. (2018). Climate Change Science Essentials Course for Extension Professionals. Southern Region Faculty Meeting. Nephi, UT.

Hill, P. A. (2018). Innovation Through Lean Experimentation. Western Region Administrators Meeting (WRAM). Saint George, UT.

Hill, P. A. (2018). Innovation Through Lean Experimentation. Western Extension Leadership Development (WELD). Santa Fe, NM.

Hill, P. A. (2018). Innovation Through Lean Experimentation. West Virginia University Extension. Morgantown, WV.

Hill, P. A. & Seger, J. (2018). We Don't Have Time for Innovation. Joint Council of Extension Professionals (JCEP). Orlando, FL.

Hill, P. A. (2018). Building a STEM Talent Pipeline in Washington County. Hurricane Rotary Chapter. Hurricane, UT.

Hill, P. A., Francis, D. W., & Allen, B. K. (2018). *FIRST* and 4-H. Utah *FIRST*® LEGO® League Symposium. Salt Lake City, UT.

Hill, P. A., (2017). How to Start a 4-H Robotics Club and Compete in the Utah *FIRST*® LEGO® League. Utah State University. Hurricane, UT.

Hill, P. A. (2017). What is the Maker Movement? Maker Town Hall. Saint George, UT.

Hill, P. A. & Francis, D. W. (2017). Collaborating to Grow the Maker Movement and Foster Innovation. St. George Area Economic Summit. Saint George, UT.

Hill, P. A., Francis, D. W., Scow, B. & Richins, W. L. (2017). How Extension Professionals Can Lead the Maker Movement. National Association of Extension Program & Staff Development Professionals (NAEPSDP). Las Vegas, NV.

Hill, P. A. & Seger, J. (2017). The Future of Extension Leadership is Soft Leadership. National Association of Extension Program & Staff Development Professionals (NAEPSDP). Las Vegas, NV.

Hill, P. A. & Seger, J. (2017). Innovation Through Lean Experimentation. National Extension Director's & Administrators (NEDA). Essex, VT.

Hill, P. A. & Seger, J. (2017). We Don't Have Time for Innovation. Cornell University Extension Annual Conference. Ithaca, NY.

Francis, D. W. & **Hill, P. A.** (2017). How to Start Down the Computer Science Pathway. National 4-H Computer Science Pathway Grant Conference: Presented by National 4-H Council, Google, and Utah State University. Lehi, UT.

Hill, P. A., Francis, D. W. & Muir, T. (2017). Unboxing the Toolkit: Intro to Chromebooks and Other Resources in the CS Toolkit. National 4-H Computer Science Pathway Grant Conference: Presented by National 4-H Council, Google, and Utah State University. Lehi, UT.

Hill, P. A. & Chan, B. (2017). Jumpstart CS First Clubs. National 4-H Computer Science Pathway Grant Conference: Presented by National 4-H Council, Google, and Utah State University. Lehi, UT.

Hill, P. A. (2017). Volunteer Engagement: The How and Why Computer Science Volunteers Get Involved. National 4-H Computer Science Pathway Grant Conference: Presented by National 4-H Council, Google, and Utah State University. Lehi, UT.

Hill, P. A., (2017). How to Facilitate a CS First Club Meeting. National 4-H Computer Science Pathway Grant Conference: Presented by National 4-H Council, Google, and Utah State University. Lehi, UT.

Hill, P. A. (2017). Selecting STEM Activities for Makerspaces. Click 2 Science pd. National Webinar.

Hill, P. A. (2017). Bringing the Maker Movement to Extension. University of Nebraska – Lincoln Extension. National Webinar.

Hill, P. A. (2017). How to Manage Information Flow & Curate for Thought Leadership in Social Media. Joint Council of Extension Professionals (JCEP). Orlando, FL.

Hill, P. A. & Seger, J. (2017). What Defines 'Innovation' in Extension? A Discussion on the Key Discoveries from ECOP Innovation Task Force Report. Joint Council of Extension Professionals (JCEP). Orlando, FL.

Hill, P. A. & Seger, J. (2017). Innovation in Action: eXtension Educational Technology Learning Network, JCEP Creative Excellence Award Winner. Joint Council of Extension Professionals (JCEP). Orlando, FL.

Hill, P. A. & Seger, J. (2017). We Don't Have Time for Innovation. University of Delaware. Dover, DE.

Hill, P. A., Esplin, K. C. & Seger, J. (2016). Gotta Catch 'Em All: Using PokémonGo [Augmented Reality] to Capture Attention for Extension Events. eXtension Foundation. National Webinar.

Hill, P. A. & Seger, J. (2016). How to Use Snapchat to Tell the Story of Your Extension Work. eXtension Foundation. National Webinar.

Seger, J., Thomas, J., & **Hill, P. A.** (2016). The New Peer Review: Digital Scholarship in a World of Traditional Pubs. Epsilon Sigma Phi (ESP). Cape May, NJ.

Seger, J., **Hill, P. A.,** Christensen, A., Baughman, S. & Wolfe, D. (2016). Social Media Analytics Workshop. National eXtension Conference (NeXC). San Antonio, TX.

Hill, P. A. & Wolfe, D. (2016). Social Media, Thought Leadership & Working Out Loud. Joint Council of Extension Professionals (JCEP). Las Vegas, NV.

Hill, P. A. (2016). The Maker Movement in Washington County, Utah. Washington County Commission Meeting. Saint George, UT.

Hill, P. A., & Francis, D. W. (2016). The Maker Movement and 4-H. USU Annual Conference. Logan, UT.

Hill, P. A., & Heaton, D. (2015). Utah *FIRST*® LEGO® League & 4-H: The rapid growth of hands-on STEM education in Washington County. Southern Utah Educators Conference. Saint George, UT.

Hill, P. A. (2015). How to Narrate Your Work When Working Out Loud. Extension Wildlife Specialists Conference. Cedar City, UT

Hill, P. A. (2015). Building Resiliency in Youth. Buoyant Families Workshop. Saint George, UT

Thomas, J. & **Hill, P. A.** (2015). Trends, Issues & Innovation: New Paths for Extension. National Association of Extension Program & Staff Development Professionals (NAEPSDP). San Diego, CA.

Seger, J., **Hill, P. A.** & Stafne, E. (2015). The New Peer Review: Digital Scholarship in a World of Traditional Pubs. National Association of Extension Program & Staff Development Professionals (NAEPSDP). San Diego, CA.

Seger, J., **Hill, P. A.** & Baughman, S. (2015). Social Media Analytics Workshop. National Association of Extension Program & Staff Development Professionals (NAEPSDP). San Diego, CA.

Seger, J., **Hill, P. A.** & Christensen, A. (2015). Digital & Social Media Confab. National Association of Extension Program & Staff Development Professionals (NAEPSDP). San Diego, CA.

Hill, P. A. (2015). How to Manage Information Flow & Curate for Thought Leadership in Social Media. National Association of Extension Program & Staff Development Professionals (NAEPSDP). San Diego, CA.

Hill, P. A. (2015). How to Narrate Your Work When Working Out Loud. National Association of Extension Program & Staff Development Professionals (NAEPSDP). San Diego, CA.

Hill, P. A. (2015). Social Media Strategies for Extension. National Association of Extension Program & Staff Development Professionals (NAEPSDP). National Webinar.

Worker, S., Walsh, M., Smith, R., Kahler, J., **Hill, P. A.**, Frerichs, S., & Ewers, T. (2015). Making and Tinkering in 4-H: Roundtables with Experts. National Association of Extension 4-H Professionals (NAE4-HA). Portland, OR.

Seger, J., Thomas, J., **Hill, P. A.,** & Chamberlin, B. C. (2015). eXtension Educational Technology Learning Network: advancing Extension through multi-state collaboration. Association for Communication Excellence (ACE) Conference. Charleston, SC.

Hill, P. A., Seger, J., Thomas, J., & Chamberlin, B. C. (2015). eXtension Educational Technology Learning Network: advancing Extension through multi-state collaboration. Public Issues Leadership Development (PILD). Washington, DC.

Christensen, A. H. & **Hill, P. A.** (2015). The Social Media Marketing Map: A Tool to Empower the Digital Leaders of Extension. Public Issues Leadership Development (PILD). Washington, DC.

Christensen, A. H. & **Hill, P. A.** (2015). The Social Media Marketing Map: A Tool to Empower the Digital Leaders of Extension. Joint Council of Extension Professionals (JCEP). Las Vegas, NV.

Ward, R. & **Hill, P. A.** (2015). Documenting Impacts. USU Annual Conference. Logan, UT.

Hill, P. A. & MacArthur, S. S., Read, N.A. (2014). Google Search Mastery. Utah 4-H Leadermete. Loa, UT.

Hill, P. A. & MacArthur, S. S., Read, N.A. (2014). Google Search Mastery. USU Annual Conference. Logan, UT.

Hill, P. A., Memmott, M., & Mills, R. (2014). Fixing Extension by Utilizing Innovative Technology. USU Annual Conference. Logan, UT.

Hill, P. A. & Kopp, K. (2014). eXtension, USU, and You. USU Annual Conference. Logan, UT.

Chamberlin, B. C., Wheeler, T., & **Hill, P. A.** (2014). Engaging Youth in Mobile Livestock Record Keeping. National Association of Extension 4-H Professionals (NAE4-HA). Minneapolis, MN.

MacArthur, S. S., **Hill, P. A.**, Cromwell, S., Garcia, Z. A., & Nelson, C. (2014). Discover 4-H Clubs: Baby Stepping Into New 4-H Projects. National Association of Extension 4-H Professionals (NAE4-HA). Minneapolis, MN.

Barnett, L., Dunham, T., **Hill, P. A.,** & Thomas J. (2014). Expanding Extension's Reach and Impact with Citizen Science: The Public Value of Citizen Science. National eXtension Conference (NeXC). Sacramento, CA.

Barnett, L., Dunham, T., **Hill, P. A.,** & Thomas J. (2014). Expanding Extension's Reach and Impact with Citizen Science: Current Examples of Citizen Science In and Out of Extension. National eXtension Conference (NeXC). Sacramento, CA.

Barnett, L., Dunham, T., **Hill, P. A.,** & Thomas J. (2014). Expanding Extension's Reach and Impact with Citizen Science: A Dialogue Session to Brainstorm Citizen Science Ideas. National eXtension Conference (NeXC). Sacramento, CA.

Lawrence, M., Seger, J., & **Hill, P. A.** (2014). Open Extension Work and Social Media Utilization in the 21st Century. National eXtension Conference (NeXC). Sacramento, CA.

Hill, P. A. (2014). LEGO Mindstorms NXT/WeDo/EV3 Robotics Platforms. National Youth Summit on Robotics: National 4-H Council. Washington D.C.

Read, N.A. & **Hill, P. A.** (2014). How 4-H Leaders Can Use Social Media to Market Clubs & Recruit New Members. Western Region Leaders Forum. Billings, MT.

Hill, P. A., & Larsen, C. (2014). Utah *FIRST*® LEGO® League & 4-H: Developing science abilities through hands-on STEM education. North Elementary School. Cedar City, UT.

Hill, P. A. & Force, M. C. (2014). Humans in the Water Cycle. Washington County Water Fair. Saint George, UT.

Hill, P. A. (2014). Technology in Agriculture. Garden Day. Hurricane, UT.

Hill, P. A. (2014). 4-H: More Than Cows, Plows, and Sows. Hurricane Rotary Club. Hurricane, UT.

Hill, P. A. (2014). Social Media Strategy & Storytelling. Beginning Farmer & Rancher Workshop. Saint George, UT.

Hill, P. A. (2014). Social Media Strategy & Storytelling. Farmer & Rancher Leadership Conference. Logan, UT.

Hill, P. A. (2013). Healthy Organization Culture. Sunrise Ridge Intermediate School. Saint George, UT.

Hill, P. A., & Larsen, C. (2013). Utah *FIRST*® LEGO® League & 4-H: Developing science abilities through hands-on STEM education. Southern Utah Educators Conference. Saint George, UT.

Hill, P. A. (2013). Using Social Networks and Mobile Apps in Noxious Weed Management. Utah/Arizona Invasive Weed Update, Hurricane, UT.

Hill, P. A., Larsen, C. & Heaton, D. (2013). Utah *FIRST*® LEGO® League & 4-H: Developing science abilities through hands-on STEM education. Washington County School District. Saint George, UT.

Hill, P. A. (2013). Getting Social: An Introduction to Social Media Strategy. Utah Farm Bureau: Young Farmers & Ranchers Conference. Saint George, UT.

Hill, P. A. (2013). Getting Social: An Introduction to Social Media Strategy. Diversified Ag Conference. Ephraim, UT.

Hill, P. A. (2013). How 4-H Leaders Can Use Social Media to Market Clubs & Recruit New Members. Western Region Leaders Forum. Honolulu, HI.

MacArthur, S. S., **Hill, P. A.,** & Dart, P. C. (March, 2013). Excellence in the 4-H Club Environment. Western Region Leaders Forum. Honolulu, HI.

Hill, P. A. (2013). Code Camp: A New Bridge to Serving Tech Communities. National Association of Community Development Extension Professionals (NACDEP): Galaxy IV. Pittsburgh, PA.

MacArthur, S. S., **Hill, P.A.**, Cromwell, S., Garcia, Z. A., & Nelson, C. (2013). Discover 4-H Clubs: Baby Stepping Into New 4-H Projects. National Association of Extension 4-H Professionals (NAE4-HA): Galaxy IV. Pittsburgh, PA.

MacArthur, S. S., **Hill, P. A.**, Cromwell, S., Garcia, Z. A., & Nelson, C. (2013). Discover 4-H Clubs: Baby Stepping Into New 4-H Projects. National Extension Conference on Volunteerism. Frankenmuth, MI.

Hill, P. A. (2013). Discover 4-H Clubs. Utah 4-H In-Service. Moab, UT.

Hill, P. A. (2013). Southern Utah Code Camp. Utah 4-H In-Service. Moab, UT.

Hill, P. A. (2013). Utah 4-H STEM abilities in a robotics program: Be intentional! 4-H Science Training. Lehi, UT.

Hill, P. A. (2013). Why You Need to Make Infographics. USU Annual Conference. Logan, UT.

Hill, P. A. (2013). How to Get $500 to Host a 4-H Robotics Camp. Utah 4-H Leadermete. Provo, UT.

Hill, P. A. (2013). Professional Networking with Twitter. Utah 4-H Leadermete. Provo, UT.

Hill, P. A. (2013). Best practices for using Google Drive in extension. Utah 4-H Leadermete. Provo, UT.

Hill, P. A. (2013). Social Internet Literacy. Utah 4-H Leadermete. Provo, UT.

Grumbles, R., Heaton, K., **Hill, P. A.** & Reid, C. R. (2012). AZ/UT Range Livestock Workshop & Tour: Educational Excellence & Collaboration. National Association of County Agricultural Agents: 97th Annual Meeting and Professional Improvement Conference. Charleston, SC.

Hill, P. A. (2012). Crowdsourcing Volunteers with Google Forms. Four Corners 4-H In-Service. Albuquerque, NM.

Hill, P. A. (2012). Crowdsourcing with Google Forms. Western Region 4-H Science Academy. Davis, CA.

Hill, P. A. (2012). Applying Online Survey Technology: A Best Practice for Extension Faculty. Western Region 4-H Institute. Albuquerque, NM.

Hill, P. A. (2012). Breaking the Code: The Creative Use of QR Codes to Market Extension Events. Utah 4-H In-Service. Lehi, UT.

Hill, P. A. (2012). Creating Effective Video Newsletters. USU Extension Southern Region Staff Meeting. Richfield, UT.

Hill, P. A. (2012). Crowdsourcing with Google Drive. USU Annual Conference. Logan, UT.

Hill, P. A. (2012). Got 15 Minutes to Spare? Why Ag Must Use Social Media. Utah Farm Bureau Mid-Year Conference. Ogden, UT.

Hill, P. A. (2012). *FIRST*® LEGO® League – An Investment in Your Future Workforce. Dixie Technical Council. St. George, UT.

Hill, P. A. (2012). Professional Networking Through Twitter. Afterschool Utah Association, Annual Recharge Training. St. George, UT.

Hill, P. A. (2012). Online Safety and Social Literacy. Washington County School District Youth Leadership Conference. St. George, UT.

Hill, P. A. (2012). Why Ag Should Care About Social Media. Washington County Library Community Education. Hurricane, UT.

Hill, P. A. (2012). Why Ag Should Care About Social Media. Diversified Ag Conference. Layton, UT.

Hill, P. A. & Serna, S. J. (2012). Social Media Marketing with County 4-H Facebook Fan Pages. Four Corners 4-H In-Service. Albuquerque, NM.

Hill, P. A. & Serna, S.J. (2012). 'Easy Button' iPad Apps for 4-H Professionals. Four Corners 4-H In-Service. Albuquerque, NM.

Hill, P. A. & Serna, S.J. (2012). Harnessing Web 2.0 Applications in Extension. 4-H In-Service. Albuquerque, NM.

Hill, P. A. & Serna, S.J. (2012). Strategies for Professional Networking Through Twitter. Four Corners 4-H In-Service. Albuquerque, NM.

Hill, P. A. (2012). How to Manage a Community Network Affected by Invasive Plants Using Social Media Strategies. UT/AZ Invasive Weed Conference. St. George, UT.

Hill, P. A. (2012). Applying Google Drive in Extension. USU Annual Conference. Logan, UT.

Hill, P. A. (2011). Online Safety and Social Literacy. Washington County School District Youth Leadership Conference. St. George, UT.

Hill, P. A. (2011). Core Value and Project Judging. *FIRST*® LEGO® League Tournament Training. St. George, UT.

Hill, P. A. (2011). Image Matters in Extension. USU Extension Southern Region Staff Meeting. Richfield, UT.

Hill, P. A. (2011). The Dropbox Concept. Utah 4-H In-Service. Provo, UT.

MEDIA MATERIALS

Website

Hill, P. A. (2018). Rural Online Initiative. Utah State University Extension. Logan, UT. Available at remoteworkcertificate.com

Social Media

Hill, P. A. (2019). Rural Online Initiative Instagram Account. Utah State University Extension. St. George, UT. Available at instagram.com/RemoteWorkUSU

Hill, P. A. (2018). Rural Online Initiative Facebook Page. Utah State University Extension. St. George, UT. Available at facebook.com/RuralOnlineInitiative

Hill, P. A. (2015). Washington County 4-H Instagram Account. Utah State University Extension. St. George, UT. Available at instagram.com/USUwashco

Hill, P. A. (2011). Washington County 4-H Facebook Page. Utah State University Extension. St. George, UT. Available at facebook.com/dixie4h

Hill, P. A. (2011). Washington County 4-H Twitter Account. Utah State University Extension. St. George, UT. Available at twitter.com/USUwashco

Hill, P. A. (2011). Personal Twitter Account. Utah State University Extension. St. George, UT. Available at twitter.com/paulhill_io

Podcasts

Hill, P. A. (2019). Tomorrow's Innovators. Utah State University Extension. St. George, UT. Available at tomorrowsinnovators.libsyn.com

Hill, P. A. (2019). Remote Work Radio. Utah State University Extension. St. George, UT. Available at remoteworkradio.libsyn.com

Email Newsletters

Hill, P. A. (2021). Silicon Slopes St. George Chapter. Featured topics: Industry news, STEM education, local tech events, job openings, grant opportunities, professional development, economic data, press releases.
Published: Monthly
Years in distribution: 4
Distribution: 2,223
Open rate: 77%
Click rate: 20%

Hill, P. A. (2021). Rural Online Initiative: Making Remote Work. Featured topics: Remote work opportunities, resources, articles.
Published: Weekly
Years in distribution: 3

Distribution: 3,566
Open rate: 81%
Click rate: 27%

Selected Coverage of Programs in Media

Jacobs, B. (2020, January). Telework program is 'game changer' for women in rural parts of Utah. Salt Lake Tribune. Available at https://www.sltrib.com/news/2020/01/02/telework-program-is-game/

Laney, A. (2019, February 26). Rural Online Initiative provides job opportunity. San Juan Record News Release. Available at sjrnews.com/view/full_story/27629689/article-Rural-Online-Initiative-provides-job-opportunity?instance=home_news_1st_right

Gillmor, L. (2018, December 20). Rural Initiatives to Change the Landscape of Economic Development. Utah Governor's Office of Economic Development News Release. Available at business.utah.gov/news/rural-initiatives-to-change-the-landscape-of-economic-development

Dilg, R. (2018, October 23). New Opportunities in Rural Utah. Silicon Slopes News Release. Available at newsroom.siliconslopes.com/new-opportunities-in-rural-utah

Younger, J. (2018, November 28). How Freelancing and Other Remote Work Will Help Save Rural Life. Forbes News Release. Available at forbes.com/sites/jonyounger/2018/11/28/how-freelancing-and-other-remote-work-will-help-save-rural-life/#6ee14811050c

Witham, J. (2018, September 22). Can rural flight be alleviated in Southern Utah? Coordinators of new remote work initiative hope so. stgeorgeutah.com News Release. Available at stgeorgeutah.com/news/archive/2018/09/22/jcw-can-rural-flight-be-alleviated-in-southern-utah-coordinators-of-new-remote-work-initiative-hope-so/#.XpTrXFNKhQJ

Reese, J. (2018, September 7). USU Extension Focuses on Strengthening Utah's Rural Economies. USU Today Press Release. Available at usu.edu/today/index.cfm?id=57945

Hislop, C. (2018, September 17). Legislature creates initiative to help Utahns find jobs. cachevalleydaily.com News Release. Available at cachevalleydaily.com/news/archive/2018/09/17/legislature-creates-initiative-to-help-utahns-find-jobs/#.W6v1mC-ZNBw

Richards, J. (2017, December 15). Coral Canyon Elementary partnership wins $100,000 STEM grant. stgeorgeutah.com News Release. Available at stgeorgeutah.com/news/archive/2017/12/15/jmr-coral-canyon-elementary-partnership-wins-100000-stem-grant/#.WkuV-iOZMWo

Witham, J. (2017, January 8). Lego League robotics competition makes science, technology fun for kids. stgeorgeutah.com News Release. Available at stgeorgeutah.com/news/archive/2017/01/08/jcw-lego-league-robotics-competition-makes-science-technology-fun-for-kids/#.WHY7Q7GZORs

Lee, R. (2016, February 29). Washington County Robotics Team Honored as a Role Model Team for International Organization. dixietechs.com News Release. Available at dixietechs.com/washington-county-robotics-team-honored-as-a-role-model-team-for-international-organization/

Wayman, R. (2015, August 21). Local 4-H students win state awards at USU gathering. stgeorgeutah.com News Release. Available at stgeorgeutah.com/news/archive/2015/08/21/rsw-local-4-h-students-win-awards-at-utah-gathering/#.VdsdVng3ONQ

Jenkins, K. (2015, January 11). Youths practice science with robot-building competition. thespectrum.com News Release. Available at thespectrum.com/story/news/local/2015/01/10/youths-practice-science-robot-building-competition/21581019/

Reina, H. (2015, January 10). Students display mad science skills at Lego robotics competition. stgeorgeutah.com News Release. Available at stgeorgeutah.com/news/archive/2015/01/10/hsr-leb-students-display-mad-science-skills-at-lego-robotics-competition/#.VLQXmMYbBBx

Whitney, Z. (2014, November 21). Code Camp at DSU challenges competitors to create app in 24 hours. fox13now.com News Release. Available at fox13now.com/2014/11/21/code-camp-at-dsu-challenges-competitors-to-create-app-in-24-hours/

DeMille, D. (2014, October 8). Kids learn agricultural basics. thespectrum.com News Release. Available at thespectrum.com/story/news/local/2014/10/08/kids-learn-agricultural-basics/16953477/

Heyborne, E. (2014, June 29). Programming for the Southern Utah Tech Pipeline. utahpulse.com News Release. Available at utahpulse.com/index.php/features/technology/1032-programming-for-the-southern-utah-tech-pipeline

Halversen, T. (2014, May 13). Utah 4-H and Fidelity Investments Partner to Fight Low Financial Literacy. upr.org News Release. Available at upr.org/post/utah-4-h-and-fidelity-investments-partner-fight-low-financial-literacy?utm_referrer=http%3A//m.upr.org/%3Futm_referrer%3D%23mobile/41014

Terry, L. (2014, February 18). Local Teen Wins National Honor. kcsg.com News Release. Available at kcsg.com/view/full_story/24602719/article-Local-Teen-Wins-National-Honor-?instance=more_local_news1

Baysden, C. (2014, February 14). National 4-H Council Robotics Summit. myfoxdc.com News Release. Available at myfoxdc.com/video?autoStart=true&topVideoCatNo=default&clipId=9873601#axzz2v3E3o3Tx

Meisenbach, T. (2013, December 9). Working Differently: Disruptive CoopExt Professor at Utah State University. eXtension.org Blog Post. Available at about.extension.org/2013/12/09/working-differently-disruptive-coopext-professor-utah-state-university/

Egan, L. (2013, November 15). Techies Descend on St. George For 'Code Camp.' KUTV.com News Release. Available at kutv.com/news/top-stories/stories/vid_8183.shtml

Terry, L. (2013, August 24). Youth wins film award. thespectrum.com News Release. Available at thespectrum.com/article/20130824/LIFESTYLE/308240018/Youth-wins-film-award

Morgan, A.V. (2013, May 1). Washington County teen represents Utah at National 4-H Conference. stgeorgeutah.com News Release. Available at stgeorgeutah.com/news/archive/2013/05/01/morgan-washington-county-teen-represents-utah-at-national-4-h-conference/

DeMille, D. (2013, January 13). Southern Utah students head to robot state finals. thespectrum.com News Release. Available at thespectrum.com/article/20130112/NEWS01/301120007/Southern-Utah-students-head-robot-state-finals

Kewish, A. (2012, October 18). Teen gets invite to White House after establishing Robotics 4-H Program. ksl.com News Release. Available at ksl.com/?nid=148&sid=22610202

The Associated Press. (2012, October 9). White House honors St. George teen's 4-H work. abc4.com. ABC 4 News – KTVX News Release. Available at abc4.com/content/news/tech/story/White-House-honors-St-George-teens-4-H-work/G-VPz9Ruv0-GhyZG_AxT6g.cspx

Bryant, A. (2012, August). Technology education in St. George, UT. 4-H.org Revolution of Responsibility Featured Story. Available at 4-h.org/About-4-H/Revolution-of-Responsibility/Stories-of-Responsibility/Technology-Education-in-St--George,-UT/

CERTIFICATIONS

Master Remote Work Leader **2020**
Utah State University Extension

Master Remote Work Professional **2019**
Utah State University Extension

Responsible Conduct of Research (RCR) **2018**
Collaborative Institutional Training Initiative (CITI)

Institutional Review Board (IRB) **2018**
Collaborative Institutional Training Initiative (CITI)

Certified Business Advisor (CBA) **2017**
The University of Toledo, College of Business and Innovation

Raspberry Pi Certified Educator **2016**
Raspberry Pi Foundation

Programming in Scratch **2015**
Harvey Mudd College

Python for Informatics **2014**
University of Michigan

Advanced Power Search **2013**
Google.com

Power Search **2012**
Google.com

EMPLOYEES & MENTORING

Dr. Amanda D. Ali, Data Scientist **2020 - Present**

^**Dolores Heaton**, Program Coordinator II **2020 - Present**

Kaylee Hanks, Staff Assistant II **2020 - Present**

^^**Alison Campbell**, Staff Assistant **2020 - Present**

Diana Escobar, Staff Assistant II	**2020 - Present**
^^**Abbey Bean**, Intern & Staff Assistant	**2019 - Present**
^^**Carter Goff**, Intern	**2019 - 2020**
Russell Goodrich, Program Manager	**2018 - 2021**
Jordan Leonard, Program Coordinator II	**2018 - Present**
^**Michael Sarles**, Program Coordinator II	**2018 - Present**
Trenton Willson, Program Coordinator II	**2018 - Present**
Kenadie Terry, Intern	**2017 – 2018**
***Michael Isom**, Intern	**2017 - 2018**
Becky Newman, Staff Assistant III	**2017 – Present**
^^**Kaleb Esplin**, Intern	**2016 - 2017**
****Andrea Schmutz**, Staff Assistant	**2016 - 2018**
Shelby Condie, Intern & Staff Assistant	**2014 - 2017**
Emy Swadley, Staff Assistant, Staff Assistant II & Program Coordinator III	**2014 - Present**
Laurie Terry, Staff Assistant & Staff Assistant III	**2013 - 2019**
Michael Redmond, Intern	**2013 - 2014**
Nicole Barnson, Intern & Staff Assistant	**2012 - 2015**
Miriam Force, Staff Assistant	**2011 - Present**
Kay Jean Mathews, Staff Assistant	**2011 - 2019**

^ Former 4-H volunteer
^^ Former 4-H member
* Hired as full-time USU Extension employee
** Hired as USU Extension faculty

AWARDS AND HONORS

Distinguished Award (Team), State Winner **2021**
Epsilon Sigma Phi (ESP)

Forty Under Forty, Honoree (Individual), State Winner **2021**
Utah Business Magazine

Diversity Award (Team), State Winner **2021**
Utah Association of Extension 4-H Workers

Diversity Award (Team), State Winner **2021**
Utah Extension Association of Family and Consumer Sciences

Marketing/Public Relations Award (Team), State Winner **2021**
Utah Extension Association of Family and Consumer Sciences

Outstanding Contributor Award (Individual), National Winner National **2021**
Association of Extension Program & Staff Development Professionals (NAEPSDP)

Excellence in Extension (Individual), Region Winner **2020**
Extension Committee on Organization and Policy (ECOP)

Award of Excellence (Team), Region Winner **2020**
Western Extension Directors Association (WEDA)

Innovation and Creativity (Team), National Winner **2020**
National Association of Community Development Extension Professionals (NACDEP)

Next Generation Leader (Individual), State Winner **2020**
Utah Governor's Rural Partnership Board (GRPB)

Administrative Leadership Award (Individual), State Winner **2020**
Iota-Utah Chapter, Epsilon Sigma Phi (ESP)

Outstanding Poster Award (Team), National Winner **2019**
National Association of Extension Program and Staff Development Professionals (NAEPSDP)

Administrative Leadership Award (Individual), Regional Winner **2019**
Epsilon Sigma Phi (ESP)

Excellence in Community Action – Rural Partner of the Year Award (Individual), State Winner **2019**
Community Action Partnership of Utah (CAPU)

County Faculty of the Year Award (Individual), State Winner **2018**
Utah State University, College of Agriculture and Applied Sciences (CAAS)

Denise Miller National 4-H Innovator Award (Individual), State Winner **2017**
Utah Association of Extension 4-H Workers (UAE4-HW)

Distinguished Team Award (Team), State Winner **2017**
Iota-Utah Chapter, Epsilon Sigma Phi (ESP)

Creative Excellence (Team), National Winner **2016**
Joint Council of Extension Professionals (JCEP)
Denise Miller National 4-H Innovator Award (Individual), Regional Winner **2016**
National Association of Extension 4-H Agents (NAE4-HA)

Innovator Award (Individual), State Winner **2015**
Utah State University, College of Agriculture and Applied Sciences (CAAS)

Visionary Leadership Award (Individual), State Winner **2015**
Iota-Utah Chapter, Epsilon Sigma Phi (ESP)

Governor's Medal for Science and Technology (Individual), State Winner **2015**
Governor's Office of Economic Development, State of Utah

Cooperator of the Year (Team), State Winner **2015**
Dixie Conservation District

Achievement in Service Award (Individual), National Winner **2015**
National Association of Extension 4-H Agents (NAE4-HA)

Achievement of Service Award (Individual), State Winner **2015**
Utah Association of Extension 4-H Workers (UAE4-HW)

Early Career Service (Individual), State Winner **2015**
Iota-Utah Chapter, Epsilon Sigma Phi (ESP)

Dean Don Felker Financial Management Award (Team), National Winner **2015**
National Extension Association of Family and Consumer Sciences (NEAFCS)

Dean Don Felker Financial Management Award (Team), Regional Winner **2015**
National Extension Association of Family and Consumer Sciences (NEAFCS)

Dean Don Felker Financial Management Award (Team), State Winner National **2015**
Extension Association of Family and Consumer Sciences (NEAFCS)

Program Promotional Piece (Team), National Winner **2015**
National Association of Extension 4-H Agents (NAE4-HA)

Search for Excellence in Teen Programming (Team), National Winner **2015**
National Association of Extension 4-H Agents (NAE4-HA)

Video Program Award (Individual), Regional Winner **2015**
National Association of Extension 4-H Agents (NAE4-HA)

Program Promotional Piece (Team), Regional Winner **2014**
National Association of County Agricultural Agents (NACAA)

Excellence in Agriculture **2014**
Utah Farm Bureau Federation (UFBF)

Program Promotional Piece (Team), State Winner **2014**
Utah Association of County Agricultural Agents (UACAA)

Excellence in Natural Resources/Environmental Education Specialty Award **2013**
(Team), State Winner
Utah Association of Extension 4-H Workers (UAE4-HW)

Educational Technology Specialty Award (Team), State Winner **2013**
Utah Association of Extension 4-H Workers (UAE4-HW)

Search for Excellence in Livestock Production (Team), National Winner **2012**
National Association of County Agricultural Agents (NACAA)

Graduate Assistantship (Individual) **2010 - 2011**
Southern Utah University, Dixie L. Leavitt School of Business

Academic Scholarship (Individual) **2007 - 2009**
Dixie State University, Udvar-Hazy School of Business

Sunshine Brooks Foundation Academic Scholarship (Individual) **2005 - 2007**
Costco Wholesale Corporation

SERVICE

University Service

Promotion &Tenure Advisory Committees

Dr. Lendel Narine **2019 - Present**
Professional Practice Extension Assistant Professor
Role: Chair

Andreé Walker Bravo **2019 - Present**
Professional Practice Extension Assistant Professor
Role: Chair

Deborah Ivie **2020 - Present**
Extension Assistant Professor
Role: Member

Search Committees

Professional Practice Extension Assistant Professor **2021**
Grand County
Role: Member

Program Manager **2021**
Rural Online Initiative
Role: Chair

Data Scientist **2020**
Rural Online Initiative
Role: Chair

Program Coordinator III **2020**
Rural Online Initiative
Role: Chair

Program Coordinator II **2020**
Rural Online Initiative
Role: Chair

Program Coordinator II (3 positions) **2018**
Rural Online Initiative
Role: Chair

Program Manager **2018**
Rural Online Initiative
Role: Chair

Professional Practice Extension Assistant Professor **2016**
Washington County
Role: Chair

Extension Educator **2015**
Millard County
Role: Member

Other Noteworthy Service

Rural Online Initiative **2018**
Utah State University Extension
Role: Interim Program Manager

Visioning Committee **2015**
Utah State University Extension
Role: Member

Annual Conference Planning Committee **2014**
Utah State University Extension
Role: Member

FastTrack Publications **2012 - Present**
Utah State University Extension
Role: Reviewer

Professional Service

National

Strategy Team **2016 - 2018**
Extension Foundation
Role: Member [Invited]

Technology Outlook for Cooperative Extension 2016-2021 **2016 - 2017**
Extension Foundation
Role: Panel Expert [Invited]

Innovation Task Force Team **2016 - 2017**
Extension Committee on Organization and Policy (ECOP)
Role: Member [Invited]

STEM Education Advisor **2014 - 2017**
National 4-H Council
Role: Member [Invited]

4-H Livestock Portfolio Mobile App Development Team **2013 - 2014**
National 4-H Council
Role: Member [Invited]

National Youth Summit on Robotics Planning Committee **2013 - 2014**
National 4-H Council
Role: Member [Invited]

National Week of Making **2011 - 2013**
White House Office of Science and Technology Policy,
Role: Task Force Member

State

Officer Team **2016 - 2017**
Utah Association of Extension 4-H Workers (UAE4-HW)
Role: Past President

Officer Team **2015 - 2016**
Utah Association of Extension 4-H Workers (UAE4-HW)
Role: President

Officer Team **2014 - 2015**
Utah Association of Extension 4-H Workers (UAE4-HW)
Role: Vice President

Officer Team **2013 - 2014**
Utah Association of Extension 4-H Workers (UAE4-HW)
Role: Secretary

Community

Washington County Area Sector Analysis Process Committee **2018 - 2019**
Western Rural Development Center
Role: Member

Organizing Committee **2017 - Present**
Silicon Slopes St. George Chapter
Role: Member

Economic Development Council **2015 - Present**
Washington County
Role: Member

Organizing Committee **2012 - Present**
Southern Utah Code Camp
Role: Member

PROFESSIONAL ORGANIZATIONS

National Extension Technology Community (NETC)
National Association of Community Development Extension Professionals (NACDEP)
National Association of Extension Program and Staff Development Professionals (NAEPSDP)
National Association of Extension 4-H Agents (NAE4-HA)
Epsilon Sigma Phi (ESP)