MEANINGFUL INTERACTIONS: RESISTANCE TO RESILIENCE-ACCEPTANCE OF AGILE PROJECT MANAGEMENT IN HEALTH CARE

by

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Abstract

The healthcare sector delivers projects with time lags and cost overruns. One of the reasons for poor performance is project complexity. Project complexity is a result of rapid industry changes in technology, regulations, and patient care. A possible solution for handling the complexity of the project is agile project management. Agile project management is a continuous cycle of requirements: plan, design, develop, release, track, and monitor. Current literature supports the success of agile project management in the healthcare industry. However, knowledge of the factors that influence individuals' acceptance or non-acceptance is limited. This quantitative non-experimental, correlational study used a 5-point Likert scale for responses to survey questions to collect quantitative data from experienced project managers in the health care industry, which measured acceptance or non-acceptance of Agile project management as well as the use of meaningful interactions. The population is Project Management Professionals (PMP) living and working in the United States. Survey Participants had a minimum of five years' experience as a health care project manager, experience with agile project management methods, and knowledge about meaningful interactions. The responses were analyzed by conducting binary logistic regression with IBM Statistical Package for the Social Sciences (SPSS) statistics software. Results show that most respondents believed that employee communication was meaningful. Most respondents also accepted and used agile project management. Results indicated that meaningful interactions could take an organization from resistance to resilience in the acceptance and use of agile project management.

Dedication

I dedicate this dissertation to my husband, Steven, daughter, Mandy, and son, DJ, as well as all my family and friends. Their support and encouragement gave me the strength to see this through. They believed in me even when I did not believe in myself. I want to make a special dedication to my mom and stepmom. My mom is in a nursing home suffering from Alzheimer's disease. Though her memories have faded, her fighting spirit, sense of humor, and love still shine through. During this journey, my stepmom lost her hard-fought battle with cancer. She never lost her positive attitude, and she was always there with her love and support. I only hope I am half the person these two women were.

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CHAPTER 1. INTRODUCTION

Research has shown that agile program management correlates to either reducing the complexity of the project or managing complexity (Stoica, Ghilic-Micu, Mircea, & Uscatu, 2016). Stoica et al. (2016) concluded that agile implementation is advantageous for dealing with uncertainty and improving the efficiency of projects. However, there is a lack of research into the factors that influence an individual's decision to accept or not accept agile program management. The purpose of the research is to identify any relationship between the use of agile project management and the use of meaningful interactions in health care organizations in the United States. Waterfall project management is the traditional project management method used. Andrei, CasuPop, Gheorghe, and Boiangiu (2019) described waterfall projects as being split into multiple fixed phases, with each phase requiring the analysis and work from the previous phase. Waterfall project management divides project tasks into stages, starting the next stage only after the previous one is complete (Knutson & Webster, 2014). The waterfall stages can take a long time to complete, and risks are difficult to identify and resolve (Andrei et al., 2019). Waterfall project management works well for some projects, but not all projects. Agile project management is an alternative project management process.

Agile project management applies incremental stages that make risks easier to identify and resolve to help to prevent project failure (Andrei et al., 2019). The agile project consists of small increments called sprints. A sprint is an iteration involving a cross-disciplinary team that includes all elements of a lifecycle: plan, analyze, design, code, test, and implement. Stakeholders are involved in the planning and testing of each increment; deployment occurs

at the end of the increment development. The agile process identifies issues earlier than with waterfall; issues are less likely to become risks (Stoica et al., 2016).

Software development in industries that are not health care has widely accepted agile project management. In health care, safety-critical software and regulatory constraints are some of the reasons for the slow adoption of agile project management (McHugh, McCaffery, & Casey, 2014). Other reasons for the slow adoption of agile project management are organizational culture, resistance to change, a lack of experience with agile, a lack of management support, and project complexity (Ghani & Bello, 2015).

Another reason for the slow adoption of agile project management in health care is that information technology (IT) needs in the health care environment are rapidly changing, and the future is unknown. Changes in health care usually come from the top down and are often a result of regulatory changes. Resistance to change is often the result of a lack of input and support from management. Health care employees must follow regulations regardless of the effects on their job responsibilities (McDermott, Fitzgerald, & Buchanan, 2013).

As more project managers try the agile method, project managers and other stakeholders are beginning to see its value in the ability to manage changes (Stoica et al., 2016). Ghani and Bello (2015) found that almost 90% of project managers who used agile were satisfied with it.

Trust is an essential aspect of successful agile project management. Trust in project management occurs through meaningful interactions. Petrén (2012) explained meaningful interaction using four points. Interactions need to be productive and meaningful; they need to be positive. Meaningful interactions need to be more than a superficial conversation. Interactions can take many forms as long as they are positive and promote group cohesion. No one can

force people to engage in meaningful interaction. Meaningful interactions during the agile project management process promote a change from resistance to resilience (Petrén, 2012).

Acceptance of the agile project management process may play an essential role in the success or failure of HIT projects (Baum & Swig, 2017). Meaningful interactions may lead to acceptance of the agile project management process by more health care organizations, taking the project team from resistance to resilience (Petrén, 2012). HIT project failure can lead to a reduction in profitability and adverse business outcomes (Baum & Swig, 2017). Some problems that result from project failure are the slow adoption of emerging technology, conflicts between functional and IT teams, and low stakeholder satisfaction (Ghani & Bello, 2015). Health care is changing rapidly. Failure to adapt to these changes can lead to loss of revenue, slow technology advances, and a lower level of patient satisfaction. Baum and Swig (2017) showed that 60% of HIT projects were unsuccessful.

Background of the Problem

Health care touches almost everyone in the United States, and this makes the cost of project failure a cost for everyone. Some costs are financial; other costs are related directly to patient care. A survey conducted by Gadison (2016) found that 75% of HIT projects missed deadlines, 55% were over budget, 40% experienced poor communication, and 37% did not meet project requirements. The implementation of HIT is complex and requires collaboration between clinical and non-clinical departments. As HIT project complexity increases, project management processes remain the same (Chiocchio, Rabbat, & Lebel, 2015).

Chowdhury, Butler, and Clarke (2007) described a HIT project that failed while using the waterfall project management method. A health care organization in England implemented an electronic medical records system (Chowdhury et al., 2007). The project failed to provide the expected deliverables (Chowdhury et al., 2007). Two reasons for project failure were the design and deployment of the project (Chowdhury et al., 2007). The goals of the project were to implement an electronic medical records system, make access to medical records available electronically, move from paper to electronic records, and increase satisfaction from patients and providers accessing patient medical information (Chowdhury et al., 2007). Organizational complexity was one reason cited for projects failing because the project plan did not accommodate these complexities (Chowdhury et al., 2007). Each operational department focused only on their environments but failed to account for how these environments connect and need to work together (Chowdhury et al., 2007). Employees resorted back to the former paper way of doing their jobs, causing a significant financial loss that resulted in a freeze on any unnecessary expenditures (Chowdhury et al., 2007).

Research conducted by Abuhejleh, Dulaimi, and Ellahham (2016) determined that agile project management contributed to health care project success. The United Arab Emirates (UAE) initiated a project to improve diagnosis and treatment, patient experience, operational efficiency, and profitability while reducing patient risk (Abuhejleh et al., 2016). The project team used the agile project management system for plan do check act repeat cycles (Abuhejleh et al., 2016). Each cycle led to changes that resulted in a successful project that achieved the desired outcomes listed above. Many modifications to the project requirements need something other than the waterfall method of project management

(Abuhejleh et al., 2016). The study by Abuhejleh et al., 2016 identified multiple changes as a primary reason the project was such a success (Abuhejleh et al., 2016).

The agile project management approach has frequent small deliveries throughout the project (Nicholls, Lewis, & Eschenbach, 2015). Acceptance of agile project management plays a role in the success or failure of IT projects (Cooke, 2014). Cooke (2014) showed a correlation between the use of agile project management and project success. Understanding the relationship between meaningful interaction, agile project management acceptance, and use, and IT project success in the health care industry may improve project success, patient safety and satisfaction, and sustainability of hospitals (Cooke, 2014). Large projects often run over budget and beyond schedule (Cooke, 2014). Research has identified challenges in complex projects are not usually from technical issues but are more often from managerial issues (Rezvani et al., 2016).

Statement of the Problem

Due to its huge increase in popularity, agile project management has emerged as an active research field (Lee & Chen, 2019). The distinctions between Agile and traditional management methods include using radically different processes, organizational frameworks, and individuals (Lee & Chen, 2019). The problem, however, is that the underlying factors that provoke the intention of organizations to adopt Agile are not well known or well explained in the existing literature. The benefits of agile project management and the adoption of agile project management in HIT was the focus of this research. Research by Madampe (2017), Carilli (2013), and Tew (2012) discussed the benefits of communication and meaningful interactions when adopting agile. Azanha, Argoud, Camargo, and Antoniolli (2017) verified that the benefits

of agile project management have led to the organizational adoption of the agile project management process. Agile project management allows companies to respond quickly to change, allowing flexibility in rapidly changing environments. Planning is the first stage of the waterfall project management method, which makes it difficult to respond quickly to change. The further the team gets into the project using the waterfall method, the more complicated and expensive the changes become (Azanha et al., 2017).

Purpose of the Study

The purpose of this quantitative non-experimental, correlational study is to explore whether there is a relationship between interactions among team members and the acceptance, use, and resistance of Agile project management in the health care industry. The population surveyed is a health care IT professionals with a background and understanding of agile project management and interactions among team members. The factors that influence an individual's decision to accept or not accept Agile is the stated problem. Thus, this study investigated the relationships between interactions among team members, the independent variable, and agile adoption, the dependent variable. This research used a binary logistic regression statistical test to determine the relationship between the variables. Binary logistic regression is a nonparametric test that measures the association between a dichotomous dependent variable and an independent variable. Survey participants answered questions with a 5-point Likert scale. The independent variable, interactions among team members, is used to identify if there is a statistically significant effect on the dependent variable, the acceptance or non-acceptance of agile project management.

The topic of this study explored the acceptance and use of agile project management and HIT project success. This study built upon the existing body of knowledge as it relates to agile project management adoption. The independent variable was interaction among team members. The researcher asked participants if they used meaningful interactions and measured the responses with a 5-point Likert scale. The dependent variable also used a 5 point Likert scale and measured the acceptance and use of agile project management. The Likert scale was as follows: 5-strongly agree, 4-agree, 3-neutral, 2-disagree, and 1-strongly disagree. Further questions in the study were about the acceptance or resistance of agile project management. Resistance or resilience using agile project management determined a correlation between interactions among team members and a willingness to use agile project management (Petrén, 2012).

Theoretical Framework

This research employed the Theory of Planned Behavior (TPB) as the theoretical framework. Fisbein and Ajzen originally proposed the TPB in 1980 (Martin, 2017). Ajzen then developed the theory in 1985 (Martin, 2017). According to the TPB, beliefs, behaviors, attitudes, subjective norms, normative beliefs, and perceived behavior control are all constructs that together shape an individual's behavioral intentions and behavior (Martin, 2017). Attitude towards behavior is a decision on whether an action is beneficial to the person or harmful to them. The theory of normative beliefs suggests that expectations from the superior of an individual can exert a similar influence. Lastly, perceived behavior controls suggest that the personal perception of an individual about the effectiveness of agile project management can also have an impact, along with the degree of commitment of an individual. Together these structures form the behavioral expectations and actions of a person (Martin, 2017).

Various researchers have used the TPB widely to recognize individuals' plans to use or refuse to use specific technology in the healthcare industry (Martin, 2017). The model's primary elements are the behavioral belief (attitude) of the person that determines the likelihood that the said behavior will produce an expected result (Martin, 2017). The normative beliefs (social norm) are the standard expectation of others and how the individual conforms to that expectation, while control beliefs (perceived behavioral control) reflects a person's beliefs about their ability to engage in the behavior (Martin, 2017).

The theory of planned behavior (TPB) and an integrated model explained individual physicians' technology acceptance decisions of telemedicine technology (Chau & Hu, 2002). In another study, the Theory of Planned Behavior results in the amalgamation of Hospital Administration Management System Technology (HAMT) (Seth, Coffie, Richard & Adu-Yeboah, 2019). The results of the study fascinatingly demonstrate the significant factors of HAMT adoption and the impact of each delineated element. The outcomes established that the majority of health workers will adopt HAMT base on their Perceived Usefulness, Perceived Ease of Use, Attitude, Subjective Norms, and Subjective (Seth et al., 2019). Guo, Berkshire, Fulton, and Hermanson (2017) applied the theory of planned behavior (TPB) and structural equation modeling (SEM) to predict intention to use evidence based management EBMgt among U.S. healthcare administrators. Guo et al. findings showed that healthcare administrators' intention to use EBMgt was statistically and significantly predicted by their attitudes and perceived behavioral control.

This current study will determine if TPB can determine the relationship of interactions among team members and the adoption of Agile project management. The independent variable,

interactions among team members, is used to identify if there is a statistically significant effect on the dependent variable, the acceptance, and the use of agile project management.

Significance of the Study

The significance of the study is that it would narrow the gap in the literature about the relationship between the adoption of agile project management and interactions among team members. Once these relationships are better known, this would lead to more efficient project management and outcomes. Additionally, using agile project management may lead to a lower rate of project failure. Fewer than 2.5% of HIT projects succeed. HIT project failure can lead to a reduction in income and adverse business outcomes. Project managers and project teams for HIT do not often accept the use of the agile project management method even though it improves project success (Cooke, 2014). A study on the use of agile project management for disaster recovery identified resistance to the acceptance and use of agile project management as a reason for project failure (Baham, Hirschheim, Calderon, & Kisekka, 2017). Poosanam (2018) found that the reason for the resistance to agile project management is mostly unknown. Health care shows that resistance is to all types of change and nonspecific to agile adoption. Poosanam (2018) identified a lack of guidance and training as contributing factors to the resistance of agile project management.

Research Question

RQ. To what extent is there a relationship between interactions among team members and the acceptance, use, and resistance of agile project management in the health care industry?

Hypotheses

H1$_0$. There is no significant relationship between interactions among team members and the acceptance, use, and resistance of Agile project management in the health care industry

H1$_a$. There is a significant relationship between interactions among team members and the acceptance, use, and resistance of Agile project management in the health care industry.

Definition of Terms

Acceptance of agile project management. Gelperin (2008) identified agile acceptance as policies, processes, and procedures that increased productivity.

Agile Project Management. Agile project management is a project management approach that manages and adapts to change quickly, minimizes upfront planning, stressing adaptability instead of changing conditions. Agile project management is a continuous cycle of identifying requirements, plan, and design, develop, release, and monitor (Augustine, Payne, Sencindiver, & Woodcock, 2002).

Demographic variables. The general population was Project Management Professional (PMP) certified HIT project managers in the United States with at least five years of on the job experience.

Health care information technology (HIT). HIT supports technology and computer systems in the health care industry (Chowdhury et al., 2007).

Meaningful interactions. Meaningful interactions have four qualities. Meaningful interactions need to be positive. Meaningful interactions need to be more than a superficial conversation. Interaction can take many forms as long as they are positive and promote group cohesion. Meaningful interaction is voluntary, not forced. Meaningful interactions during the

agile project management process promote a change from resistance to resilience (Dankulov, Melnik, & Tadić, (2015). Interactions among team members were the independent variable of this study. A 5-point Likert scale is the interval level of measurement.

Participant characteristics. People working in a health care organization in the United States were the target population Participants have tried, are using, or are considering the implementation of agile project management methods. Potential participants were excluded if they were not working in a health care organization outside the United States, were not PMP certified, or lacked a minimum of 5 years' experience working as a health care IT project manager.

Project failure. Project failure is not meeting the project cost, scope, or schedule (Braun, 2016).

Resistance to Agile Project management. Resistance to agile project management is the unwillingness to use agile project management regardless of it is proven effectiveness towards project success (Poosanam, & Kelsey-Jenkins, 2018).

System Development Methodology (SDM). SDM is an industry-standard approach to project management that includes seven phases. The seven phases of SDM are planning, system analysis and requirements, system design, development, integration & testing, implementation, and operations & maintenance.

Use of agile project management. Gelperin (2008) identified agile acceptance as policies, processes, and procedures that increased productivity

Research Design

For this study, the quantitative correlational design is a no manipulative way of identifying relationships between variables. The use of a correlational quantitative research design means the research is no experimental, where the researcher intends to measure variables and assess the statistical relationship between them while excluding any influence from unrelated variables (Geddes, 2003; Rovai & Jordan, 2004; Schenker & Rumrill, 2004). The analyzed data assists the researcher with verifying if there is statistically significant evidence supporting a relationship between the variables of interest.

According to Curtis, Comiskey, and Dempsey (2016), a correlational research design is a tool that allows researchers to assess the relationships between variables in the setting where variables can be measured numerically. One significant advantage of utilizing a correlational study is that the researcher can explore the magnitude of the aforementioned statistical relationships between variables in addition to whether they are related or not (Babbie, 2013). This research methodology will apply statistical data to determine the relationship between acceptance and use of agile project management and Interactions among team members in the health care industry.

Assumptions and Limitations

Assumption

Assumptions describe factors that are outside of the researcher's control. These assumptions allow investigation of a problem (Simon, 2011). Leedy and Ormrod (2010) indicated that without assumptions, the research problem could not exist (p. 62). Some assumptions made during this study are; first, the participants for this project responded

truthfully, instead of attempting to present a level of privacy and security, not corresponding with reality. Second, the data used were current and still relevant to the healthcare facility. Third, the data was representative and detailed enough to serve the purpose of the project. Fourth, the participants in the anonymous assessment took ownership of the data they provided to increase the accuracy, validity, and reliability of the data.

Limitations

This research project involved only project managers employed at a healthcare facility and obligated to maintain the confidentiality, integrity, and availability of sensitive and confidential information regarding patients. Being limited to one specific region limits the generalizability to the greater population of project managers in the healthcare industry in the United States. Another significant limitation of the project was nonresponses. Some participants may have declined to respond out of concern for organizational policies and regulatory requirements.

The anonymity of the survey prohibits participants from revealing information that may lead to a conflict of interest or jeopardize the participant's employment status. A limitation to an anonymous instrument is that answers from the participants are less specific and lack follow up detail, and clarification of information provided in in-depth, qualitative studies (Vanzant-Stern, 2016).

Additionally, a small sample size may be an issue. The sample size was 100 HIT project managers, which is small concerning the vast number of HIT project managers. Lastly, another limitation was time. This research is a requirement for a doctoral degree, which limits the amount of time available to conduct in-depth research.

Organization for the Remainder of the Study

Chapter 1 introduces the research problem. Discusses the background of the problem and states the research questions. Chapter 2 is a literature review. A literature review is an in-depth discussion of previous research on the topic of this research. It includes a synthesis of the research findings and a critique of previous research. Chapter 3 discusses the methodology, purpose, and design of the research. Chapter 3 also includes an explanation of the data collection process. Chapter 4 contains the results of the questionnaire with a descriptive analysis of the survey results. Chapter 5 is the conclusion. It provides an evaluation of the research question and primary findings. Chapter 5 also includes the fulfillment of the research purpose and recommendations for future research.

CHAPTER 2. LITERATURE REVIEW

Introduction

The topic of this quantitative non-experimental research study is the acceptance and use of agile project management in a health care setting and if meaningful interactions impact that acceptance and use. This literature review will discuss the purpose of the study and the method of searching. It goes on to define the theoretical framework that leads to the review of the literature. The topics included in this literature review are agile project management, agile project management in health care, agile adoption, agile resistance, agile acceptance, and meaningful interactions. Professional journals from the project management and health care industry were the primary sources of information. Some of the searches used to find literature for this dissertation are agile project management, agile in health care, and meaningful interactions.

This chapter begins with the topic of general project management, IT, project management, and health care project management (Aubry, Richer, & Lavoie-Tremblay, 2014). The next topics include agile, agile in health care, and agile adoption (Aubry et al., 2014). A discussion of meaningful interactions, project success, and project failure are the last sections (Aubry et al., 2014). Professional journals from the project management and health care industry were the primary sources of information (Aubry et al., 2014). Some of the searches were IT projects, project management, agile, agile in health care, meaningful interactions, and project failure (Aubry et al., 2014).

Methods of Searching

Most of the information used in the literature review was within the years 2014-2019. Summon is a search tool that encompasses the entire Capella library collection. The databases

accessed were *ABI/INFORM Collection, eBooks on EBSCOhost, ProQuest Central*, and *SAGE Research Methods*. Boolean (AND, OR, or NOT) search strategies located information on agile project management, meaningful interactions, and HIT. The Boolean searches used but not limited to were (agile project management AND meaningful interactions), (agile project management AND health care), (resistance AND agile project management), and (resilience AND agile project management). Inclusion criteria were peer-reviewed articles dated between 2015 and 2019. The number of articles reviewed was 294; approximately 60 had the information needed. Excluded were articles that did not relate to health care, doctors' offices, hospitals, clinics, or other health care settings. Also excluded were articles about the use of waterfall project management in health care.

Theoretical Perspective of the Study

The main theoretical framework is System Development Methodology (SDM). This mythology has seven phases that are consistent with project management phases. A search of SDM identified many researchers that used this theoretical perspective. Innovating Information System Development Methodologies with Design Thinking (Silvius, Schipper, & Planko, 2017) was one of many. This paper is particularly relevant because it is about integrating agile and waterfall project management. This theoretical framework supports the investigation of the topic of this research, the acceptance and use of agile project management. Gelperin (2008) identified agile acceptance as policies, processes, and procedures that increased productivity. The acceptance of agile often encounters resistance. Overcoming resistance to agile acceptance is a concern in the field of IS research. The theoretical framework states that there is resistance to

agile. SDM assumes that customers do not know their requirements, but developers do. Agile assumes that both the customer and the developers know what they want (Gelperin, 2008).

Meaningful interactions can aid in the acceptance of agile. This research identifies the effect of meaningful interactions on the acceptance and use of agile project management. The theoretical framework of system development methodology identifies an industry-standard approach to project management. Research identifies the effect of meaningful interactions on the acceptance and use of agile project management. Theoretical framework system development methodology identifies an industry-standard approach to project management.

The theoretical framework also contends that meaningful interactions can increase the acceptance and use of agile project management (Kaplan & Harris-Salamone, 2009). While many studies examined agile project management, this research focuses on the health care industry. The acceptance and use of agile project management affect the success or failure of HIT projects. The state of health care makes it very difficult for hospitals to stay current with HIT. Mastering and using meaningful interactions, agile project management can improve the success rate of HIT projects, thereby improving the bottom line (Kaplan & Harris-Salamone, 2009).

Main Theoretical Framework

The theoretical framework of this study is the System Development Methodology (SDM). There are seven phases for this industry-standard approach to project management. Planning, system analysis & requirements, system design, development, integration & testing, implementation, and operations & maintenance are the seven phases. The independent variable, meaningful interactions, is used to identify if there is a statistically

significant effect on the dependent variable, the acceptance, and the use of agile project management.

Complementary Theoretical Framework

The diffusion of innovations theory (DOI) sees innovations as being communicated through specific channels over time and within a particular social system. Individuals possess different degrees of willingness to adopt innovations. Breaking this normal distribution into segments leads to the segregation of individuals into the following five categories of individual innovativeness (from earliest to latest adopters): innovators, early adopters, early majority, late majority, laggards. There are distinguishing characteristics of each group of individuals. Innovators are venturesome; early adopters are typically social leaders; the early majority are deliberate in their actions; the late majority are usually skeptical, laggards fear change.

When the adoption curve converts to a cumulative percent curve, a characteristic S curve gets generated that represents the rate of adoption of the innovation within the population (Pedersen, 2013). Five factors: relative advantage, compatibility, trialability, observability, and complexity impact the rate of adoption innovation (Pedersen, 2013). The first four factors are generally positively correlated with the rate of adoption, while the last factor, complexity, is generally negatively correlated with the rate of adoption (Pedersen, 2013). The rate at which innovation takes off and the rate of later growth are the actual rate of adoption. Low-cost innovations may have a rapid takeoff, while innovations whose value increases with widespread adoption may have faster late-stage growth; Additional items also impact innovation adoption rates. For instance, the adaptation of technology to individual needs can change the nature of

innovation over time. Also, innovation can impact the adoption rate of existing innovation, and path dependence may lock potentially inferior technologies in place.

Contrasting Theoretical Framework

Information Processing Theory (IPT) identifies three essential concepts: information processing needs, information processing capability, and the fit between the two to obtain optimal performance. Organizations need quality information to cope with environmental uncertainty and improve their decision making. Environmental uncertainty stems from the complexity of the environment or the frequency of changes to the environment. Typically, organizations have two strategies to cope with uncertainty and increased information needs. They develop buffers to reduce the effect of uncertainty, and they implement information processing capability to enhance the information flow and reduce uncertainty.

Review of the Literature

A review of the literature will be organized first with the independent variable meaningful interactions. Presented in this chapter is the dependent variable, acceptance, and use of agile project management. There are four agile topics: agile project management, agile project management in health care, agile acceptance, and agile resistance. Professional journals from the project management and health care industry were the primary sources of information.

Meaningful Interactions

Dankulov et al. (2015) stated that the process of knowledge creation requires meaningful, logically coordinated interactions. For interaction to be effective in improving community relationships, it needs to be positive. Negative interactions that involve arguments or unpleasant experiences do not build community cohesion. For interactions to be meaningful, they also need

to go beyond a superficial level and be sustained (Dankulov et al., 2015). The Commission on Integration and Cohesion report said meaningful interaction was when conversations go beyond surface friendliness; people exchange personal information, share a common goal, or share an interest and are supported long term (Aubry et al., 2014).

The benefits of meaningful interaction are well documented and appear evident about increased levels of psychological health, assessed by various measures of happiness and emotional wellbeing, and increased physical health, such as lower blood pressure. Evidence shows that meaningful interaction between people of different backgrounds is explicitly beneficial, stemming from its potential to increase understanding and reduce prejudice (Dankulov et al., 2015). Meaningful interaction can help build trust between people and increase resilience in communities (Aubry et al., 2014). The decreased sense of anxiety during periods of change or upheaval and a better sense of belonging increase the benefits of meaningful interaction. Participating in meaningful interactions increased levels of comfort and confidence in talking to/working with other people, increasing the opportunity to acquire and develop new skills that may aid job seeking and widen career options, and improved preparedness for the workplace regarding dealing with diversity and encountering racism (Dankulov et al., 2015).

A wide range of public places is suitable for hosting meaningful interaction. Institutional settings can also be useful contexts for meaningful interaction (Dankulov et al., 2015). Active listening, facilitation of discussion, and conflict/tension management are skills that require both practice and training. Identity should not be the basis for interaction; instead, it should build on what people have in common, taking a subtle approach to bringing people together rather than *selling* interaction or defining initiatives by their target audience, which can involve labeling

people. Interactions should emerge out of shared, sustained interests (Dankulov et al., 2015). Recognizing the interdependence of different services is critical for meaningful interactions to occur. Conclusions based on a systematic review of the evidence show that meaningful interaction helps to build an understanding and trust between people of different backgrounds. An increase in understanding and trust reduces discrimination and levels of resentment toward others while increasing equality of opportunity in social and economic life, and levels of satisfaction (Dankulov et al., 2015).

Interactions considered meaningful have shown an advancement of knowledge among the participants. Meaningful interactions lead to innovation, collaboration, and cooperation. Meaningful interactions with other people have shown to improve psychological health and emotional wellbeing and improve physical health, such as lowering blood pressure. Meaningful interactions with people from different backgrounds have shown to reduce prejudices, increase trust, reduce discrimination, and increase polite behavior. These benefits have shown a decrease in anxiety during times of high anxiety and change. Research has identified that meaningful interaction improved communication, fostering an appreciation for differing views, increased comfort and confidence when working with other people, increased development of new skills, improved workplace performance, and welcomed diversity (Dankulov et al., 2015). Project managers can use leadership tools to encourage and develop meaningful interactions among the project team members. This research reviewed how meaningful interactions can create good team member relations; reduce stress; and develop more specific roles, creativity, and joy at the workplace (Dankulov et al., 2015).

Project Management

According to Seymour and Hussein (2014), "Project management, at its core, is concerned with creating an environment in which people can work together to achieve a mutual objective" (p. 232). Successful projects of considerable size throughout time, from the pyramids of Giza to the Great Wall of China, have been completed. Someone had to plan, execute, and monitor these projects that must have spanned many years. Project management would have benefited from the documentation of these completed projects.

In the 1950s, researchers began to use and document standard tools and techniques. This standardization was the beginning of formal project management (Seymour & Hussein, 2014). The 1960s led to further advancements in the project management process. The 1970s were the beginning of the technological era, which brought with it its project management software. As computers advanced in the 1980s, project management also advanced (Seymour & Hussein, 2014).

The Project Management Institute's definition of a project is an activity that has an end date and is used to produce something unique to an organization. Henri Foyol and Henry Gantt are often considered the founders of modern project management. Henri Fayol (1841-1925) was an engineer for the largest iron and steel company in France. Fayol believed every manager performed five functions daily: planning, organizing, commanding, coordinating, and controlling. Henry Gantt (1861-1919) was an engineer and management consultant from the United States. Gantt recognized the importance of dividing projects into smaller tasks and

showing how the tasks interact. The building of the Hoover Dam was the first project recognized as using the benefits of a Gantt chart (Seymour & Hussein, 2014).

Seymour and Hussein (2014) identified four critical periods of development of project management as we know it is the 2020's: before 1958, 1958-1979, 1980-1994, and 1995 to present. Period one introduced Fayol's five functions of; planning, organizing, commanding, coordinating, and controlling and Gantt's breakdown of projects into small manageable tasks. The second period (1958-1979) saw the development of technology, the project management tools PERT and CPM. Such tools were the start of a work breakdown structure (WBS). Period three was between 1980 and 1994. This era watched the development of personal computers and project management software. The first introduction of the agile project management method and publishing of the first *PMBOK* occurred in the period between 1980 and 1994. The PMI published the *PMBOK* sixth edition in 2018. Era four, 1995 to the present, brought critical chain project management, the A*gile Manifesto*, and recognition of the *PMBOK* as the industry standard (Seymour & Hussein, 2014).

Sustainability in project management refers to accountability in economics, environment, socially, ethics, fairness, and equality. Pedersen (2013) investigated the success rate for IT projects. Successful projects require the use of a project management method such as agile or waterfall (Pedersen, 2013). The larger the project, the more critical formal project management becomes. The Pedersen study asked project managers what methodologies they use to improve the chances of project success. The research identified a correlation between a lack of project management and project failure (Silvius et al., 2017). The research also examined agile and

waterfall methodologies to determine if one was more successful than the other. The results identified significant differences between effective communication, user involvement, and quality planning between agile and waterfall (Davis, 2012). Tests showed a correlation between project success and effective communication, user involvement, and the use of a quality plan in the agile project management method (Silvius et al., 2017). Using the waterfall method has the same correlation (Pedersen, 2013).

Pedersen (2013) compared the benefits of using agile instead of the waterfall method in IT projects. The research showed that benefits gained from using agile were better communication, more user involvement, and a successful project plan (Pedersen, 2013). Project success relies heavily on open communication and trust among the project manager, project team, and other stakeholders (Mallet, 2014). This study used the emotional competence inventory to identify the impact a project manager′s emotional intelligence has on a project (Bates, 2013).

Agile Project Management

Agile project management is a style of project management that focuses on the early delivery of business value, continuous improvement of the project's product and processes, scope flexibility, team input, and delivering well-tested products that reflect customer needs (Layton & Ostermiller, 2017). The agile approach to projects starts with the expectation that the requirements (or features) will evolve and change during the project (Tripp, Saltz, & Turk, 2018). The project team and the customer agree on the resources used and the time needed to deliver as much as possible of the prioritized features (Pedersen, 2013). Individuals and interactions in agile development, self-organization, and motivation are essential (Tripp et al.,

2018). Responding to change in agile development focuses on quick responses, continuous development, and harnessing change for the customer's competitive advantage (Tripp et al., 2018).

The *Agile Manifesto* endorses the use of modeling and embraces documentation. The *Agile Manifesto* promotes the benefits of frequent and substantial stakeholder communication, which is also an essential element of meaningful interactions (Woo & Reeves, 2007). Planning is necessary but limited by rapidly changing environments. The purpose of the A*gile Manifesto* is to develop a better process in software development. Agile relates strongly to the importance of meaningful interactions by valuing people over processes to break through resistance toward acceptance. A working piece of software is more important than extensive documentation; collaboration more important than contract negotiation, and responding to change takes priority over just following a plan. Planning, documentation, processes, and tools are essential but are not always the most important (Denning, 2015).

The highest priority of the *Agile Manifesto* is customer satisfaction through the delivery of software products. Addressing requirements occurs in all stages of software development from start to finish. Agile software development gives the customer a competitive advantage by delivering frequent software releases. Developers and the clients meet daily, preferably face to face, to check on progress and make identified adjustments (Jackson, 2012).

The Agile Manifesto welcomes changing requirements even late in the development process—frequent delivery of working software, from every couple of weeks to every couple of months. A measure of progress with the delivery of working software is the first measure of progress. Sustainable development gives sponsors, developers, and users a constant reference.

Motivated individuals receive the support they need and trust to get the job done. A face to face conversation is the most effective method of conveying information to a development team. Professional excellence occurs through continuous attention to technical excellence and sound design. Self-organizing teams produce high-quality requirements and designs (Pedersen, 2013). Regular adaptation of the team reflects on how to become more productive and adjusts its behavior accordingly (Tripp et al., 2018).

Pedersen (2013) compared the benefits of using agile instead of the waterfall method in IT projects. The research showed that benefits gained from using agile were better communication, more user involvement, and a successful project (Pedersen, 2013). Project success relies heavily on open communication and trust among the project manager, project team, and other stakeholders (Mallet, 2014).

The introduction of agile happened about 15 years ago; many organizations have stated that they have adopted agile because they recognized the benefits of agile principles and methods. Research does not support this level of adoption. Tripp et al. (2018) found that the use of agile is low. How, who, where, and when to adopt and implement agile can cause an organization to delay adoption (Tripp et al., 2018).

The agile project management methodology defines processes, tools, techniques, methods, resources, and procedures used to manage a project to a successful end (Rasnacis & Berzisa, 2015). Cooke (2014) explains how an agile approach can increase productivity, quality, and customer satisfaction. Gelperin (2008) described the features of agile methodology as quickly embracing and responding to change, learning from mistakes made in one phase and adjusting in the next phase, and frequent stakeholder interactions.

Agile is not without challenges. Agile continues to evolve (Gelperin, 2008), and making changes in each new phase of an agile project can be considered challenging. Agile organizations are different from traditional organizations. Agile managers must make changes rapidly and often. Agile uses technology as a tool for change, not the reason for the change, which can be challenging. Agile emphasizes the importance of teams over individuals, interpersonal interactions over processes and tools, customer collaboration over contract negations, and initiating change over responding to change (Denning, 2015).

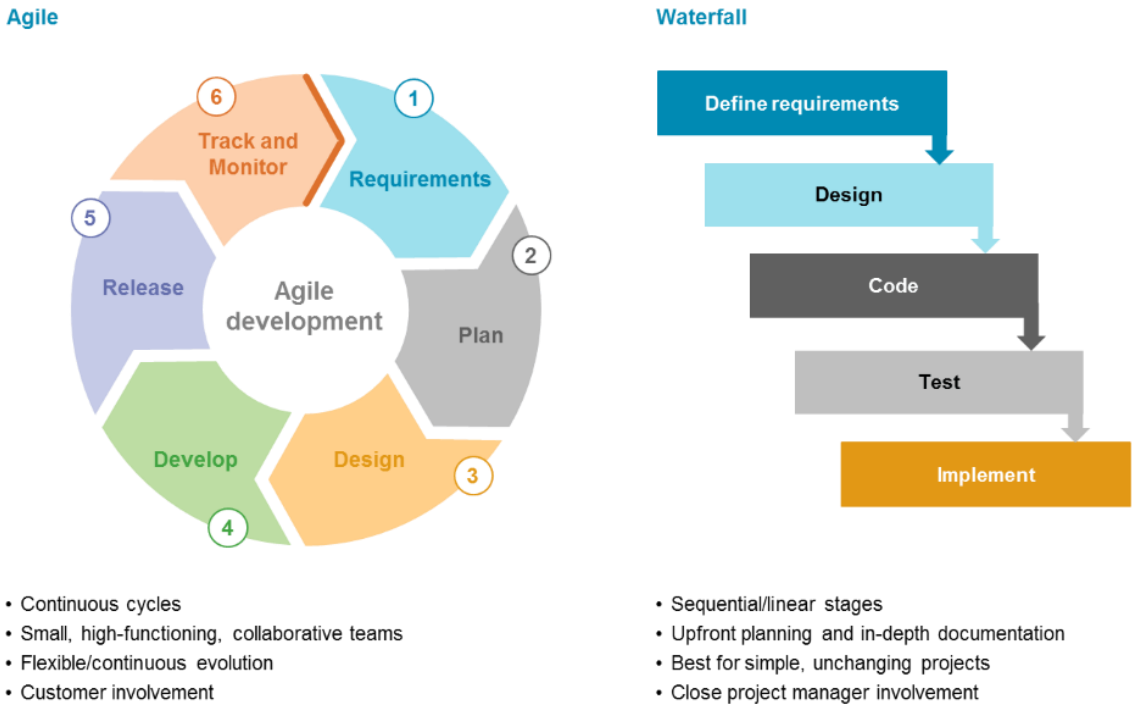

Figure 1. Waterfall and Agile Project Management Processes

Figure one shows and the differences between them. The waterfall model of project management requires substantial upfront planning. Changes in the project plan become more difficult as the project progresses. Waterfall follows a sequence with one stage starting as the previous stage finishes. Agile is a continuous cycle of requirements, analysis, testing, and

evaluation until the project is complete. Each cycle produces a functional model to test and evaluate for changes needed. The changes are needed to begin the next cycle of requirements, analysis, testing, and evaluation. The cycle of requirements, analysis, testing, and evaluation continues until no more changes are needed. Agile identifies the required changes early in the project, making it easier to address them, unlike the waterfall method, which identifies changes later in the process, making it much more difficult to address (Jackson, 2012).

Agile Project Management in Health Care

Agile is an alternative approach to project management (Williams, 2017). Williams (2017) investigated the benefits of using agile in a health care setting. Efficiency improved with the use of agile project management (Davis, 2012). Uncertainty and unpredictability plague the current health care environment. Health care organizations are becoming more proactive and less reactive, more transparent, customer-focused, responsive, and flexible by using the agile methodology (Nicholls et al., 2015). Agile aids in the development of an environment that leads to the creation of proper patient management (Tolf, Nyström, Tishelman, Brommels, & Hansson, 2015).

Agile is a software development tool used for project management systems. The unique needs of health care IT projects can also benefit from this flexible, adaptable system that accommodates change rapidly (Nicholls et al., 2015). Agile is well suited to accommodate the unique needs of complex health care environments (Kitzmiller, Hunt, & Sproat, 2006).

Chowdhury et al. (2007) investigated some issues related to how the design and deployment of the project resulted in project failure. Chowdhury et al. (2007) discussed the possibility that project failure may be a direct result of the project approach used. Walter and De

La Robertie (2017) investigated ways to improve the success rate of HIT projects. HIT has unique requirements that include patient safety, financial constraints, and strict regulations (Walter & De La Robertie, 2017).

The U.S. government is trying to improve health care, reduce health care costs, and make health care available to all Americans. HIT has improved the health care industry (Chowdhury et al., 2007). Some issues leading to health care changes are the relationship between a HIT and organizational effectiveness, exchange of information, organizational process, and organizational productivity (Ukaga, 2015). These issues can be helped with the benefits of consistent communication, enforcing workplace policies, communication techniques between managers and employees, and resistance to change (Schenck, 2017). The quality of health care has been improving locally and globally, but communication and collaboration still need improvement (Braun, 2016).

Project management in a health care setting has unique needs to achieve project success. A health care setting must meet regulatory requirements, provide patient safety, and adhere to stringent budgets (Aubry et al., 2014). To meet these requirements, the skills of the project manager should include knowledge of the health care environment. A failed project could have grave consequences from receiving a fine to the death of a patient (Ukaga, 2015). A project manager in a health care setting requires behavioral, interpersonal, and technical skills (Tabernik, 2008).

The successful acceptance and use of agile promote operational, organizational, technical, managerial, legal, and social benefits in HIS. This study looks at areas of technical, functionality, usability, and care quality provided by HIS (Tabernik, 2008). This research has

explored the nature and type of failures that impact healthcare organizations. There is a struggle between usability and security. The nature and types of usability failures were user failures, confidentiality, and integrity. Healthcare projects often require IT innovation to bridge gaps in productivity. Walter and De La Robertie (2017) found that IT innovation had a positive influence on the outcome of healthcare projects. This positive influence is an essential strategy for improving the success of IT projects in healthcare (Walter & De La Robertie, 2017). Studies have shown the positive impact IT had on the quality of healthcare services but showed that IT did not have a significant impact on patient safety or process efficiencies.

Healthcare organizations have a high demand for technology-based healthcare services. IT is a center stage in the operations and management of healthcare organizations. IT requirements come from visions, values, and beliefs of organizations (Mallet, 2014). Healthcare information systems are necessary for the effective and efficient delivery of health care and patient care. Information systems impact many aspects of health care, including structure, economics, and performance. This study looks at the reasons for the success and failure of these projects. HIS includes social, legal, ethical, and economical IT applications (Armoni, 1999).

Project management considerations are scheduling time and costs, cost analysis, possible project delays; budget preparation; work breakdown structure, and overhead. A project management schedule involves tasks, milestones, and deliverables with start and completion dates (Baum & Swig, 2017). Projects are essential for the improvement of healthcare organizations, but health care professionals lack project management training. An overview of the project management process can result in individual and satisfaction, and improvements in

task work and teamwork increased clarity of expectations and coordination (Chiocchio et al., 2015).

A Chowdhury, Butler, and Clarke (2007) study investigated issues related to the design and deployment of projects that resulted in project failure. The findings identify that failure was a direct result of the approach taken to the management of the project (Chowdhury et al., 2007). Information technology brings quality care and savings to the healthcare industry. Research by Kaplan and Harris-Salamone (2009) found that most HIT projects fail in some way. Often, a lack of communication is one reason for failure. Technology complexities, regulatory requirements, policy requirements, and social, cultural, and financial issues are other reasons attributed to failure (Kaplan & Harris-Salamone, 2009).

Agile Acceptance

Agile started as a software development tool. Over time, organizations have seen the benefits of agile go beyond software development. Projects that have a high level of uncertainty require shorter delivery times and require innovation can benefit from the agile method. Organizations using agile have moved away from scope, schedule, and cost as indicators of project status (Davis, 2012). Agile organizations use-value, quality, and constraints as measurements of project progress (Jackson, 2012).

Ghani and Bello (2015) defined agile as iterative, incremental, and collaborative. Barriers exist to the adoption of agile. Organizational culture was considered the primary reason for not adopting agile. General resistance to change was second (Davis, 2012). A lack of knowledge and experience in the agile methodology is another barrier (Ghani & Bello, 2015). Organizations that have embraced the agile methodology of project management have found an increase in

satisfaction from managers, developers, and customers (Davis, 2012). The barriers often outweigh the advantages (Ghani & Bello, 2015).

Nicholls et al. (2015) cited a decade of assumptions that better planning leads to better outcomes. An agile approach can be successful if the scope is poorly defined, resource availability is uncertain, or the organization is experiencing ongoing change. Agile makes changes easier throughout the project. Changes in the waterfall method are more natural at the beginning of the project but can be difficult and costly later in the process. Identified reasons for not adopting an agile methodology are a lack of knowledge about the agile process and a concern that the project will take longer. The benefits of agile increase visibility of project performance, accountability for task assignments, more team involvement, and interaction. The agile methodology produces quick results throughout the project process because the deliverables are divided into smaller tasks making it quicker to see results (Ghani & Bello, 2015). The lack of understanding of agile and its benefits often leads to the exclusion of the agile methodology as an option (Nicholls et al., 2015). The agile project management method supports business, informational, and technological concerns (Rasnacis & Berzisa, 2015).

Agile Resistance

Resistance to the acceptance and use of agile project management begins with any change. Reasons for resistance to change can be a lack of leadership, poor communications, and a lack of training (Poosanam, 2018). Ghani & Bello (2015) found that resistance to change is vital. Agile resistance improves by creating successful teams through better communication, effective problem solving, and stress management (Ghani & Bello, 2015).

Resilience is to adjust quickly to change. Cohen (2018) defined resilience as a class of phenomena characterized by good outcomes despite several threats to the adaptation of development. Rutter (1987), a psychiatric risk researcher, stated that the term resilience describes a positive tone of individual differences in people's responses to stress and adversity. The measurement of resilience included the same survey questions as resistance. The answers determined whether the project team was experiencing resistance or resilience.

Synthesis of Research Findings

Clearly defined goals and objectives are critical to understanding a project (Glaser, 2004). For example, for an EHR implementation, a reasonable goal is to have X number of providers using the system by Y date (Glaser, 2004). Another goal would be to eliminate X number of paper charts by a specific date (Glaser, 2004). Objectives change during the project: many times, a health care practice will substantially change the structure in the middle of an IT project, and not re-scope the IT project accordingly. Changes may align themselves with a new hospital or clinic or add an entirely new line of medical services (Glaser, 2004).

A project has three organizational groups: champions, who are fully committed to the project's success; those who oppose the change; and those who are unsure. In medical practice, those in the third group see the possibility of disaster (Glaser, 2004). Organizational tactical support is high when everything looks promising and withers when the hard work starts. Withholding relevant communication or failing to read and understand communication causes project failure.

Experience and skill levels spread across all departments and functions: clinical, business office, billing, scheduling, supplies, and many others (Glaser, 2004). The appropriate skills,

planning, and management go into a HIT project before, during, and after implementation. Failure to understand and avoid the problems that plague all IT projects will almost guarantee an inevitable failure (Glaser, 2004).

Sensational headlines and studies of systems causing errors both surprised and dismayed the medical informatics community. The many success stories make less than informed mass media reporting of project failures more disappointing and problematic. Multiple stakeholders share an interest in supporting the implementation of health IT. The U.S. Congress has passed incentive packages; the Centers for Medicare and Medicaid Services (CMS) have put considerable effort into pay for performance initiatives; and electronic health record vendors, health care payers, and providers all are interested parties. With the Obama administration's emphasis on the rapid implementation of health IT, issues of failure became acuter (Glaser, 2004).

Research conducted by Azanha et al. (2017) cites quality, budget, and schedule as the reason for most project failures. This study also showed that improved emotional and cultural skills reduced the percent of project failure (Azanha et al., 2017). Glaser (2004) found that management plays a role in project failure. Unclear expectations, lack of leadership support, and unmanageable complexity are a few reasons cited for IT project failure (Glaser, 2004).

The top three tasks of a project manager are often said to be communication, communication, communication. Mackey (2015) did identified ways to improve project communications. These improvements are more substantial involvement for project stakeholders, clearly identified project requirements, active listening, frequent feedback, stakeholder education, stakeholder training, knowledge of processes, and knowledge of

the goal of the project (Mackey, 2015). IT projects continue to fail at an alarming rate. Health care IT is no exception. Health care in the United States is highly regulated and is going through a period of rapid change (Mackey, 2015). Each new administration changes policies and regulations that, in turn, change the way health care organizations do business. Health care organizations must find ways to comply with regulations, provide excellent patient care, stay current with new technology, and make enough money to stay in business (Mackey, 2015). A higher success rate of IT projects can help meet these goals. Waterfall project management requires significant upfront planning, which can be problematic when changes are happening so rapidly. Agile project management is a process that accommodates rapid change without causing project failure (Glaser, 2004).

Studies exist on the benefits of agile project management and how organizations seem to be embracing these benefits. The agile process starts with planning, moves to requirement, analysis, design, implementation, testing, evaluation, and deployment (Glaser, 2004). The health care industry has not largely embraced the agile methodology because of a lack of knowledge in the agile process. Research also shows that meaningful interactions aid in the understanding, acceptance, and use of the agile methodology (Glaser, 2004).

Research done by social scientists has enhanced the understanding of effective group communication. Meetings are a regular occurrence in project management; employees spend an average of 6 hours per week in meetings, and managers spend an average of 23 hours per week in meetings (Glaser, 2004). Unfortunately, 40% –50% of meetings are considered unproductive or a complete waste of time. Meetings are a way to bring people together to discuss issues or problems, generate new ideas, and make critical business decisions. A successful and productive

interaction between two or more people that makes meetings successful and productive is the definition of meaningful interactions (Buengeler, Klonek, Lehmann-Willenbrock, Morency, & Poppe, 2017).

The healthcare industry faces rapid, sometimes unpredictable changes (Tabernik, 2008). Healthcare reform, government initiatives, and regulations are all changes that happen regularly in the healthcare industry. Agile allows quick responses to these types of changes; the waterfall method makes it difficult to respond quickly, mid-project to changes that are mandated by regulating agencies (Buengeler et al., 2017).

Meaningful interactions are interactions that accomplish a defined goal that is positive, productive, and takes many different forms (was their email follow up to the meeting? as an example) (Dankulov et al.., 2015). First, for interaction to be effective in improving community relationships, it needs to be positive. Negative interactions that involve arguments or unpleasant experiences will not build community. Second, for interaction to be meaningful, it needs to go beyond a superficial level and be sustained (Dankulov et al.., 2015). The Commission on Integration and Cohesion report said meaningful interaction was when: "conversations go beyond surface friendliness; in which people exchange personal information or talk about each other's differences and identities; people share a common goal or share an interest and sustained long term. Third, the interaction can take many forms, all of which are positive for building community cohesion (Dankulov et al.., 2015). Chowdhury et al. (2007), in its publication Promoting interaction between people from different ethnic backgrounds, suggested that there are four types of interaction (Chowdhury et al., 2007).

Resilience is to adjust quickly to change. Mallet (2014) defined resilience as a class of phenomena characterized by good outcomes despite several threats to the adaptation of development. Rutter (1987), a psychiatric risk researcher, stated that the term resilience describes the positive tone of individual differences in people's response to stress and adversity. The measurement of resilience will be the same survey questions as resistance. The answers will determine if the project team is experiencing resistance or resilience.

The social cognitive theory describes how people acquire and maintain specific behaviors and how behavior change is dependent on the following factors: people, environment, situation, and behavior (Dankulov et al., 2015). This study is looking into the behavior of project managers and their acceptance and use of agile project management. The environment includes both the social environment and the physical environment. The social cognitive theory has been further narrowed by Dankulov et al. (2015), who discuss building collective knowledge through meaningful social interactions. These meaningful interactions allow a common value to emerge. They point to the importance of several people with a wide range of experience with meaningful interactions participating (Dankulov et al., 2015). Meaningful interaction has four key points. First, for interactions to be productive and meaningful, they need to be positive. Second, meaningful interactions need to be more than a superficial conversation (Dankulov et al., 2015). Third, the interaction can take many forms as long as they are positive and promote group cohesion. Fourth, meaningful interaction is voluntary, not mandated (Department for Communities and Local Government, 2009). Meaningful interactions can support agile project management by bringing people together, breaking down barriers, and promoting cohesiveness within the group. Meaningful interactions break through cultural, ethical, geographical, and other

boundaries that may prevent the acceptance and use of agile project management (Dankulov et al., 2015).

The Agile Manifesto endorses the use of modeling and embraces documentation. The Agile Manifesto promotes the benefits of frequent and substantial stakeholder communication, which is also an essential element of meaningful interactions (Woo, & Reeves, 2007). Planning is necessary, but planning is limited by rapidly changing environments. The purpose of the Agile Manifesto is to develop a better process in software development (Woo, & Reeves, 2007). Agile is strongly tied to the importance of meaningful interactions because it values people over processes, for breaking through resistance towards acceptance (Woo, & Reeves, 2007). A working piece of software is more important than extensive documentation; collaboration more important than contract negotiation, and responding to change takes priority over just following a plan. Planning, documentation, processes, and tools are essential but are not always the most important (Denning, 2015).

The highest priority of the Agile Manifesto is customer satisfaction through the delivery of software products (Woo, & Reeves, 2007). Addressing requirements is done in all stages of software development from start to finish. Agile software development gives the customer a competitive advantage by delivering frequent software releases (Jackson, 2012). Developers and the clients meet daily, preferably face to face, to check on progress and make identified adjustments (Jackson, 2012).

Critique of Previous Research

Previous researchers covered the agile process, its adoption, and its success. The health care industry is mostly missing from this research. Extant research stops at saying that health

care does not widely use agile and does not discuss why or how to increase adoption (Glaser, 2004). Health care is slow to adopt the agile project management process (Glaser, 2004). The present research examined the possible underlying issues causing this slow adoption. Meaningful interaction can lead to an understanding of agile project management, which can lead to a higher chance for adoption (Glaser, 2004).

Research by Glaser (2004) has shown the benefits of agile project management in the health care industry. Ramanathan, Deoskar, and Jadhav (2018) also found that there are benefits of agile project management in the health care industry. Research has also shown a slow adoption of agile project management in health care (Glaser, 2004). Meaningful interaction is a way to improve communication, which, in turn, can help an organization go from resistance to agile project management to resilience in IT project success (Glaser, 2004).

Additional research identified characteristics of IT projects that increase the probability of failure. IT projects often have unidentified constraints and unrealistic expectations. Senior management does not have a clear understanding of what they are requesting, which leads to unobtainable functionality (Glaser, 2004). Frequent change requests lead to scope creep. Unidentified complexities lead to unattainable reliability and efficiencies. (Glaser, 2004). IT projects continue to fail at a high rate. Technology complications, organizational and functional issues, and managerial problems attribute to project failure.

The Standish Group published failure and success rates but also pointed to indicators for success and failure. Their original report was done in 1994 and published as The Chaos Report (Verhoef and Laurenz-Eveleens, 2010). The Standish Group studied 365 companies with a total of 8,380 Information System applications under development. The report divides projects into

three distinct outcomes, which they called Resolutions. The first resolution type is project success; it is completed on time and budget, with all features and functions as specified. Only 16.2% of projects fell in this category (Verhoef and Laurenz-Eveleens, 2010). Resolution type 2 is project challenged; these were completed, but were over cost, over time, and lacking all of the features and functions that were initially specified; 52.7% of all studied projects fell into the challenged category (Verhoef and Laurenz-Eveleens, 2010). Resolution type 3 is termed as project impaired/failed. These projects were abandoned or canceled at some point and thus became total losses. A disturbing 31.1% of all studied projects fell into this category. The disturbing conclusion from this Standish report is that only 16.2% of projects were successful by all measures and that of the 70% of projects that were not successful, over 52 percent were partial failures, and 31% were complete failures (Verhoef and Laurenz-Eveleens, 2010).

According to the 1994 Standish CHAOS Report, there are five factors found in successful projects: user involvement, executive management support, a clear statement of requirements, proper planning, and realistic expectations (Verhoef and Laurenz-Eveleens, 2010). Challenged projects showed a lack of user input, incomplete requirements & specifications, changing requirements & specifications, lack of executive support, and technical incompetence (Verhoef and Laurenz-Eveleens, 2010). The top factors found in "Failed" projects are incomplete requirements, lack of user involvement, lack of resources, unrealistic expectations, lack of executive support, changing requirements and specifications, lack of planning, lack of IT management, and technical illiteracy (Verhoef and Laurenz-Eveleens, 2010).

Proper planning requires excellent planning, which includes detailed planning of the process implementation stages, task timelines, fallback positions, and re-planning. Initial

planning is not enough. Projects often take wrong turns, or initial solutions prove unfounded. The project manager who does not prepare to re-plan or has not considered and planned fallback positions when initial plans fail will often find that the project's first stalls, and then fails. We must remember that project management is not a straight-line process, but an iterative process that requires agile rethinking as the known environment changes before your eyes.

Clear responsibility and accountability of team members require that all team members have a clear understanding of their roles and duties in the project. They must understand how expectations vs. achievements will be measured and graded. It is left to the project manager to implement the communication of these responsibilities properly, to provide feedback, and to assure all understand that for which they will be held accountable.

Schedule control requires the continual monitoring and measurement of time, milestones, people, and equipment schedules. Correctly done schedule control will give the first hint that initial planning may not be going according to schedule. If you pick up on these hints, you have an opportunity to implement a fallback position and re-plan to get back on track. At this point, we have several lists of things that might indicate project success and others that might indicate project failure. Nevertheless, there is one thing primarily that you must recognize in all these lists. There are no stock answers, and there is no one list that will guarantee success. IT and IS projects are complex by nature, and each is unique. It is exceedingly difficult to plan with complete certainty. Every single factor in all these lists is essential and each project. The most challenging part may be prioritizing the factors. Which are the most important? Hopefully, the

lists will help you answer these questions. In each case, you must ultimately make the decisions based upon the unique circumstances of your next project.

Summary

Research has shown the benefits of agile project management in the healthcare industry. Research has also shown a slow adoption of agile project management in healthcare. Meaningful interaction is an excellent way to improve communications, which in turn can help an organization go from resistance to agile project management to resilience in IT project success.

The adoption and benefits of agile project management are the topics of much research. This study intended to fill the gap of why health care has not widely accepted agile and how to transition health care from resisting agile acceptance to resilience using agile project management with meaningful interaction. Several principles are the basis of the *agile Manifesto*: satisfied customers, early and continuous delivery of project goals, quickly changing requirements, project teams and other stakeholders work together closely, motivated staff to provide support and trust, and face to face conversation (meaningful interactions) to exchange information. Project teams are often self-organizing, and the project team regularly reflects on how to become more productive and efficient. Agile can create a suitable environment for growth, but as projects vary, there are challenges to applying agile methods into the existing organizational culture. Organizations can benefit from the successful adoption of the agile method. Lack of executive support and user involvement: In medical practice, the fence-sitters in the third group can spell disaster. Their tacit support when everything looks promising will wither when the real hard work starts, and they will usually be some of the first who say, “I told you this would not work.”

Failure to communicate and act as a team: This is closely related to the previous issue, but it can manifest itself in slightly different ways. Withholding critical communications, or failing to read and understand communications, is a recipe for failure. Inappropriate skills: frequently, the people assigned to a HIT project implementation get selected because they can spell IT. Furthermore, sometimes only those who are gung-ho are on the team. There needs to be a balance of experience and skill level across all departments and functions — clinical, business office, billing, scheduling, and supplies. It is critical that all the appropriate skills, planning, and management go into a HIT project before, during, and after implementation. Failure to understand and avoid the problems that plague all IT projects will almost guarantee failure.

CHAPTER 3. METHODOLOGY

The benefits of Agile project management and the adoption of agile project management in HIT was the focus of this research. Research by Madampe (2017), Carilli (2013), and Tew (2012) discussed the benefits of communication and meaningful interactions when adopting agile. Azanha et al. (2017) verified that the benefits of agile project management have led to the organizational adoption of the agile project management process. Agile project management allows companies to respond quickly to change, allowing flexibility in rapidly changing environments. This study addressed the relationships between meaningful interactions and the acceptance, use, and resistance of agile project management in the health care industry. This chapter includes the purpose of the study, Research Questions and Hypotheses, the research design, target population, sampling, power analysis, procedure, instruments, validity, reliability, and ethical considerations, and summary.

Purpose of the Study

The purpose of this quantitative non-experimental correlational study was to explore whether there exists a relationship between interactions among team members and the acceptance, use, and resistance of Agile project management in the health care industry. Research has shown that agile program management correlates to either reducing the complexity of the project or managing complexity (Stoica et al., 2016). Stoica et al. (2016) concluded that agile implementation is advantageous for dealing with uncertainty and improving the efficiency of projects. However, there is a lack of research into the factors that influence an individual's decision to accept or not accept agile program management. This study would fill in the gap that

currently exists regarding the factors such as interactions between individuals that influence agile project management utilization, acceptance, and resistance.

In order to measure the independent variable meaningful interactions and the three dependent variables, agile utilization, agile acceptance, and agile Resistance, this quantitative non-experimental correlational study used a 5 point Likert scale to collect quantitative data from experienced project managers in the health care industry. The 5-point Likert scale was as follows: 5-strongly agree, 4-agree, 3-neutral, 2-disagree, and 1-strongly disagree. This method allowed the statistical analysis of the data.

Research Questions and Hypotheses

Research Question

RQ1: To what extent is there a relationship between interactions among team members and the acceptance, use, and resistance of agile project management in the health care industry?

$H1_0$: There is no statistically significant relationship between interactions among team members and the acceptance, use, and resistance of agile project management in the health care industry

$H1_a$: There is a statistically significant relationship between interactions among team members and the acceptance, use, and resistance of agile project management in the health care industry.

Both Pearson correlations and binomial logistic regressions addressed these research questions and hypotheses. Pearson correlations measure the strength and direction of the relationship between two variables measured either at the interval or ratio level of measurement.

Pearson correlations assess the correlations between interactions among team members, agile use, agile acceptance, and agile resistance. There are no distinctions between independent and dependent variables while conducting Pearson correlations. In order to measure the relationship between dependent and independent variables, three binary logistic regressions predicted the three dependent variables, Agile use (yes/no), Agile acceptance (yes/no), and Agile resistance (yes/no), from the impendent variable interactions among team members (meaningful interactions).

Research Design

The researcher chose to utilize the non-experimental correlational quantitative design for its non-manipulative way of identifying relationships between variables. The researcher examined the relationship of interactions among team members and the acceptance, use, and resistance of agile project management in the health care industry. In this study, the data from the study variables will use data collected from the posting of a request for survey participants on two LinkedIn groups. The independent variable was interactions among team members, and the dependent variables were acceptance, use, and resistance of agile project management. The use of a correlational quantitative research design means the research is non-experimental, where the researcher intends to measure variables and assesses the statistical relationship between them while excluding any influence from unrelated variables (Geddes, 2003; Rovai & Jordan, 2004; Schenker & Rumrill, 2004).

A non-experimental quantitative correlational design is most appropriate for examining the relationship between variables and to permit the prediction of future outcomes from present knowledge (Simon, 2011). The study includes numerical data that is analyzed to test hypotheses.

Examining a single group of participants identifies the existence of a relationship. Secondly, the choice of a correlational research design ensures research objectivity as the researcher is separate from the research participants (Simon, 2011). The correlational design also provides the examination of standard errors, estimators, confidence intervals, and hypotheses tests for the parameters relative to the statistical outcomes, which helps in the maximization of overall accuracy in the collected data (Simon, 2011). Therefore, a correlational research design is appropriate for this study due to the non-manipulative properties and the ability to address the objective of evaluating the relationship between the independent variables and the dependent variable.

A correlational research design is utilized in quantitative research when two or more variables are analyzed to see if there is a statistically significant relationship and will not attempt to determine causation between the variables (Williams, 2017). The unit of analysis and the unit of observation is HIT project, management professionals. The non-experimental quantitative correlational research design is appropriate for this study as it offers an analysis of the predicted relationships and inferences of the overall predictions (Williams, 2017). Other research designs, such as causal-comparative, quasi-experimental, and experimental, lack this approach.

According to Lee and Chen (2019), casual comparative research identifies that one event is the direct result of the existence or occurrence of the other event. This design seeks to examine the difference between groups, identifying the cause and effect relationship. The causal-comparative research design has predictor variables that are typically categorical, nominal scale, and the criterion variable is continuous. In the causal-comparative design, the predictor variables are expressed in categorical type to identify research groups and examine overall group

differences with preexisting conditions (Li, & Shen, 2019; Rubin, 2005). However, this study did not intend to examine group differences but instead intends to identify the existence of a relationship. This research does not have separate intervention groups incorporated into the chosen design. Therefore, a causal-comparative research design is not an appropriate fit for this study.

The quasi-experimental research design is another option for studies. The quasi-experimental research design is similar to that of the traditional experimental research design (Glaser, 2004). However, the quasi-experimental research design allows the researcher to control the study by enabling a decisive factor (Glaser, 2004). This design intends to examine the fundamental significance, outside of the lab, of long-lasting actions. This researcher does not utilize this design for this proposed research due to the researcher not being able to manipulate the variables (Glaser, 2004).

The experimental research design was another option to consider for this study. The experimental research design requires that the researcher manipulates the independent variable and examine the changes in the dependent variable resulting from the influence (Glaser, 2004). Within the experimental research design, the researcher makes adjustments or influences on one or more predictor variables to examine the effects it has on one or more dependent variables. The independent variables lack manipulation in this study, as they are inherently not controllable (Glaser, 2004). Therefore, the researcher selected a correlational design for this study to measure the statistical significance of the relationship between the variables of interest.

Target Population and Sample

This section will discuss the target population and the sample. These two terms are sometimes misused. The target population is the entire group of individuals that the sample represents. The target population in this research is HIT project management professionals that know agile project management and meaningful interactions. Participants are a sample group of people who complete the survey.

Population

The population is Project Management Professionals (PMP) living and working in the United States. According to the Project Management Institute (PMI), there are an estimated 16.5 million Project Managers in the world ("Project Management Institute," 2020). PMI members based in North America account for 66.7% of their total membership. Therefore, that implies that there are approximately 11 million Project Managers in North America.

Sample

The researcher used a self-selecting, convenience sample. This type of sample is appropriate when members of the target population meet certain conditions such as accessibility, proximity, availability, and the willingness to participate (Glaser, 2004). Participants who are convenient to reach are called a convenience sample; according to Glaser (2004) also described snowball sampling as a phenomenon when study participants recruit new participants.

The criteria for participation in this research will be that they need a minimum of five years' experience as a health care project manager. They also need to have knowledge and experience with agile project management methods.

Exclusion Criteria

Survey participant exclusion criteria include no experience using agile project management, no experience in healthcare, and refusal to sign the consent form. Also excluded were people under the age of 18. There are also research exclusion criteria. Exclusion included studies that do not include agile project management or focuses only on agile software development methods are excluded. Exclusions also include research papers with personal bias or personal opinion without supporting research.

Power Analysis

G*Power is used to conduct a priori power analysis to determine the required minimum sample size for the study. Four factors were considered in the power analysis: significance level, effect size, the power of the test, and statistical technique. The significance level, also known as Type I error, refers to the chance of rejecting a null hypothesis given that it is true (Haas, 2012). Most quantitative studies make use of a 95% confidence level because it adequately provides enough statistical evidence of a test (Creswell & Poth, 2017). The effect size refers to the estimated measurement of the relationship between the variables is considered the effect size (Cohen, 1988). Cohen (1988) categorizes effect size into small, medium, and large. Berger, Bayarri, and Pericchi (2013) purported that a medium effect size is better as it strikes a balance between being too strict (small) and too lenient (large). The power of a test refers to the probability of correctly rejecting a null hypothesis (Sullivan & Feinn, 2012). In most quantitative studies, 80% of power is usually used (Sullivan & Feinn, 2012). The two tests used in this study were Pearson correlations and binomial logistic regression. In order to conduct Pearson correlations to detect a medium effect size, at the 5% level of significance with 80%, at least 67 participants were necessary. Figure 1 depicts this.

Exact Correlation: Bivariate normal model
Options: exact distribution
Analysis: A priori: Compute required sample size

Input:	Tail(s)	=	One
	Correlation ρ H1	=	0.3
	α err prob	=	0.05
	Power (1β err prob)	=	.80
	Correlation ρ H0	=	0
Output:	Lower critical r	=	0.2026735
	Upper critical r	=	0.2026735
	Total sample size	=	67
	Actual power	=	0.8032714

Figure 1. G*Power sample size calculation in order to conduct Pearson correlations,

The calculation of a minimum sample size for logistic regression requires previous knowledge such as the expected odds ratio (effect size), a proportion of observations in either group of the dependent variable, and the distribution of each independent variable (Kaplan, & Harris-Salamone, 2009). (Faul, Erdfelder, Buchner, & Lang, 2009: Berman & Silvers, 2016). If these are not known, it is best to use an estimate to determine the appropriate sample size. G*Power computed the minimum sample size by utilizing a medium effect size of OR = 2.47, based on the categorization of effect sizes by Haas (2012), who categorized odds ratio into small (OR = 1.44), medium (OR = 2.47), and large (OR = 4.25). In order to conduct binary logistic regression to detect a medium effect size of OR = 2.47, at the 5% level of significance, with 80% power, the minimum sample size needed is at least 72. Figure 2 below depicts this information.

Input:	Tail(s)	=	Two
	Odds ratio	=	2.47
	Pr(Y=1|X=1) H0	=	0.2
	α err prob	=	0.05
	Power (1β err prob)	=	.80
	R^2 other X	=	0
	X distribution	=	Normal
	X parm μ	=	0
	X parm σ	=	1
Output:	Critical z	=	1.9599640

Total sample size = 72
Actual power = 0.8057580

Figure 2. G*Power sample size calculation in order to conduct binary logistic regression.

Procedures

Conducting research requires procedures. Procedure groups are methods of sampling, methods of ensuring the protection of the participants and their rights; methods of data collection; and methods of data analysis.

Participant Selection

Two LinkedIn groups posted a request for survey participants. Interested participants click a link that directed them to the survey. If the participant agreed to the informed consent question and participant requirements, the survey questions began. Qualifying questions were:

- Have you worked in HIT as a project manager for five or more years?
- What project management method do you use most often?
- What project management methods have you used in the past or are considering for future use?
- Are you PMP certified?

Setting

The survey is entirely online. Not Everyone likes conducting or responding to online surveys. The lack of face to face non-verbal communication can be limiting. Non-verbal communication can be valuable. As more organizations become digital online survey participation becomes more widely accepted.

Data Collection

The participants received the purpose and nature of the study in order to avoid any deception. Moreover, the participants received a consent form, including the researchers' contact information along with the IRB representative information. The researcher used the recruitment strategies of the social media platform LinkedIn to recruit potential research participants. In this message, the researcher explained the purpose of the study. Furthermore, the researcher assured each employee that participation was entirely voluntary. Also, the researcher included contact information in the message. Finally, the researcher explained that no personal identifying information should be collected or storing any participant information. The researcher will include the informed consent document within the invitation message. This document detailed the minimal risks and ethical considerations associated with participation in the study.

The survey consisted of two parts. The first part consisted of four qualifying questions. The first question asked, “Have you worked in HIT as a project manager for five or more years?” The second question asked, “What project management method do you use most often? “ The third question asked, “What project management methods have you used in the past or are considering for future use? “ The fourth question asked, “Are you PMP certified? “ The criteria for participation in this research were that they needed a minimum of five years’ experience as a health care project manager. They also need to have knowledge and experience with agile project management methods. The second part of the survey was the Agile Acceptance Survey, which consisted of a total of 21 items based on a 5point Likert scale ranging from 1 “Strongly disagree” to 5 “Strongly Agree.” There are four categories of questions, Agile utilization (3 items), Agile, acceptance (8 items), Agile resistance (6 items), and Meaningful interactions (4 items). Table 1

below depicts the items that comprise each of the study variables utilizing the Agile Acceptance Survey.

Table 1
Operationalization of Variables of Agile Acceptance Survey

Variable	Items
Agile Utilization	• Agile project management has been used by the organization in the past • Our organization currently uses agile project management • Our company is considering the use of agile project management in the future
Agile Acceptance	• Our organization has a plan in place to sustain the long term use of Agile. • Our organization will use a combination of Agile and waterfall • Our executive leadership supports the use of Agile. • I support the use of Agile. • I understand the agile process. • Project success has improved since adopting Agile in our organization • Our company leadership has helped with agile adoption • Our employees are appropriately equipped mentally for the transition to Agile
Agile Resistance	• Lack of experience is a reason for resistance to the implementation of Agile • Overall resistance to change is a reason for resistance to the implementation of Agile • Lack of adequate resources is a reason for resistance to the implementation of Agile • The reason for resistance to the implementation is currently unknown • Our employees support using Agile • The intensity of the resistance to Agile is strong
Meaningful Interaction	• Interaction among project team members is positive • Interaction among project team members is more than superficial conversation

Variable	Items
	• Interaction among project team members promotes group cohesion • Interaction among project team members is voluntary, not forced

An online survey platform, Zoho, was utilized in order to administer the questionnaires to the participants for collecting data. The data analysis utilizes statistical procedures to include all completed responses from the participants. The survey took approximately 15 to 20 minutes to complete. All data were collected anonymously.

The data was stored on that site until exported to be analyzed using SPSS software. The data was stored on an encrypted disk and will be destroyed those data after seven years per Capella Institutional Review Board (IRB) requirements. The target was to collect a minimum of 100 completed responses. The actual data analyzed consisted of one 74 completed surveys.

Data Analysis

In order to answer the research questions and explore the hypotheses, the study utilized the agile acceptance survey. This instrument measured Agile utilization (3 items), Agile, acceptance (8 items), Agile resistance (6 items), and Meaningful interactions (4 items). Answers utilize a 5-point Likert scale 5-strongly agree, 4-agree, 3-neutral, 2-disagree, 1-strongly disagree. The reliability of this instrument was measured and had acceptable reliability as measured by Cronbach's alphas of at least 0.70. This method allowed the statistical analysis of the data. A 5point Likert scale provides an efficient way to gather data without introducing threats to reliability that can occur with other collection methods (Yin, 2002). The typical 5-level ranking (a.k.a. Likert scale) provides a way that measures the semantical distance between consecutive levels is kept roughly constant. Because of this property, variables, classified as intervals, can

proceed with addition (or arithmetic mean, or any other mathematical manipulations). This non-experimental quantitative study with a correlational design used SPSS version 21 for data analysis. The data analysis involved performing Pearson correlations and binary logistic regression (Babbie, 2013). What now follows is a summary of the data cleaning process, descriptive statistics, and hypothesis testing.

Descriptive Statistics

Examining the dataset for missing data is cleaning the data (Babbie, 2013). If a value was missing, the entire case was removed from the analysis and not used for the study. Analyses were then performed only with complete datasets with no missing values. Frequency and percentage summaries measure categorical variables, while measures of central tendencies of means, standard deviations, and minimum and maximum values identified continuous variables.

Hypothesis Testing

Both Pearson correlations and binary logistic regression answered the following research question and hypotheses:

RQ1: To what extent is there a relationship between interactions among team members and the acceptance, use, and resistance of agile project management in the health care industry?

$H1_0$. There is no significant relationship between interactions among team members and the acceptance, use, and resistance of agile project management in the health care industry.

$H1_a$. There is a significant relationship between interactions among team members and the acceptance, use, and resistance of agile project management in the health care industry.

Pearson correlations determine the strength and direction of a linear relationship between two continuous variables. More specifically, the test generates a coefficient called the Pearson

correlation coefficient, denoted as *r*, and it is this coefficient that measures the strength and direction of a linear relationship between two continuous variables. Its value can range from 1 for a perfect negative linear relationship to +1 for a perfect positive linear relationship. A value of 0 (zero) indicates no relationship between the two variables. Pearson correlations assess the relationships between interactions among team members, agile utilization, agile acceptance, and agile resistance.

Binary logistic regression attempts to predict the probability that an observation falls into one of two categories of a dichotomous dependent variable based on one or more independent variables that can be either continuous or categorical. In this study, the likelihood of the event of Agile utilization (yes/no), Agile acceptance (yes / no), and Agile resistance (yes / no) was measured based on the level of interactions among team members based on the variable "meaningful interactions."

Testing assumptions occur before conducting the analysis. The assumptions for Pearson correlations include linearity, normality, and absence of outliers. The assumptions for binary logistic regression include the independence of observations, and there should be no significant outliers. Regarding linearity, scatter plots assessed linearity. The skewness and kurtosis index identified the normality of the data. If the data values were within 3/+3, the data is approximately normally distributed (Simon, 2011). Outlier detection identified standardizing variables. Standardized values beyond 3 and +3 are outliers (Babbie, 2013). Independence of observations is largely a study design issue rather than something one can test for (Babbie, 2013). The independence assumption of binary logistic regression assumes that the observations were independent based on the study design. Dichotomizing these three dependent variables into

acceptance (no or yes), use (no or yes), and resistance (no or yes) measures the likelihood of Agile acceptance, use, and resistance. A value less than three (neutral) categorized the respondent into a "no" category for that variable. A value that is greater than 3 (neutral) is a "yes" for that variable. In this way, an individual was categorized as agree/ strongly agree or disagree/strongly disagree, thus defining them into acceptance/non-acceptance, utilization/non-utilization, and resistance/nonresistance.

Testing occurred for three binary logistic regression models for each of the three dependent variables agile utilization, agile acceptance, and agile resistance:

1. Logit (Agile Utilization) = $\beta 0 + \beta 1$Meaningful Interactions

2. Logit (Agile Acceptance) = $\beta 0 + \beta 1$Meaningful Interactions

3. Logit (Agile Resistance) = $\beta 0 + \beta 1$Meaningful Interactions

The "logit "is the natural log of the odds of an event occurring (Babbie, 2013). The event in each of the models is agile utilization, agile acceptance, and agile resistance. These events were coded as either 0 or 1 (non-utilized/utilized, not accepted/accepted, nonresistance/ resistance). In order to test the first model, the independent variable meaningful interactions, and the first dependent variable, agile utilization, were entered into the binary logistic regression procedure in SPSS.

The significance of the predictor meaningful interactions assessed at the 5% level of significance. If the p-value fell below 0.05, the predictor was deemed significant, and the null hypothesis was rejected (Babbie, 2013). This procedure repeated two more times to assess the predictor's significance on the remaining two dependent variables, agile acceptance and agile resistance.

Instruments

Agile Acceptance Survey

The Project Implementation Profile (Slevin & Pinto, 1986) and the survey by Kanabar, Leybourne, and Warburton (2014) titled *Using a Student Survey to Measure Changes in Experience, Knowledge, and Competency in Introductory Project Management* provided the basis for the survey questions modified for use in agile project management (Kanabar et al., 2014). The research topics are not the same, but these were used as an example to create the Agile Acceptance Survey.

The agile acceptance survey started with qualifying questions to narrow the number of participants. The next section included preliminary questions. After the first questions, agile utilization, agile acceptance, agile resistance, and meaningful interactions were the last four sections of the survey. Table 2 below provides the specific items used to create the study variables.

Table 2
Agile Acceptance Survey

Variable	Items
Agile Utilization	• Agile project management has been used by the organization in the past • Our organization currently uses agile project management • Our company is considering the use of agile project management in the future
Agile Acceptance	• Our organization has a plan in place to sustain the long term use of Agile. • Our organization will use a combination of Agile and waterfall • Our executive leadership supports the use of Agile. • I support the use of Agile. • I understand the agile process. • Project success has improved since adopting Agile in our organization

Variable	Items
	• Our company leadership has helped with agile adoption • Our employees are appropriately equipped mentally for the transition to Agile
Agile Resistance	• Lack of experience is a reason for resistance to the implementation of Agile • Overall resistance to change is a reason for resistance to the implementation of Agile • Lack of adequate resources is a reason for resistance to the implementation of Agile • The reason for resistance to the implementation is currently unknown • Our employees support using Agile • The intensity of the resistance to Agile is strong
Meaningful Interaction	• Interaction among project team members is positive • Interaction among project team members is more than superficial conversation • Interaction among project team members promotes group cohesion • Interaction among project team members is voluntary, not forced

HIT projects do not widely adopt agile. This research examined meaningful interactions to understand if meaningful interactions could provide one solution or one approach to improve the adoption of agile methods for HIT projects. This research study measured whether the presence of meaningful interactions suggested an improved adoption of the agile process in project teams for HIT.

Validity and Reliability

There are differences between reliability and validity. Reliability implies consistency: repeatedly doing the same thing produces the same results every time. A test is valid if it measures what it is supposed to measure. Valid tests are also reliable. The data is valid (and reliable) because it measures what it intended to measure. However, reliable tests are not always

valid. If the data were not accurate, then it would not be valid. Validity and reliability are accounted for in all research to ensure that the results stand up to peer review. The answer was assumed to be reliable and accurate based on the assumption that respondents are truthful in reporting what they know. There is no assumption that the statement has meaning beyond the words used.

Validity

Research must be valid and reliable at the beginning of the data collection process to ensure that it holds up to peer review. The survey was administered to professionals with five or more years of HIT project management to support the validity and reliability of the responses. Validity refers to instrument measures as intended. The instrument used in this study will be assumed to be valid and reliable based on its face value. The clean collected data process validated the survey. Two people verified data captured and evaluated. Answers to the qualifying questions are assumed to be valid and reliable based on the assumptions of truthfulness on the part of the respondent. No answers represented a construct beyond what appears in the statement.

Reliability

A 5point Likert psychometric scale was the scale of measurement used. Participants in the survey stated they were comfortable with the scale and wording. Surveys that use a 5point Likert scale are reliable, according to many research studies (Andrews & Withey, 2012). Nonresponse bias, based on withholding information for fear of exposing critical resources of the healthcare organization, can affect the validity of the project. Anonymous assessments can increase nonresponse bias because participants will not be allowed to validate their responses.

The reliability of each of the four variables formed was measured using Cronbach's alphas. Edwards (2002) recommends a minimum level of 0.7. A generally accepted rule is that α of 0.60.7 indicates an acceptable level of reliability, and 0.8 or greater an excellent level. Each of the four variables: Agile Utilization (alpha = 0.877), Agile Acceptance (alpha = 0.911), Agile Resistance (alpha = 0.842), and Meaningful Interaction (alpha = 0.793), showed good reliability with Cronbach's alphas greater than 0.7.

Ethical Considerations

Capella University provided ethical guidelines. Data collection began after the Capella Institutional Review Board (IRB) approved it. Participants provided written acceptance through a digitally signed anonymous informed consent question. The letter of consent notified respondents that their participation was voluntary, and they were free to withdraw at any point and for any reason. The participants received the objectives of the study, collection, use, and storage of data, as well as reassurance that their answers would be confidential and used only for academic purposes concerning this research project.

The survey was anonymous. Participants provided no personal information, even email addresses. The responses from the participants were anonymous. The anonymity of the participants was enhanced by not requiring a signature. The data collected from the participants reside on an encrypted hard drive stored in a lockbox owned by the researcher. Once the data is no longer needed, it will be disposed of securely.

No known risks (physical, psychological, social/economic, legal, or loss of confidentiality) were associated with the survey. The participant can also choose not to answer any question that the participant feels uncomfortable answering. The researcher avoided any

form of plagiarism and copyright violation. The research was free of coercion and undue influence. Participants have the right to withdraw from the study at any time without any penalty. Participants may omit questions if the participant does not want to answer them.

This research did not include anyone under the age of 18 or any other group protected by standard research ethical guidelines. Participants certified this information in the informed consent form. Participation was entirely voluntary for all research participants. All information gathered was protected from third-party access.

Summary

Chapter 3 includes the process used to gather data to answer the research questions. Zoho.com website and a Likert-type 5point survey with qualifying questions identified participants, then analyzed data as discussed in Chapter 4 to develop a theory surrounding the research hypotheses. Chapter 5 will be the conclusion derived from that data analyzed in chapter 4.

CHAPTER 4. RESULTS

Introduction

The objective of Chapter 4 is to give an overview of the results obtained from the survey questions and provide enough evidence to support or reject the null hypothesis. The data consisted of 74 responses to a survey. The survey questions consisted of four categories: Agile Utilization, Agile Acceptance, Agile Resistance, and meaningful interactions. All the questions had possible responses from a five-point Likert scale, ranging from "strongly agree" to "strongly disagree." Bar graphs visualized the distribution of responses. A separate scale was created based on the mean responses to each item in the respective group of questions. The mean, standard deviation, min, max, and Cronbach's alpha reported each scale. Cronbach's alpha is a measure of how interrelated the items are that creates the scales. Acceptable values are above 0.7, while those closer to one indicate better internal consistency. Pearson's correlations calculated the scale variables, followed by three binary logistic regression models to assess the likelihood of agile utilization, acceptance, or resistance based on meaningful interactions.

Description of the Sample

The population surveyed are health care IT professionals with a background and understanding of agile project management and meaningful interactions. The stated problem is a high rate of project failure in the health care industry. Agile project management has shown to improve project success rates. An online survey of health care project management professionals used Zoho online survey tool to identify the number that uses agile project management and has seen an increase in project success. Three hundred one visitors entered the survey. A lack of health care project management or a lack of experience with agile project management

disqualified one hundred seventy-three surveys. Participants that moved forward in the survey had to accept the informed consent questions, have working knowledge of agile project management and five years of HIT experience. The data analysis excluded eleven responses, with no reason for the early exit of the survey. Additionally, 43 cases had no responses. This reduced the number of cases to 74 for analysis.

Variables of the Study

The survey questions consisted of four categories: Agile Utilization, Agile Acceptance, Agile Resistance, and Meaningful Interactions. All the questions had possible responses from a five-point Likert scale, ranging from "strongly disagree" to "strongly agree." Table 3 below depicts the survey items used in the creation of each variable. Calculations included the means of the responses for each item within each of the four categories. This provided an overall measure of Agile Utilization, Agile Acceptance, Agile Resistance, and Meaningful Interaction.

Table 3
Operationalization of Variables

Variable	Items
Agile Utilization	• Agile project management has been used by the organization in the past • Our organization currently uses agile project management • Our company is considering the use of agile project management in the future
Agile Acceptance	• Our organization has a plan in place to sustain the long term use of Agile. • Our organization will use a combination of Agile and waterfall • Our executive leadership supports the use of Agile. • I support the use of Agile. • I understand the agile process. • Project success has improved since adopting Agile in our organization

	• Our company leadership has helped with agile adoption • Our employees are appropriately equipped mentally for the transition to Agile
Agile Resistance	• Lack of experience is a reason for resistance to the implementation of Agile • Overall resistance to change is a reason for resistance to the implementation of Agile • Lack of adequate resources is a reason for resistance to the implementation of Agile • The reason for resistance to the implementation is currently unknown • Our employees support using Agile • The intensity of the resistance to Agile is strong
Meaningful Interaction	• Interaction among project team members is positive • Interaction among project team members is more than superficial conversation • Interaction among project team members promotes group cohesion • Interaction among project team members is voluntary, not forced

The reliability of each of the four variables formed was measured using Cronbach's alphas (Table 4).

Table 4
Reliability of Variables

Variable	Number of items	Cronbach Alpha
Agile Utilization	3	.877
Agile Acceptance	8	.911
Agile Resistance	6	.842
Meaningful Interaction	4	.793

Edwards (2002) recommends a minimum level of 0.7. A generally accepted rule is that α of 0.60.7 indicates an acceptable level of reliability, and 0.8 or greater an excellent level. Each of the four variables: Agile Utilization (alpha = 0.877), Agile Acceptance (alpha = 0.911), Agile

Resistance (alpha = 0.842), and Meaningful Interaction (alpha = 0.793), showed good reliability with Cronbach's alphas greater than 0.7.

Meaningful interaction is the independent variable, and agile acceptance, agile use, and agile resistance are the three dependent variables. Both dependent and independent variables measured the interval level of measurement. Survey participants answered questions with a 5point Likert scale. The independent variable, meaningful interactions, is used to identify if there is a statistically significant effect on the dependent variables, the acceptance, use, or resistance of agile project management.

The topic of this study explored the acceptance, use, and resistance of agile project management and HIT project success. This study built upon the existing body of knowledge as it relates to HIT project success. The independent variable was meaningful interactions. The researcher asked participants if they used meaningful interactions and measured the responses with a 5point Likert scale. The dependent variables also used a 5point Likert scale and measured the acceptance, use, and resistance of agile project management. The Likert scale was as follows: 5strongly agree, 4agree, 3neutral, 2disagree, 1strongly disagree.

Dichotomizing these three dependent variables; Agile acceptance, use, and resistance measure the likelihood of acceptance (no or yes), use (no or yes), and resistance (no or yes). A value less than three (neutral) categorized the respondent into a "no" category for that variable. A value greater than 3 (neutral) is a "yes" for that variable. In this way, an individual was categorized as agree/ strongly agree or disagree/strongly disagree, thus defining them into acceptance/non-acceptance, utilization/non-utilization, and resistance/nonresistance.

Descriptive Statistics

Table 5 depicts the descriptive statistics of the study variables.

Table 5
Descriptive Statistics of Study Variables

	Min	Max	*M*	*SD*
Agile Utilization	1.00	5.00	3.99	.98
Agile Acceptance	1.00	5.00	4.01	.82
Agile Resistance	2.33	5.00	3.70	.81
Meaningful Interactions	1.00	5.00	4.01	.79

Agile utilization ranged from 1 to 5 (M = 3.99, SD = 0.98); Agile acceptance ranged from 1 to 5 (M = 4.01, SD = 0.82); Agile resistance ranged from 2.33 to 5.00 (M = 3.70, SD = 0.81); and meaningful interactions ranged from 1 to 5 (M = 4.01, SD = 0.79). The mean response for each variable indicates that, on average, there was acceptance and use of Agile. Additionally, there was a consensus that there were meaningful interactions and resistance. Regarding Agile utilization, six categorizes existed as "no" and 57 as "yes." Regarding agile acceptance, 14 categorized as "no" and 50 as "yes." Lastly, for Agile resistance, 21 were categorized as "no" and 43 for "yes." Tables 6, 7, and 8 provide this information.

Table 6
Utilization

	Frequency	Percent
No	6	9.5
Yes	57	90.5
Total	63	100.0

Table 7
Acceptance

	Frequency	Percent
No	14	21.9
Yes	50	78.1
Total	64	100.0

Table 8
Resistance

	Frequency	Percent
No	21	32.8
Yes	43	67.2
Total	64	100.0

Regarding the Likert responses of each item, the Agile Utilization question block consisted of three questions. "Agile project management has been used by this organization in the past" had a modal response of "strongly agree." "Our organization currently uses agile project management" also had a modal response of "strongly agree." "Our company is considering the use of agile project management in the future," had a modal response of "agree." Figure 2 depicts this information.

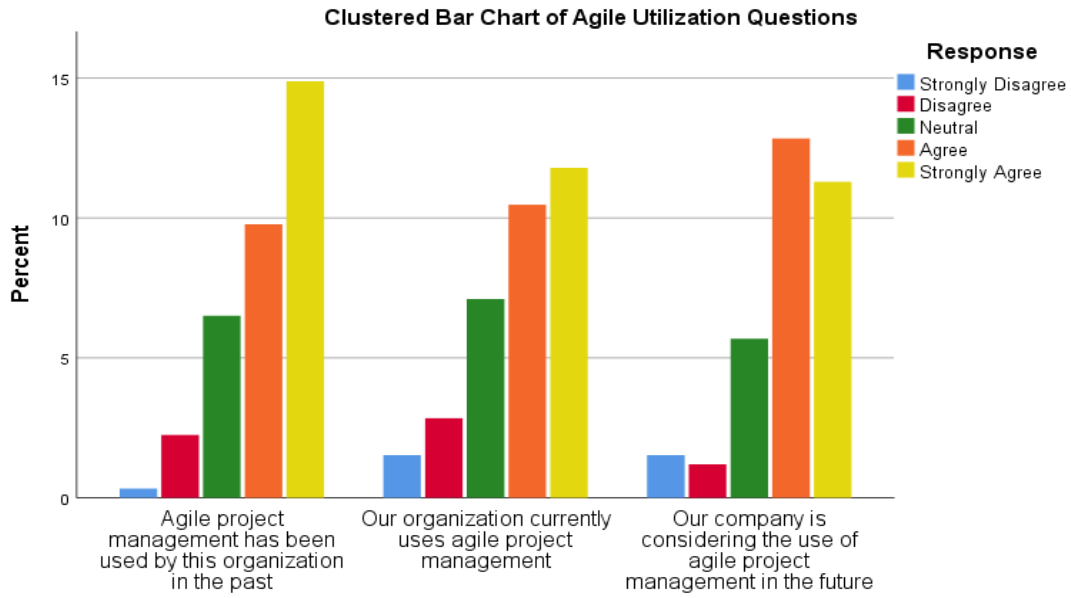

Figure 2. Clustered Bar Chart of Agile Utilization Questions

The Agile Acceptance question block consisted of eight questions. "Our organization has a plan in place to sustain the long term use of agile" "Our executive leadership supports the use of Agile," and "I understand the agile process" each had the modal response "strongly agree." All other questions in this block had the modal response of "agree." Figure 3 provides this information.

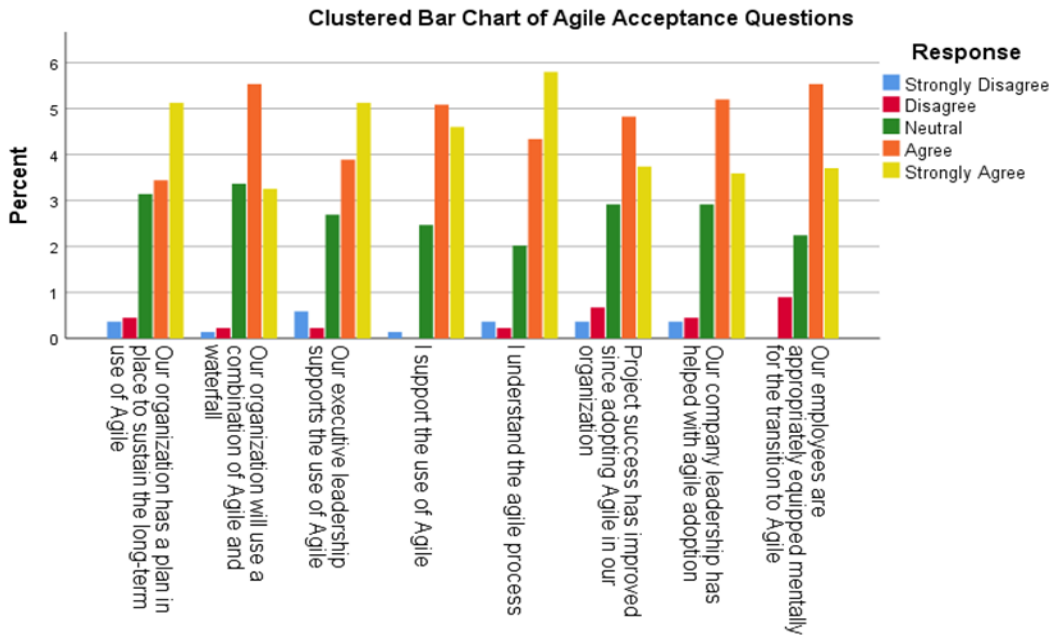

Figure 3. Clustered Bar Chart of Agile Acceptance Questions. The Agile Resistance question block consisted of six questions. "Lack of experience is a reason for resistance to the implementation of Agile" had modal response "strongly agree." "Overall resistance to change is a reason for resistance to the implementation of Agile," "Lack of adequate resources is a reason for resistance to the implementation of Agile," and "The intensity of the resistance to Agile is strong" all had modal response "agree." "The reason for resistance to the implementation is currently unknown" and "Our employees support using Agile" each had a modal response of "neutral." Figure 4 depicts this information.

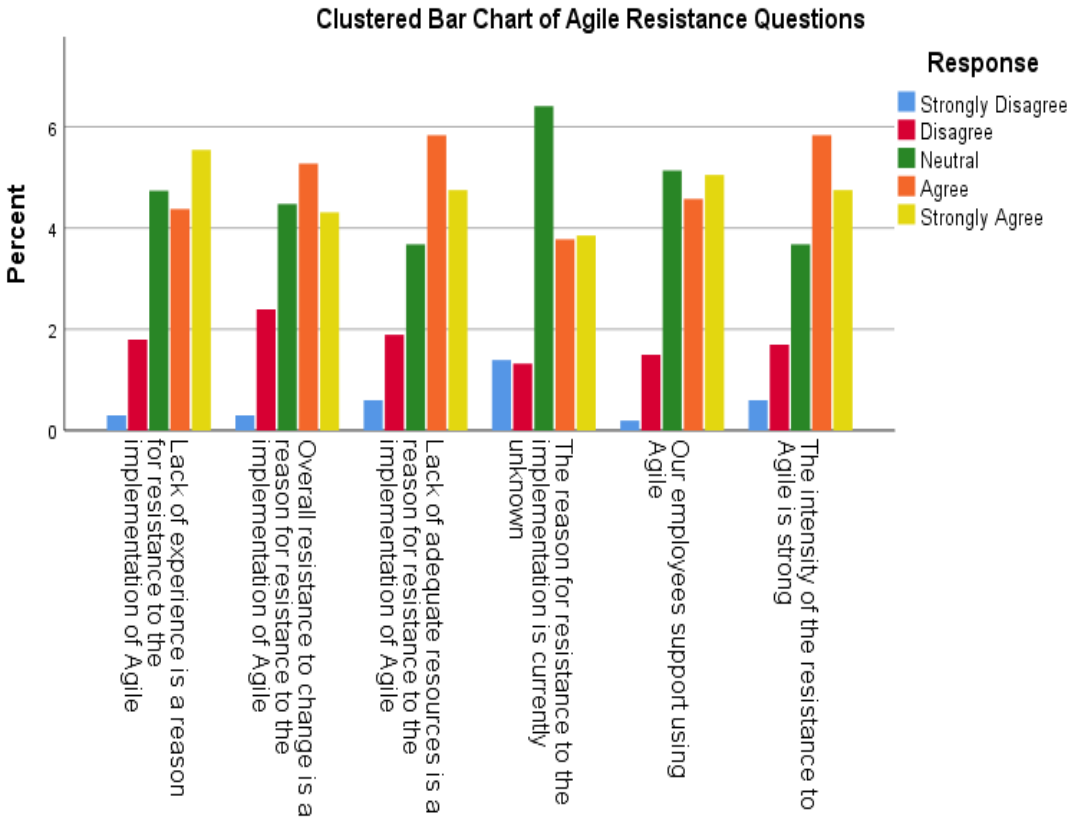

Figure 4. Clustered Bar Chart of Agile Resistance Questions

The Meaningful Interactions question block consisted of four questions. “Interaction among project team members is positive” and “Interaction among project team members is more than superficial conversation” both had a modal response of “strongly agree.” “Interaction among team members promotes group cohesion” and “Interaction among project team members is voluntary, not forced” each had a modal response of “agree.” Figure 5 depicts this information.

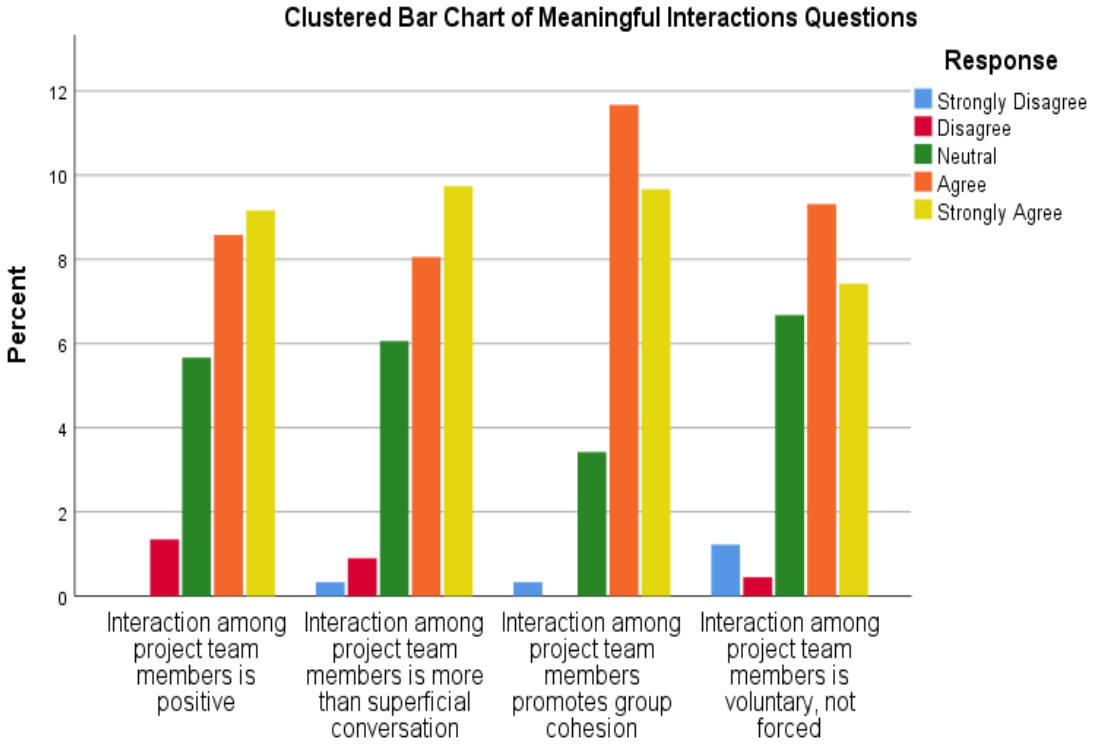

Figure 5. Clustered Bar Chart of Meaningful Interactions Questions Scales

Assumption Testing

Pearson correlations, as well as binary logistic regression, were performed in order to address the following research question:

RQ: To what extent is there a relationship between meaningful interactions among team members and the acceptance, use, and resistance of agile project management in the health care industry?

The assumptions for Pearson correlations include linearity, normality, and absence of outliers. The assumptions for binary logistic regression include the independence of observations, and there should be no significant outliers. Regarding linearity, scatter plots assessed linearity. Figures 6, 7, and 8 suggest an approximate positive linear relationship between the independent variable meaningful interactions and the three dependent variables, agile utilization, acceptance, and resistance.

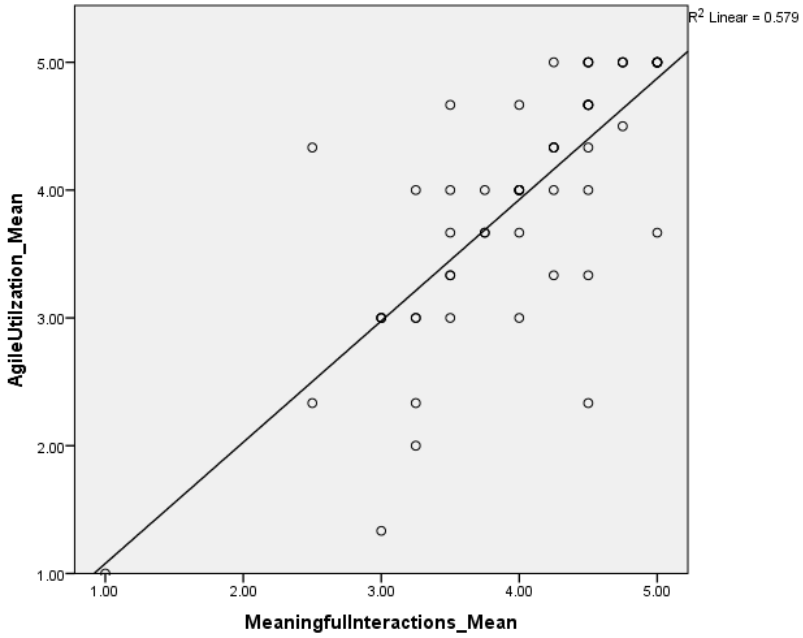

Figure 6. Scatter plot of meaningful interactions versus agile utilization.

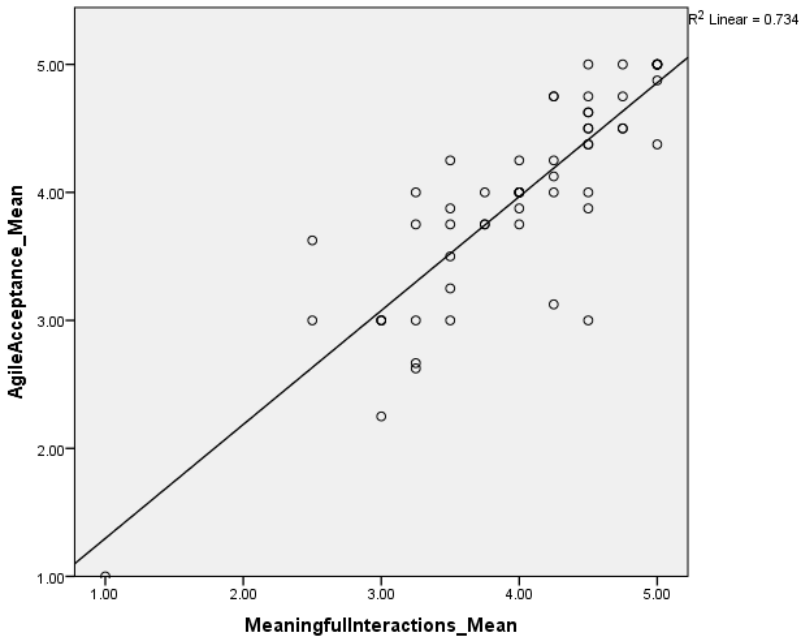

Figure 7. Scatter plot of meaningful interactions versus agile acceptance.

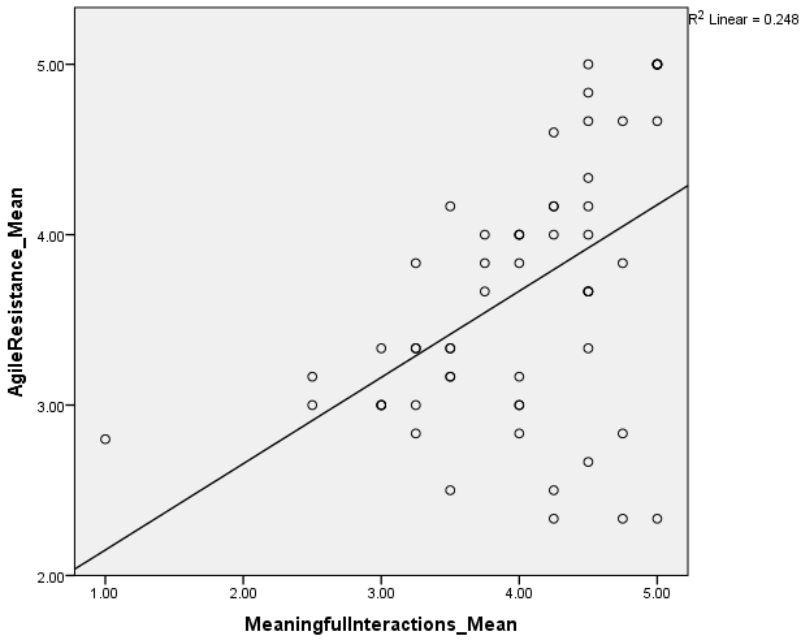

Figure 8. Scatter plot of meaningful interactions versus agile resistance.

The skewness and kurtosis index identified the normality of the data. The results suggested that the deviation of data from normality was not severe as the value of skewness and kurtosis index were within 3/+3 (Simon, 2011). Table 9 depicts this information.

Table 9
Descriptive Statistics of Study Variables

	Skewness	Kurtosis
Agile Utilization	.912	.367
Agile Acceptance	1.042	1.711
Agile Resistance	.156	1.032
Meaningful Interactions	1.131	2.308

Outlier detection standardized the variables. There was one case that resulted in unusual responses to Agile utilization (standardized value of 3.06), Agile acceptance (standardized value of 3.67), and meaningful interactions (standardized value of 3.82). Standardized values beyond 3 and +3 are outliers. However, since it was not extreme (i.e., beyond four standard deviations), this one case was left in the analysis. Table 10 below provides the ranges of standardized values for each variable.

Table 10
Standardized Variables

	Min	Max
Agile Utilization	3.06	1.03
Agile Acceptance	3.67	1.21
Agile Resistance	1.70	1.60
Meaningful Interactions	3.82	1.26

Independence of observations is largely a study design issue rather than something one can test for. The independence assumption of binary logistic regression holds that the observations were independent based on the study design.

Results of Hypothesis Testing

As mentioned earlier, both Pearson correlations, as well as binary logistic regressions, were conducted in order to address the following research question and hypotheses:

RQ1: To what extent is there a relationship between meaningful interactions among team members and the acceptance, use, and resistance of agile project management in the health care industry?

$H1_0$: There is no significant relationship between meaningful interactions among team members and the acceptance, use, and resistance of agile project management in the health care industry.

$H1_a$: There is a significant relationship between meaningful interactions among team members and the acceptance, use, and resistance of agile project management in the health care industry.

Pearson correlations revealed that meaningful interactions was significantly positively associated with Agile utilization ($r = 0.761$, $p < .001$), Agile acceptance ($r = 0.857$, $p < .001$), and Agile resistance ($r = 0.498$, $p < .001$). Increases in meaningful interactions are associated with increases in agile project management use, acceptance, and resistance. Table 11 depicts this information.

Table 11
Pearson Correlations

		1	2	3	4
Meaningful Interactions (1)	*r*	1			
	r	.761	1		
Agile Utilization (2)	*p*	<.001			
	r	.857	.938	1	
Agile Acceptance (3)	*p*	<.001	<.001		
	r	.498	.525	.578	1
Agile Resistance (4)	*p*	.<.001	<.001	. <.001	

Three binary logistic regression models tested each of the three dependent variables agile utilization, agile acceptance, and agile resistance:

1. $logit(Agile\ Utilization) = \beta_0 + \beta_1 Meaningful\ Interactions$
2. $logit(Agile\ Acceptance) = \beta_0 + \beta_1 Meaningful\ Interactions$
3. $logit(Agile\ Resistance) = \beta_0 + \beta_1 Meaningful\ Interactions$

The "*logit* "is the natural log of the odds of an event occurring. The event in each of the models is agile utilization, agile acceptance, and agile resistance. These events are coded as either 0 or 1 (non-utilized/utilized, not accepted/accepted, nonresistance/ resistance). Regarding model 1, the logistic regression model was statistically significant, $\chi 2$ (1) = 13.927 p < .001. The model explained 46.4% (Nagelkerke R2) of the variance in agile utilization. Meaning interactions are statistically significant. An increase in meaningful interactions by one unit increases the likelihood of Agile utilization by 10.89 times (B = 2.389, OR = 10.89, p = .001. Tables 12, 13, and 14 provide this information.

Table 12

Omnibus Tests of Model Coefficients

Chi-square	df	Sig.
13.927	1	.000

Table 13

Agile Utilization

2 Log-likelihood	Cox & Snell R Square	Nagelkerke R Square
23.019	.239	.464

Table 14

Dependent Variable

	B	*S.E.*	Wald	df	Sig.	*OR*	95% C.I.for OR)	
							Lower	Upper
Meaningful Interactions_	2.389	.904	6.989	1	.008	10.899	1.855	64.046
Constant	6.888	3.234	4.538	1	.033	.001		

Regarding model 2, the logistic regression model was statistically significant, $\chi 2$ (1) = 14.082, $p < .001$. The model explained 57.0% (Nagelkerke R2) of the variance in agile acceptance. Meaning interactions are statistically significant. An increase in meaningful interactions by one unit increases the likelihood of Agile acceptance by 32.19 times (B = 3.472, OR = 32.19, p = .033. Tables 15, 16, and 17 provide this information.

Table 15

Omnibus Tests of Model Coefficients

Chi-square	df	Sig.
14.082	1	.000

Table 16

Agile Acceptance

2 Log-likelihood	Cox & Snell R Square	Nagelkerke R Square
13.960	.241	.570

Table 17

Dependent Variable

	B	S.E.	Wald	df	Sig.	OR	95% C.I.for OR	
							Lower	Upper
Meaningful Interactions	3.472	1.626	4.558	1	.033	32.191	1.329	779.565
Constant	10.013	5.525	3.285	1	.070	.000		

Regarding model 3, the logistic regression model was not statistically significant, $\chi 2$ (1) = .719, p = .396. The model explained 2.2% (Nagelkerke R2) of the variance in agile resistance. Meaning interactions was not found to be statistically significant. (*B* = .373, *OR* = 1.452, *p* = .389. Tables 18, 19, and 20 provide this information.

Table 18

Omnibus Tests of Model Coefficients

Chi-square	df	Sig.
.719	1	.396

Table 19

Agile Resistance

2 Log-likelihood	Cox & Snell R Square	Nagelkerke R Square
49.763	.014	.022

Table 20
Dependent Variable

	B	S.E.	Wald	df	Sig.	OR	95% C.I.for OR	
							Lower	Upper
Meaningful Interactions	.373	.433	.743	1	.389	1.452	.622	3.392
Constant	.100	1.764	.003	1	.955	.905		

Summary

The purpose of this study was to assess the relationship between meaningful interactions and agile utilization, agile acceptance, and agile resistance of program managers in a health care setting. Results of Pearson correlations showed that meaningful interactions significantly positively correlated with agile utilization, acceptance, and resistance. The results of binary logistic regression indicated that there was a significantly increased likelihood of agile utilization and acceptance with increasing meaningful interactions. However, agile resistance was not significant.

What follows in Chapter 5 is a discussion of the results of this study in the context of the theoretical framework. Limitations of the results of the study will are in chapter 5. Chapter 5 also discusses recommendations for future research.

CHAPTER 5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

Introduction

Chapter 5 discusses the results of this survey. The results are summarized and explained. Further discussion includes evaluating the research question, the conclusion drawn based on results, and recommendations for future research reviewed.

Summary of the Results

This research intended to examine to what extent meaningful interactions can take an organization from resistance to resilience in the acceptance and use of agile project management in the health care industry. The definitions of terms, research design, and the central assumptions about research literature review, methodology, data analysis, results, and discussion are in the previous chapters. The final chapter of the study is the conclusion and provides an evaluation of the research question. Chapter 5 is an explanation of the research question and hypotheses tested. Also, Chapter 5 includes a summary of the primary findings of the research. Next, it explains the fulfillment of the research purpose, describes the contribution to the business technical problem defined at the beginning of the research as one of the research objectives, and finally, gives recommendations for further research.

Discussion of the Results

The theoretical framework for this study was the correlation between meaningful interaction and the acceptance of agile project management in the health care industry. The purpose of this research was to identify whether meaningful interactions could influence the acceptance of agile project management in the health care industry. Much research exists about the benefits of agile project management in the health care industry. A gap existed in how

organizations transition people from resisting agile project management to resilience using agile project management. Health care is changing at a previously unseen rate. Failure to adapt to these changes can lead to loss of revenue, slow technology advances, lack of government reimbursement, regulatory fines, and a lower level of patient satisfaction. The purpose of the study stated that project managers and project teams for HIT do not often accept the use of the agile project management methodology even though it improves project success.

Evaluation of Research Questions

This study explained and evaluated meaningful interactions and acceptance of agile project management in health care. Therefore, the research question and Hypotheses posed were:

RQ1: To what extent is there a relationship between meaningful interactions and the acceptance and use of agile project management in the health care industry?

$H1_{0:}$ There is a relationship between meaningful interactions and the acceptance and use of agile project management in the health care industry.

$H1_{a}$: There is no relationship between meaningful interactions and the acceptance and use of agile project management in the health care industry.

Results show that most respondents believed their employee communication was meaningful. Most respondents also accepted and used agile project management. These results indicated that meaningful interactions could take an organization from resistance to resilience in the acceptance and use of agile project management.

Azanha et al. (2017) verified that the benefits of agile project management have led to the organizational adoption of the agile project management process. Agile project management allows companies to respond quickly to change, allowing flexibility in rapidly changing

environments. Therefore, the research question was suitable for further examination. The analysis of this question in the health care industry is valuable because stakeholders in the health care industry could use the outcome of this study to increase patient satisfaction and increase the quality of patient care. Researchers in health care organizations and educational institutions that teach health care courses could use this study to enhance the course content.

The survey questions were in five sections; methods used, agile utilization, agile acceptance, agile resistance, and meaningful interactions. Most respondents used agile, the waterfall method was the second most used, and the spiral method was the third. These results provide insight into how familiar the respondents were with the agile process.

The next few questions focus explicitly on agile utilization. These questions identified how strongly the participants felt about their use of agile. Most respondents strongly agreed they used agile in the past, currently use agile, or are planning to use agile in the future. These results show that once an organization starts using agile, they continue to use it. The next group of questions identified the strong acceptance of agile. These results indicate that leadership, project managers, and project team members embraced the continued use of agile. Most respondents used and supported the use of agile. When there was resistance, the resistance was strong.

The last group of questions was about meaningful interactions. These show that interactions among team members are positive, more than superficial, promote group cohesion, and are voluntary. These characteristics define meaningful interactions. The percent of respondents using agile and the percent with meaningful interactions among team members point to a connection between meaningful interactions and agile acceptance.

The results of the research also show the importance of the research question. For example, the results show that meaningful interactions statistically significantly predict agile acceptance. Moreover, the results show that meaningful interactions statistically significantly predicted agile utilization. The conclusion was that a relationship exists between meaningful interactions and agile project management.

Conclusions Based on the Results

The purpose of this study was to examine whether meaningful interactions influence the acceptance of agile project management in the health care industry. Surveys that use a 5point Likert scale are very reliable, according to many research studies, but are not always objective (the recommendations for future research contain more about this topic). Fulfillment of the purpose of this study occurred by providing evidence of the relationship between meaningful interactions and agile project management. The results show that meaningful interactions statistically significantly predicted agile acceptance. For a one-unit increase in meaningful interactions, expected an increase in agile acceptance.

Implications for Practice

According to Cooke (2014), the specific problem is that project managers and project teams for HIT do not often accept the use of the agile project management methodology even though it improves project success. Therefore, the contribution of this research to a business technical problem was that it showed a relationship between meaningful interactions and agile utilization, as well as between meaningful interactions and agile acceptance. Distributing this research to health care organizations would solve a business technical problem and help them to use the agile project management method to improve project success.

This study contributed to the business technical problem. IT shows that 31.67% agreed, and 36.67% strongly agreed that project success improved because of adopting agile project management in their organizations. HIT project failure can lead to a reduction in income and adverse business outcomes. Results show that HIT most often used agile project management, as did respondents overall, and waterfall project management was the second most used process.

Recommendations for Further Research

The health care industry encompasses a wide range of organizations (e.g., for-profit and not-for-profit hospitals, doctor offices, walk-in clinics). It might be beneficial to focus on specific portions of the health care industry to identify whether health care results are different from other industries. Health care is a worldwide industry. Researching different countries is suggested to identify cultural differences in the results.

An increase in the number of respondents is another recommendation. Because the sample used in this study consisted of 101 respondents, it does not recommend generalizing the results obtained. Consequently, to reach general conclusions, future research should use a sample that includes more respondents. Also, more organizations need to be involved in the research. Although the results obtained by the reliability analysis show the reliability of the scales for analysis, the survey, conducted at a given time, meant the results obtained could not apply for an extended period. It would be more appropriate to collect data over several periods and then compare the results obtained.

Recommendations developed directly from the data

The measuring instrument used the Likert scale, that rating a statement on a scale of one to five. Because the survey was anonymous, the influence of subjectivity diminished. Future

research should focus on interviewing more respondents and testing over multiple periods, as well as involving more organizations to obtain research results that are more valid and reliable.

The questions were specific and had a limited number of answer options. Adding qualitative research and the bidirectional interaction of some other quantitative research methods could increase the depth and breadth of the investigation. The questions asked may change based on answers from previous questions.

Recommendations based on delimitations

The delimitations are characteristics that limit the scope and define the boundaries of a study. Delimiting factors include the United States, the health care industry, agile project management, and meaningful interactions. Expanding the research to include other countries and other industries would show if the issue of project failure was similar to that in the health care industry or not. Expanding the research to other project management methods would provide insight into meaningful interactions improving project success using different project management methods.

Conclusion

This research intended to examine whether a relationship between meaningful interactions and agile project management existed. The extensive review of the literature led to a statistical model that explored the relationship between meaningful interactions and agile utilization, and between meaningful interactions and agile acceptance. The results revealed a statistically significant relationship between meaningful interactions and agile utilization and between meaningful interactions and agile acceptance. Therefore, the hypothesis of the study

concluded that meaningful interactions could take an organization from resistance to resilience in the acceptance and use of agile project management in the health care industry.

The research question is useful for future research. This study fulfilled and confirmed the contribution to the business technical problem because this study could help health care industry workers and participants use the agile project management method to improve project success. Future research should include more respondents and testing over multiple periods, as well as involving more organizations to obtain more valid and reliable research results.

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