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Harishankar Krishnakumar
hkrishnakumar@my.harrisburgu.edu

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Challenges to Adopting Hybrid Methodology: Addressing Organizational Culture and Change

Control Problems in Enterprise IT Infrastructure Projects

Harishankar E. Krishnakumar

Harrisburg University

GRAD 699 PMGT

Abstract

IT infrastructure projects have long been an overlooked field superseded by the more popular software development silos and cross-functional project teams when it comes to enterprise Agile transformations. This paper presents a systematic literature review by leveraging a qualitative research methodology based on empirical evidence provided in contemporary scholarly research articles to explore how certain variables such as organizational culture- including team structure, leadership hierarchy, geolocation, etc. along with an organization's change management processes affect the adoption of a Hybrid/Agile project management methodology, focusing on reported challenges and critical success factors that define such large-scale enterprise transformations. The salient features from the conclusion of this preliminary research endeavor point to a direct relationship between certain aspects such as the size of the organization, stakeholder buy-in, and inherent resistance to change playing pivotal roles that define success within IT infrastructure teams and associated projects. This research endeavor and literature review also identifies a plethora of opportunities within IT infrastructure project management practices for future research based on the gaps that have been identified in contemporary literature.

Keywords: Project Management, Agile, Hybrid, IT Infrastructure, Organizational Culture, Transition, Change Control

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Introduction

IT projects in general and subsequently, the associated software or application development endeavors in particular, form a perennially ubiquitous context that tends to direct a majority of contemporary discussions related to the field of the Agile framework when discussing Project Management methodologies, as is evidenced by numerous literary articles and scholarly journals available for review within this specific domain. However, there is considerably minimal exposure and understanding of non-IT, and particularly, non-software development functional silos and the unique challenges that they pose to successful Agile transformations (Reis Sales, 2016). The context of this research seeks to precisely delineate IT infrastructure projects with that of software development, define and discern challenges that pertain to organizational culture, and change management processes for large-scale enterprises seeking to transform their project management practices away from the traditionally established waterfall project management processes along with its associated tools and techniques to an Agile/Hybrid approach.

The Scrum methodology, as outlined by its inherent adaptability to change while focusing on continuous delivery and the customer satisfaction that it brings with the help of an iterative approach could potentially play a key role in meeting the needs of IT infrastructure projects. There are some well-documented, yet unique challenges that fall within the purview of IT infrastructure-related projects, some of which can be categorized at a higher level such as the inability to breakdown certain project tasks beyond the epic level (onto a User Story-level), project tasks that are not inherently iterative, etc. (Ranjan, 2018). Despite these constraints, Agile/Scrum could potentially be applied to manage these tasks with the help of a knowledgeable Agile coach following what can best be described as a Hybrid-Agile approach stemming from

the Scrum methodology. Adherence to the core principles of Scrum is established with the help of mundane Scrum events, team roles, and artifacts, while at the same time, providing some much-needed leeway that helps the infrastructure team leverage Scrum in a way that is most beneficial in achieving their own specific project goals.

As a direct result of trying to adopt this Hybrid-Agile project management methodology by teams catering to the IT infrastructure of large-scale enterprises, unique challenges that arise from such transformational endeavors will need to be studied to better equip future project teams and individual functional silos to adapt successfully. This paper seeks to focus on specific challenges that arise from IT infrastructure teams adopting this Hybrid-Agile framework by looking specifically at the organizational culture- including team hierarchy, leadership structure, location, etc. along with the inherent change management processes followed by the enterprise to meet its IT infra production deployment needs. This scope would, therefore, directly relate to the knowledge areas pertaining to Project Scope Management, Project Resource Management, Project Communications Management as well as Project Stakeholder Management as defined in the Project Management Body of Knowledge.

Research Problem

There is an ongoing problem with a lack of understanding of how challenges that arise from varied organizational cultures- specifically team structure, location, and leadership hierarchy, along with inherent change management processes together form the critical success factors in large-scale IT infrastructure enterprises undergoing a transition from traditional project management approach to a Hybrid or Agile project management methodology (Mahadevan, Kettinger & Meservy, 2015, p. 78). Although IT infrastructure is a lesser-known domain when compared to the more popular software development arena, there is a significant investment and

use of IT infrastructure across industries due to the need for communication that both confidential and available (in terms of ease-of-access) to every authorized person within that organization (Rouse, 2020).

Despite a plethora of research material available for similar themes within software development and certain other industries such as government projects, construction endeavors, etc. to name a few, there is relatively minimal knowledge of how such project management methodology transitions are deployed in IT infrastructure silos, even though this functional domain spans various industries. “Project control dynamics in the Agile development method place a much greater role on clans and self-control than is common in the Waterfall method. Thus, for an organization introducing Agile methods, a change in development approach that relies more on individuals or teams to exercise control presents important resource allocation and control consequences” (Mahadevan, Kettinger & Meservy, 2015, p. 78). This problem has negatively affected the organizational approach to Agile transitions for IT infrastructure projects in retail, manufacturing, pharmaceutical industries- just to name a few, as they are unprepared for its full impact as evidenced by fall in revenue (Reis Sales, 2016). A possible cause of this problem is the inherent lack of understanding in how IT infrastructure differs from software development and if we don't solve it, the ubiquitous nature of IT infrastructure will cause a potential penalty in terms of the triple constraints of scope, time, and cost. Another cause of this problem relates to the lack of availability of specific case studies pertaining specifically to large-scale organizations and their approach to Agile transformations in general. Perhaps research that investigates specifically how a transition from traditional project management methodology is carried out in the IT infrastructure domain of a large-scale organization would help remedy the situation by addressing the critical roles played by organizational culture including- team

location, hierarchy, leadership structure, etc. along with change management to have such enterprises understand and be better prepared for the transitional endeavor.

This paper will seek to limit specific project management methodologies being reviewed within the Agile framework by focusing on Scrum. The reason for this focus on Scrum is justified by the author's exposure to this framework during multiple IT infrastructure projects over the last five years as well as the relatively higher popularity of the Scrum framework in IT infrastructure projects due to its inherent ability to address complex adaptive problems while at the same time, meeting customer expectations in the form of continuous delivery (Ranjan, 2018).

Research Question

The research question here provides purpose and relevance to the research effort and also seeks to establish objectives that need to be met by this effort. The problem statement for this research endeavor as outlined above, seeks to answer this critical, yet relevant research question pertaining specifically to the IT infrastructure domain: How do the various facets of organizational culture- including team structure, location, and leadership hierarchy along with change management processes contribute to project success in IT infrastructure enterprises that leverage an Agile or Hybrid project management methodology?

Literature Review

The theme of this literature review attempts to provide credibility and legitimacy to the research problem that relates to organizational culture and how its various facets play a significant role in how work is accomplished, how projects are deemed to be a success within IT infrastructure enterprises as outlined in the previous section and to also explore its real-world implications with the support of contemporary peer-reviewed literature.

Organizational Culture

Organizational culture has been considered to subsume shared values that interact with organizational structure and control systems to produce behavioral norms and these are part of a larger set of artifacts (practices, expressive symbols, forms, etc.), beliefs, and certain basic assumptions that members of the organization share about apt behavior (Marampa, Khananda & Anggraeni, 2019, p. 535). There have been numerous peer-reviewed studies that explore the relationships between organizational culture, its associated facets such as teamwork, and collaboration, employee effectiveness, satisfaction, etc. and organizational performance as a whole, but these are, in general, independent of functional domains and technical areas within such domains, as well as the type of project management methodology in place (Kosfeld & Von Siemens, 2011; Marcoulides & Heck, 1993; Petty et al., 1995). Although there are avenues for further research in terms of seeking to explore relationships between different cultural dimensions and associated performance scales, these would need to be carried out relative to each functional domain and its associated set of variables and work environments. Prior research suggests a significant relationship wherein, organizational culture and its sub-dimensions of innovation, risk-taking, attention to detail, outcome orientation, people orientation, team orientation, aggressiveness, and stability- have a direct influence on organizational performance in terms of its effectiveness and efficiency (Marampa, Khananda & Anggraeni, 2019, p. 540). An example of this very scenario for further exploration would be in the IT infrastructure domain with a focus on Agile/Hybrid Project Management Methodology, and that falls within the direct purview of this literature review.

Organizational agility is, by itself a vast topic that provides ample opportunity for both further study as well as scrutiny. It is vital for companies to develop capabilities that help them

adapt and offer quick responses to market changes. The competing values framework, which is one of the most predominant frameworks applied within organizational culture research, consists of two dimensions- one that highlights the flexibility, adaptability, and dynamism, and the other dimension that focuses on integration, collaboration, and unity (Felipe, Roldán & Leal-Rodríguez, 2017, p. 3). This need to understand the process of assimilating agility within an organization is especially true in today's pandemic-affected global economy that is witness to about 11.1% unemployment as of July 02, 2020 (US Bureau of Labor Statistics, 2020).

The challenges associated with transforming a large-scale enterprise to wholly and successfully imbibe an Agile project management approach cannot be accomplished overnight, and a transition period would potentially involve a steep learning curve for associated stakeholders (Barbosa & Saisse, 2019, p. 317). Therefore as a direct result of this aforementioned learning curve, it is important to clearly understand the challenges associated with such transformations from an organizational culture and change management perspective due to the inherently automated and robust processes that exist within IT infrastructure (Silva & Simões Gomes, 2019, p. 45). A holistic outline as observed in terms of the literature review for this paper can be described with a topical approach based on certain pre-defined criteria that will help the reader discern and understand its original context as was meant to be and at the same time, arrive at the relevant evidence-based conclusions highlighted by this author.

Before we take a comprehensive look at IT infrastructure projects and the associated challenges they pose to Hybrid-Agile transformations, it is vital to understand holistically, what an IT infra project actually is. To help us in this regard, we can consider the following statement to be our vanguard- Not all IT is created equal. "IT infrastructure predominantly consists of the components required to operate and manage enterprise IT environments and can be deployed

within a cloud computing system, or within an organization's facilities. These components could potentially include hardware, software, networking components, an operating system (OS), and data storage, all of which are used to deliver IT services and solutions” (Red Hat, 2020).

IT infrastructure projects, to our detriment, are overshadowed by an inherent focus on software development in terms of contemporary research among project management domains. This literature review seeks to leverage existing research articles as well as my own professional experience as a Network Infrastructure Engineer in a large-scale multinational IT enterprise to identify challenges seen in transforming from a Traditional/Waterfall Methodology to a Hybrid-Agile approach to Project Management specifically from Organizational Culture and Change Management perspectives. Additionally, why truly Agile transformations are rare in IT infrastructure projects as observed within the ambit of Scrum Methodology will be explored.

The Agile project management methodology and the Scrum framework that falls within this umbrella, both of which can be considered to have originated around the needs of smaller development teams and single projects, are being increasingly applied to large-scale enterprises (Dikert, Paasivaara, & Lassenius, 2016, p. 87). Additionally, multiple factors that affect inter-team coordination become critical success factors while attempting to scale-up to this unique Agile transformation need. Outside of the traditional functional silos constrained within Software Development or rather Application Development in general, Agile has been identified as highly beneficial to other business units within the same enterprise and this includes human resources, marketing and sales, and product management. This inter-dependency helps in an organization-wide implementation strategy despite scaling issues (VersionOne, Inc, 2016; Paasivaara et al., 2013, 2014; Dingsøy and Moe, 2014).

The transformation from a traditional to an Agile project management methodology requires significant stakeholder buy-in. For example, the iterative approach manifested in Agile would need the Dev Teams as well as management to change their mindset from an established life-cycle model (Nerur et al., 2005). The flexibility in scope afforded by Agile mandates a change in planning strategy compared to the waterfall technique and prioritizes near term tactical decisions to long-term strategy (Cohn and Ford, 2003). The paradoxical outcome of this scenario is the need to involve senior leadership in discussions due to their anticipation of meeting long-term strategic objectives (Boehm and Turner, 2005).

In discussions of availability of research on Agile Software Development over the last decade or so, established research evidence from Dybåand, Jalali, Wohlin, Senapathi, Srinivasan, and Kaisti, all agree that even though the scholarly material is still in the process of reaching its full maturity, large-scale implementation of Agile does not currently have sufficient literary evidence based on consistent, yet admissible secondary studies (Dybåand, 2008; Jalali and Wohlin, 2012; Senapathi and Srinivasan, 2013; Kaisti et al., 2013).

Change Management

Considering the role played by different functional silos within the same organization, the period of transformation from legacy project management processes and tools employed by the company over the years could be significant and therefore, each department or associated functional silo within IT infrastructure teams (such as Network Operations and Projects, Server Administration, Application Teams, Datacenter support, etc. just to name a few) would need to collaborate at a higher-than-expected level for which these associated teams and their members are seldom unprepared for.

The interdependence of various organizational units within the same IT enterprise plays a significant role when considering Agile transformation needs. Boehm and Turner, 2005 have asserted that HR departments in most organizations regularly mandate specific roles for team members (Boehm and Turner, 2005). Similarly, Lindvall et. al. posits that production change management teams within such IT infrastructure enterprises regulate continuous integration boundaries, which in turn create hurdles to a full Agile deployment (Lindvall et al., 2004).

Putting this data together from the multiple sources listed above could help us achieve cognizance of such challenges from an organizational culture and change management perspective within these IT infra projects. Firstly, going specifically by the numbers alone, various studies have shown that the definition of a large-scale organization has the potential to vary significantly. On the one hand, Koehnemann and Coats, 2009, agree that agile projects are categorized as small when it consists of up to 50 people (Koehnemann & Coats, 2009), while on the other hand Dingsøy and Moe, 2014 contend based on surveys conducted at the XP2014 workshop that the general size of a “large-scale” organization depends on the context and person defining it (Dingsøy and Moe, 2014).

There are numerous ways to conduct pertinent research to understand a complex social phenomenon as described by how different project management approaches are affected by organizational culture typologies. Where this agreement usually ends, however, is raised by the question of Pinto, 2014 as defined by his case studies. Whereas some are convinced that the approach is mostly qualitative, due to the fact that their research results cannot be measured numerically (Carvalho and Mello, 2012), others maintain that there is substantial empirical evidence of the relationship between employee attitudes and organizational effectiveness (Carvalho and Mello, 2012).

Similarly, there are numerous theories put forth when it comes to providing a high-level approach to Agile transformations in large-scale enterprises. One of the major scholarly opinions includes the “Discover-Define-Create-Evaluate” Driving Cycle, which is an effective framework that can replace existing traditional schools of thought with a novel project management approach that is inclusive of project internal stakeholders, collaborators as well as external stakeholders (Barbosa & Saisse, 2019, p. 330). These findings related to each Driving Cycle can be equated to iterations in Agile as proposed by Barbosa & Saisse, 2019 and have important consequences for the broader domain of ensuring stakeholder buy-in from an organizational culture standpoint (Barbosa & Saisse, 2019, p. 330).

Organizational culture plays an outsize role in Agile transformations and yet, this is one of the most overlooked domains in IT infrastructure projects that usually have unique sets of associated challenges including team structure, leadership hierarchy, outsourcing, lack of collocation, etc. to name a few (Hillaire, 2018, p. 40). Outsourcing is a rather common practice among IT infrastructure enterprises and with a growing interest in adopting agile methods in offshored projects, organizations have been paying particular attention to countries such as India- which is one of the major outsourcing and consulting destinations in IT. The reasons for this critical analysis are rooted in the hierarchical culture of offshore organizations and the related behavior of management that emphasizes linear command-and-control and is generally considered to be impeding to adopting agile methodologies (Šmite, Gonzalez-Huerta & Moe, 2020, p. 145).

Ultimately, what is at stake is the ubiquitous need to understand that there are numerous challenges associated with adopting Agile or a Hybrid Project Management methodology in IT infrastructure projects and some of the significant ones that relate to business processes involve

the assessment of skill levels of project resources (Hillaire, 2018, p. 35). Additionally, organizational culture and its associated challenges that include ease of task switching, logistical issues arising from non-located or geographically disparate teams that support IT infrastructure endeavors will need to be overcome for an organization to have fully embraced Agile (Boehm & Turner, 2005).

Knowledge Management and the Human Factor

Another important point of note when it comes to adopting Agile is knowledge management. Knowledge sharing in the Agile environment is less formal and fuzzier than compared with organizations adhering to a traditional project management approach. This is due to the Agile environment only requiring a tacit type of sharing. The effectiveness of knowledge management processes, therefore, is found to be a derivative of several different enablers such as learning organization, strategy, organizational culture, structure, collaboration, communication, project management methods, leadership, tools, and processes, etc. (Paterek, 2016, p. 249). A roadmap to adopting the Agile framework by large corporations such as PPL- an electric utility company headquartered in Allentown, PA in the United States- has been widely discussed and analyzed in peer-reviewed literature (Tenali, 2016). Specific figures from such journals have shown a quantifiable increase in efficiency and productivity upon adopting Agile methodologies in their projects. For example, with an Agile adoption rate increase from 10% to 40% of PPL's large projects, the organization was able to witness a reduction of over-budget projects decrease from about 66% to about 33% within a relatively short span of three years between 2010 and 2013 (Tenali, 2016, p. 12). Therefore, assessing such figures that help relate and quantify the success of adopting the Agile/Hybrid project management approach is a comparatively easy task when the primary organizational domain is outside of IT infrastructure.

Additionally, the human aspect that plays another significant role within the paradigm of organizational culture in determining the success of projects should not be forgotten. Prior research suggests that there is a link between employee satisfaction with their jobs and the level of organizational commitment. The study has explored the causality of employee turnover and retention in organizations to determine exogenous and endogenous variables such as job satisfaction, sense of moral duty to the organization, and the effect of organizational inducements on employee attitudes and behaviors. It was noted that a better evaluation of job content and job context by employees leads to a sense of obligation and commitment to the organization, both of which can be deemed critical to project success (Ahmad, 2019, pp. 74-76). Organizational culture, therefore, permeates every behavior in an organization and is pivotal for business efficiency that in turn supports scalability and rapid growth of a business undertaking irrespective of its area of operations or industrial domain (Thorwid & Vinge, 2020, p. 52).

Most large-scale organizations that are under the purview of this literature review have an established ITIL (Information Technology Information Library) framework to improve upon their deliverables as well as consistency. ITIL evolves from the Information Technology Services Management (ITSM) process which in turn, is based on a collection of best practices for the management of IT services (Silva & Simões Gomes, 2019, p. 45). Change management processes in most large-scale IT enterprises are rather well-established and stem from this concept of the ITSM wherein, their internal associates or outsourced teams and partners that are deployed to work on IT infrastructure needs are well-versed with production deployment task streams and approval processes. This is evidenced based on the fact that ITIL tools such as Service Now and Atlassian JIRA hold significant sway and are a mainstream point in annual budget estimates of most organizations (Cherwell Software LLC, 2020).

Consequently, change management can be viewed as a sub-set of the process framework within IT infrastructure projects and the challenges posed by such established processes when it comes to Agile transformations need to be prioritized irrespective of the size of the organization and/or functional domain (Mahadevan, Kettinger & Meservy, 2015, p. 95).

In terms of the limitations of this work, an inherent researcher bias toward the ubiquity of the IT infrastructure domain could be somewhat evident due to the author's specific background as a Network Infrastructure Engineer. However, the selection of scholarly articles pertaining to this topic has been carried out in a manner such that there is considerable effort to ensure minimal bias and this is aided by the limited availability of supporting secondary research on this topic. Additionally, the more significant limitation is raised by the finite amount of time available to carry out preliminary research which was spread over five weeks as part of the stringent university graduate course requirement and this forms a major impact on the quantity and quality of scholarly research material available for review as part of this paper.

On a concluding note, it is observed that relevant, contemporary literature helps to provide an in-depth review of various challenges observed with transitioning from a traditional project management approach to a Hybrid-Agile one while staying within the specific contexts of organizational culture and change control (Mahadevan, Kettinger & Meservy, 2015; Reis Sales, 2016; Dikert, Paasivaara, & Lassenius, 2016; Hillaire, 2018). Consequently, this opens up an opportunity for potential interpretation of these same factors listed above, but within a non-software development framework and specifically, within the ambit of IT infrastructure projects. Therefore, it can be concluded that there is a significant gap in existing scholarly material that pertains to specific effects of the various facets such as team structure, leadership hierarchy,

outsourcing, lack of collocation, etc. on such non-software development projects and their impact on successful Agile transformations in IT infrastructure projects (Hillaire, 2018).

A holistic approach using qualitative means were employed to consider over twenty pieces of unique contemporary scholarly articles which agree on a multitude of common themes related to IT infrastructure projects and associated challenges while transforming from a traditional approach to a Hybrid-Agile project management methodology. Some of these common themes include the necessity of a well-established command and control leadership structure, the need for a well-established change management process stemming from ITSM best practices, the use of collocated teams where possible, etc. to help answer the research question of how the various facets of organizational culture- including team structure, location, and leadership hierarchy along with change management processes contribute to project success in IT infrastructure enterprises that leverage an Agile or Hybrid project management methodology? As future research, specific case studies and qualitative analyses can be conducted within the ambit of large-scale IT enterprise organizations undergoing such project management transformations and investigate interdependencies based on the numerous variables such as the industrial domain, size of the organization, organizational compatibility, and acceptability to change, leadership and senior management support, stakeholder buy-in, and changes in project communication needs.

Methodology

A systematic literature review is a “means of identifying, evaluating and interpreting all available research relevant to a particular research question, or topic area, or phenomenon of interest and appropriate for summarizing existing research, for identifying gaps in the existing literature, as well as for providing background for positioning new research” (Dikert, Paasivaara, & Lassenius, 2016, p. 89). This literature review has been based on over twenty contemporary,

yet independent scholarly articles and is based on empirical evidence provided by these authors as part of their work.

Justification and Business Objectives

The initial study that was conducted as part of the literature review product has led this author to pursue further research study based on the problem statement described in the pertinent section and resultantly, compile and present this data based on a qualitative research methodology as part of the Graduate Thesis- GRAD699 course and its definitive academic requirements towards a Master of Science degree in Project Management at Harrisburg University in the Late Summer semester of 2020.

The problem statement, on a high-level, delved into a lack of understanding of how challenges that arise from varied organizational cultures- specifically team structure, location, and leadership hierarchy, along with inherent change management processes together formed the critical success factors in large-scale IT infrastructure enterprises undergoing a transition from traditional project management approach to a Hybrid or Agile project management methodology.

One of the major concerns, as discerned from this literature review on this topic was the paucity in the availability of specific case studies and other empirical evidence pertaining to large-scale organizations and their general approach when it comes to enterprise-wide Agile transformations (Mahadevan, Kettinger & Meservy, 2015; Reis Sales, 2016; Dikert, Paasivaara, & Lassenius, 2016; Hillaire, 2018). This dearth of relevant academic material supported by more precise empirical evidence was addressed by potential research into the critical roles played by certain common variables such as organizational culture including- team location, hierarchy, leadership structure, etc. along with change management at large-scale organizations dealing with IT infrastructure projects and their associated transitional effort from a traditional to a

Hybrid-Agile project management methodology. The results from this endeavor played a vital role in bridging current gaps in knowledge among IT infrastructure project management professionals and associated stakeholders that include leadership teams, technical personnel (SMEs), etc. and thereby, successfully addressed current business needs in terms of a standard operating procedure that leadership can refer to while guiding their organizations through what could potentially be a lengthy and tumultuous process of transformation from the traditional to a Hybrid/Agile methodology while seeking to answer the research question that has been highlighted in the previous section.

Research Approach and Methodology

While this literature review sought to synthesize existing academic sources and associated literature on this topic by having explored multiple avenues that are credible from a scholarly viewpoint in order to help make substantiated connections, the goal of a typical follow-up as part of the Graduate Thesis- GRAD699 course was for the primary research approach to possibly leverage a qualitative research approach- one that uses a specific research methodology in the form of a questionnaire as described below. Some of the reasons behind this particular choice pertained to the need for a general analysis- one that is not grounded in measurable models or hypotheses, but rather on an open-ended and holistic approach that can be considered relatively information-rich, while at the same time providing the author with a flexible measurement opportunity for some of the nebulous phenomena that govern typical organizational cultures and span IT infrastructure change management paradigms at most large-scale organizations.

The lack of efficiency afforded by this relatively time-consuming approach is somewhat counterpoised by the fact that a qualitative analysis of this problem provided the author with a

viable research footing to measure data based on the knowledge that is neither adequate nor mature enough at this particular moment in time- at least within IT infrastructure projects (Hillaire, 2018, p. 40). Therefore, seeking to analyze responses and help make connections took precedence with the help of this qualitative research approach.

The primary research methodology was a questionnaire as mentioned above- one that was intended to include responses from project management professionals as well as students associated with various project teams that span across industrial domains and typical functional silos and was aimed at collecting as wide a swathe of research data as possible, within the limited amount of time that was being made available. Having zeroed-in on this research approach and associated methodology, any additional streams of information source- such as case studies or interviews would be pursued based on the availability of research subjects as well as time. However, this author believed that committing to a specific number in terms of plausible sample size (over and above the minimum institutional requirement of six participants) and confirmation of reaching saturation were rather proleptical as part of this paper, and was not of paramount importance considering this qualitative (holistic) approach and that these specifics could be discussed with the faculty advisor at a later stage or as part of a future research endeavor of this continuing work- in full compliance with all institutional research requirements.

Population and Sample

The primary research instrument that this study pursued was a questionnaire that included specific individual (open-ended) operational questions and a structured analysis of the associated responses that investigated the relationship between seemingly unrelated variables such as leadership hierarchy, team structure, geolocation, size of the organization, industrial domain, etc.

that pertain to the general organizational culture as well as specific change management methodologies in Hybrid-Agile transformations at IT infrastructure projects or organizations.

The sample, with a minimum count of six participants, was expected to be a smaller representation of the overall population or target group as defined by specific attributes and characteristics pertaining to this research, was finalized based on discussions with and approval of the faculty advisor. However, these attributes and characteristics of ideal samples that constitute potential research participants could be considered to include- project management professionals and students whose project backgrounds span across various industrial domains (say IT/software development, IT/infrastructure, manufacturing, construction, bio-pharmaceutical, etc. to name a few) with a preference given to IT infrastructure personnel in order to help compare/analyze and make appropriate connections. Additionally, the sample included technical personnel/SMEs who can be considered part of the Dev Team in a typical Agile-Scrum project setup and those who are aware of project management techniques and processes at some basic level- typically based on their professional experience within their respective domains (Agile practitioners). Certain factors that affected this research- in terms of relative geolocation of team members (collocated vs. geographically dispersed), communication/collaboration tools and preferences, leadership hierarchy/command & control structure, potential trust deficits, and other facets that help define organizational culture, and that are unique to their respective work environments were considered to ensure an unbiased approach, and additionally, try to explore how they relate to each other when looking at what can be considered to frame a successful Agile transformation within IT infrastructure.

At the same time, it is important to note that no sample was expected to have a 1:1 (or a 100%) representation of the total population in terms of its homogeneity. The results, therefore,

were expected to arrive at a sample that was representative of the population, but not expected to be at 100% statistically, given that this is a qualitative analysis and not a quantitative one.

Additionally, this particular research path was not expected to involve human subjects- except in the form of the questionnaire responses/interviews that would need an additional level of IRB (Institutional Review Board) approval. However, any potential ethical concerns relating to the research data being gathered as part of this effort was expected to be discussed with the faculty advisor and other institutional authorities by this author and proceed only upon appropriate review, completion of prescribed training programs (CITI), and any other relevant approvals.

Recruitment

The research process recruited candidates based on the author's previous professional work experience and background in IT infrastructure projects and organizations. Collaboration tools such as LinkedIn, Microsoft Teams, Zoom, WhatsApp, and emails were used to connect with colleagues and students that this author had worked with over the last five to six years. An online link to the SurveyMonkey questionnaire was shared with the potential participants in the form of an email or WhatsApp communication and this, in turn, ensured anonymity in all the questionnaire responses as explained in the subsequent sections.

Analysis

The research process, along with the associated methodology and instruments could potentially subsume an inherent researcher bias due to the author's specific background as a Network Infrastructure Engineer, along with the tendency to focus on Agile-Scrum due to its popularity among IT infrastructure projects and organizations (Ranjan, 2018). However, these considerations were kept in mind while drafting the actual questionnaire while at the same time,

adhering to guidelines laid down by the ethical and moral scope, and carried out in a manner that displayed significant effort to ensure minimal bias. The results were expected to be further limited based on the finite amount of time available to carry out preliminary research that was spread out over only a few weeks due to the stringent graduate capstone program requirements.

Given these specific limitations, the validity of research was based on how the actual questionnaire was framed in terms of wording the specific questions being considered. The literature review conducted as part of the GRAD695- Research Methodology & Writing that included about fourteen peer-reviewed articles, in addition to the scholarly articles from an expanded search that was conducted in the initial few weeks of the GRAD699 thesis course, included over twenty pieces of contemporary academic literature, played an integral part in wording the questionnaire to help it meet specific research objectives being outlined in this paper and thereby, ensure validity. These questions underwent enhanced scrutiny prior to soliciting final responses from potential research participants, and this was achieved by testing the questions internally within a controlled test environment and reviewed, in order to fine-tune the exact wording to meet research requirements after multiple rounds of deliberation with the faculty advisor. Additionally, the availability of questionnaire responses from practicing project management professionals and students with the characteristics described above played an important role in assuring results. This response availability, which followed upon the original framing/wording of the questionnaire in specific accordance with the course requirements was expected to ensure validity as well as reliability and quality of research based on this holistic, qualitative approach.

Data Confidentiality

The names and titles of the participants were not solicited as part of the research design. Any other potentially personal identification information was removed to protect the privacy of participants. For data that was collected through a networked service such as email or LinkedIn, the responses were to be first forwarded to an objective third party and was not needed in this case due to the use of SurveyMonkey. In such a scenario, the third party was expected to remove all personal identification information (such as email addresses, locations, org names, IP addresses, etc.) and forward back to the researcher and was given explicit instructions to delete all data received, once the cleansed version was forwarded to the researcher. Using SurveyMonkey to draft/share the questionnaire leveraged an anonymous response option built within the tool that provided an extra measure of confidentiality and ensured informed consent to bolster participant privacy. Additionally, all raw research data collected as part of this questionnaire is scheduled to be deleted from all laptop hard drives and cloud locations within one year i.e., July 26, 2021, from the date the IRB application was originally approved (July 27, 2020).

Results

The questionnaire that was drafted using SurveyMonkey and approved by the HU-IRB, was shared with seven potential participants via email as well as WhatsApp using an auto-generated weblink (<https://www.surveymonkey.com/r/P3L66S9>). This questionnaire consisted of ten operational questions that relate directly to the various facets of organizational culture and change management processes and teams; of these seven participants, six chose to respond to the questionnaire and they were categorized as participants A through F in order to present their data here and the logic in turn, was based on their respective chronological order of questionnaire submissions using SurveyMonkey.

The participants with whom the questionnaire was shared, were chosen based on their professional/academic backgrounds that span project management domains within IT infrastructure enterprises as explained in detail within the methodology section. Of these seven potential participants, the one who chose not to respond cited their inherently small organizational size (six-member startup) and the complexity of the questions- which were considered to be outside of their operational purview as being the primary reason to not participate. The final analysis of these results, therefore, leverages a total of six responses.

Discussion

The purpose of this study was to qualitatively identify and analyze the challenges posed by the various organizational culture facets and inherent change management processes within IT infrastructure enterprises that leverage what can best be described as a Hybrid or an Agile project management approach. The study leveraged an open-ended questionnaire consisting of ten operational questions shared with project management professionals and students, with a preference for personnel with specific exposure to IT infrastructure projects and/or enterprises. The operational questions were so designed as to clearly imply relevance across industrial domains while at the same time, adhering to the specific project management background within IT infrastructure that this study originally mandated. The ten operational questions were sorted and have been presented in this paper as part of Appendix A in the relevant section, with each question clearly outlined and the associated responses from each of the six participants (classified as A through F) tabulated as is- ncluding any grammatical/spelling errors, with the help of only a timestamp to preserve participant anonymity as well as to maintain data confidentiality.

The control question that indicated adherence to IT infrastructure background can be considered to be the first operational question here and the associated responses suggested that the

study remained relevant (and met the background) as originally warranted, with five of the six participants responding that their professional/academic function lied within the IT infrastructure domain. Participant B was the only deviation from this pattern and therefore, can be used as a control case for comparative purposes due to their background in the pharmaceutical domain.

The subsequent control question that was used to gauge the adherence of the participants' backgrounds to the original requirement of their organization leveraging a Hybrid or Agile project management methodology was with the analysis of operational question #8. The majority of participants (five of six) highlighted that their projects leveraged a hybrid project management methodology- in terms of utilizing events such as the Daily Scrum, Sprint Retrospectives, etc., but that maintenance or operational tasks followed a traditional approach with planning and execution. Only one of the participants indicated a completely traditional project management approach and this was the same control participant (B) that suggested a non-IT infra background based on the response from operational question #1.

Organizational Culture

Appendix A lists operational questions 2 through 4 and these can be considered directly relevant to the various facets of the organizational culture that have been identified as part of the original research problem. Each of these three questions delves into one such aspect- firstly, team structure- a linear command and control structure vs. a pull-based approach where work is owned up by the individuals from a central repository or by leveraging an ITIL system as discussed in the literature review section. Secondly, collocation of the project team or their geographical disparity, and thirdly, the predominant means of communication among team members- especially in cases where the team has been identified as being geographically disparate.

Considering the interdependence of these three questions and their associated relevance to the research problem, these can be viewed and analyzed as a single response to provide some much-needed context and to help group the responses together to form easily identifiable patterns.

Responses to these three questions suggest that IT infrastructure enterprises follow a pattern of having geographically distributed teams- assuming that the prevalence of outsourcing among these entities has required consulting companies from other countries such as India, China, and Mexico to support projects and operations in North America (the United States and Canada). It was interesting to note that the control response from the non-IT infra participant “B” also indicated a geographically disparate project team- that in turn, suggests a wider prevalence of outsourcing (even outside the IT infrastructure silo). In light of this suggestion, the operational question #4 about the communication mode in use at the organization would result in a more electronic mode due to the distances and various time zones involved. This continued to hold true based on the responses analyzed, where tools such as emails, videoconferencing using MS Teams, Skype, Webex, etc. played an outsize role in team communication. The associated challenges with this specific question would be due to the current pandemic-induced (COVID-19) work changes that most organizations have made in the US since March 2020. The viral outbreak has resulted in more organizations requiring/allowing employees to work from home as is the case with this author.

Lastly, the operational question on the leadership hierarchy among IT infra project teams has provided a unique insight into the eclectic mixture in place today. The participants were evenly split (two each) between indicating a linear command and control structure, a pull-based system where work is owned up by individuals from a central repository like Service Now, and a mixture of both these systems. This would suggest a homogenous transfusion of team structure that moves

away from a cookie-cutter “one-size-fits-all” approach that can be leveraged by every IT infrastructure silo and consequently, suggests that individual project teams or organizations would need to leverage a team structure that works best for them, one that meets their custom-needs most efficiently and cost-effectively.

Although multiple additional insights can be gained by extrapolating these results, it is important to stay within the scope of this paper, and the way this can be achieved is by directly confirming that organizational culture facets of geo-location, team hierarchy, and mode of communication as posing to challenges in Hybrid or Agile project management approach leveraged by IT infrastructure enterprises.

Change Control

Operational questions #5 and #6 as presented in Appendix A of this paper delve specifically into the change control aspects of IT infrastructure organizations. Firstly, the presence of a formal change control process and dedicated change management personnel/team are explored. This has revealed that a majority of IT infra organizations (five out of six) have indicated the presence of a formal change approval workstream. This suggests the presence of automated systems within IT infrastructure and also with other silos (not limited to IT infrastructure) as indicated by the response from the non-IT infra participant “B” regarding the presence of a dedicated “change authorization team” as well as the specific system information provided by participant F confirming the presence of ITSM (IT Service Management) tools and weekly CAB (Change Approval/Authorization Board) meetings.

Following up, operational question #6 looked at what these participants consider to be their organizational appetite for change- in terms of employees being highly resistant vs. being highly enthusiastic to imbibe workplace changes to processes, systems, or administration. A majority of

participants (five out of six) indicate a resistance to change that can be categorized between moderate-to-high. The only exception was participant “C” who had also indicated the presence of a dedicated change management team and a formal change approval workstream.

Consequently, some of the details provided by the participants have also addressed another interesting point of note- how this relatively high resistance to change can be addressed within their organizations. Participant B for example highlights that “I believe employees would be more motivated to accept change if change management principles are better followed”. This points to challenges posed by an organizational resistance to change and certain actions (such as dedicated training about change management principles) could potentially address these challenges as discussed in the next sub-section.

Associated Challenges

Operational questions #7, #9 and #10 relate directly to challenges identified by the participants in terms of adopting a Hybrid (or Agile) project management methodology in their organizations. On a high level, these findings can be categorized holistically as follows:

In summary, the results obtained from this research endeavor can be highlighted as:

- An ITSM (IT Service Management) tool has been indicated as being leveraged to log and track project tasks- which purportedly helped automate and simplify administrative requirements up to a certain extent.
- A majority of participants (four out of six) have indicated the presence of a dedicated manager (technical or administrative) who oversees execution, tracking, training, finances, etc. of organizational projects.
- Various challenges have been indicated as primary concerns by the participants and this provided an eclectic mixture of responses with some them pointing to a

lack of managerial understanding of project complexity (Participant A), Lack of a WBS (Work Breakdown Structure- Participant B), Project Visibility/Communication (Participant C), Transparency within the project team (Participant D), Communication, collaboration and a lack of pertinent training (Participants E & F).

Additionally, the participants have indicated the associated remediation measures that they believe would best apply to their respective organizations as part of operational question #10. These can be categorized as follows:

- Technical training to improve professional skills
- Project management training for the technical folk to help them better understand project requirements and “help improve overall productivity”.
- Soft skill training to “enhance chances of success”.
- Training that is specifically related to change management and project implementation.

Considering this section holistically, and going back to the original research question, it can be surmised that the various facets of organizational culture including- team structure, leadership hierarchy, geo-location, communication, along with the established change management processes do pose significant challenges to adopting Agile or (predominantly) Hybrid project management methodology in IT infrastructure enterprises and these challenges can be addressed by the various methods addressed above. It is also essential to note that there is no “one-size-fits-all” approach when it comes to remediating these challenges and that a custom solution needs to be employed based on various organizational parameters that unique to the IT infrastructure enterprise due to its inherent nature of spanning across organizational domains.

Limitations

The research conducted here has tried to be extensive in both scope and detail when it comes to the literary endeavor of drafting the open-ended questionnaire, seeking approval by the HU-IRB, and analysis of the results presented. However, there have been certain mitigating factors that have proved to be intentional limitations to this research effort and they can be broadly categorized as follows:

Time Constraints

Time constraints can be considered to be the most significant limitation of this research effort. The course deadlines that have been scheduled for the GRAD699 program at Harrisburg University mandate a very tight timeline between the IRB approval to when the results need to be presented and followed-up with a thesis defense. This relatively short time-span of about four weeks resulted in certain logistical challenges in terms of the very little margin of error to reach out to and wait for potential participants, solicit their responses, follow-up with them wherever needed, and then finally analyze these responses to identify patterns that support or counter the original research problem posed by this paper.

Participant Background/Sample Constraints

Following up from the previous limitation that has been highlighted above, the next significant constraint to this piece of research was the relatively low number of participants- with a count of six- that the author was able to reach out to as mandated by the IRB, and those who chose to respond promptly, that eventually would allow for the work to be turned in within the prescribed deadlines of this graduate-level course.

With such a scenario, it would be appropriate to assume that a larger pool of participants (say, a count of ten) would have allowed for a more in-depth analysis of response patterns due to the availability of a significantly larger amount of data than what has eventually been considered in this paper. Additionally, this larger pool of participants would have allowed this author to consider a more diverse professional background of participants that could include additional domains such as retail, construction, healthcare, financial, etc, within the IT infrastructure realm.

Operational Questions

The operational questions created as part of this open-ended questionnaire were limited by the freely available commercial tool- SurveyMonkey. The number of questions being sent out as part of this questionnaire was specifically limited to ten. In addition to ensuring a finite count of questions, this forced the author to focus on the basics and most essential forms of data that would need to be considered as part of the anticipated responses from the participants.

The wording of specific operational questions needed to be generalized in such a way that they remained attuned and relevant to every participant irrespective of their IT infrastructure background (physical security, retail, pharmaceutical, etc.). An option to increase the number of operational questions could have added compelling evidence to the existing data and could potentially have affected overall patterns and associated conclusions.

Follow-up Opportunities

Given the specific (relatively short) timelines available for this research endeavor, as discussed in the previous section, another limitation that can be highlighted here is the opportunity for follow-up with participants based on specific responses received. The initial set of data points received from the original questionnaire would tend to open up to follow-up

questions that would take the idea forward (or deeper along a specific thought trajectory) to glean additional insight into the idea behind the specific operational question.

This follow-up process can be deemed essential to a continued qualitative analysis, where analyzing patterns and making connections to understand how they relate to the original research problem and specifically, the research question and this would take precedence over trying to relate specific hypotheses and the interdependence of associated variables therein- which is a critical requirement for a qualitative research endeavor.

Future Research Opportunities

This research endeavor aims in trying to identify and eventually, relate patterns based on responses from an open-ended questionnaire on how various organizational culture and change control facets pose a challenge in adopting Agile or a Hybrid project management methodology within enterprises functioning within the IT infrastructure domain. Considering this underlying objective and some of the associated limitations that have been listed in the previous sections, there are significant implications when it comes to future research on this topic. For instance, there is a substantial emphasis laid on the qualitative research methodology that has been leveraged in this paper, and thereby, certain generalizations have been applied in trying to relate organizational culture facets such as location, team structure, leadership hierarchy, etc. in a more holistic manner. One of the future research opportunities that arise from this methodology is a subsequent quantitative analysis of very specific hypotheses and variables to try and relate them to organizational success (or project success) within IT infrastructure enterprises. For instance, some of the questionnaire responses in this paper have indicated a strong affinity in relating technical and soft-skill training to project success. In such a scenario, it would seem logical that a future research effort would try to relate variables such as the length or specific type of training

to organizational success or project turnaround times that can be deemed satisfactory to the end-client.

Another opportunity for future research would be a follow-up questionnaire based on the responses received here, to delve deeper into ideas that were only tangentially relevant to this paper. One such example would be to follow-up on the question pertaining to how projects are managed at the organization- which currently covers multiple domains (project onboarding, customer satisfaction, project completion/sign-off requirements, etc. to name a few). This could be further split down into multiple questions- each of which could cover these individual facets separately and thereby, provide an opportunity for distinct, yet concentrated analysis of each.

Lastly, there is also an opportunity in focusing on individual organizational facets that were covered with mostly broad strokes within this paper. Specific focus could be laid on the distinct industrial domains such as with IT infrastructure silos that operate in healthcare, construction, retail, finance, etc. and the various flavor of results that each of them could generate. It is important to remember that the IT infrastructure field within the ambit of project management is relatively under-researched by the evident lack of scholarly articles as discussed in the literature review section of this paper, and this by itself provides ample motivation for future research in this area.

Conclusion

As elaborated at the outset of this research paper and specifically, the literature review section therein, it is overwhelmingly evident that there is an ongoing problem with a general lack of understanding in how challenges that arise from varied organizational cultures- specifically team structure, location, and leadership hierarchy, along with inherent change management processes, together form the critical success factors in large-scale IT infrastructure enterprises

that leverage a project management approach that can be considered a Hybrid or Agile methodology.

Software development, under the ambit of a larger IT umbrella, continues to dominate the contemporary research landscape when talking about Hybrid-Agile transformations at large-scale enterprises when compared to some of its lesser-known counterparts that include IT infrastructure. Results have indicated that at such large-scale IT organizations, resource allocation and control consequences play an outsize role during enterprise-wide transitions from the legacy waterfall approach to project management wherein, individual stakeholders and teams are held more accountable for their project deliverables. Additionally, the need for an entrenched command and control leadership structure, supported by a robust change management process derived from industry-leading ITSM best practices have been known to play significant roles in aiding this transformation to a Hybrid-Agile technique.

Resultantly, the research conducted in the form of an open-ended qualitative questionnaire highlight the following salient features:

- IT infrastructure spans various industrial domains/silos as indicated by participant responses.
- There is no “one-size-fits-all” organizational culture facet or change management process/tool that works for every organization.
- Inherent resistance to change is being met by specific actions/goals within organizations.
- Geolocation, team structure/hierarchy vary and are not significant IT infra project success factors as per responses.

- Collaboration and Communication play outsized roles- especially during the ongoing COVID-19 pandemic.
- Challenges to project success are seen as multi-dimensional (training needs, better communication, and collaboration between teams and/or leaders, soft skills being just as important as technical skills).

Some of the gaps evidenced in existing literature have been left open to interpretation, thereby leaving a huge swathe of future research opportunities open at its heels. The ubiquitous nature of IT infrastructure as an independent domain and one that straddles across traditional industrial boundaries- be it application development, manufacturing, food & pharmaceutical industries, etc. and the inherent human need to communicate and share entrepreneurial data across platforms provides a much-needed motivation for research ideas as well as associated improvements and resultantly, makes it that much more important to do so in a time-bound manner. Although the inherent nature of IT infrastructure changes every few decades- from on-premises systems co-located datacenters and on to cloud solutions and beyond, the project management logic and leadership decisions behind such projects are seen to have a consistent and familiar cadence that assures relevance to our research conclusions.

This literature review of empirical studies from well over ten different, yet independent sources provide credibility to the inter-relationship between a plethora of seemingly independent variables such as the industrial domain, size of the organization, organizational compatibility and acceptability to change, leadership and senior management support, stakeholder buy-in, and changes in project communication needs. As part of additional topics for future research in addition to the themes outlined above, this author would suggest exploring the relationship of these seemingly independent variables within IT infrastructure silos at large-scale enterprises and

how they affect internal transitions from the traditional to a Hybrid-Agile project management approach with the support of direct empirical evidence in the form of surveys, questionnaires, interviews or specific case studies.

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APPENDIX A

Operational Questions

OPERATIONAL QUESTION#1 How would you describe your organizational domain? (e.g. Software Development, IT Infrastructure, Manufacturing, Construction, Logistics, Pharmaceutical, etc.)		
Participant ID	Timestamp (EDT)	Response/Data
A	7/27/2020 13:26	IT Infrastructure
B	7/27/2020 23:08	Pharmaceutical
C	8/1/2020 12:09	IT Infrastructure for financial domain
D	8/1/2020 12:29	IT Infrastructure
E	8/1/2020 16:08	IT Infrastructure (Physical Security Domain)
F	8/18/2020 19:24	IT infrastructure for a multinational fast food chain

OPERATIONAL QUESTION#2 How would you describe your team structure and hierarchy? (linear command and control where work is assigned to team members, a distributed leadership where work is pulled by members from a central repository, or a mixture of both)		
Participant ID	Timestamp (EDT)	Response/Data
A	7/27/2020 13:26	mixture of both; the team has to meet an average work load but the cases are assigned based on availability.
B	7/27/2020 23:08	Mixture of both
C	8/1/2020 12:09	A distributed leadership where work is pulled by members from a central repository
D	8/1/2020 12:29	Linear command and control
E	8/1/2020 16:08	Linear Command control and projects are assigned to me
F	8/18/2020 19:24	mixture of both- operations have a linear command and control, projects with distributed leadership

OPERATIONAL QUESTION#3 Would you consider your team to be collocated or geographically disparate, and why?		
Participant ID	Timestamp (EDT)	Response/Data
A	7/27/2020 13:26	The team is collocated.
B	7/27/2020 23:08	co-located however different shifts so, not all team members see each other at same time
C	8/1/2020 12:09	Geographically disparate
D	8/1/2020 12:29	Geographically disparate
E	8/1/2020 16:08	Team in geographically disparate because we use subcontractors and work at multiple on site client locations within the same country
F	8/18/2020 19:24	geographically disparate in USA, India, Singapore and UK

OPERATIONAL QUESTION#4 How is communication usually carried out among team members- especially if they are not collocated?		
Participant ID	Timestamp (EDT)	Response/Data
A	7/27/2020 13:26	face to face and case handover by emails.
B	7/27/2020 23:08	Email, MS one note, MS Access, MS Sharepoint
C	8/1/2020 12:09	Via email, skype chats and phone calls
D	8/1/2020 12:29	Office meetings, weekly fun activities, daily lunch meetups
E	8/1/2020 16:08	Email, Phone call and Video Conferencing (Zoom)
F	8/18/2020 19:24	daily sync calls/videoconferences for handover, email etc.

OPERATIONAL QUESTION#5 Describe your organizational change control/change management structure (such as with a formal change authorization/approval workstream and dedicated change management team)		
Participant ID	Timestamp (EDT)	Response/Data
A	7/27/2020 13:26	There is no formal change management structure. Client changes are done on the fly.
B	7/27/2020 23:08	Formal change authorization
C	8/1/2020 12:09	We have a dedicated change management team as well as a formal change approval workstream.
D	8/1/2020 12:29	We go through change management tool within servicenow tool
E	8/1/2020 16:08	New projects/installations don't need a formal change control process but the existing site system installation does require a change approval/maintenance downtime from the client
F	8/18/2020 19:24	formal change control process with change management team-service cafe ITSM tool for change approval and weekly CAB meetings

OPERATIONAL QUESTION#6 How would you describe your organization's general acceptability to change? (Is there usually a lot of resistance or are employees enthusiastic about integrating changes often)		
Participant ID	Timestamp (EDT)	Response/Data
A	7/27/2020 13:26	General acceptability to changes is low with high resistance expected.
B	7/27/2020 23:08	Very dynamic with respective changes implemented. I believe employees would be more motivated to accept change if change management principles are better followed.
C	8/1/2020 12:09	Employees are enthusiastic about integrating changes since changes are well planned ahead of time.
D	8/1/2020 12:29	It goes from Team lead, manager to director approval through Service Now Approval system
E	8/1/2020 16:08	There is a moderate resistance to change especially for organization culture changes
F	8/18/2020 19:24	technical changes are easily approved if they go through the change control process, organizational and process changes see moderate resistance

OPERATIONAL QUESTION#7 How are projects managed at your organization? (in terms of onboarding, completion requirements, and general success/happiness of customers)		
Participant ID	Timestamp (EDT)	Response/Data
A	7/27/2020 13:26	Each product tower has dedicated managers and they are in charge of tracking productivity and customer feedback.
B	7/27/2020 23:08	using dedicated project teams
C	8/1/2020 12:09	Projects are spearheaded by Technical Project Managers and a team of Deployment Engineers
D	8/1/2020 12:29	Through service now tool
E	8/1/2020 16:08	We have a formal project Manager however as a small sized startup most employees participate in cross functional duties of the project including pre-sales, project Implementation, training and finances.
F	8/18/2020 19:24	formal process to onboard new projects, tickets are created in the ITSM tool and approved by multiple managers (finance, technical) customers are updated based on ticket state

OPERATIONAL QUESTION#8 How would you describe your current project management methodology? (Traditional/Waterfall, or Agile, or a Hybrid of both)		
Participant ID	Timestamp (EDT)	Response/Data
A	7/27/2020 13:26	It is a hybrid of both as it is more operations oriented.
B	7/27/2020 23:08	Traditional
C	8/1/2020 12:09	It is a Hybrid model
D	8/1/2020 12:29	Hybrid of both
E	8/1/2020 16:08	The initial systems installation follows Traditional project Management due to procurement process and in post sales support and Maintenance contract follows a Hybrid approach due to extended contract duration.
F	8/18/2020 19:24	hybrid of both- daily scrum, retro meetings are held, JIRA is used for tracking, but deployment is done in one go during an approved change window

OPERATIONAL QUESTION#9 What challenges do you see with the way projects are managed with the above-mentioned project management methodology at your workplace? And how would you like to solve these challenges?		
Participant ID	Timestamp (EDT)	Response/Data
A	7/27/2020 13:26	Managers tend to be more focused on project scores than the quality of the work being done. As a solution, if the project scores are more indicative of the complexity & handling of the cases, the management can be more in sync with the ground reality of the engineers.
B	7/27/2020 23:08	WBS not in place. Better project management principle application could help.
C	8/1/2020 12:09	1. We as engineers do not have full picture/visibility of the project. 2. It is often difficult with adapting to a new process with a start of a new project.
D	8/1/2020 12:29	Transparency with other teams, aligning all teams together .. would like to solve through dedicated tool which shows progress on daily basis
E	8/1/2020 16:08	Use of multiple third party contractor causes confusion in scope of work and delays due to construction activities etc. These challenges can be solved with better communications such as periodic meetings and better time management and planning.
F	8/18/2020 19:24	communication and approval process could be easier by training customer/requester to provide the right info, a trial period would help with new changes so transition is easier

OPERATIONAL QUESTION#10 What are your thoughts on how additional training will influence the use of Agile/Hybrid Project Management methodology at your workplace?		
Participant ID	Timestamp (EDT)	Response/Data
A	7/27/2020 13:26	It will definitely help as most technical personal are unaware of management methodologies and additional training will help with improving overall productivity.
B	7/27/2020 23:08	Theoretical knowledge will impart soft skills that could enhance chances of success.
C	8/1/2020 12:09	1. Training could help with change requests. 2. Could help working better within the team once training is done and everyone has adopted agile.
D	8/1/2020 12:29	It would clear out little apprehensions about progress of the project

E	8/1/2020 16:08	Additional Training in Agile project management can help in a more efficient project implementation(stock, managing excessive inventory)
F	8/18/2020 19:24	additional training will definitely help ease transition- technical personnel could use project mgmt training and non-technical personnel should be aware of existing processes for easier change approvals and avoid delays