12-2018

Is the sum greater than the parts? A qualitative case study of cross-functional team creativity.

Tracy J. Richardson
University of Louisville

IS THE SUM GREATER THAN THE PARTS? A QUALITATIVE CASE STUDY OF CROSS-FUNCTIONAL TEAM CREATIVITY

By

Tracy J. Richardson
B.A. University of Kentucky, 1992
M.S. University of Kentucky, 1996

A Dissertation
Submitted to the Faculty of the
College of Education and Human Develoment of the University of Louisville
in Partial Fulfillment of the Requirements
for the Degree of

Doctor of Philosophy
in Educational Leadership and Organizational Development

Department of Educational Leadership and Organizational Development
University of Louisville
Louisville, Kentucky

December 2018

IS THE SUM GREATER THAN THE PARTS? A QUALITATIVE CASE STUDY OF CROSS-FUNCTIONAL TEAM CREATIVITY

By

Tracy J. Richardson

B.A. University of Kentucky, 1992

M.S. University of Kentucky, 1996

A Dissertation Approved on

November 13, 2018

by the following Dissertation Committee:

_____

Dissertation Director Dr. Meera Alagaraja

_____

Dissertation Committee Dr. Brad Shuck

_____

Dissertation Committee Dr. Jason Immekus

_____

Dissertation Committee Dr. Keith Gatto

DEDICATION

This dissertation is dedicated to my late parents, Richard and Bunny Johnson who always encouraged me and believed in my ability to pursue my goals.

ACKNOWLEDGEMENTS

I would like to give praise and thanks to God who has provided for me throughout this journey. It is through His gifts and grace that I am able to achieve my goals. I would also like to thank my advisor, mentor and friend, Dr. Meera Alagaraja who has guided me throughout the last several years. Her friendship, teaching and support have been invaluable. I would also like to acknowledge the committee members who have supported me in the development and completion of this dissertation: Dr. Brad Shuck, Dr. Jason Immekus, and Dr. Keith Gatto – your feedback, encouragement and guidance are greatly appreciated. I would also like to acknowledge my friends, co-workers and family who have supported me, encouraged me when things have been difficult, and provided care and support to my family during the long process of pursuing this degree. I would like to thank my sister, Terrie Johnson, brother, Mark Johnson, and my sister-in-law, Ann Johnson who spent countless hours cheering me on and proofreading papers. Lastly, and most important I would like to thank my family: Jim, Emily, Hannah and Jamie who have stood by me and sacrificed along with me their time and energy. You are my joy and my inspiration.

ABSTRACT

IS THE SUM GREATER THAN THE PARTS? A QUALITATIVE CASE STUDY OF CROSS-FUNCTIONAL TEAM CREATIVITY

Tracy J. Richardson

November 13, 2018

Creativity is an important capability for organizations to develop solutions for complex challenges. Cross-functional teams are often used within organizations in the hope of leveraging diverse perspectives to develop creative ideas. However, the process by which cross-functional teams generate new ideas is often elusive in practice and poorly understood in research. A case-study design was used to explore the complex nature of the creative process within a services industry organization, which is an understudied context for creativity. The study focused on the knowledge sharing and knowledge integration processes for cross-functional teams as well as overall team effectiveness. The results of the research suggest cross-functional teams should be formed with explicit focus on the structure of the team. In addition, cross-functional teams need guidance and support by leadership as well as organizational practices to allow team members to integrate their different knowledge and perspectives in order to support the creative process. Recommendations for future research and Human Resource Development (HRD) practices are provided to support team-level creativity and effectiveness.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

Innovation is a critical capability for organizations to grow and survive; however, the ability to infuse innovation capability within an organization's culture is elusive for many companies (Barsh, Capozzi, & Davidson, 2008). Innovation within organizations however is a complex process which consists of two primary elements a) creativity which is the generation of new ideas, and b) innovation which is the implementation of the creative ideas in the form of products, processes, or even new markets resulting in economic benefit to the organization (West, 2002b). Figure 1 provides a visual conceptualization of organizational creativity and innovation.

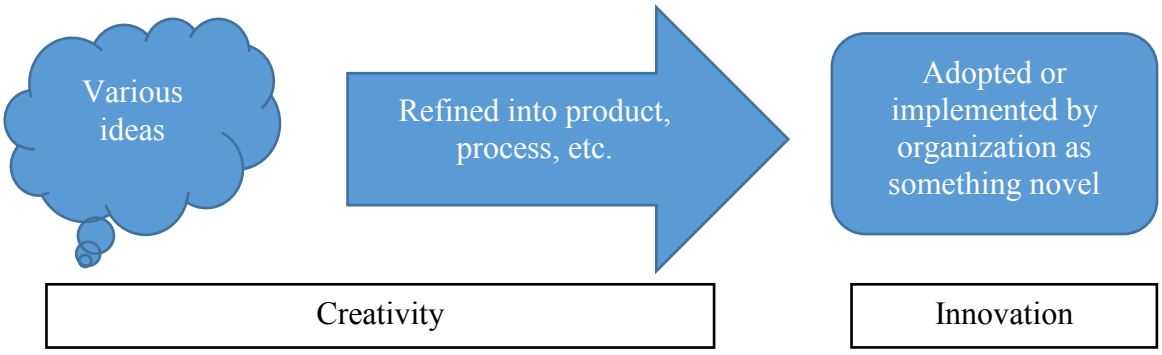

Figure 1: A visual depiction of creativity and innovation

The process by which these novel ideas are created and implemented has profound impact on organizational effectiveness, growth and survival and is therefore an important area of focus for organizational research (Anderson, Potocnik & Zhou, 2014, Wolfe, 1994). However, a comprehensive understanding of the process is still lacking and is often attributed to the complexity of the process being multi-phased, multi-dimensional and composed of multiple determinants (Anderson, Potocnik et al., 2014).

Although innovation is important for organizations, the foundation of innovation is the creative process that results in the generation, development and evaluation of a new or novel idea (Amabile, 1988). Furthermore, the elements necessary for creativity may not be the same elements needed for innovation (Anderson, Potocnik et al., 2014). Following the work of West (2002a), this research is focused on the first stage of innovation, namely creativity which is considered the generation and development of new or novel ideas. Therefore, this research is focused solely on the creative phase as this is the foundational building block for innovation. However, because the concepts are closely connected, both creativity and innovation literature are used to inform this research.

Research on creativity and innovation has provided a number of contributions aimed primarily at either understanding the attributes of individual creativity or at the organizational level regarding the implementation of creative ideas (Anderson, De Dreu, & Nijstad, 2004; Egan, 2005; Zaltman, Duncan & Holbek, 1973). Despite these advances, a number of gaps remain, including the study of creativity at the group level of analysis (Potocnik & Anderson, 2016), the study of creativity within organizational work settings (Anderson, De Dreu et al., 2004), and the study of creativity and innovation within the Human Resource Development (HRD) and Human Resource Management (HRM) disciplines (Sheehan, Garavan & Carbery, 2014). In a meta-analytic review of research on innovation from 1997 – 2002, only 15 empirical articles focused on the study of innovation within a workplace setting at the individual, work group, or organizational level where innovation was either the independent or dependent variable (Anderson, De Dreu et al., 2004). Of these studies only 13% of the articles considered group level

analysis, with the majority focused on individual level of analysis (73%). In addition, 80% of the studies were replication/extension driven versus theory driven (13%) which is a further critique of innovation studies, namely the lack of theory basis within empirical studies (Crossan & Apaydin, 2010).

In addition to the lack of group-level studies of creativity or innovation within organizational work-settings is the lack of understanding of these processes within non Research & Development (R & D) or high-tech settings (Den Hertog, Gallouj, & Segers, 2011; Hirsch-Kreinsen, Jacobson & Robertson, 2006). The services industry employs the vast majority of US workers, accounting for over 80% of employment in 2016 and consists of such industries as utilities, healthcare and professional services (U.S. Bureau of Labor Statistics, 2017). Despite the prevalence of services based industries in the US, there are few studies which focus on this industry segment for research related to innovation and creativity, therefore, this study's focus is on the creative process with organizational work teams within the services industry.

Refining the focus of this research on creativity versus innovation is an important step in providing conceptual clarity for research. Despite this distinction, there are also conceptual clarity challenges within the concept of creativity (Potocnik & Anderson, 2016). Creativity literature has often focused on the output of creative effort or behaviors such that creativity is considered "the production of novel, useful ideas or problem solutions" (Amabile, Barsade, Mueller, & Staw, 2005, p. 368). In this regard, creativity is a tangible output, which if implemented or adopted could then become innovation. However, more recent literature has called on the need to consider creativity as a temporal process consisting of multi-dimensional sequencing of behaviors engaged in by

individuals and/or groups in order to create novel ideas (Rietzschel, DeDreu, & Nijstad, 2009). As a process, creativity is concerned with how ideas are generated, developed and evaluated over time, regardless of whether an organization adopts or implements the idea (Amabile, Barsade, Mueller & Staw's, 2005). By adopting this process approach as the conceptualization of creativity this study allows for creativity to be considered as a recursive and dynamic concept instead of a finite tangible output. However, the elements which influence this process over time are far from clear and are complicated by whether the research is focused on the individual-level or group-level of analysis.

Although the creative process can occur at individual or group levels of analysis, (Drazin, Glynn & Kazanjian, 1999) literature has focused more heavily on individual-level creativity as opposed to team or group-level creativity (Anderson, Potocnik et al., 2014). Much of this focus has been on individual-level attributes such as motivation (Amabile, 1988), general cognitive ability and personality attributes (Taggar, 2002), and problem-solving style (Scott & Bruce, 1994) as predictors of creative performance. However, possessing those attributes alone does not necessarily result in creative outputs or behavior (Zhou & Shalley, 2003).

Creativity is suggested to be influenced not only by individual attributes but also by social influences, such as supportive leadership and group behaviors such as showing appreciation for each other's ideas (Oldham & Cummings, 1996; Taggar, 2002). Therefore, the individualistic approach to the study of creativity is limiting as it fails to consider the dynamic and temporal nature of the creative process as well as the interactionist effects of individuals within the broader organizational context. In addition, the focus on individual creativity fails to consider the more realistic elements of

organizational work practices which utilize teams, often made up of individuals possessing different backgrounds and attributes, for the purpose of developing new ideas and problem solutions.

Given the need to extend the understanding of creativity at the group-level of analysis, this research is focused on creativity within organizational work-teams in a non-R & D or services industry setting. The shift to greater engagement with consumers suggests the need for service organizations to adopt horizontally oriented, cross-functional team-based structures with internal coordination in order to be responsive to customer needs (Anand & Daft, 2006). The ability for teams to effectively engage in the creative process appears to be a critical capability for organizations and in particular those in the services industry. However, how the creative process unfolds and what contextual elements are necessary for effective creativity to occur at the group-level appears less well understood (Kurtzberg & Amabile, 2001).

Problem Statement

While literature on creativity is extensive it also suffers from a number of critiques and methodological challenges including: (a) being highly fragmented and lacking conceptual clarity, (b) limited use of qualitative and time oriented methodological approaches necessary for the study of the creative process, (c) inconsistent use of theoretical frameworks to support research of creativity as a multi-level and multi-dimensional concept, and (d) minimal focus of the creative process using teams as the level of analysis and specifically groups within private organizations (as opposed to university or laboratory settings) (Anderson, De Dreu et al., 2004; Anderson, Potocnik et al., 2014; King & Anderson, 1990; Potocnik & Anderson, 2016; Rank, Pace & Frese,

2004; West, 1990). In considering research on the creative process, this study aims to address a number of these critiques through the design, context and concepts being considered within the study.

First, the study is focused on the creative process as opposed to a singular creative output or the implementation of a creative output (i.e. innovation). Second, the study is focused on the group-level of analysis in order to extend the understanding of creativity as a multi-level concept. In considering group-level analysis, the study is refined to focus on the knowledge or domain-relevant aspect of the team members by focusing on cross-functional teams (i.e. teams consisting of members with different functional or job related backgrounds). Lastly, the focus of the study will draw on theories of group effectiveness to consider how both the team and the team's stakeholders define and evaluate the effectiveness of the team's performance in the creative process. In doing so, the study aims to expand the understanding of the outcome of the creative process beyond the general operationalization of creative outcomes as the number or relative novelty of ideas generated by the team (Hennessey & Amabile, 2010; Paulus, 2000; Pirola-Merlo & Mann, 2004).

Drawing on literature from group effectiveness theories, the study aims to explore group-level emergent states as well as individual-level reactions and attitudes such as satisfaction which may also be a measure of group effectiveness (Mathieu & Gilson, 2012; Mathieu, Maynard, Rapp & Gilson, 2008). For the purpose of this study, the concept of group or team-level effectiveness adopts Kozlowski and Ilgen's (2006) definition of the output of team performance consisting of three primary elements: "(a)

performance judged by relevant others external to the team; (b) meeting of team member needs; and (c) viability or the willingness of members to remain in the team" (p. 79).

Guiding questions

The purpose of this study is to explore in what ways cross-functional teams generate and develop creative ideas and how the team members and key stakeholders perceive effectiveness of the team. In order to focus the research efforts and address some of the numerous gaps within the academic literature, this paper aims to answer three primary questions:

1. How do cross-functional work teams share and integrate knowledge over time to develop creative ideas?
2. How do these cross-functional teams define and perceive their effectiveness?
3. How do stakeholders assess the effectiveness of cross-functional teams and their creative idea generation capacity?

The research questions aim to describe how, versus how much, regarding the concepts of team creativity and team effectiveness, therefore, a case study research design was chosen (Richards & Morse, 2013a; Yin, 2012). The study design used a qualitative dominant, mixed-methods case-study focused on cross-functional teams within a services organization whose formation was purposeful to develop creative ideas to address a complex problem. The study utilized a temporal approach to study teams over a period of extended time to evaluate how ideas are generated, developed and evaluated for final recommendation or selection. The study did not address idea implementation as this phase is considered innovation as opposed to creativity (West, 2002a). The data collection method consisted of interviews, observations, survey and organizational

documents to explore the processes by which cross-functional teams share and integrate their different functional knowledge in the creation, development and evaluation of new or novel ideas and how these processes manifest over time.

Significance of study

The study approach offered the unique ability to extend understanding of the creative process by using a temporally focused design with intact teams in a singular organization setting rather than cross-sectional design using a point-in-time, survey-based design across multiple organizations, which has been used extensively in the literature (Anderson, De Dreu et al., 2004; Shalley, Zhou, & Oldham, 2004). In addition, the case study design allowed for the extension of understanding of organizational work teams in the creative process as opposed to the study of individual creativity. In doing so, the study aimed to identify perceptual, behavioral and contextual elements which influence the group's collective offering and exchanging of ideas and how the different perspectives are integrated to form higher order, more creative ideas (i.e. the sum is greater than the parts). Finally, the study design allowed for the exploration of theoretical models of team process, creativity and group effectiveness within the services or low to medium technology industries as an alternative to high-technology manufacturing or universities which have been the primary organizational settings in the study of creativity or innovation (Santamaria, Nieto, & Barge-Gil, 2009).

Lastly, the study explored the unique perspectives of the team members and their key stakeholders regarding how they define effectiveness for the team. In doing so, the study allowed for the potential development of a construct of team effectiveness which might be operationalized for creative problem-solving teams within the specific

organizational setting. In addition, this approach allowed further comparison and extension of the understanding of team effectiveness outcomes as outlined in existing literature.

The research study recognized the creative process is dynamic, multifaceted, and required much closer connection to the participants to more fully understand the process within cross-functional teams (Mathieu et al., 2008). Understanding the context to support and improve creativity within organizations is critical to building innovation capabilities within organizations (Amabile & Fisher, 2000) and can therefore support both practical application for managers and human resource professionals as well as contributing to academic research. By drawing on theory regarding the creative process and group performance, the study also aimed to provide a more integrative and theory driven view of creativity within an organizational context.

Delimitations

In general, the delimitations of the study focused on inclusion criteria related to which elements of interest are the focus of the study, the setting or context of the study and task focus of the teams to be considered as study participants. In terms of the focus of interest, a myriad of constructs or predictors of creativity could be considered. However, the interest of the study focused on three primary elements: (a) cross-functional composition of teams (diverse versus homogenous), (b) knowledge sharing and integration practices within organizational teams, and (c) the outcomes of the team's performance in terms of creativity and overall effectiveness as described by the team members and the stakeholders. The focus of outcomes related to what is salient for the team as a representation of their collective performance (as opposed to any one

individual's contribution). In keeping in line with traditional literature related to creativity, these outcomes could be represented by idea recommendations for new products, services or processes which may be new to the team, the organization or the industry related to the problem the team is attempting to solve, but allows for the surfacing of other salient outcomes such as emergent states or individual member perceptions (Mathieu et al., 2008). These elements were the focus of the literature review and data collection efforts.

The choice of setting was also specifically chosen to be field-based versus laboratory and to specifically focus on work-place or organizational context versus university or loosely coupled organizations. The context setting for the study was also chosen specifically to be within the services industry. The decision for this is predicated on both a gap in creativity and innovation literature within the service industry and the reliance of knowledge workers within the services industries to develop creative solutions to customer needs (Hirsh-Kreinsen et al., 2006; Sethi, Smith & Park, 2001). The setting focus was intentionally targeted to organizations whose focus was on teams formed for the purpose of solving complex problems with creative ideas as opposed to a focus on small-incremental improvements targeted to general efficiency or effectiveness outcomes.

Decisions were also made regarding the type of teams to be included in the setting. The task or purpose of the team is foundational to understanding the processes and behaviors in which teams engage (Kozlowski & Ilgen, 2006). Teams which engaged in routine or production type work were not considered, as the predictors of team performance for routine work and complex work are not the same, particularly as they

relate to diverse functional team member composition and knowledge integration (Guzzo & Shea, 1992). These delimitations were key aspects of shaping the focus and design of the current study.

In summary, the purpose of this study was to explore in what ways cross-functional teams generate and develop creative ideas and how the team members and key stakeholders perceive effectiveness of the team.

CHAPTER 2: LITERATURE REVIEW

Given the complexity and multidimensionality of the creative process among organizational teams, an organizing framework was chosen which serves to narrow the focus of several key elements considered important to further refine this study. These organizing elements are: (a) the creative process and group-effectiveness, (b) functional knowledge or domain specific diversity of the team members, (c) knowledge sharing and knowledge integration processes and (c) communication as an integrating process for group-effectiveness.

The literature review process consisted of keyword searches in three primary databases: ABI/Inform, EBSCO (Psych Info) and Google Scholar. Keyword searches consisted of various combinations of *cross-functional teams*, *creativity*, *innovation*, *knowledge sharing, knowledge integration* and *team effectiveness*. Empirical articles were reviewed for relevance to the research questions of interest. Articles which did not address group-level analysis were excluded unless they were needed for foundational understanding of core concepts. In addition, the reference section of articles was reviewed for additional relevant articles. Several meta-analytic articles were reviewed to develop a more comprehensive understanding of the primary concepts of interest. Finally, articles were reviewed by seminal authors or authors whose research was routinely referenced across multiple studies. Therefore, while the literature review will inform the conceptual understanding of the creative process, the study design does not aim to predict a clear path of interaction between concepts.

Drawing on theory and empirical evidence, the literature is organized to address the following key elements which inform the study design : (a) theoretical models were reviewed in order to understand the primary elements considered important to the creative process involved in idea generation, (b) group-level creative process and theories of group performance were reviewed to understand the unique distinctions and gaps in understanding related to group-level analysis of the creative process, (c) the role of functional diversity as a key input of group composition for creativity was reviewed given the practical nature of organizations using functionally diverse teams and the relatively consistent support both theoretically and empirically for functional diversity to be an important element in the creative process, (d) an overview of knowledge sharing and knowledge integration was reviewed to focus the research on a key cognitive and social process theoretically important to the creative process within teams and which appears to be lacking in empirical research, (e) the role of communication as a group process was chosen for review as a potential integrating mechanism to support knowledge sharing and integration, and (f) a brief overview of team effectiveness outcomes in addition to creativity to broaden the understanding of group-level performance outcomes for creatively oriented groups.

Theoretical Models of Creativity

The study of organizational creativity is fairly recent compared to the more widely studied concept of innovation (Zhou & Shalley, 2003). Creativity, however, is entwined with innovation, as research suggests innovation would not occur without the creative process (West, 2002b). Research on creativity, and more specifically the creative process, within organizations is primarily attributed to Amabile's (1988)

compositional model of employee creativity and Woodman, Sawyer and Griffin's (1993) interactionist model of organizational creativity. Amabile's (1988) model is primarily concerned with individual-level attributes needed for creative performance. Her model also provides insights into creativity as a temporal and phased process which is foundational for organizational innovation. Woodman et al. (1993) model expands on Amabile's model by incorporating group and organizational elements which are proposed as necessary for the creative process. This model, however, does not elaborate on the temporal or phased nature of the creative process to the degree Amabile's model proposes. These models are generally considered the seminal and foundational models of creativity and are described in more detail in the next section.

Compositional model. Amabile's (1988) compositional model defines creativity as "the production of novel and useful ideas by an individual or small group of individuals working together" (p. 126). In this model, creativity is considered both a dynamic process which builds on the skills, knowledge and intrinsic motivation of one or more small groups of individuals to develop an output of something evaluated in regard to relative novelty and usefulness. Amabile suggests individuals engaged in the creative process possess inherent individual skills and intrinsic motivation which allow them to create novel ideas.

The specific skills an individual needs to possess consists of personality traits such as curiosity and persistence as well as self-motivation driven by an inherent excitement in the work. In addition, Amabile (1988) suggests individuals engaged in the creative process need to possess certain "domain-relevant skills" which relate to their knowledge and technical skills relevant to the domain specific problem (p. 130).

Therefore, this compositional model suggests individuals with a relevant knowledge or functionally grounded background who are motivated to work on solving a problem and who have a high degree of curiosity and openness to think differently or explore new ways of thinking about problems are likely to be more creative.

Empirical studies have found some support for the compositional model. Sung and Choi (2009) assessed the relationship between the Big Five Personality factors and creative performance and found a statistically positive relationship between *extroversion* and *openness to experience* with creative performance (r = .30 and .26 respectively, p <.01). In addition, the study considered the mediating role of motivation between personality factors and creative performance, finding extrinsic motivation (versus intrinsic as hypothesized) was a significant predictor of creative performance such that for each standard deviation increase in extrinsic behavior, creative performance increased by .13. However, the generalizability of this study is limited due to both the use of students versus organizational workers as the sample as well as the use of a self-report measure for creative performance suggesting the potential of common method bias (Podsakoff, MacKenzie, Jeong-Yeon, & Podsakoff, 2003).

The importance of motivation and personality attributes has also been supported in organizational settings. Dewitt (2007) found both *intrinsic motivation* and *openness to new experience* were significantly and positively correlated with both objective and subjective measures of creativity among Research and Development (R & D) scientists. Furthermore, the study found through regression analysis an indirect linkage occurred with intrinsic motivation and creativity. Intrinsic motivation predicted a *willingness to take risks* and this in turn positively influenced creative outcomes. However, this finding

was only significant when considering the subjective measure of creativity versus the objective (supervisor) rating of creativity. These two studies highlight a general perspective in the literature, which suggests the relationship of personality characteristics, motivation and domain skills as Amabile (1988) proposed is complex and is likely influenced by contextual factors (Anderson, Potocnik et al., 2014).

Amabile (1988) also suggested these components for creativity were needed for different phases of the creative process. The phase process initiates from *intrinsic motivation* for an individual to initiate in the process of searching for a potential solution and motivation to continue through the problem-solving process. *Domain relevant skills* are drawn upon as part of an information-processing component to assist in gathering needed information and resources, and in evaluating the ideas against various criteria. Lastly, *creativity-relevant skills* help produce one or more creative ideas and relates to things such as divergent thinking or a willingness to take risks when considering various options to a problem. Therefore, Amabile's model provides a foundation to consider how various individual attributes are involved over a phased approach consisting of *presentation*, *preparation*, *idea generation*, *idea validation* and *outcome assessment*. The model, while foundational, shows the complexity of the creative process at the individual level. However, creativity rarely occurs in isolation, and other research has considered the interaction of contextual factors along with individual factors.

Interactionist model of creativity. The complexity of the creative process being due to the influence of contextual factors was theorized by Woodman et al. (1993). Woodman et al. extends Amabile's (1988) model to the individual, group and organizational levels. This interactionist model suggests the elements of *cognitive*

style/abilities, personality, knowledge and *intrinsic motivation* at the individual level generate individual creativity, which then influence group-level elements of *group composition, group characteristics* and *group processes* to create group-level creativity which then influence organizational creativity. This process is influenced by contextual elements throughout the various levels of individual, group and organizational (e.g., the type of task the group is working on might influence the make-up of team members brought together to work on the specific task). Furthermore, Woodman et al. (1993) model suggests social interactions within the group and between groups and individuals influence the creative process. Woodman et al. (1993) model provides additional insight in the multi-level and multi-dimensionality aspects of the creative process. In essence, this model suggests creativity is a recursive process consisting of the creative person, creative groups, the creative product, the creative situation and the interaction of each of these components.

In addition to individual attributes or creative capabilities, teams working in the creative process need effective inter-personal processes to support creativity. Tagger (2002) found groups with high levels of individual creative members and creative-relevant processes had higher levels of creative outputs. However, groups with highly creative members and poor group processes or group members with low levels of individual creative skills and high-creative processes did not generate highly creative outputs. This study provides an interesting insight into the multi-dimensional and behavioral components of the creative process, highlighting the need for groups to have both individuals with the requisite capabilities as individuals but also the necessary integrating processes to support creativity.

However, as is the case with many studies on creativity, the sample consisted of university students versus organizational workers. Despite this limitation, the study's use of a large number of intact groups (n=94), the use of external rater assessment of creativity, and evaluating the creative outputs over a 13-week period, increase the generalizability of these findings to organizational settings. Despite the limitations of the study's sample, the results highlight the importance of understanding both the inputs of the group (composition of the group's capabilities) and the group processes utilized by the group to transform their individual capabilities into a creative output at the group level.

An additional aspect of this study valuable for continued research is the use of the development of a behavioral observation scale. The researcher used critical incident technique to develop and map a list of observed group behaviors that were effective and ineffective during the 13-week study. For example, the study conceptualized *task motivation* in the form of "team commitment" such as attending meetings regularly as well as "focusing on the task at hand" in the form of whether a team-member engages the team in off-topic discussions (p. 321). The same approach was used for individual and team-level creativity processes. While this approach was used to develop a scale measure of creativity components it also can be valuable as a guide to observational areas of focus for team interactions and helps to inform the observational protocol for this proposed study. One limitation of this scale is the use of assessment only at the end of the study period versus incrementally across the 13-week period. The retrospective approach does not allow insights on how these behaviors manifest over the temporal process of creative idea generation and evaluation. Despite the limitations, the study provides initial insight

into the interactional nature of the creative process at the group-level of analysis, further supporting Woodman et al. (1993) theoretical model of the role of group composition and group processes as key elements within the creative process.

The importance of interactional effects at multiple levels and multiple elements in the creative process has been supported within the academic literature. In a comprehensive review of the creativity literature, Shalley et al. (2004) found support for the interactional effect of individual characteristics and contextual factors related to creative outputs. Their review asserts the importance of *individual personality style a*nd *cognitive style* as predictive elements for creative outputs. Furthermore, they found numerous contextual factors such as *job complexity, relationships with others* and *evaluation* play a role in creativity. Despite these findings, the research is shows mixed results and does not fully explore the myriad of interactional possibilities which could occur between individuals, groups and their context as it relates to creativity. Furthermore, the studies reviewed were predominantly focused on creativity as an output as opposed to a process and considered antecedents of individual creativity versus group-level or team creativity. This gap suggests the need to continue to explore the interactional effects of groups' cognitive and social aspects throughout the creative process to further elevate our understanding of this complex process.

The need to further study the creative process over time, within organizational field settings and particularly at the group-level or team-level of analysis is consistent with other large reviews of creativity and innovation (Anderson, Potocnik et al., 2014; Gilson & Shalley, 2004; Shalley, Zhou & Oldham, 2004; Zhou & Shalley, 2003). Therefore, the focus of the next section of the literature will consider the creative process

at the group-level of analysis. Three primary models are drawn upon: (a) Amabile's (1988) phased approach to creativity, (b) the interactionist-model proposed by Woodman et al. (1983), and (c) the input-process-output (IPO) model of group performance.

Group-Level Creative Process

Drawing on Woodman et al. (1983) multi-level model of creativity, group-level creativity is considered more than the sum of its parts. Creativity is influenced through the interaction of group composition, the group's processes and the contextual influences from the organization. However, more research is needed to explore the specific elements of group composition and group process which are important to the creative process. While prior research has highlighted the importance of individual attributes such as domain-relevant skills and motivation, it appears less clear how groups of individuals with relevant capabilities can come together to generate creative outputs.

The group creative process may be more effective than individual level creative thinking, since the group can build on each other's ideas, particularly when individuals have diverse backgrounds related to the task or problem of focus (Kurtzberg & Amabile, 2001). However, diverse groups can also be faced with lower cohesion and higher conflict which can negatively affect the group's performance (Austin, 1997). Because there is limited research on group-level creative processes, literature on group performance was reviewed to understand theoretical and empirical insights regarding groups and their effectiveness in developing outcomes. Group performance, is a complex interplay of elements. The input-process-output (IPO) theory of group performance provides a basis for understanding these elements (Mathieu et al., 2008).

Input-process-output (IPO) theory of group performance

Groups exist for the purpose of accomplishing a task (Guzzo & Shea, 1992). However, the study of group performance needs to consider the context in which the group is embedded as well as the type of task (McGrath, Arrow & Berdahl, 2000), such as creative problem solving versus routine production. Furthermore, group interaction is complex and temporal in nature suggesting the elements influencing group performance are dynamic (Mathieu & Gilson, 2012; McGrath, 1991). Foundationally, the IPO model of group performance suggests group performance is influenced by the interaction of inputs to the group, the processes the group engages in to transform those inputs and some type of intended or meaningful output.

Conceptually the *inputs* relate to various elements which make up the composition or characteristics of the group or the groups' work, *process* relates to the behaviors or interactions the group engages in to resolve a task demand and *outputs* are the results of the team's performance or effectiveness (Kozlowski & Ilgen, 2006; Guzzo & Shea, 1992). The process aspect of the framework are behaviors which serve to mediate the relationship between the group composition and the performance outcomes (Kozlowski & Ilgen, 2006; Mathieu & Gilson, 2012). These processes include elements such as a shared vision of the problem and potential solutions (West, 1990), communication (Campion, Medsker & Higgs, 1993; Cohen & Bailey, 1997), developing shared mental models (Majchrzak, More & Faraj, 2012) and building trust (Bo-Young & Bum-Kyu, 2008).

Group Effectiveness

While group effectiveness literature has produced a myriad of potential inputs, processes, and outputs in a variety of combinations, there appears to be no clear alignment of which inputs, which processes, and at which phase these elements need to occur to support groups in the generation, development and evaluation of novel ideas nor whether the output of a creative idea is in and of itself a measure of an effective team. At a high level, team effectiveness outcomes have been grouped around elements of productivity, satisfaction and managerial judgements (Campion et al., 1993). Examples of outcome measures have been considered in terms of the accuracy and quality of work (i.e. productivity) or composite measures (Mathieu et al., 2008) of various elements such as time, cost, and quality to represent new product development effectiveness (Kim & Kang, 2008). Additionally, Kozlowski and Ilgen (2006) defined the output of team performance to consist of three facets "(a) performance judged by relevant others external to the team; (b) meeting of team-member needs; and c) viability, or the willingness of members to remain in the team" (p. 70). However, the specific measures of a team's effectiveness is primarily aligned to the task for which the team was formed.

In regard to creativity and innovation, team outcome measures have consisted of such measures as the number of ideas generated and percentage of ideas accepted or rejected (Harvey & Kou, 2013). In addition to quantity of ideas, the relative quality of the ideas has been assessed using such dimensions as magnitude, radicalness, impact and novelty (Fay, Borrill, Amir, Haward & West, 2006) as well as the way in which a team experiments with new ways of working or alternative approaches to solving problems (Tiwana & Mclean, 2005). Therefore, creativity lacks a singular measure in terms of

effectiveness. While substantively about newness or novelty in regard to problem solving, it is also contextually bound.

Although there appears to be a wide range of potential inputs, processes and outcome measures related to teams and creativity, some consistency of literature does exist in regard to the composition of the team membership. Research has suggested groups compromised of individuals with diverse functional or domain specific backgrounds working on complex and non-routine situations may be more likely to develop creative ideas (Bell, Villado, Lukasik, Belau, & Briggs, 2011; Guzzo & Shea, 1992; Van Knippenberg, De Dreu, & Homan, 2004). The importance of having a team comprised of individuals with different functional backgrounds stems from the cognitive and information-processing nature of creative problem solving (Van Knippenberg et al., 2004). In order for individuals to generate, develop and evaluate new ideas for a problem, they must be able to draw on a broad array of information and integrate that information into new ways of considering solutions to a problem (Austin, 1997). Therefore, having teams made up of individuals with diverse functional backgrounds is both conceptually relevant and organizationally relevant, as organizations continue to utilize cross-functional teams for various projects (Martin & Bal, 2015). Furthermore, at the group-level of analysis, the creative process consists of both cognitive and social processes which interact to ensure the team members share their unique domain knowledge, integrate the collective team knowledge, and transform this knowledge into creative ideas (Guzzo & Shea, 1992; Hennessey & Amabile, 2010).

Therefore, drawing on the literature of creativity and group process, an organizing framework is developed which aims to explore the creative process occurring within

functionally diverse teams (input), with specific emphasis on the group's processes related to *knowledge sharing* and *knowledge integration* (cognitive process) supported by on-going *communication* (social process), in order to develop creative ideas (output) over a period of time. Figure 1 provides a visual depiction of this organizing framework.

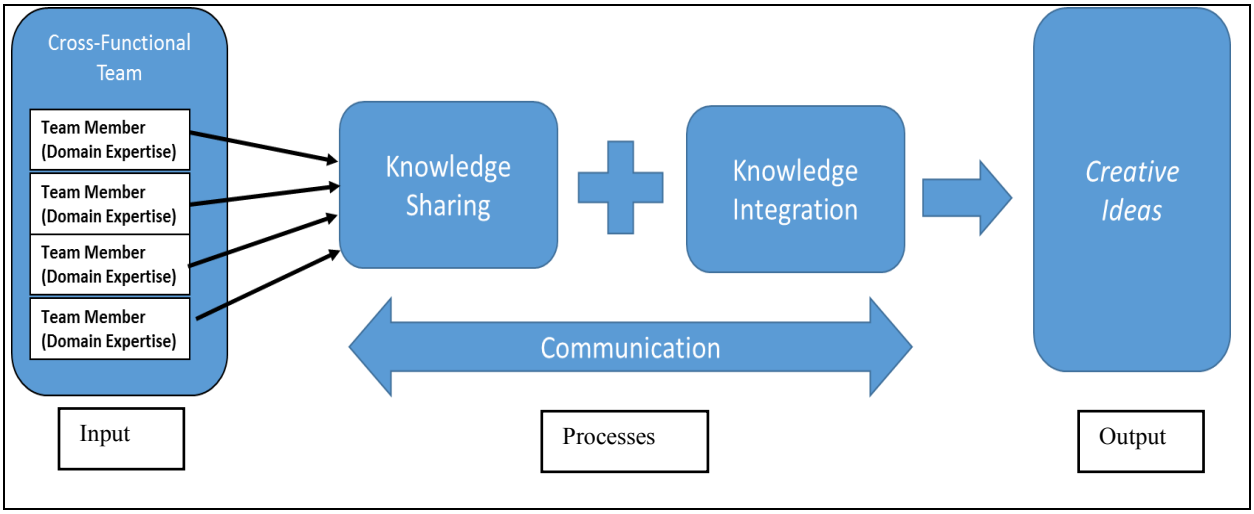

Figure 2: A visual depiction of the key elements of the creative process with cross-functional teams

Functional Diversity as an Input to the Creative Process

Cross-functional creative teams are a type of group which are formed for the purpose of working on non-routine tasks and require the application of knowledge, expertise and judgment to develop new or novel ideas for the solution to a complex problem (Cohen & Bailey, 1997). Groups with diverse backgrounds related to the task have been found to positively influence innovative performance (Hulsheger, Anderson & Salgado, 2009). Furthermore, a meta-analytic review of various diversity and demographic variables found functional diversity was consistently positively related to team performance and in particular with innovation (Bell et al., 2011).

Team functional diversity or heterogeneity is related to the diversity of team members in regard to skills, knowledge and expertise or attributes which are less visible and more related to job requirements (Van Knippenberg et al., 2004; Jackson, 1992; Somech & Drach-Zahavy, 2013). Drawing from an information processing and decision-making perspective, functional diversity within teams is theorized to support creativity and decision making through the group's ability to provide diverse thoughts and perspectives in the development of solutions to complex problems (Austin, 1997; Jackson, 1996; Jehn, 1999). Functionally diverse groups are thought to be able to achieve greater performance through the "exchange, discussion, and integration of ideas, knowledge and insights relevant to the group's task" (Van Knippenberg et al., 2004, p. 1010). Since few empirical studies consider group-level analysis and creativity, literature on innovation was reviewed to understand the relationship between functional diversity and innovation. Functional diversity has been positively linked to innovation and therefore may be positively related to creativity.

In a meta-analytic study of innovation predictors, job-related diversity was found to have a significant positive mean corrected correlation ($p = .155$, p assumed to be significant if confidence interval did not include zero), however the findings were not generalizable due to issues related to measurement discrepancies across studies (Hulsheger et al., 2009). Additionally, a meta-analytic study related to diversity variables and the relationship to team performance found a positive correlation with creativity and innovation measures ($p=.18$, where p is the corrected population correlation). This relationship was also stronger for creativity and innovation outcomes as compared to efficiency performance measures ($p = .03$) (Bell et al., 2011). In a study of primary care

teams within a large health maintenance organization (HMO), Somech and Drach-Zahavy (2013) found group functional heterogeneity to be positively linked with team creativity and that functional heterogeneity and team creative personality accounted for 21% of the variance in team creativity (R^2=.21). Functional heterogeneity of top management teams was also found to be a strong predictor of administrative, technical innovation adoption within the banking industry (Bantel & Jackson, 1989).

However, research has also identified conflicting results related to functional diversity and innovation. In a comprehensive review of innovation literature, Anderson, Potocnik et al. (2014) suggested group functional diversity may not have direct effects on innovation, but rather is mediated or moderated by group processes such as climate, task and goal interdependence. In addition, functional diversity could result in conflict and decreased information sharing (Bunderson & Sutcliffe, 2002). The conflicting relationship of functional diversity on innovation was identified in a recent study of Research and Development (R & D) teams in a Chinese technology company (Cheung, Gong, Wang, Zhou, & Shi, 2016). The study found a negative but non-significant correlation between functional diversity and innovation (r = -0.14), yet a statistically significant and positive correlation between knowledge sharing and innovation (r = 0.34, $p < 0.01$). The study found when affect-based trust decreased in teams the relationship between functional diversity and knowledge sharing also decreased. So although functional diversity was indirectly related to innovation, both trust and knowledge sharing moderated the relationship. Again, the conceptualization of functional diversity, creativity or innovation and the study context may play a role in the mixed findings of the studies. The authors of both meta-analytic studies call for additional studies that provide

better clarity on the role of functional diversity measured at the team level and the relationship to team outcomes such as creativity, innovation or performance.

These mixed findings suggests that the innovation process consists of a complex interaction of both cognitive and social elements within teams particularly when the team is functionally diverse. Although research provides mixed support for functional heterogeneity as a valuable input, both innovation and group effectiveness literature suggest the value of functional diversity for teams focused on creativity. In addition, there also appears to be a need for moderating processes to realize the benefit of the functional diversity or reduce the potential negative implications of functional diversity. Given the increased usage of teams within organizations (Martin & Bal, 2015) and the need for multiple functional perspectives to address the complexity of organizational challenges, functional diversity will be the primary consideration of input for this research.

Knowledge Sharing and Integration

Since creativity is foundationally about generating new ideas, literature has suggested creativity can be supported through utilizing cross-functional teams to leverage diverse knowledge sets which, when integrated, allow the team to generate more creative ideas than could be developed at the individual level. Despite this assertion, empirical studies have been mixed in testing this assumption (Paulus & Yang, 2000; Stroebe & Diehl, 1994). One potential issue related to the mixed findings is the complexity and lack of agreement of knowledge as a construct. The concepts of knowledge and information are often used interchangeably in literature, though there are some distinct differences which should be considered.

Examining knowledge definitions. Information or explicit knowledge is generally concerned with facts or representations universally understood across various contexts, whereas knowledge (often referred to as tacit or implicit knowledge) is a more personally constructed aspect which may be held consciously or unconsciously by the individual (Hirunyawipada, Beyerlein & Blankson, 2010; Nonaka & von Krogh, 2009).

The perspective of knowledge as being both known and unknown to self draws from the philosophical work of Polanyi (1966). Building on this theory, Nonaka and von Krogh (2009) suggest knowledge can exist along a continuum of consciousness. Knowledge consciously held and therefore represented in a universal manner understood by others is considered explicit knowledge. Less consciously held knowledge is defined as tacit. Nonaka and von Krogh define this knowledge as being "tied to the senses, tactile experiences, movement skills, intuition, unarticulated mental models, or implicit rules of thumb" (p. 636). It is through the intentional focus on our tacitly held knowledge that we can raise it to a level of explicit or consciously held knowledge. In essence, knowledge occurs at the individual level through both what we focus on in terms of observation and awareness as well as through things we are subconsciously aware of in our surroundings. The complexity of knowledge as both known and unknown to one's self makes definition of the concept difficult.

Knowledge versus information. Howells (1996) defines tacit knowledge as "non-codified, disembodied know-how that is acquired via the informal take-up of learned behavior and procedures" (p. 92). Information, on the other hand, is related to more commonly held representations of data, objects, or events (Kessel, Kratzer, & Schultz, 2012). The concept of knowledge being related to know-how and information

being related to know-what seems to have consistency in the conceptualization of knowledge, although there is no academic consensus on the definitions and the terms are used interchangeably within the literature (Hirunyawipada, et al., 2010; Wang & Noe, 2010).

Nonak and von Krogh (2009) provide a definition characterizing how explicit and tacit knowledge may be conceptualized in more observable behaviors: "knowledge that is uttered, formulated in sentences, and captured in drawings is explicit" (p. 636). They suggest this type of knowledge is easily accessible and understandable by others. Conversely, tacit knowledge is "tied to the senses, tactile experiences, movement skills, intuition, unarticulated mental models, or implicit rules of thumb" (p. 636) and is tied to values and routines. Although tacit knowledge is non-codified it can be made explicit through intentional conscious effort, which is important in the consideration of team-level knowledge. For the purpose of this study, knowledge is conceptualized as information possessed by and processed by individuals consisting of both know-how and know-what, regardless of whether this knowledge is universally understood by the other team members. Furthermore, the study is interested in knowledge which is explicated by the team members and therefore shared with the team members and then integrated by the team members to create new knowledge and subsequently support the development of creative ideas for problem solving.

Knowledge Sharing

While knowledge relates to what is known, knowledge sharing relates to the processes through which knowledge becomes known. Knowledge sharing is a process by which individuals consciously choose to make explicit the aspect of know-how (or know-

what) they possess and provide this knowledge through various means in order to help others in problem solving and creative idea generation (Wang & Noe, 2010). Knowledge sharing, for this study, is conceptualized as being related to the individual motivation of team members to share what is known to them for the benefit of the teams' greater knowledge awareness and integration.

Knowledge sharing can be observed through members voicing ideas, sharing feedback, seeking new information and reflecting on others' ideas (Kessel et al., 2012). However, the ability to share or voice knowledge may not be sufficient to foster team-level creativity. Rather, at the team-level, uniquely held knowledge by the members needs to be integrated and transformed into new knowledge which is held at the team-level collectively (Hirunyawipada et al., 2010; Majchrzak et al., 2012).

Knowledge Integration

Knowledge integration (also referred to in the literature as knowledge exchange or knowledge transformation) relates to a high-order aspect of knowledge through which the collective team members' knowledge base and understanding is expanded and transformed. This collectively held knowledge stems from the integration of the team members' shared knowledge. This integration or transformation of knowledge occurs through the sharing of ideas, work products, or relevant information using dialogue, active reflection, visualization or other methods which result in a shared collective knowledge or mental model from which the team can operate to solve problems and develop creative ideas (Gong, Kim, Lee, Zhu, 2013; Hirunyawipada et al., 2010; Majchrzak et al., 2012; Ward, Smith, House, Hamer, 2012). Knowledge integration is considered a dynamic learning process whereby the team members' assumptions, beliefs

and potentially their professional identities must be questioned to allow for the incorporation of new information which further shapes both the individual's and collective team's knowledge base (Majchrzak et al., 2012; Ward et al., 2012).

Empirical studies have suggested knowledge sharing and integration are important elements of team-level creativity (Gong et al., 2013) and innovation (Cheung et al., 2016). Kessel et al. (2012) found information-sharing to be significantly and strongly positively related to both know-how sharing and creativity (r=.86 and .32, $p<.01$ respectively) with a study of 73 patient-centered healthcare teams. The high correlation between information-sharing and know-how sharing suggests a potential of multicollinearity of the constructs in how they are measured. Know-how sharing alone was also significantly and positively related to team creative performance, but only moderate in strength (r= .27, $p<.05$). In addition, using regression analysis, information-sharing was found to be a significant predictor of the overall variance in creativity accounting for 13% of the variance. Know-how sharing was also a significant predictor of creative performance, accounting for 15% of the variance, but a relatively weak correlation (Cohen, 2013).

The importance of knowledge integration for cross-functional teams was identified in a study of information systems development within a large US conglomeration (Tiwana & Mclean, 2005). Using a survey based approach, the research indicated expertise integration (similar to knowledge integration) accounted for over 80% of the variance in the teams' creativity measures and partially mediated the relationship between relational capital and absorptive capacity with team-creative outcomes. Using partial least squares (pls) structural equation modeling, expertise heterogeneity had a

direct and significantly positive path coefficient of .719 ($p<.001$) with team creativity. Both relational capacity and absorptive capacity had direct and significantly positive path coefficients as well with expertise integration. These findings suggest both the relational and social dynamics of the groups' interactions as well as the groups' ability to find and build from common knowledge are important aspects of expertise integration and subsequent creativity. Interestingly, the study failed to identify a significant relationship with expertise heterogeneity and expertise integration. The research suggests there is value in bringing individuals with diverse knowledge backgrounds together to solve complex problems with creative solutions. However, how this process unfolds in order to support the sharing and integration of this diverse knowledge seems less clear. The role of communication within teams may serve to be a supporting integrative group process which supports knowledge sharing and integration. Communication has been positively linked with innovation and therefore likely creativity as well (Hulsheger et al., 2011).

Communication and the Creative Process

Communication is considered a central behavioral process to the effectiveness of teams, serving as a coordinating mechanism which can support both information-exchange and social processes necessary for team performance (Guzzo & Shea, 1992; Kozlowski & Ilgen, 2006). The importance of communication to support team-level creativity makes both theoretical and common sense. Creativity stems from the effective sharing of individually held knowledge to the broader team members through a collaborative process in order to solve problems (Wang & Noe, 2010). Therefore, communication likely serves as a mechanism which supports and fosters information-exchange (know-what) and knowledge (know-how). In addition, communication may

also support the social dynamics within a team such as trust among the participants (Valtakoski & Jarvi, 2016) which may foster the creative process.

One mechanism through which knowledge is shared can occur through formal and informal meetings (Boerner, Schaffner, & Gebert, 2012; Drach-Zahavy & Somech, 2001). Both the frequency and quality of the communication may be important for effective knowledge integration (Zhang, Cheng & Wang, 2015). In addition, communication through regular dialogue may serve for teams comprised of functionally diverse members to develop a common language which supports the creative process (Majchrzak et al., 2012). However, as with most studies related to creativity, the findings are mixed and complex. While frequent communication may be important to team information-exchange, too much communication may negatively influence the creative process (Kratzer, Leenders, & van Engelen, 2004).

In summary, literature has suggested functionally diverse teams are a necessary input for creativity. The ability to achieve more than the sum of the parts from the team members' knowledge, skills and abilities may be influenced through cognitive and social processes within the group. These processes may serve to help team members align and understand the various perspectives in order to develop a shared understanding of the problem and approach to developing creative solutions. A variety of group-level processes have been proposed as mediators of the knowledge sharing and integration aspect of the creative process, communication being a commonly cited mechanism. The aim of this literature review is not to prescribe which processes should be in place, but rather elevate awareness of the complexity of cognitive and social processes at play when cross-functional groups are tasked with developing creative ideas to solve complex

problems. The final section of the literature review provides a brief glimpse into the final stage of the IPO model, namely the outcomes. Again, there is a dearth of literature related to team level creativity outcomes so general team effectiveness and team innovation literature serve as a guide for considering what might constitute effectiveness for creativity focused cross-functional teams.

Outcomes for Creativity and Group Effectiveness

The actual outcomes of groups vary based on the purpose of the group but can include productivity, quality and satisfaction (Campion et al., 1993; Mathieu & Gilson, 2012). However, the output measure is highly contextual to the work of the group and may incorporate some composite measure representing quality, productivity, and/or satisfaction, making comparison difficult across research domains (Mathieu & Gilson, 2012). For example, in a study of team effectiveness in manufacturing teams, team performance was conceptualized as a composite measure consisting of eight-dimensions: *knowledge of tasks*, *quality of work*, *quantity of work*, *initiative*, *interpersonal skills*, *planning and allocation*, c*ommitment to the team,* and *overall team performance* (Barrick, Stewart, Neubert & Mount, 1988, p. 384). In regard to creativity or innovation, team effectiveness tends to be conceptualized in regard to the relative degree of novelty, usefulness, and magnitude of creativity for the problem (Amabile & Fisher, 2000; West & Anderson, 1996). For example, in a study of consumer product organizations using cross-functional teams to develop innovative products, innovation was measured using a developed scale with two dimensions: novelty and appropriateness of the new product (Sethi et al., 2001).

However, in the services industry, innovations may be focused on processes which are new and novel to the organization (Fay et al., 2006; West & Wallace, 1991) as well as new products introduced to the market (Santamaria et al., 2009) or which require modification to address quality or consumer satisfaction expectations (Omachonu & Einspruch, 2010). Due to the vast spectrum of what constitutes an outcome for group performance, the measurement of team effectiveness for creatively oriented groups should be salient to the team as an appropriate measure of outcomes (Mathieu & Gilson, 2012) as well as sufficiently clear in construct definition to provide generalizability to other teams or organizations (Mathieu et al., 2008). For the purpose of this research, team effectiveness will be operationalized as the outcome of value most salient to the members of the team and most valued by the key stakeholder(s) of the team's primary work objective. In this regard, team effectiveness does not serve as a dependent variable, but rather a conceptual element to be explored and described through the research considering both the creative outcomes and any additional outcomes made salient as elements of the team's performance by both team members and key stakeholders.

CHAPTER 3: RESEARCH DESIGN & METHODOLOGY

The starting point for any research study is to define or make explicit the over-arching question to be addressed (Glesne, 2016). The purpose of this study was to explore in what ways cross-functional teams generate and develop creative ideas and how the team members and key stakeholders perceive effectiveness of the team. The study drew on both theories of the creative idea process as well as the Input-Process-Output (IPO) theory of group performance (Kozlowski, & Ilgen, 2006; McGrath, 1991). The conceptual model described in the literature review integrated these core theories into a model which framed the research design. Specifically, the research design aimed to explore the interpersonal processes cross-functional teams use over time to share and integrate their diverse knowledge in order to offer, create, develop and evaluate creative ideas. Since this study was focused primarily on the ways the creative process unfolds over time, a qualitative case study approach was selected (Pratt, 2009; Yin, 2014). The use of case study design was appropriate for this research question as it deals with a current (rather than historical) phenomenon of group-level creativity within organizations, explores a phenomenon from the perspective of the individuals most closely engaged in the process without attempting to manipulate the process, and centers on the creative process as a complex phenomenon which is not clearly distinguished from the context of the phenomenon (Yin, 2014).

Researcher Positionality

The researcher's paradigm or basic belief system shaped the design of this study, both what is studied and how the study is conducted (Guba & Lincoln, 1994). This researcher had several key values which drove the nature of the particular study of interest. First, the researcher works in a services industry and provides internal consulting to various teams focused on improving their performance. Second, the researcher values understanding complex human and organizational processes, which as a result of the study might positively inform changes in organizational practices for the benefit of the associates and the organization. These underlying experiences and values have shaped the researcher's interest in studying the phenomena of the creative process within the services industry and particularly from the perspective of cross-functional teams versus creative individuals. Lastly, the researcher values the complexity of human nature and the belief that there is not a singular truth for why humans interact with one another. Rather, the researcher believes people co-create their experiences and the complexity of human interaction needs to be understood as opposed to being parsed to the most discrete elements. These researcher-held assumptions shape a pragmatic perspective which seeks to understand the phenomena of the team-level creative process within the organization in order to help the organization better support the creative process using cross-functional teams (Creswell, 2013). Furthermore, the researcher believes a qualitative study design is most relevant for this study to allow the complexity of the creative process to be understood from the individuals engaged in the process.

As the instrument of data collection, the researcher must be mindful of assumptions and bias which may be present throughout the research process. The initial

assumptions the researcher holds stem from the researcher's work as a practitioner in the Human Resources and Organizational Development (HROD) function of a large US-based healthcare services company. In this work, the researcher has had multiple consulting engagements with various leaders and their teams to assist them in working more effectively together. In addition, the researcher has conducted prior research studies with innovation teams and has had exposure to certain processes or practices used by those teams for the effective creation and development of creative solutions. Making these assumptions explicit helped the researcher consider data collection and analysis strategies which may serve to guard against undue bias in the research. Three primary researcher held assumptions shaped the design of the study and the data collection strategy and are discussed next.

First, the researcher assumed teams who have an explicit process which guides them in problem framing and understanding, provides criteria to evaluate ideas and who have regular communication will be more successful in the development and selection of their ideas. This assumption drove the data collection of organizational documentation to assess the accurateness of the assumption. In addition, the documentation shaped interview questions regarding why the team used (or did not use) certain processes and how they believed the processes influenced or inhibited their collective effectiveness.

A second key assumption was teams who have regular communication through various channels throughout the creative process (e.g., meetings, impromptu discussions, phone calls, etc.) will have higher levels of trust with one another and be more motivated to share ideas and perspectives with the team. This assumption was based on the researcher's professional experience in the role of Organization Developer within a large

US-based services company where the researcher is often asked for consultation by leaders of teams for guidance and support. One element often raised by teams who are struggling with effective team performance is the lack of regular and varied types of communication. This assumption determined data collection of both organizational documents (such as meeting schedules and minutes) as well as interviews of the team members to assess the team's communication practices and how these practices influence their knowledge sharing and integration perspectives. Shaping interview questions around motivation for voicing ideas and sharing perspectives allows for the potential of other factors besides communication to be raised and why those factors influence or inhibit the creative process.

Finally, the researcher assumed the participants would engage in the creative process with their team members in the same fashion they would if the researcher was not present. This particular assumption is one which required continued reflection and awareness throughout the research process, as the researcher's presence could in fact be a source of bias introduced into the study (Creswell & Clark, 2011). The researcher attempted to reduce this risk through building rapport with the team members throughout the research process and engaging with a key gatekeeper in the organization to build credibility and acceptance among the team members. In addition, the researcher gave the participants informed consent documents in order to provide awareness of the research study, the voluntary nature of their participation and the confidential nature of their participation. Lastly the use of data collection from multiple sources as well as participant and peer review of assumptions made by the researcher throughout the study

process was used to reduce bias and improve the overall credibility of the study (Glesne, 2016).

Trustworthiness

In qualitative studies, the concepts of reliability and validity are achieved through somewhat different approaches compared to quantitative research (Creswell, 2013). Guba (1981) suggests that four primary elements should be considered with naturalistic research: "truth value, applicability, consistency, and neutrality" (p. 79 – 80). These four elements relate to the overall trustworthiness of the research. Because the research design is exploratory and relies on the researcher as the instrument of truth, the value or confidence of the truth needs to be considered in order to provide greater confidence in the research results. This study design adopted several tactics suggested by Yin (2014) to support the quality and rigor of the research design. Yin describes approaches which can be used in qualitative case studies which serve to address the traditional statistical tests of construct validity, internal validity, external validity and reliability. Adopting Yin's recommendations, the research design utilized the following tactics for each of these tests outlined below in Table 1.

Table 1

Overview of trustworthiness approaches compared to reliability and validity

Standards for Rigor	Reason for standard	Tactic used

Trustworthiness (Construct Validity)	To ensure the study accurately measures what is intended	Collection of multiple sources of data (i.e. triangulation) Drawing on existing literature to operationalize key constructs Member-checking whereby the participants can review key elements of the study to ensure accuracy of the data collection and analysis relevant to the objective being measured
Credibility (Internal Validity)	For explanatory case studies to ensure the causal relationships described are not the result of some additional or spurious element	Designing the study to consider using a logic model as the analytic strategy Developing observational protocol to collect data of cause and effect Developing open ended interview questions to allow for data collection to illuminate rival theories
Transferability (External Validity)	To allow for transferability of the findings beyond the study	Using existing theory to develop "how" research questions and aligning data collection strategy accordingly within the research design
Dependability (Reliability)	To allow for other researchers to repeat the design and arrive at the same conclusions	The development and usage of a case study protocol which outlines the steps taken throughout the data collection process The utilization of a case study database to house and organize raw data such that another researcher could review the raw data, codes and inferences made to assess reliability

Quantitative Research terms for obtaining rigor are provided in parenthesis below each standard.

Case Description

The focus of this research was exploring the ways cross-functional teams generate and develop creative ideas and how the team members and key stakeholders perceive effectiveness of the team. Of particular interest for this study were work-teams within an organizational setting in the services industry. This setting was chosen because of the complexity of issues facing the industry around consumer needs, cost and quality as well

as the limited number of empirical studies conducted within this setting (Den Hertog et al., 2011; Hirsch-Kreinsen et al., 2006). In addition, the case required the team to be a work-team within the organization consisting of at least three members representing at least two different functional domains (e.g., Marketing and Finance). Furthermore, the case required the group members recognize themselves as a team and that they have been formed to develop a new idea or solution to a complex problem.

Research Site

The site for the researcher was a small non-profit organization in the Mid-Atlantic region. According to the organization's published materials, the organization provides fund-raising support and collaborative initiatives to address complex, systemic community challenges. The organization provides services to over 100,000 individuals across a regional area and manages funds raised from donations in excess of twenty-three million dollars. The organization employs approximately sixty full and part-time paid staff. The organization's stated values include a focus on innovation. The organization's fundamental mission is to develop and implement new ideas to help solve complex social problems, therefore making it a relevant focus for this study, as companies within the service industry have been under-utilized in the studies of creativity and/or innovation (Den Hertog et al., 2011; Hirsch-Kreinsen et al., 2006).

Operationalization of Key Concepts

In determining a case for study, the key criteria related to sample selection was cross-functional teams engaged in the creative process. The concept of team was operationalized as comprising several key characteristics: 1) is composed of at least three members, 2) are brought together for the purpose of accomplishing a task, 3) are

recognized as an entity by the members of the group as well as non-members of the group, 4) are embedded within the organizational context, and 5) have some level of interdependence and distinct roles which they perform in order to generate an organizationally relevant task or output (Guzzo & Shea, 1992; Hackman, 1982; Kozlowski & Ilgen, 2006).

Regarding the functional diversity of the team, the concept of functional heterogeneity was adopted and was operationalized as the proportion of team members' differences in regard to skills, knowledge and expertise (Jackson, 1992; Somech & Drach-Zahavy, 2013). In addition, functional diversity considered both the current organizational assignment of job function as well as the function in which the participant had spent the majority of his/her career (Bunderson & Sutcliffe, 2002). This approach to operationalizing functional diversity allowed for a broader consideration of the concept.

The concept of creativity was operationalized as the process through which new or novel ideas are generated, developed and evaluated (Amabile, 1988; Anderson, Potocnik et al., 2014; West, 2002a). In addition, the operationalization of creativity was not concerned with whether the ideas are actually implemented or adopted as that process is considered more related to the concept of innovation (De Jong & Den Hartog, 2007; West, 2002a). The outcome of the creative process may be an idea, process or a physical prototype. However, the research was not interested in the content of the output but rather the degree of novelty, usefulness and originality of the output if adopted or implemented (Egan, 2005), as evaluated by the team and key stakeholders.

In addition to participant criteria, the case was time-bound by focusing on teams at the initial or early formation and assignment to a strategic or complex project through a

point in time in which the creative idea is determined and presented as the team's output. The explicit identification of both temporal and compositional characteristics were necessary to provide guidance on the case boundaries (Yin, 2014). Because the focus for this study was a singular context of the creative process, the use of a single-case design is appropriate. However, because the unit of analysis consisted of both perceptions and behaviors of individuals and the collective team, the case for this study was an embedded single-case (Yin, 2014).

Case and Participant Sampling Strategy

The primary method of site access for case studies is through the use of a gatekeeper or organizational member who can provide access to relevant participants for the study (Glesne, 2016). The researcher initiated contact to the company through a professional colleague who provided introductions to a key business leader within the research site. The researcher then provided an overview of the research objectives through e-mail exchange and conversation with the key leader (i.e. sponsor). Initial discussions centered on the general purpose of the research and whether the research was of interest and practical application to the organization.

Support and interest was expressed by the sponsor, given the immediate need for the organization to develop ideas concerning three primary focus areas stemming from their Board of Director's and leadership's recent strategic planning process. The sponsor secured additional internal commitment to the research. Additional e-mail and in-person discussions occurred throughout the course of the research with the sponsor (gatekeeper) to ensure appropriate access to relevant data, validation of interpretation of business specific concepts or context and continued alignment with the sponsor such that the

results and implications of the research may be of value back to the sponsoring organization.

Preliminary discussions with the sponsor also included descriptions of key criteria for teams to be included in the study, namely a cross-functional team representing two or more disciplines and consisting of at least three members. The sponsor indicated three teams met this criteria as a result of the organization's recent strategic planning process. The sampling method for actual team selection was prospective in nature, however through additional discussions with the key sponsor of the research and following Institutional Review Board approval, the study focus remained with the three teams identified by the sponsor during the preliminary meetings.

The nature of the research design predicated the teams be newly formed or in the process of launching new work to develop a creative solution. At the time of the study, the organization had formed teams to develop solutions to address three primary areas of focus: 1) the value proposition of the organization moving forward, 2) to capture and utilize data more effectively to drive decisions, and 3) grow revenue streams. Furthermore, the organization had specifically indicated the work of these teams was distinct and separate from routine operational work and general continuous improvement efforts. Therefore, the organization had already indicated a desire for the teams to develop highly creative ideas for these focus areas. At the early stage of the research, the three teams had formed specifically to develop, evaluate and select ideas for these areas. The research initiated within a couple of months of the teams beginning their work on these initiatives.

Based on the discussion with the organization sponsor, these teams were appropriate for inclusion in the study because the nature of the projects they were concerned with related to developing new or unique solutions to complex problems (as opposed to routine process improvements in which the solution is already known). In addition, the teams consisted of more than three members each and the members represented two or more functional/professional domain areas in their job assignment. The cross-functional teams were formed from individuals within the organization who had prior working knowledge of one another even if their assignment to these specific cross-functional teams was a new event. For the purpose of this research, teams who had been working together for a period of time but had recently begun work on a new initiative were considered to ensure adequate number of teams for inclusion in the study.

Case Description

Data Team. The Data team was a cross-functional team whose focus was in the development of ideas to implement solutions which can enable the organization to effectively harness data from various disparate sources to better inform analysis and decision making. The team initially consisted of 8 members, which included a leadership member who served in the role of advisor to the team. The team consisted of members who represented professional domains in the area of data analytics, information technology, process management and strategy development as indicated by the key sponsor/gatekeeper from the organization.

Revenue Team. The Revenue team was a cross-functional team whose focus was in the development of ideas to implement solutions which can enhance the organization's ability to increase revenue through methods other than traditional

fundraising campaigns. The team initially consisted of 9 members, which included a leadership member who served in the role of advisor to the team. The team consisted of members who represent professional domains in the area of fundraising, marketing, community and volunteer engagement, and finance as indicated by the key sponsor/gatekeeper from the organization.

Value Proposition Team. The Value Proposition team was a cross-functional team whose focus was the development of ideas to implement solutions which can enhance the organization's value proposition. The team consisted of 9 members, which included a leadership member who served in the role of advisor to the team. The team consisted of members who represented professional domains in the area of fundraising, marketing, community and volunteer engagement, and impact or program development as indicated by the key sponsor/gatekeeper from the organization. Each of the teams had two individuals of the team designed as co-leads or facilitators.

The cases described above represented the initial identification of viable teams which met the study design criteria and had received support from senior-level leaders within the organization. The described composition of the teams was based on the preliminary assignment of individuals to the team and the team's preliminary focus of work. As the research progressed, membership composition changed slightly with some individuals being added to the teams and some individuals initially identified as being a team member, withdrawing from participation on the cross-functional team. Additional descriptive information about each case demographics is provided in Chapter 4.

Data Collection

Data collection for a case study relies on the researcher as the instrument of much of the collection and interpretation of the data (Creswell, 2014). As such, data collection entailed the utilization of multiple data collection strategies, including semi-structured interviews, observations, organizational documentation and a survey. The use of multiple data collection methods was chosen to improve trustworthiness of the data (Creswell & Clark, 2011).

The primary focus of analysis came from twenty-three interviews conducted with sixteen unique participants over the months of February through June, 2018. The use of semi-structured interviews of the team members and key stakeholders was used to evaluate the theoretical constructs as well as to allow for the collection of data which may elucidate alternative or additional theoretical insights (Yin, 2014). In addition to interviews, observations of key meetings in which the teams were specifically focused on the generation, development and evaluation of ideas was conducted for two of the three teams. The use of observation was intentional to allow for deeper and prolonged engagement with the participants to build trust and provide greater awareness of cultural nuances within the organization (Creswell, 2013). The use of observations and multiple interviews also allowed for prolonged engagement with the organization to enhance the trustworthiness of the data (Creswell, 2013).

Observations and interviews were recorded, based on participant permission, and transcribed for ease of analysis. Organizational documentation and observations were used to supplement the data collection. In addition, field notes were developed during and following the observations and interviews in order to provide the opportunity for

both researcher reflexivity, opportunity to identify potential bias occurring in the data collection process, as well as the ability to be adaptive in the data collection strategy (Glesne, 2016; Peshkin, 1988; Yin, 2014). The use of multiple methods to collect data allowed for the use of triangulation to provide greater validity of the information collected and reduce potential bias in the data collection process (Mathison, 1988; Yin, 2014). Initial information provided by the gatekeeper indicated a total of 31 participants (team members and/or key stakeholders engaged in the project). This list was used to initiate the baseline survey and served as the beginning point for data collection. Prior to data collection, two individuals were removed from consideration due to their role not being part of the project (they did not complete the survey or any of the interviews). Additionally, four stakeholders were also excluded from team-level data collection and analysis because they did not serve as active team members during the process (they were however included in interviews for their perspective as stakeholders and were included in the invitation to participate in the electronic survey). The resulting team-level data collection and analysis focused on 25 individuals across three distinct teams: Data, Revenue and Value Proposition. Data collection occurred over five distinct phases: baseline (survey and organizational documentation), observation, phase 1 interviews, phase 2 interviews and phase 3 interviews.

Survey

Initial data collection began with collection of data from the organizational gatekeeper related to the member's assigned functional background, role title, and tenure with the organization. This data informed the collection strategy for the survey and to assess member demographics. An electronic survey was sent to all individuals indicated

by the organization as being a member or key stakeholder of at least one of the strategic initiative teams (n = 31). The survey consisted of twelve items related to key conceptual themes (personal motivation, perceived value of cross-functional teams, perceived learning orientation, perceived effectiveness measures of outcomes (e.g., quality/quantity of ideas) as well as team processes of communication and conflict management). A 5-point Likert type scale was used to collect responses (1 = *Strongly Disagree* to 5 = *Strongly Agree*). In addition, open comment fields were provided to gather qualitative information related to the participants' perception of the purpose for the formation of the team and how the participant would define success outcomes. Lastly, general demographic information was collected regarding the participant's gender, tenure in role, tenure in the organization, highest level of education, assigned work function and years of prior work experience across a selection of work functions.

Example of scaled items included:

- I am personally motivated to work on this project
- I am personally motivated working in a team environment.
- I believe using a cross-functional team will produce better ideas than individuals working alone

Appendix C provides a summary description of the minimum and maximum response scores by question as well as the average and standard deviation (Std. Dev.) of each question.

Data was also collected through the survey regarding the participants' functional assignment (i.e. job related function). This data was collected to inform future analysis of the teams' functional heterogeneity, which can be assessed based on evaluating the

proportion of team members representing a specific list of organizational functions (e.g., sales, marketing, etc.) (Blau, 1977) or more deeply in regard to the team member's dominant functional diversity based on the amount of time each member has spent working in a particular functional area and how that breadth and depth is represented by the team's composition (Bunderson & Sutcliffe, 2002). The initial list of functional areas was modified from Bunderson and Sutcliffe's (2002) work to relate to the non-profit/social services industry of the study site. The initial nine functional areas were: Sales/Marketing, Fundraising, Finance, Technology, Human Resources, Social Service Delivery (e.g., Social Work, Counseling, etc.), Community Engagement & Development, Grant Writing, and Program Evaluation. In addition, a write-in option was provided for participants to indicate a different functional area not provided in the questionnaire. Four write-in categories were provided: Journalism/PR, Communications/Media Relations, Administration and Database Reporting. Based on these write-in responses, two additional categories were created. The category of "Communications" was created to represent the Journalism and Communications/Media Relations options and Administration. For the write-in option Database Reporting and Analytics, the response was mapped to the original category of Technology. The purpose of collecting this information was to provide both descriptive analysis of the team's functional diversity as well as to support analysis on how or if the diversity manifested during the idea creation process. In addition, collecting initial baseline perceptions of the member's perceived role and importance of the project was intended to provide insight into the potential differences or alignment which exists among the team members prior to the idea generation process.

The survey was sent electronically to the participants work e-mail addresses on March 1, 2018 with additional reminders sent both electronically through the Qualtric system and through e-mail notification directly to participants from the researcher as well as from the internal stakeholder. In addition, an option was provided for participants to complete the questionnaire manually and turn it in privately and directly to the researcher which yielded an additional two responses. The use of multiple methods to outreach to the participants (personally directed e-mail, system e-mail and onsite collection) were used in an attempt to improve response rate (Dillman, Smyth, & Christian, 2014). The survey collection process was completed on April 21, 2018 with the collection of two manual responses. A total of 14 responses were received from the original 31 participants invited to complete the survey (12 electronic and 2 manual) resulting in a 45% response rate. There did not appear to be any meaningful difference in responses from individuals who responded later in the collection time frame or by paper versus electronic.

Interviews

Participant selection strategy for the Phase 1 interviews consisted of selecting one lead or co-facilitator from each team and one randomly selected participant from each team. A total of five interviews were conducted, with the Data team being represented by a single participant. Phase 2 interviews were conducted with two individual team members from each team. Initial selection strategy for this phase anticipated using a purposive sampling approach following observations of team meetings, such that individuals who were the most and least actively engaged in the observed session would be selected for an interview. However, since not all participants were willing to engage

in the interviews due to lack of availability or lack of response to multiple requests for participation, and because the Value Proposition team was not observed, the selection strategy focused on ensuring the second of the two team co-leads was interviewed and at least one additional participant for each team. The resulting approach yielded a total of 7 interviews, with Revenue team having three individuals represented. The third phase of interviews was focused on stakeholder perspectives and entailed interviewing five senior leaders, who were not part of the working teams, as well as both co-leads from each team for a total of eleven interviews. The resulting approach resulted in a total of twenty-three interviews collected over a three-month period to ensure a sufficiently broad spectrum of perspectives provided by the teams and stakeholders. Lastly, participant checking was used by asking members of the team to review insights and interpretations of key themes as well as offering participants the ability to review their transcripts. This approach provides greater credibility of the research as well as allowed for alternative theories or considerations to emerge (Glesne, 2016).

Interviews were focused on each team member's perspectives of the interpersonal and contextual influences which supported or inhibited their ability to share their particular functional knowledge as well as understand and integrate others' knowledge and how this affected the idea generation/development/evaluation process. In addition, open ended questions were used to explore member's perceptions regarding other elements, such as communication, which may influence the creative process and in what ways the member perceived the team's effectiveness. Appendix A provides a copy of the interview protocols for each phase of the study.

Observations

Observations were conducted of formal meetings of two teams (Value and Data) during the month of February when the teams were formally focused on idea generation, as indicated by organizational agendas and meeting notes, and working towards their final recommended solution. These observations occurred at the agency headquarters on two separate occasions. Each observation lasted approximately 1 hour and was audio recorded. Notes were also taken during the observation by the researcher to aid with future data analysis. Participants were aware of the researcher's presence and had been provided informed consent and information about the research prior to engagement with the group. An observation protocol was developed to provide a framework in which to explore the process the teams engaged in to share and integrate knowledge and to generate, develop and evaluate ideas over time.

The development of the observational protocol stemmed from prior pilot studies conducted within a different organization's Innovation Department. In addition, aspects of the protocol were developed adopting approaches from published case studies specifically focused on idea development and evaluation in the creative process (Harvey & Kou, 2013) and knowledge sharing and integration within cross-functional teams (Majchrzak et al., 2012). The observation protocol for this study was developed with recognition of the challenges of collecting data through observation. The format of the protocol was designed with an intent to focus the data collection and analysis on the relevant aspects of the team's interactions in regard to the study. The initial plan for the data collection through observation was abandoned due to the timeline and schedule conflicts. Only a limited number of observations were able to be scheduled and therefore

the observation data collection was used for confirmatory or expanded understanding of the data collected through interviews, rather than formal analysis. However the observation protocol was still useful for researcher reflection. Appendix B provides a copy of the observation protocol.

Organizational Documentation

Organizational documentation was requested and reviewed to understand guidelines, resources, procedures, and practices which were provided to the team for the completion of their project. In addition, information related to the project itself was collected regarding such items as project plans, milestones, budgets, evaluation criteria, descriptions of the problem and reason for the project. Information regarding the team participants including functional role assignment or job title, tenure with organization, tenure in position, and gender was collected from the gatekeeper to assist in descriptive information regarding each team's composition.

Documents were reviewed holistically and then coded deductively regarding major theoretical categories related to such aspects as *process phases*, *communication, knowledge sharing, knowledge integration, idea generation* and *idea development and/or evaluation*. Additionally, inductive coding was applied to documents which seemed to address a salient concept not initially being considered. For documents which seemed to be heavily used or referenced by the team, follow-up interview questions were asked to understand more deeply the team members' perspectives on the role the document may have played in the process. Table 2 provides a summary of the data collection strategy related to the primary conceptual elements of interest for this study.

Table 2

Overview of trustworthiness approaches compared to reliability and validity

Concept	Related Question(s)	Data Collection Methods
Functional Heterogeneity	How do members of the team identify in terms of their assigned and dominant function? How do members of the team perceive their role on the team at the beginning of the project?	Interview Organizational documentation Survey
Knowledge Sharing & Integration	How do the members contribute and integrate their functional knowledge to generate or develop novel ideas at different phases of the creative process?	Interview Observations
Communication	How is communication used throughout the process? Why is communication important? How does it influence the creative process?	Interviews Observations Organizational documentation Survey
Team Effectiveness	How do the members define and perceive the team's effectiveness? How do stakeholders define and perceive the team's effectiveness?	Interviews Organizational documentation Survey
Creativity	How do team members evaluate the creativity of the idea? How do stakeholders evaluate the creativity of the idea?	Interviews Organizational documentation Survey

Ethical Considerations

Prior to data collection, Institutional Review Board (IRB) approval and internal organizational ethical reviews were completed. In addition, informed consent was sought from the study participants (Yin, 2014). Participants were contacted via e-mail by the researcher to explain the purpose of the study, the scope of the project, the data collection approach in terms of the survey, interviews and observations and the anticipated amount of time needed from participants based on the data collection type. In addition, participants were informed as to who would have access to the information (i.e. dissertation committee and summary analysis to internal organizational leadership) and the approaches planned to maintain confidentiality and anonymity. In addition,

ownership of the data was clearly articulated as belonging to the researcher and not to the organization. By outlining these elements, the researcher attempted to ensure the participants had visibility to the benefits (namely being helpful versus receiving a tangible reward) as well as the costs (primarily their time) of participation in the study (Miles, Huberman & Saldana, 2014). Lastly, because of the small sample size, identifying information was intentionally withheld from quotes to provide anonymity to the participants.

Managing and Recording data

The management of qualitative data can be challenging given the volume of information collected. A case-study database was used to ensure accurate collection, documentation and retrieval of the data elements as well as allow for review of the data separate from the research report (Yin, 2016). Documents, field notes, interview notes and transcriptions included relevant dates/times/locations and other descriptive information. Participant identifiers were kept in a separate file accessible only by the researcher. Pseudonyms were used in the researcher's notes and other documents to maintain participant confidentiality. Observations and interviews were audio recorded and transcribed to ensure accurate collection of the data. Lastly, the collection of data was based on the specified protocol and where any deviations occurred, those were documented along with the rationale for the decision.

Data was stored securely on a password protected computer. Organizational documents considered proprietary or confidential were not kept with the primary database given the sensitive nature. References to these documents is made without revealing any of the sensitive or confidential information.

Data Coding

The analytic strategy used for this case study is a logic model approach, by which the data was evaluated against the conceptual model to analyze the how, what, and why of a series of events over time to determine if cause and effect elements occur as proposed in the conceptual model (Yin, 2014). Data collection and analysis used a mixed-method approach incorporating both quantitative and qualitative data. The use of a qualitative dominant mixed-method design was chosen to allow for greater trustworthiness of the data through triangulation, whereby themes or concepts could be explored from multiple data collection strategies (Mathison, 1988).

However, from a design standpoint, the decision to incorporate quantitative data within a primarily qualitative research design was intended to allow the quantitative data to enhance and elaborate on the qualitative data (Greene, Caracelli, & Graham, 1989). Quantitative data was collected through the use of a survey at the early phase of the research project and was related to the phenomena of focus for the study (i.e. the creative process). Furthermore, the data was coded and interpreted interactively with the qualitative data (Greene, Caracelli, & Graham, 1989).

Qualitative data was collected through semi-structured interviews using an interview protocol. Qualitative coding and analysis was conducted using both deductive and inductive coding strategies to allow both the theoretical concepts to be evaluated as well as to allow for the codes to emerge from the data (Miles et al., 2014). A provisional list of deductive codes was developed based on the theoretical concepts highlighted in the literature review. Provisional codes are useful for assessing how well the data corroborates existing theory (Miles et al., 2014). However, prior to utilizing the

deductive codes, the data was first coded inductively whereby as data was collected, the researcher reviewed the information and applied initial codes to key segments of the data, or when appropriate, line-by-line coding (Miles et al., 2014). Furthermore, a constant comparative approach was applied, whereby data was gathered, analyzed and reflected upon in an iterative fashion to allow for the generation of conceptual and theoretical concepts to emerge from the data as well as to allow comparison and expansion of existing theory related to the creative process within teams (Strauss & Corbin, 1994).

The data coding and analysis strategy was structured as three distinct phases. Appendix D provides a summary of the data collection strategy and timeline. Initial data analysis started with quantitative analysis of organizational data and survey data using descriptive analytics to provide a general understanding of similarities and differences of key concepts. The use of descriptive statistics was necessary given the small sample size and limited power for inferential analytic approaches (Cohen, 2013). Analysis was conducted using measures of central tendency and variability, primarily mean and standard deviation, to allow for interpretation of the general grouping or emphasis of certain concepts measured through survey questions (Cohen, 2013). In addition, qualitative data within the survey and organizational documentation was converted to numerical data using a nominal scale to categorize different job functions reported by the participants as the precursor to creating an index score to measure relative homogeneity or heterogeneity within the teams regarding their functional (knowledge-based) diversity. This approach is described in more detail in the analysis section. The remaining phases of data collection were qualitative in nature using semi-structured interviews as the data collection method.

Phase 1

Phase 1 data was collected through semi-structured interviews. Interviews were conducted with one participant and one co-lead from each team, with the exception of the Data team which only had one person interviewed in this phase. The interviews occurred over several weeks in March 2018 and were conducted in person or by phone using an interview protocol. Interview questions were e-mailed to the participants in advance of the interview. Each interview was audio recorded and transcribed.

The primary coding strategy used Word software to highlight key segments of data using different colors for the code types. The 1st cycle coding used the application of process codes to capture the actions in which the team members were engaged, such as "brainstorming" or "refining and reflecting" (Saldana, 2013). Because the researcher's ontological stance aims to explore the process from the perspective of the participants, value coding and in-vivo coding were also applied to interview data to elicit the participant's personal experience as part of the creative process (e.g., "I think the team approach is really important" – was coded as a + value and "safe-place" was an in-vivo code reflecting the atmosphere of the team-environment that was important to the creative process). In addition to exploring participant voice and perspective, the research questions focused on both what and how questions related to the process and how it unfolded over time, therefore descriptive and structural codes were also used during the 1st cycle (e.g., Outcome: Confusion – lack of clarity) (Miles et al., 2014; Saldana, 2013).

Constant comparative review, reflection and condensing of the data was used to develop initial and then more evolved codes and categories to further aid in the analysis of the data and the development of initial themes (Richards & Morse, 2013; Strauss &

Corbin, 1994). During the 2nd cycle coding of the phase 1 data, the codes were consolidated into recurring themes or attributes (e.g., motivation +) from across the participants and condensed into the team level grouping for each of the primary research questions for that phase. The themes were then compared to the provisional code list to look for similarities or differences that might inform future analysis.

Phase 2

The phase 2 data collection occurred during the months of March through May 2018. Collection occurred through seven interviews which represented 2 individuals from the Data and Value Proposition team and 3 individuals from the Revenue team. Participants included the alternate co-lead from each team (i.e. one that had not been interviewed during phase 1) and then at least one additional participant on the team. Participants were provided the interview questions in advance. Interviews were conducted in person or by phone and were audio recorded and transcribed for coding and analysis.

For phase 2, the researcher chose to move the data analysis from Word to NVivo software to aid in a more detailed analytic approach. Each transcribed interview was imported into NVivo and then an initial structure was created using structure, process and descriptive codes to analyze the data around the interview question focus areas. An example of the initial coding structure for phase 2 is outlined below:

- Information Sharing: sub-nodes of hindrance, support and outcomes
- Information Integration: looking for practices or descriptions of disparate information being created into something new - using process or descriptive coding
- Functional background: focusing on how knowledge from work experience/function is represented (again using process or in-vivo codes)
- Phase description node: utilizing in-vivo or values coding that describe the experience or sentiment

- Team Processes within Phase 2: utilizing process coding to look for actions the individual or team engaged in and used these to further refine to other nodes or create themes

In order to move the coding further away from the specific questions, multiple comparisons of the codes was conducted with the perspectives of: a) exploring how information was shared and the outcomes, b) how information was integrated and the outcomes, and c) any additional themes or groupings of coding similarities. Table 3 provides an overview of the coding approach. Appendix E provides a summary of the phase 2 themes, description and sub-codes.

Table 3

Phase 2 coding strategy and purpose summary

Coding Strategy	Purpose
1st cycle coding - establish coding structure tied to interview protocol	Allow codes to emerge from data using process, descriptive, value or in-vivo codes (Saldana, 2013).
Code each interview against initial structure	Allow for exploration of continuous themes or alternative codes to emerge from data
2nd cycle coding – Constant comparative review ((Miles, Huberman & Saldana, 2014; Strauss & Corbin, 1994)	Compare and contrast statements within codes – look for commonality of text to group into higher order themes
3rd cycle review and theme development	Application of structure coding using conceptual elements for organization and deeper understanding – example "information sharing process and outcomes"; development of themes which carried through from phase 1 interviews (e.g., leadership)
4th cycle review – exploration of saturation	Review coding to ensure at least 2 interviews represented the code; discarded codes that did not appear to be sufficient for insight or were only representative of one

	individual; comparison of codes to be representative for all three teams or unique to one team

Phase 3

The phase 3 interviews focused on exploring the outcomes of the team process and how the outcomes were evaluated as creative and/or useful. In addition, this phase of the interview process sought to understand how the concept of effectiveness was perceived or defined. The interviews were intended to compare and contrast the perspectives from the voice of the team (through the co-facilitators) and the stakeholders (senior leadership team) who were the recipients of the teams' recommendations. The data collection consisted of in person or phone interviews using a semi-structured interview protocol. Participants were provided the interview questions in advance of the interview. Interviews were audio recorded and transcribed for later analysis. Phase 3 data collection began with external stakeholder interviews. These represented the members of the senior leadership team (Chief Executive Officer and several Vice Presidents) who are the recipients of the three strategic teams' recommendations, but were not a part of the teams, with the exception of the gatekeeper who served both as stakeholder and participant. A total of five stakeholders were interviewed. For the co-leads, data collection occurred using semi-structured interviews. However because each of the co-leads had already been interviewed once, participants were provided the option to respond to the questions via e-mail or an in-person or phone based interview. A total of six interviews were conducted, one of which was by phone and audio recorded and the others were by e-mail.

The initial coding structure was inductive based on the primary focus areas of a) overall experience with the teams (descriptive and value codes), b) outcomes in terms of

novelty and usefulness and team effectiveness (descriptive and value), and c) actions, activities or events the teams engaged in or the stakeholders engaged in with the teams (process codes). Additional deductive codes were applied to descriptions of the teams' processes or experiences which represented key themes from earlier phases of interviews, such as *leadership*. Sub-codes for each of the three teams/cases (e.g., Data team, Value Proposition team or Revenue team) under the main categories of codes were added if descriptive elements about a specific team were referenced in order to begin to assess relative differences in teams. For the co-leads the coding approach used process and descriptive codes to explore how the co-leads described the effectiveness and relative novelty of their recommendations as well as the processes or practices they used to evaluate and refine their ideas towards final recommendation. In addition, process codes were used to evaluate supporting or inhibiting factors related to the evaluation and refinement of the ideas to final recommendation.

The use of various ordering and explaining techniques such as conceptual matrices, content-analytic matrices, time-ordered matrix, and casual network models (Miles et al., 2014) were then used to organize, consolidate and analyze the data around the primary research questions related to the process of cross-functional teams creating novel ideas. Axial coding or focus coding was then used to further group and synthesize codes around central themes that had emerged through the coding process (Saldana, 2013). These axial or focused codes were then used to compare to the research key conceptual elements of *team membership, knowledge sharing and integration, creativity and team effectiveness* for elaboration of the theoretical concepts. Lastly, longitudinal coding was used to analyze the temporal phases of the creative process and was applied

to organizational documents to identify specific time frames as well as to interview data to compare themes for consistency or changes over time (Saldana, 2013).

Analytic memos were created throughout the coding process to capture the researcher's feelings, initial impressions and thoughts related to the coding process as well as to document decisions made throughout the research process (Birks, 2008). The addition of analytic notes to the collection of data gathered through twenty-three interviews, two observations and numerous organizational documents allowed for saturation of the key conceptual themes being explored (Creswell, 2013) as well as to provide opportunities for reflection and personal feelings occurring during the process in order to capture the researcher's own perspectives and to guard against undue bias that might be brought into the research data and analysis (Peshkin, 1988).

Given the complexity of the research, the analysis was conducted uniquely at each phase and then compared across phases to further refine and develop the findings. The use of tables and visual models was used to organize, analyze and display the insights in meaningful ways to aid in the interpretation and reporting of the data (Miles et al., 2014). The analysis approach and emerging insights are described in the next Chapter.

Limitations

Despite the attempt at rigor and application of solid research design techniques, there were a few challenges which should be discussed in the hope that future researchers could incorporate design elements to overcome these challenges. The primary challenge was the lack of embedded observation with the teams. While the researcher engaged in numerous interviews and meetings over a period of several months, the extensiveness of engagement with the teams was not feasible given the researcher's and the teams'

schedules. The lack of embeddedness with the teams may have reduced the trustworthiness of the research because of the lack of personal observation of the team interactions. The use of multiple sources of data (interviews, organizational data, and observations), thick descriptions of the participant comments related to inductive codes and themes and member checking were all strategies used to improve the trustworthiness and overcome the lack of extended time with the participants in their organization (Guba, 1981).

The second limitation inherent in the nature of qualitative research is the potential for limited reflexivity on the part of the researcher during data collection and analytic phases. The researcher utilized analytic memos to reflect on perceptions and assumptions during the process. The researcher also reviewed with participants, academic advisors and peer practitioners analytic interpretations of the data. The researcher also offered participants the opportunity to review their transcribed interviews but none elected to do so. The research design incorporated triangulation for data collection through the use of both quantitative and qualitative collection strategies to improve the verifiability of the information being collected and interpreted by the researcher. In addition, as the data was being collected and analyzed the results were compared against existing literature and conceptual models to identify similarities and differences. Lastly, information was documented through the use of research protocols and intermittent research notes to log decisions for sampling, coding and analysis in an attempt to provide clarity both to the researcher and others as to why decisions were made throughout the research (Guba, 1981; Shenton, 2004). Each of these techniques were utilized in an attempt to improve the overall quality and trustworthiness of the study and to support the researcher's

reflexivity throughout the process. However the sheer volume of data collected was challenging to manage. Future researchers may want to narrow the conceptual elements to be explored or use a research team to support collection and analysis of the data.

Two remaining limitations to be noted are also an opportunity for future research and relate to the concept of knowledge integration. First, while this study supports the importance of knowledge integration as a key factor in the creative process, the researcher personally feels the data collection strategy was limited in fully exploring the mechanisms by which the groups integrated their knowledge and the degree to which they were successful in integrating different perspectives. While the study found some initial elements that further supported literature on the value of dialogue and questioning, the lack of extended observations or more specifically focused interview questions may have contributed to a less than desired exploration of this concept. Future research may want to focus solely on this element to provide greater clarity on the practices and techniques that team members, leaders or neutral facilitators can employ to develop greater knowledge integration with cross-functional teams and how those techniques influence outcomes related to goal achievement, novelty of ideas, usefulness of ideas and team member satisfaction.

The other limitation that was not intentionally planned for and yet became apparent to the researcher was the darker side of the creative process in terms of the emotional toll that employees may face when asked to be a part of cross-functional creative teams. While the participants all seemed to value the concept of the creative process and the value of working on these cross-functional teams, there were also clear occurrences of tension, frustration and dissatisfaction with the overall process and in

some instances with other team members that participants experienced. This experience suggests a darker side to the creative process, which has also been alluded as an area needing additional research within innovation literature (Anderson, Potocnik et al., 2014). Given the small sample of members from each team it is difficult to determine if this was a common sentiment or only the experience for certain members of the team, yet regardless this was a challenging aspect of the study for the researcher because it was difficult to hear the negative side of the creative process. As a researcher, I was personally humbled and appreciative of the trust and vulnerability the participants offered through their interviews and sharing of their experiences. While I believe the experience in general was positive, it was still a difficult and challenging experience for many participants and something organizations and researchers should not take lightly. The social and cognitive demands of the creative process at the team-level should be considered and evaluated further for the effects they have on individual members' well-being, satisfaction and performance as opposed to studies which continually assume creativity, done well, will result in positive outcomes to the organization.

Despite these limitations, this study provided insights which expanded the understanding of the creative process and provided new insights into the creative process at the team-level within organizational settings. The development of the conceptual model offers a more comprehensive view of the creative process and expanded understanding of the composition of cross-functional teams. First, while diverse perspectives are important the intentionality of the team composition is critical and should consider membership relations, role clarity, motivation and learning orientation along with diverse functional skills. Second, leadership support and team-level practices

which support knowledge integration are critical in order for the sum to be greater than the individual parts.

CHAPTER 4: DATA ANALYSIS

Team Membership Demographics.

An analysis was conducted of several demographic elements to represent diverse knowledge based backgrounds, namely functional domain expertise, organizational tenure and role tenure. Team size varied from Revenue with the lowest number of members (n = 6) to the Data team with the largest number of members (n = 11) and ranged in tenure with the organization from a minimum of 2 years to a maximum of 26 years (M = 7.67, SD = 5.99). The teams varied as well in regard to the average organizational tenure with the shortest average years of tenure represented by the Value Proposition team (5.9) to the longest average years of tenure on the Data team (11.0). Table 4 provides a summary of the team size and organizational tenure for each of the three teams (based on data provided by the organizational gatekeeper).

Table 4

Descriptive statistics for team size and tenure

	Team Size (count)	Min of Org. Tenure (years)	Max of Org. Tenure (years)	Average of Org. Tenure (years)
Data	11	3	26	11.0
Revenue	6	3	10	6.2
Value	8	2	11	5.9
Total	25			7.67

In addition to organizational tenure, participants were asked, through the survey, their tenure in their current role. 67% (2) of the Data team respondents had 5 or more years of tenure in their current role, 50% (2) of the Revenue team had more than 3 but less than five years tenure in their role and the Value Proposition team had the lowest

tenure with 67% (4) of the respondents indicating 3 or less years of tenure in their role. Due to the low number of responses through the survey, response rate based on team size is provided to aid in interpretation of the data. Given the response rate for the Value Proposition team (75%), it is likely that the majority of team participants were fairly low in the tenure of their current role. It is less clear regarding the ability to interpret the average tenure for the Revenue and Data teams due to the relative low response rate, but it appears that the Revenue team had a moderate level of tenure with the data team having the highest level of tenure. Table 5 provides a summary count of responses by team for current role tenure.

Table 5

Summary count of current role tenure (in years) by team (based on survey response)

	Less than 1 year	1 - 3 years	More than 3 but less than 5 years	5 years but less than 10	10 or more years	% of responses to total team size
Data			1	1	1	27%
Revenue	1		2	1		67%
Value Prop	2	2	1	1		75%
Total Count	3	2	4	3	1	

Lastly, demographic information of gender and education were collected within the electronic survey. Based on the survey response, the teams were 78% female (n = 10). Reviewing the names of the full list of participants along with observations it is likely females represented 80% of the overall membership (n=20). The team members also appear to be primarily college educated with all of the survey respondents indicating they possessed some college with the majority of respondents indicating they held a Bachelor's degree (n = 7). Table 6 provides a summary of the gender and education level by team member of the participants who responded to the survey. This suggests the

teams were fairly homogenous in terms of gender and education but may have had a breadth of organizational tenure.

Table 6

Summary count of gender and highest level of education by team

	Male	Female	Grade school	High School or GED	Some College	Associate's Degree	Bachelor's Degree	Master's Degree	PhD or Doctorate
Data	1	2				1	1	1	
Revenue	1	2					2	2	
Value Proposition		6			1		4	1	

Team Membership and Functional Heterogeneity.

Team functional diversity or heterogeneity is related to the diversity of team members in regard to skills, knowledge and expertise or attributes which are less visible and more related to job requirements (Van Knippenberg et al., 2004; Jackson, 1992; Somech & Drach-Zahavy, 2013). Functional diversity was assessed with two measures: assigned functional diversity and dominant functional diversity. Assigned functional diversity represents the participants' organizationally assigned functional area of work, i.e. the functional role in which they are currently assigned by the organization. The second measurement, dominant functional diversity, represents the professional function in which the team member has spent the majority of his/her career (Bunderson & Sutcliffe, 2002).

To calculate *assigned functional diversity*, organizational data was collected through a request to the organization gatekeeper to provide the current functional

assignment of the participants. A total of twenty-five participants were identified as being assigned to at least one of the three strategic teams. The organization data indicated fifteen unique functional assignment areas (e.g., Community Giving, Technology and Marketing). The representation of functional categories for each team was then assessed as well as the number of participants representing the categories on the team.

Assigned functional heterogeneity of each team was assessed using Blau's index of heterogeneity ($1-\sum pi^2$) where p is the proportion of group members in a given category of *i* categories (Blau, 1977). If all members of the group are represented by the same functional area, then the resulting index would be 0, whereas if each member of the group represented a different functional area, the index would approach 1. The team with the highest degree of functional heterogeneity was the Value Proposition team (Blau index .88), followed closely by the Data team (.81), while the team with the least amount of functional heterogeneity was the Revenue team (Blau index .50). Table 7 provides a review of the assigned functional heterogeneity index for each of the three teams as well as the participant size and number of unique functions within each team. Appendix F provides the calculation for Blau's index.

Table 7

Team participant size and assigned functional heterogeneity index

Team	Total participants per team	Count of unique functional areas represented	Assigned Functional heterogeneity index
Data	11	7	.81
Revenue	6	3	.50

Value Proposition	8	8	.88

To calculate dominant functional diversity, team members were asked to indicate the number of previous years of work experience in nine functional areas through the online survey. Because some participants indicated the same year across multiple categories, no singular unique category could be defined, therefore Blau's index could not be used to assess *dominant functional diversity*. However, a count of dominant functional diversities per team was calculated. Figure 3 provides a visual overview of the distribution of functional categories represented across the three teams. The figure shows

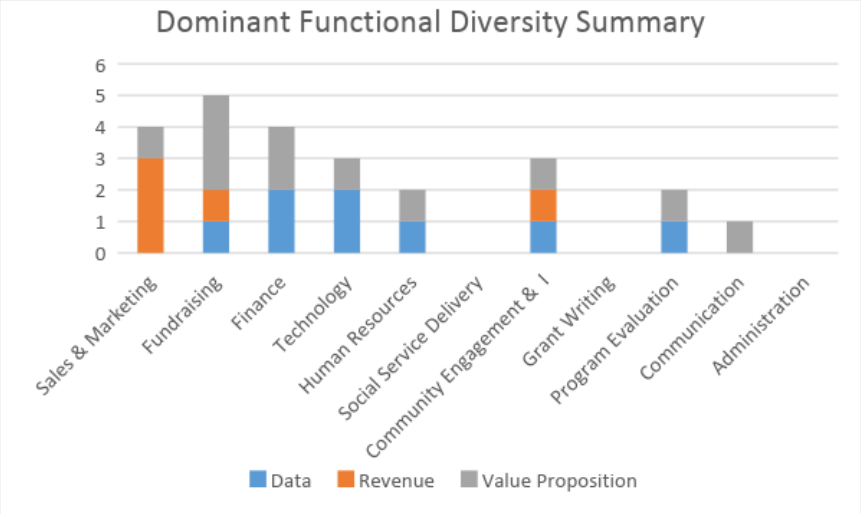

Figure 3: Distribution of dominant functional categories by team

the count of functional categories represented by each team. For instance, The Revenue Team had 3 individuals who indicated this functional category represented the majority of their work experience, whereas only 1 individual within the Value Proposition team indicated Sales and Marketing as their dominant functional background.

Given the sample size and restricted number of responses provided through the survey, a quantitative comparison of the overall team demographics and diversity is not feasible. In order to develop a more holistic understanding of the team membership a

content-analytic summary table was developed. Content-analytic summary tables are useful to bring together key data across multiple cases to provide a singular view for initial analysis (Miles et al., 2014). The content-analytic summary pulls together the key elements of knowledge-based, non-visible diversity and membership demographics for each team to provide a more succinct understanding of the team membership. Table 8 provides an overview of the content analytic summary for non-visible team diversity. This initial analysis of team membership is important to understand as membership is considered an input to the creative process and will be used to explore relationships between team membership and team processes of knowledge sharing and integration as well as outcomes.

Table 8

Content-analytic summary of non-visible diversity elements by team

	Team Size	Organizational Tenure	Tenure in Role	Assigned Functional Diversity (Blau Index)	Dominant Functional Diversity
Data	Large	High	High	High	Medium
Revenue	Small	Medium	Medium	Medium	Low
Value Proposition	Medium	Low	Low	High	High

Based on the review of team membership, the teams were comprised of varying levels of functionally or knowledge-based diverse members at the beginning of the strategic planning initiative.

Motivation, Value, Learning Orientation and Effectiveness.

Because of the low response rate to the baseline survey (45%), additional analysis was conducted at the team-level to identify if any differences existed around the elements of perceived *value*, *motivation*, *learning orientation* and *effectiveness*. One of the respondents to the survey was not a participant on any of the teams and therefore the individual's responses were removed from analysis at the team level. The number of participants by team responding to the survey varied from a low of 3 participants (Data) to a high of 6 participants (Value Proposition). In general, the teams were motivated to participate in the cross-functional team, saw value in participating and believed the cross-functional teams would provide effective results. However, the Data team did show a lower average score on the question of project motivation ($M = 2.67$, $SD = 2.08$) compared to the Revenue and Value Proposition teams ($M = 4.67$, $SD = .58$ and $M = 4.3$, $SD = .60$ respectively). Similarly, personal satisfaction appears lower for the Data team ($M = 2.33$, $SD = 1.53$) compared to the Revenue and Value Proposition teams ($M = 5.0$, $SD = 0$ and $M = 4.3$, $SD = .60$ respectively).

In terms of effectiveness the Data team appears to view the effectiveness of the team less favorably than the other teams. Although the perceived quantity of ideas was positive ($M = 4.67$, $SD = .58$) and higher than Revenue ($M = 4.0$, $SD = 1.73$) and just slightly less than Value Proposition ($M = 5.0$, $SD = 0$), the quality of the ideas is perceived to be less than favorable ($M = 3.0$, $SD = 1.73$) compared to the Revenue team and Value Proposition team ($M = 4.0$, $SD = 1.73$ and $M = 4.7$, $SD = .6$, respectively). In addition, the Data team had generally negative perceptions of their overall effectiveness ($M = 2.33$, $SD = 1.53$), their communication effectiveness ($M = 2.67$, $SD = 1.53$) and their

conflict management effectiveness (*M* = 2.33, *SD* = 1.53). The Value Proposition team appeared to have a positive perception of their overall effectiveness (*M* = 4.0, *SD* = 1.0), communication effectiveness (*M* = 4.0, *SD* = 1.0) and conflict management effectiveness (*M* = 4.7, *SD* = .6). The Revenue team appeared to have a moderate perception of effectiveness across the three areas: general effectiveness and communication effectiveness (*M* = 3.0, *SD* = 2.0) and slightly higher perspective on conflict management effectiveness (*M* = 3.33, *SD* = 2.08). Table 9 provides a summary of the descriptive statistics for the item responses by team.

Table 9

Descriptive statistics by team for survey response items

Questions	Motivation for project	Motivation to work on team	Value of cross-functional team	Personal satisfaction being	Willingness to share professional	Openness to learning from	Perceived value of learning from	Perceived effectiveness -	Perceived effectiveness -	Perceived general effectiveness	Effectiveness of communication	Effectiveness of conflict management
Data Team (n=3)												
Min	1	4	3	1	4	4	4	4	2	1	1	1
Max	5	5	5	4	5	5	5	5	5	4	4	4
Average	2.67	4.33	4.33	2.33	4.67	4.67	4.67	4.67	3.00	2.33	2.67	2.33
Std Dev	2.08	0.58	1.15	1.53	0.58	0.58	0.58	0.58	1.73	1.53	1.53	1.53
Revenue Team (n=4)												
Min	4	5	5	5	5	5	5	2	2	1	1	1
Max	5	5	5	5	5	5	5	5	5	5	5	5
Average	4.67	5.00	5.00	5.00	5.00	5.00	5.00	4.00	4.00	3.00	3.00	3.33
Std Dev	0.58	0.00	0.00	0.00	0.00	0.00	0.00	1.73	1.73	2.00	2.00	2.08
Value Proposition Team (n = 6)												

Min	4	5	5	4	5	5	5	5	4	3	3	4
Max	5	5	5	5	5	5	5	5	5	5	5	5
Average	4.3	5.0	5.0	4.3	5.0	5.0	5.0	5.0	4.7	4.0	4.0	4.7
Std Dev	0.6	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.6	1.0	1.0	0.6

Given the small sample size, a conceptually clustered matrix was developed to compare the relative attributes of the key conceptual elements of *motivation to work as team*, *value of team*, *learning orientation*, *effectiveness of ideas*, and *general team effectiveness* by teams (Miles et al., 2014). The attribute determination is researcher generated based on the average responses to each of the research questions within the survey, where a positive attribute reflects an average score of 4.0 or higher, a neutral attribute reflects an average score of 3.0 - 3.9 and a negative attribute reflects an average score less than 3.0.

In general, the teams were motivated and saw value to using cross-functional teams for the challenges they were tasked with solving. In addition, they had a positive learning orientation which reflects both a willingness to share information as well as learn from others. However, the teams varied in their perception of the effectiveness of the ideas they had developed at this point in their project as well as the overall effectiveness of the team's working dynamics. Understanding these conceptual elements at the early stage of the research was important to gauge both how these elements emerged over time and what if any themes emerged that influenced these results. Table 10 provides a qualitative summary of the team's baseline attributes on each of the conceptual elements.

Table 10

Conceptually clustered Matrix: Motivation, Values, Learning Orientation and Effectiveness

	Motivation to work as team	Value of teams	Learning Orientation	Effectiveness of Ideas Quantity & Quality	Effectiveness of team (general, communication & conflict management)
Data	Positive	Positive	Positive	Neutral	Negative
Revenue	Positive	Positive	Positive	Positive	Neutral
Value Proposition	Positive	Positive	Positive	Positive	Positive

The last element of the baseline phase was a review of the open-ended items in the survey to assess the perceived problem the team was charged with addressing as well as how the team participants defined success for the project. A review of the open-ended responses was conducted and codes were developed based on the primary descriptive aspects of the responses. The individual codes were then re-reviewed for condensing into themes. Organizational documents provided to the teams which outlined the strategic objectives and initiative outcomes were also reviewed to triangulate the themes. The teams seemed to clearly agree around the task or purpose they were created to address, however the teams' perspectives of success measures varied and only the Revenue team indicated a success measure around relative creativity or newness of an idea. All the teams included as a measure of success the implementation of a defined plan. Table 11 provides a summary of the baseline themes for each team's purpose and success measures.

Table 11

Summary of baseline themes of purpose and success measures by team

	Purpose - Theme	Success - Theme
Data	Improve data-driven decision-making	Implement a plan
Revenue	Identify new revenue streams	Change Structure (Leadership) Implement new revenue techniques Agree on ideas
Value Proposition	Define organizational value	Create a roadmap or guide Implement a plan Overcome organizational inertia

In summary, at the baseline phase of analysis an initial set of themes are emerging related to the relative diversity of the team membership as well as their perceived value and effectiveness of their work. The Data team is large, consists of a high degree of functionally diverse members with long tenure in the organization. In the early stage of their project, the team is aligned around their purpose and positively motivated to work as a cross-functional team. However, they perceive the quality of their outcomes and effectiveness as relatively low. They appear to view their success as tied to implementing a defined plan more so than generating creative or novel ideas. The Revenue team is small and fairly homogenous in terms of functional background. The team appears to be aligned around their purpose to create new ideas tied to revenue growth. They appear positively motivated to work as a team, see value in the use of a cross-functional team and have a positive learning orientation. At this stage in the project they view the effectiveness of their ideas as positive but the effectiveness of their team dynamics is neutral or mixed. They also appear to have mixed perspectives of what success for the team would be, ranging from creative idea generation to changing organizational structure. There also appears to be a desire for agreement or alignment on

ideas as a measure of team success. Lastly the Value Proposition team has a high degree of functionally diverse members and is a moderate sized team with relatively low organizational tenure. They have a consistently positive perspective across the areas of *motivation*, *value of teamwork*, *learning orientation*, and *effectiveness measures.* The team also perceives success as encompassing various outcomes from a defined roadmap or guide to implement work as well as overcoming organizational inertia ("push through the difficult questions"). The next phase of the study, Phase 1, moves to the qualitative data collection strategy.

Phase 1: Team Membership, Practices and Outcomes for Knowledge Sharing

The focus of phase 1 was to expand the understanding of the team member's experience during the time they were working on the organization's strategic initiative and how the team worked to generate ideas that were then finalized as part of their recommendation to senior leadership for the team's specific initiative. Data analysis for this phase employed process codes to look for actions the teams engaged in, description codes for events, temporal codes for elements of phase or time based experiences or perspectives and in-vivo codes where participants' words seemed to capture a key concept (Saldana, 2013). A conceptually clustered matrix (Miles et al., 2013) was created to compare the primary concept areas of *role or work experience (membership)*, perceptions of *team value,* beneficial and inhibiting factors for *knowledge sharing*, and the resulting *outcomes* as well as overall *effectiveness.* In addition to themes developed inductively within each concept across teams, a list of deductive (a priori) codes, based on literature, was added to compare and contrast expected themes to emerging themes. Developing a deductive list and comparing to inductive codes allows for greater

analysis and reflection on the themes and serves as a precursor for the development of causal networks (Miles et al., 2014). Using the conceptually clustered matrix also allows for analysis of recurring themes within and across teams. Table 12 provides an overview of the deductive codes for each conceptual element as well as the inductive codes developed for each team.

Table 12

Conceptually Clustered Matrix: Role perspective, team value, knowledge sharing practices and outcomes

	Role/Work Experience on Team	**Perceived value of teams**	**Perception about working on teams**	**Beneficial Practices**	**Positive outcomes**	**Inhibiting practices**	**Negative outcomes**	**Team effectiveness measures**
Deductive Codes (a priori)	Sharing different ideas Sharing perspective based on experience Purposeful role on team	Sharing knowledge Generating new ideas Conflict Learning	Personal motivation Openness to new ideas Creative personality	Brainstorming External Research Experimentation Time/Resources	Quantity of ideas Quality of ideas Creative thinking Learning or knowledge sharing	Lack of time or resources Culture Lack of communication	Fewer ideas Less creativity Conflict	Aligned goals Regular communication Satisfaction Attainment of objectives
Data Team	**Role clarity (-)** member vs facilitator - facilitator role - gathering ideas versus influencing outcomes	**Value +** "bring in all the brainpower and the viewpoints that are needed to have something that works"	**Motivation +** Personal attraction to working through ambiguity	Brainstorming Group collaboration Regular communication	Sharing knowledge Aligning on knowledge (integrating) Achieving goal of recommendations	Process design Lack of role clarity Preconceived ideas/agendas - Senior leader influence Different levels of knowledge Lack of communication	Fear Ambiguity Constrained versus expansive thinking	Climate (trust/honesty; conflict resolution) Regular communication

Revenue	**Role clarity (+)** Facilitator role - "to move the team forward" membership -provide mix of knowledge; intentional placement on team	**Value +** Collaboration essential to generate new ideas Trade off - balancing creative problem solving with day-to-day work	**Motivation +** Personal attraction to broadening perspective Trade off- requires skills to overcome preconceived agendas	Brainstorming Grouping ideas into themes Regular communication Benchmarking	Multiple ideas (10 - 20) Achieving goal of recommendations (refined ideas) Aligning on steps to achieve goal *Not seen as creative - validation of existing ideas*	Process design Leadership influence/presence (hierarchy) Timeline/organizational constraints	Refined versus expansive thinking Lack of novelty Missing the voice of experts	Diverse perspectives and voices Time for creativity and iteration of ideas Role/Process clarity "setting up ground rules"
Value Proposition	**Role clarity (-)** member vs facilitator facilitator - facilitator of process not knowledge holder Participant - sharing individual perspective	**Value +** Getting different points of view and supporting goal achievement (same as Data)	**Motivation +** Personal attraction to broadening perspective	Group sharing Regular communication Asking questions - for clarity Benchmarking Grouping ideas into themes	Mapping of process Aligning on steps to achieve goal Achieving goal of recommendations *Not seen as creative team - rather logistics team*	Focus on defining parameters Focus on task versus creative solution Lack of role clarity Lack of individual skill in creative problem solving Leadership presence (hierarchy) - inhibits dialogue	Refined versus constrained thinking Sacrificing time - slow process Advocating for personal agendas	Climate (trust/honesty; conflict resolution) Successful attainment of goal Laissez-faire leadership as supporting mechanism Diverse perspectives and voices Role clarity Expert guidance

A comparison was then made between the inductive and deductive coding strategy for each concept. While role clarity was expected to be purposeful and intended for sharing unique knowledge, the analysis suggested role clarity was more complex. First and foremost, team membership seemed to consist of two roles: participant and facilitator or lead. Second the expected actions or responsibilities each role was supposed to contribute appeared less clear and purposeful. There appeared to be confusion particularly around the expectation of the co-facilitator/lead role regarding whether they were supposed to share their knowledge or whether they should constrain their knowledge and not offer thoughts or perspectives but rather only serve to coordinate the process. This confusion did not appear present for the Revenue team members. The Revenue team members seemed aligned on the role of the facilitator as both overseeing the process timeline and deliverables but also to provide their specific functional knowledge and ideas. The Revenue team was also the only one to specifically indicate taking an intentional approach to select team members based on their knowledge and expertise and to ensure they had a cross-representation of departments on their team. This was somewhat interesting given the relative lack of functional diversity as indicated by the Blau (1977) index compared to the other teams.

What emerges in terms of membership on the team is the need for clarity in both why the member is placed on the team, specifically what knowledge or perspective they are expected to share and bring to the team and how they are expected to interact within the team (i.e. do they play a role of knowledge sharer, facilitator of process, guider of decisions, etc.). This insight extended the original conceptualization of team composition to move beyond a general grouping of functionally different individuals to a deeper

understanding of the intentionality of the group formation as well as how the members perceived their membership on the group. This emerging theme resulted in the development of an axial or focused code of "membership" which was then compared and contrasted to codes related to team composition or membership from phases 2 and 3.

The next step of analysis for the phase 1 interviews was to explore the emerging relationships and themes within and across teams specifically related to practices that supported or inhibited the sharing of knowledge and the outcomes of those practices. In order to explore the emerging relationships among the concepts, causal chains were developed. Miles et al. (2013) suggest causal chains are useful to "display linear events, actions and/or states that suggests a plausible sequence of cause and effects" (p. 235). Figure 4 provides the initial review of both the positive and inhibiting relationships related to sharing knowledge, generating and developing ideas and integrating knowledge.

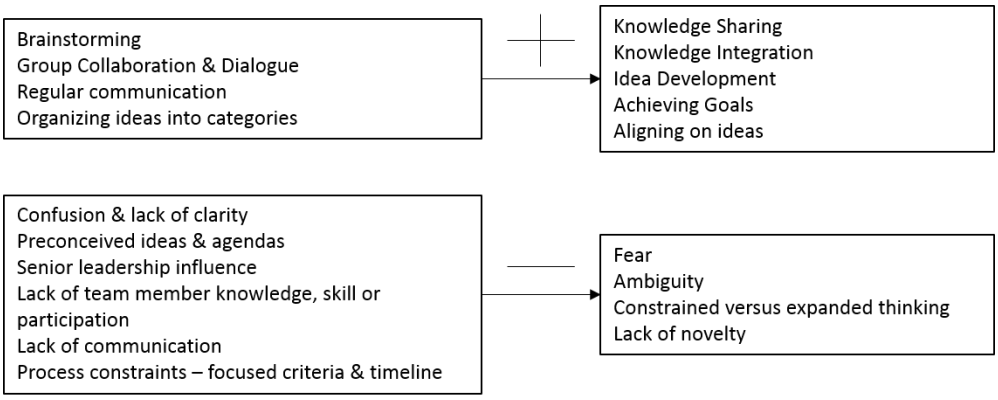

Figure 4: Positive and inhibiting practices of knowledge sharing with outcomes

The active practices and visible practices of brainstorming, dialogue and regular communication seemed positively related to the teams' ability to share their knowledge, develop common understanding and support the creative process. These practices were

corroborated with observations the researcher conducted with two of the three teams. The Revenue team was observed on February 6th and the Data team was observed on February 21st, each for approximately 1 hour. (Due to scheduling issues, the Value Proposition team was not observed.) The teams were seen using post-it-notes or whiteboards to write out ideas, teams would meet as a group, in-person (or through web technology for those remote) to offer an idea and others on the team would ask questions, agree or disagree as to the relevance of the idea. So, the visible and active practices of brainstorming, dialogue and discussion appeared to be readily used practices the teams engaged in during the early phase of their initiative. Brainstorming was also noted as an expected practice and specified in the organizational timeline and process instructions provided to the co-leads via e-mail.

While intentional and active practices were noted in support of knowledge sharing, there also appear to be some negative practices the teams experienced related to contextual elements of the process as well as within team elements. Contextually, the design of the process or initiative seemed to lack clarity resulting in confusion and ambiguity. While the process was structured in terms of meeting cadence and project templates, there was less clarity provided to the teams around how to engage with one another as a team. This lack of clarity resulted in members being unclear about how to engage with other team members in terms of sharing their perspectives, particularly for the co-leads.

> There was also it seemed like a lack of clarity in the beginning about what the role of the co-leaders were and whether or not they were expected to provide input or just be in more of a secretarial or reporting role.

> Originally one of the co-leads reported to me that he didn't think it was his job to offer any input on the topic that he was just there to take notes and keep us all on task. Which of course I said well we really want your input so please provide your input when you see an opportunity to add to the conversation and so I'm not sure if that was a misunderstanding or if that was what was instructed of them

Within the team structure, there appeared to be negative influences related to the team membership (knowledge or skills) and participation. Although the initiative was important and leadership communicated this work as a priority as evidenced by meeting notes and e-mails, the organization context still required this work to be done along with regular work resulting in team members being unable to attend the meetings consistently. As a result team participation and knowledge sharing was inconsistent and restricted the ability of the group to develop their collective knowledge efficiently.

> There was never the same people in the room. [member] missed several of the meetings … so what that does is when there are people missing in meetings you always end up feeling like you have to go back and bring them up to speed

> I felt like we would've been a lot more productive if everybody had been able to fully commit to every one of the tasks that we were challenged with but with any other group there were a lot of times when calendars conflicted or you know life happened and not everyone was in the room at the same time so that was the barrier

Furthermore, there did not appear to be an organizational context to support the teams' ability to hold collective knowledge in an easily accessible way. Some teams used document sharing, but it was inconsistently used and not all teams used an interactive platform where they could edit documents collaboratively. These contextual elements seemed to constrain the process by limiting the participants' willingness or ability to share information or get to a collective understanding.

In addition, senior leadership was suggested to have some negative influence by constraining the voice of other participants or limiting decision making if senior leadership roles were in flux.

> There were moments when strategic leadership team members either dominated the conversation or barriers and ideas weren't shared because there were at the table so I think there were times that maybe that did hinder some creativity and some progress.
>
> I think there was some tension in thinking about who is this mystery person that's going to take this role, how will they impact it and how do we effectively think about what we need not knowing what they're bringing.

The outcomes of these inhibiting factors related to elements of fear and ambiguity as well as constricted thinking and lack of novelty in the ideas. However these inhibiting factors and outcomes weren't as visible to the researcher through observations. While a review of the observation notes and post-observation reflection memos did indicate some element of concerns being raised by participants as well as a sense of ambiguity about whether the members were really sharing their viewpoints and integrating them into new ideas or knowledge, the visibility of these inhibiting factors was less apparent to the researcher than when observing brainstorming or idea sharing.

The nature of these inhibiting elements may be related to the informal and social or relational aspect of knowledge integration (Newell et al., 2004; Zhang et al., 2015), which may be less visible to the outside observer or potentially even to the participants themselves. While the teams were provided guidance to develop specific goals, measures and projected budget needs for the recommendations, there was no apparent guidance to support how the team members could build intentional social relationships and norms that may have fostered better knowledge integration. For example, only one team indicated a

specific practice related to intentional relationship building within the team through starting meetings with learning about one another's backgrounds outside of work.

The contextual elements of the organizationally defined process the teams were expected to follow and the presence and influence of senior leadership were consistent across all three teams as inhibiting factors. The capability (skills and knowledge) of the membership appeared to be an inhibiting factor for the Data and Value Proposition teams. These contextually inhibiting factors were present regardless of whether the teams had positive motivation and perceived value for the process.

In summary, at this phase of analysis the emerging themes that appear to be relevant and important concepts for how cross-functional teams share knowledge and integrate knowledge to develop creative ideas are: *membership* as a multi-faceted concept consisting of both functional skills but also intentionality of role and actions to be taken as a member of the team; *motivation* and *perceived value* as precursor attributes held by the collective team entering into the process and *visible & active dialogue* as the mediating practice to support knowledge sharing. In addition to these emerging themes, there appear to be *contextual barriers* that relate to organizational rules or team-level expectations that constrain thinking as well as *leadership* as a potential barrier to effective creative idea generation and development. For the phase 2 and 3 analysis, these themes were used as part of the constant comparative and reflective process to continue to refine the understanding of the creative idea development process within this research study.

Phase 2: Knowledge Sharing and Integration Practices and Outcomes

The focus areas for analysis related to the processes the teams engaged in to share their knowledge, integrate their different knowledge or perspectives and the outcomes of these processes. In addition, analysis was conducted to explore how the teams described the experience of the process (both for sentiment and distinct phases of transition in the creative idea development process) as well as whether the ideas were being developed into distinct outcomes that were creative or novel. Lastly, any additional themes were explored that seemed to be coming forward from the prior interviews.

Table 13 provides a summary of the themes and sub-codes along with examples of coding segments from the interviews. The aggregate number of files and references is provided in parenthesis within each theme to indicate relative weight or saturation of each theme.

Table 13

Phase 2 themes, sub-codes and coding examples

Theme	Sub-codes	Coding segment examples
Information sharing process is formal and visible (7, 34)	Divide & conquer Formal group meetings Document sharing Step-by-step process	"divide and conquer", things that were assigned to people" "getting together as a team in a meeting", "created a google docs", "just taking notes and writing it on a white board", "here's the first step, here's the second step, here's the third step", "we started to really hammer out what were the steps included, who are the key staff members, working through that worksheet"
Information integration process is reflective and recursive (7, 46)	Re-visiting old ideas Outside in thinking Informal communication Group dialogue and perspective sharing Refining and reflecting	"we had already walked through a lot of the same stuff already", "I needed to try to kind of convince somebody of I tried to bring as much information as I could from other sources", "somebody went back and did some research", "we had ways to be together informally that was more helpful"; "we discussed it as a team that was great about having a team because people come at it from different points of view and different experiences"; "I do think that there was brainstorm, then there was refine and then there was decide and then there was back to refine and then there was back to decide I don't think that the process always follows a step one, step two, step three"

Information sharing led to shared understanding (3,3)	Shared understanding as outcome	"it encouraged us to learn more about the other department or person or volunteer or whoever the case may be, learn more about their perspective, build our empathy muscles a little bit, come to an agreement on something that is not just what I want but it's what we need as an organization"
Information Integration led to consensus & expanded individual knowledge (6,11)	Consensus as outcome Expanded individual thinking as outcome	"ultimately we all came to some sort of agreement as to what was going to go on the page."; "we got to that point which meant each of us had to make compromises of the what we wanted the group advocate for."; "I have never had the opportunity to have a cross functional look at that and what it takes to do that so that definitely influences my thinking around how do we proceed."; "I think it did broaden peoples understanding of what each other departments do, what they need, what they interact with. It definitely opened my eyes"
Team Membership is more than being cross-functional (6,18)	Team member relationship Team member expertise Multiple voices being heard	"people were willing to come to the table to bring their best selves"; "some people stepping up to take on you know undefined roles in the team was one of things that pushed that forward as well"; "she had a ton of experiential information to share with us and strong recommendations based on her having been doing it as to what needed to be done and those were all things that we didn't know so that was fantastic and it was extremely helpful"; "making sure it's collective, making sure everyone had a voice; "it's nice to have all of the voices at every level represented at the table."

Hindrances are contextual or structural (6,39)	Team size Organizational context Culture of group decision making Inconsistent team presence or knowledge Senior leadership dominance Insufficient time	"So the root cause that hindered us would be the number of people in the group"; "there's definitely been some barriers we know we're going to go through an organizational restructure and that's very distracting to our team"; "we had to discuss everything"; "when you have different people coming to the meeting with different levels of preparedness"; "there were moments when strategic leadership team members either dominated the conversation or barriers and ideas weren't shared because there were at the table so I think there were times that maybe that did hinder some creativity and some progress."; I mean there were challenges around getting that done in the given time that we had set aside to do it"
Hindrances are constrained thinking (7, 31)	Starting from a blank slate Resistance to change Lack of trust Silo perspectives	"A lot of people came in with a blank slate and perspectives because they really didn't know what they were going to do. They literally didn't know the purpose of what we were doing."; "we have some people really resistant to anything changing. We might have ideas of ways they could do things better, they weren't open to that."; "there were a lot of trust issues in the room with the leadership piece there"; "they came from looking at it from the organization they had bias based on their own departments"

Creative process is valuable but lacks clarity and can be frustrating; Leadership is needed for direction setting (7,28)	Phase sentiment Lack of clarity Lack of closure Leadership provides clarity	"The process happened and it's over and that's cool that's fine we survived"; "a very positive process from the beginning"; "but there was definitely a lot of confusion from not only from the lead standpoint but also from the team members on what we were working towards"; "how we define co-leads currently as facilitators having a perspective that is negative to have them have a strong voice"; "I'm in a position trying to defend the recommendations and some time I'm not sure I can because I don't fully understand why they made the recommendation."; "to feel a little bit more that the process was cohesive as a whole so I felt like our team understood our initiative, our charge, our recommendations but I'm really not up to speed on what any of the other strategic plan groups have worked on and there have been some sharing out of that information"; "found ourselves at many points providing information and perspectives for them that helped them have more context and help them understand"; "X joined us and shared some of her thoughts and perceptions and I think that really added some clarity to what the task at hand truly was for our team to accomplish."
Outcomes are recommendations to internal process and structure – limited novelty (6,32)	Recommendations: Improve existing work Adopt external practices Internal organizational re-structure Internal process change	"I didn't really hear any new ideas"; "I feel like we gave glorified daily work or continuous improvement work"; "people who are already doing this work so that we don't have to reinvent the wheel so outcome of that is that we're going to use the tools"; "but in terms of the actual idea they were from the start organizational structure"; "we had some recommendations on looking at some of our policies and procedures internally on how we move forward with how this works"

Following the review of the primary themes and coding structure, a review of relationships between themes and codes was explored to deepen the understanding of the complexity and interconnectivity of elements and themes. The use of partial causal networks allowed for the exploration of these types of potential cause and effect relationships (Miles et al., 2014). Figure 5 shows the relationship between antecedents and mediating factors that influence constrained thinking. From this view we see that when membership composition is imbalanced either in terms of expertise, presence, or leadership dominance on a team, the result is a reduction in the willingness and/or ability of participants to share their ideas and perspectives which may be caused by a lack of trust or which may result in a lack of trust within the team due to the lack of perspective sharing. This dynamic then results in constrained thinking by the team because not all voices or perspectives are being heard or shared.

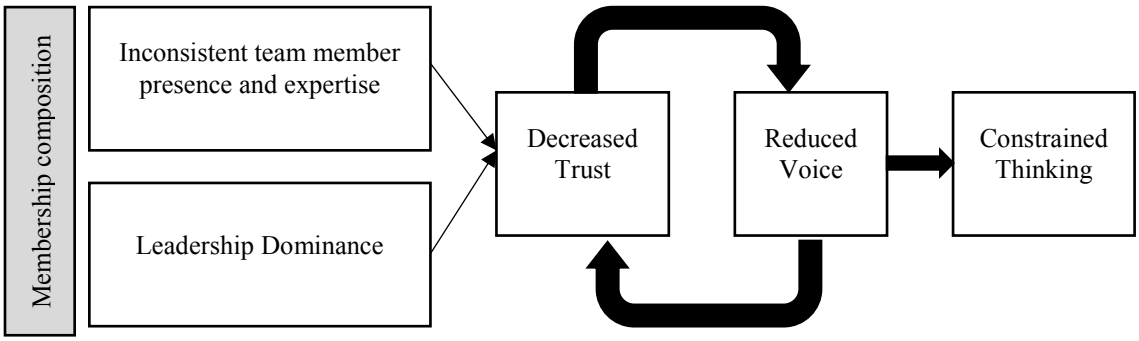

Figure 5: Antecedents and mediating factors to constrained thinking

In addition to elements that appeared to inhibit the information sharing process, the relationships and elements that influenced information integration were also explored. In reviewing these codes more deeply, an emerging view of both positive and negative attributes related to knowledge integration practices was conceptualized. While outside-in thinking and group dialogue were positive supportive factors for expanding thinking

and consensus building there also appears to be some negative attributes of creating tension within the team and being perceived as time-consuming. Figure 6 provides a visual depiction of these relationships.

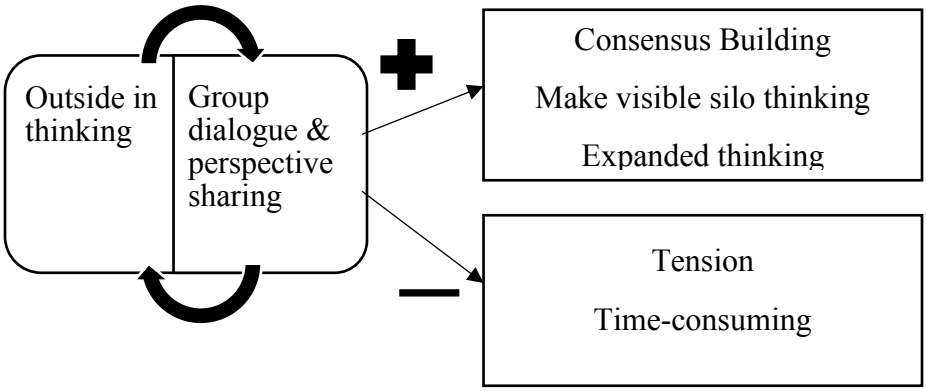

Figure 6: Visual depiction of positive and negative attributes of knowledge integration process

The analysis within the Phase 2 data collection provided a deeper view of the complexity of the concept of *team membership* as not only being related to the composition of diverse knowledge, which is important, but also a blending of size, clarity of purpose, and interpersonal relationships within the team. This overarching composition of the team, defined as *team membership*, seems to influence the supporting and inhibiting practices which can lead to either expanded thinking or constrained thinking. From this analysis the concepts of knowledge sharing and knowledge integration continue to evolve into *visible practices* of dialogue and brainstorming that allow for ideas to be generated and *collective knowledge* to be created within the team.

Figure 7 provides a visual depiction of this emerging relationship between team membership and visible practices that lead to knowledge creation at the team level.

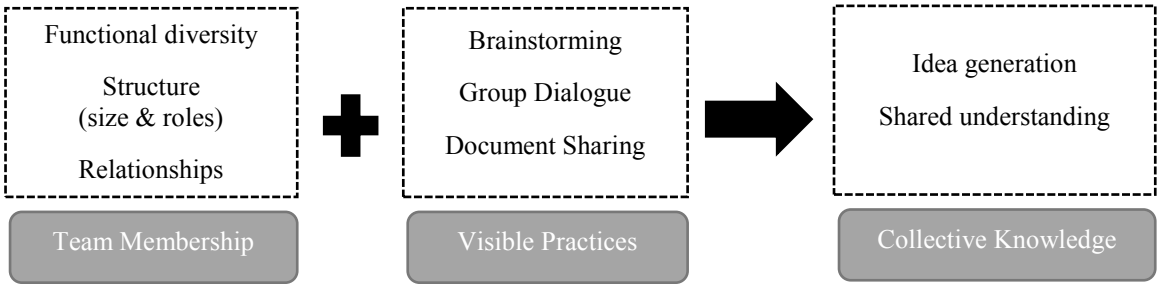

Figure 7: Causal chain fragment for knowledge creation

However, what is less clear are the practices that support knowledge integration in order to refine and develop ideas to move from idea generation to final selection. Based on the analysis there appears to be some aspect of less visible and less clearly defined practices such as perspective sharing, challenging silo perspectives and asking questions that can be considered *reflective thinking* that are necessary to refine the ideas over time. In addition to reflective thinking, there also appears to be some contextual elements that influence *decision criteria* to evaluate the ideas for further consideration or final selection. These decision criteria seem to stem from organizational context and leadership influence and the result of the reflective thinking and application of decision criteria result in the outcomes that are both related to the final work product as well as perceptions of value the team members attributed to the experience of the process. Figure 8 provides a visual depiction of this causal fragment.

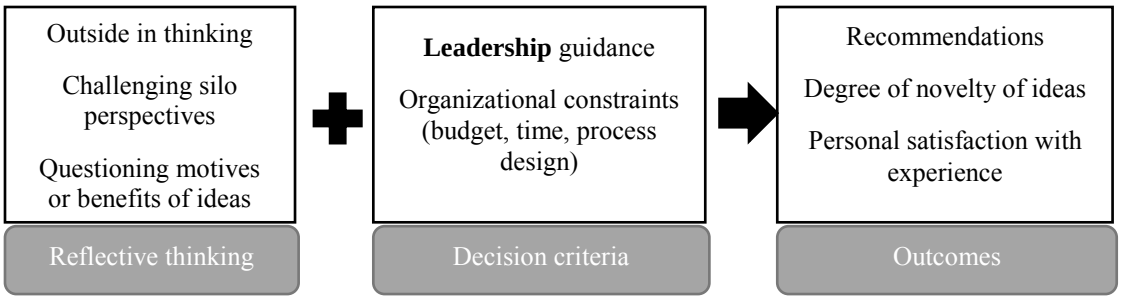

Figure 8: Causal network fragment related to idea development and outcomes

Lastly, the role of *leadership* appears to provide both an inhibiting and supporting role in different aspects of the process. If leadership presence is dominating it can deteriorate trust and reduce the members' willingness to share ideas and perspectives. Conversely, leadership can also serve as a guide for decision making and clarity which can serve to support the team's ability to refine and decide which ideas to move forward in the creative process.

While the analysis of phase 2 was helpful to get a better understanding of how and why certain practices the team engaged in were valuable or not and how they contributed to the creative process, what is less clear from this analysis was why the outcomes the teams generated were considered internally facing and lacked a perspective of creativity or novelty, given that two of the teams clearly indicated at the baseline phase, their purpose was to create new or novel ideas as part of this initiative. Phase 3 of the data collection and analysis phase was used to explore the aspect of the outcomes of the teams' creative process as well as the perceptions of team effectiveness in order to build on the understanding of the creative process.

Phase 3: Stakeholder and Team-lead Perspectives on Outcomes and Effectiveness

The final phase of data analysis focused on how the different stakeholders evaluated the recommendations made by the teams in terms of novelty or usefulness as

well how effective the teams were. Initial codes were refined and grouped into the primary focus areas from the perspective of the stakeholders related to: the *purpose* of the teams, the *supporting and inhibiting factors* for the creative process, *effectiveness attributes* for the process, and *outcome*s of the process. In addition, how the stakeholders evaluated the recommendations in terms of novelty and usefulness were also compared. Table 14 provides a summary of the key themes, sub-codes and coding segment examples; parenthesis in each theme represent the number of aggregated files and references related to the theme.

Table 14

Summary of phase 3 stakeholder themes, sub-codes and coding segments

Theme	Sub-codes	Coding Segment
Team Purpose is task oriented and near-term focused (5,12)	Refine & operationalize broad concepts Define improvements to specific areas of organizational work Inform and drive near-term budget decisions	"these teams were coming up with ideas as to how we can strategically make improvements in those areas."; "these strategic teams were responsible for putting meat to the bone and really figuring out how to make the concepts that the board came up with how to make it operational."; "define the strategic initiatives, define the steps, define the resources and make a recommendation about how we will go into the next fiscal year."
Effectiveness meant meeting organizational requirements using collaborative approach (4, 30)	Integrating perspectives: Incorporating broad spectrum of ideas and Gaining consensus Recommendations created: Being focused & prioritizing actions and Meeting stated deliverables Supported by effective team leadership	"folks being receptive to feedback, questions and being honest in a way like "we have gotten that far yet"; "It looked like consensus"; "we were reflecting back our own knowledge in a way that was organized in this framework that's actually really valuable and those that did that they considered all the creativity of the last three years"; "laying that out and thoughtfully considering what was most urgent"; "they did a good job of like first this than that"; "we had a pretty clear outline of deliverables in terms of articulation of what we really wanted them to produce"

Leadership as both a positive influence (4,10) and inhibitor (5, 19)	Positive leadership: Provides guidance and support Negative leadership: Ineffective leadership skill Lack of leadership to guide decisions Poor leadership inhibits voice of team members	"Whenever there was a progress update, whenever there were opportunities to ask questions in this order to push back or anything like that so I would I was engaged throughout"; "I was just thinking globally whole time."; "For their subject matter expertise because you know we sort of needed their voices on the team" "I think how you build the teams and how you pick the leaders would be something that I would want to continue to reconsider"; "looking back I would probably recommend that we provide some kind of facilitation training or team dynamics training even if it's just something brief to our team leaders."; "without those top leaders in place we just it was more a lot of it was more of a contingency until they got there to make sure they could buy into that and then we could create more specifics."; "a couple of the teams that were heavy with the senior leaders that the other folks were sort of like backing out a little bit"; "some voices being louder and some voices not being heard as much as they should."

Outcome of the process was a Roadmap for action (4,10)	Process steps that led to commitment and action	"The outcome really a roadmap. It was a really important roadmap"; "it was from the sense that we needed to come up with a way to operationalize these concepts that came up from the Board of Directors and I think it was effective in that sense and they came up with a game plan and with budget."; "what has to happen first what's the sequencing of this - what can't happen without the other. So that we can help prioritize for budget and for workflow."
Creativity – ideas were useful but not creative; novelty was applying a collaborative process (5,24)	Creativity was a change in mindset and how the organization works going forward Useful recommendations were more important than novel ideas	"I think there was creativity and thinking through something that we haven't done well"; "there was a uniqueness to even applying the model and the thinking"; "And that the creativity was bringing the group together to give us a clear plan that we would all focus on and align around. And that that is where the creative space was, not like the newest, latest, greatest thing"; "I don't think there was a lot of new ideas, period. I think that this organization at this moment in time we don't need new ideas, we need a plan"; "hey came up with recommendations that were in line with the direction that we wanted to go. Nothing was like completely out of left field. I don't know how creative and novel they were"; "I don't know that it was that creative but its useful in terms that I think that they hit on the three things that we need to strategically to continue to survive"

In addition to the major themes derived from the stakeholder interviews, the interviews were analyzed to identify any comparisons made across the three teams. Attribute coding was used to identify how the stakeholders rated the teams overall in terms of effectiveness. In addition, the type of recommendations were coded by each team to compare and contrast how the teams' recommendations were described. What emerges is the stakeholders' value towards clear plans of action versus generalized or novel ideas. While the table provides a perspective of relative rating, the stakeholders felt all teams were effective and met the expected deliverables of completing the required work plan documents. Table 15 provides a summary of the rating attributes and recommendations made by each team.

Table 15

Summary comparison of stakeholder relative ranking by team based on outcomes

Team	Rating Attributes	Recommendations
Data	+ most effective	Structure change and defined actions
Revenue	- least effective	Generalized ideas
Value Proposition	Mixed effectiveness	New processes to align work and vision

The next element of the phase 3 analysis was to compare how the co-leads of each team evaluated their team in terms of effectiveness, outcomes and novelty or creativity of their recommendations. Attribute coding was used to assess relative ranking or comparisons of the teams. In addition, how the teams made decisions to evaluate and recommend ideas was explored. Analysis was conducted first within each team by coding the interviews from each co-lead and then consolidating the codes into higher-order themes. Table 16 provides a summary of the co-leads perceived team effectiveness, decision making practices and inhibiting factors for success.

Table 16

Summary comparison across teams for effectiveness, decision making practices and inhibiting factors based on co-facilitator analysis

Team	Perceived attribute for effectiveness	Decision making practices	Inhibiting factors for effectiveness
Data	Poor – limited novelty in ideas	Group discussion and seeking consensus (minimal decision criteria identified)	Lack of clarity within process Team size and structure
Revenue	Mixed – positive social dynamics but outcomes not fully met – ideas were useful but not novel	Decision making through group discussion & leader direction (some criteria used for evaluating ideas)	Team structure/composition hindered the process
Value Proposition	Generally positive – team was actively engaged; recommendations were useful but not novel	Decision making through group discussion (logistical elements used as decision criteria – e.g., calendars/schedules; project scope)	Leadership dominance hindered process

A comparison approach was used to evaluate how the external stakeholders viewed the effectiveness of the team compared to how the co-leads evaluated the team's effectiveness. In addition, the initial measures of success (from baseline phase) were compared to the outcomes identified during phase 3 analysis to identify similarities and differences that may have occurred over time as the process unfolded. Table 17 provides a summary comparison of these elements.

Table 17

Team comparison of effectiveness rating and success measures (stakeholder versus co-leads/team)

Team	Stakeholder effectiveness rating	Co-lead effectiveness rating	Initial measure of success	Phase 3 outcomes from stakeholders

Data	Most effective	Poor – limited novelty in ideas	Implement a plan	Structure change and defined actions
Revenue	Least effective	Mixed – positive social dynamics but outcomes not fully met – ideas were useful but not novel	Change Structure (Leadership) Implement new revenue techniques Agree on ideas	Generalized ideas
Value Proposition	Mixed	Generally positive – team was actively engaged; recommendations were useful but not novel	Create a roadmap or guide Implement a plan Overcome organizational inertia	New processes to align work and vision

The results of this comparison suggest the perceptions of team success varied from the stakeholders based on whether ideas were clearly defined and implemented or more general in nature. The data team was considered the most effective, relative to the other teams, by the stakeholders for the degree of detail provided in their recommendations. However the co-leads potentially had a higher expectation of the outcome of their recommendations in terms of formal implementation, which may have influenced their lower rating of team effectiveness. For both the Revenue and Value Proposition team, the element of team dynamics was an important consideration for their perception of effectiveness. They appeared to vary in the degree to which they viewed their recommendations as effective, possibly related to the degree of detail they were able to provide as part of their recommendation.

Summary of Overall Analysis and Primary Concepts

The data analysis for this research was complicated given the exploratory nature of the research design and the multitude of conceptual elements being explored over time

and by different participant perspectives. A review of the key elements from the various phases of analysis was created to identify the primary concepts from the analysis, the key elements related to the concepts and the outcomes from the concepts. Table 18 provides a summary of these elements.

Table 18

Summary description of primary concepts and the key elements and outcomes related to each concept.

Primary Concepts	Key elements	Outcomes
Team Membership	Beyond cross-functionality or expertise, but also size, role clarity, relationships and active voice	Poorly structured team can lead to constrained voice
Information Sharing	Is formal and visible process	Leads to shared understanding
Information Integration	Is reflective and recursive Supported by group dialogue and outside-in thinking	Leads to consensus and expanded thinking can also lead to tension and is time-consuming
Organizational context can hinder creative process	Team structure Lack of clarity Poor leadership Culture	Confusion Frustration Lack of decision clarity
Constrained thinking can hinder creative process	Lack of trust Resistance to change Reduced voice	Ideas can lack creativity Lack of ability to shift perspectives
Creative process is valuable but not always satisfying	Lack of clarity increases frustration	
Creative outcomes can be useful but not novel	Improving existing work Re-structuring organization to meet changing demands Adopting external practices	

Leadership	Is a foundational element to the process	When effective can be supportive and provide guidance; - when ineffective it can constrain thinking and increase tension
Effectiveness	Is tied to the teams' perception of goals Relates to both observable achievements and team member relationships Can be evaluated differently (i.e. stakeholder versus team member)	

The conceptual elements were then organized and connected to the earlier created causal network fragments to provide a holistic picture of the creative process. What emerges is a broader view of team composition as well as antecedents needed to initiate the creative process. In addition, there appears to be a positive or negative path that can occur depending on the team composition and leadership influence. Figure 9 provides a visual representation of the concepts which is used to inform the overall findings.

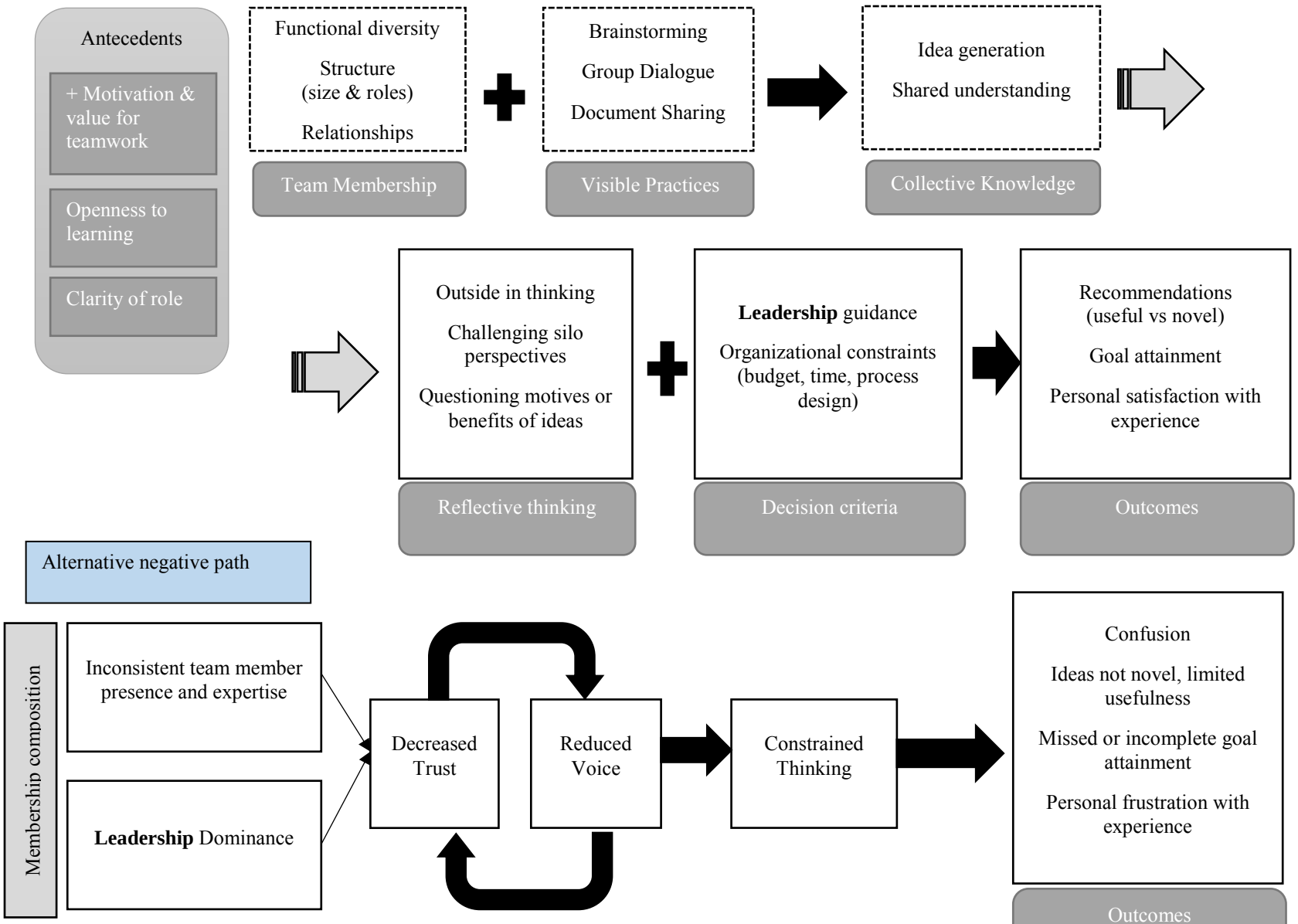

Figure 9: Conceptual model of creative process

The expanded conceptual model allows a more comprehensive and nuanced understanding of the creative process at the team level. First, the individuals who comprise a creative-focused team should possess personal attributes of intrinsic motivation and openness to learning which support the creative process (Amabile, 1988). In addition, the model suggests the importance of providing clarity to the individual members about the role they are to play on the team (e.g., knowledge sharer, facilitator of conversation, guider of decisions, etc.). In addition, the model expands the concept of team composition to focus beyond simply a grouping of individuals with diverse professional backgrounds, but to also consider the size and structure of the team. Consideration should be given to the structure of the team to ensure the size is manageable to allow formal and informal gatherings of the team members as well as considering whether formal organizational leaders should be included in the team and if so being clear about the role they will play in the team's process.

The model expands the understanding of knowledge sharing and integration to highlight the importance of both formal visible practices such as brainstorming sessions, formal group dialogue and shared documents which can be used to support the team's efforts to voice their perspectives and background related ideas but also to support gaining clarity and shared understanding on definitions and concepts or grouping and organizing ideas for further development. However, simply sharing ideas and even gaining shared understanding is insufficient, the team must be willing to reflect on their own assumptions and potential biases which may influence their ability to share, develop or evaluate ideas for further consideration. Having intentional practices incorporated into the team's dynamics to share assumptions and beliefs, compare perspectives with outside

or external benchmarks, and utilize objective decision criteria to compare and contrast ideas against can support the ability for the team to integrate their individual perspectives into higher order more valuable insights and ideas.

The model also provides an alternative negative path teams could take if the creative process is not intentionally managed. First, if the team membership is not intentionally and carefully cared for at the onset teams could be comprised of individuals who, while motivated, may lack the necessary skills, time or ability to fully engage as a member of the team. If they are unwilling or unable to offer their perspective and voice their ideas, the process suffers. Second, if the team is comprised of hierarchical leaders or if organizational leadership dominates the process, particularly at the early stages, the social dynamics, trust and sense of psychological safety could be inhibited further reducing team members' willingness to voice their perspectives. Absent robust member voice, the collective thinking of the team is constrained and reduces the team's ability to generate and develop novel ideas, achieve the goal of the team's objectives and inhibits the members experience and satisfaction of being on the team.

CHAPTER 5: FINDINGS

The purpose of this study was to explore in what ways cross-functional teams generate and develop creative ideas and how the team members and key stakeholders perceive effectiveness of the team. Literature has suggested teams comprised of individuals from diverse functional or professional backgrounds are better than homogenous teams at creating novel ideas or generating ideas for complex problems (Bell et al., 2011). The original conceptual model based on literature suggested that team-level creativity occurs when a team is formed representing individuals with different functional backgrounds or expertise, who then engage in a process of sharing and integrating knowledge in order to generate creative outcomes. Building on theories of the creative process and team performance, the research aimed to explore the phenomenon of team-level creativity by exploring the primary inputs (team membership functional heterogeneity), processes (knowledge sharing and integration and communication) and outcomes (creativity and team effectiveness).

However, the findings from this study suggest a more nuanced conceptual model should be considered which expands the assumptions around team membership as well as provides deeper insights into the knowledge sharing and integrating processes that occur within teams to generate creative ideas. In addition, the model highlights elements which can inhibit the creative process and result in negative outcomes. The findings which informed the conceptual model are described in more detail as they relate to the primary questions that guided this study:

1. How do cross-functional work teams share and integrate knowledge over time to develop creative ideas?
2. How do these cross-functional teams define and perceive their effectiveness?
3. How do stakeholders assess the effectiveness of cross-functional teams and their creative idea generation capacity?

How do cross-functional work teams share and integrate knowledge over time to develop creative ideas?

The findings suggest cross-functional teams share and integrate knowledge through a combination of intentionally structured teams comprised of members with diverse job-related or functional backgrounds who collectively develop a sense of shared understanding of ideas and recommendations to achieve the team's objectives. This shared understanding stems from a willingness to voice their knowledge as well as to reflect on their own assumptions and bias and to learn from others to shape their assumptions to develop new ways of thinking. Cross-functional teams require intentionality around the formation and social dynamics of the team relationships to foster a climate of trust that supports the sharing of ideas and reflection and challenging of status quo assumptions. Furthermore the role of leadership, both formal and informal, can shape the process in both positive and negative ways. These elements are described in more detail to showcase how the knowledge sharing and integration process unfolds with cross-functional teams.

Team membership

In order to understand how cross-functional teams share and integrate information, the element of what constitutes a cross-functional team needs to be

understood. Initially, the conceptual model suggested the creative process at the team-level was initiated around the primary elements of what constitutes a team: 1) is composed of at least three members, 2) are brought together for the purpose of accomplishing a task, 3) are recognized as an entity by the members of the group as well as non-members of the group, 4) are embedded within the organizational context, and 5) have some level of interdependence and distinct roles which they perform in order to generate an organizationally relevant task or output (Guzzo & Shea, 1992; Hackman, 1982; Kozlowski & Ilgen, 2006). In addition, literature has suggested having team members who represent different functional backgrounds of knowledge and experience are beneficial to creative problem-solving and non-routine tasks (Bell et al., 2011).

However, based on the results of this study, membership should be considered as more than a group of individuals with different backgrounds organized around a particular goal or challenge, but rather there should be intentionality of bringing the varying types of expertise together as well as clarity around the roles each team member is expected to perform in support of the creative process. While the findings from this study support the value in having team members representing different expertise areas:

> Purpose of cross functional teams are to make sure you have all kinds of perspectives at the table
>
> Having those varied insights were great - varying points of view it was great
>
> Bring in all the brainpower and the viewpoints that are needed to have something that works

It was also clear, that the team formation wasn't always intentional and caused challenges within the team in regard to inconsistent participation, as well as skills and expertise:

> When you have different people coming to the meeting with different levels of preparedness... spend 30 minutes of an hour and half meetings playing catch up then you don't get as far on your action items
>
> They don't necessarily fully manage that kind of stuff at the level you really need to be strategic around, you know they weren't without any knowledge but it was just challenging

Finally, the findings suggest having a positive relationship within the team is also an important attribute of *team membership*.

> It did feel like people were willing to come to the table to bring their best selves and that probably was one of the reasons why we didn't need nearly as many email communications
>
> We kind of started off one of our meetings was to talk about skill sets that we had but maybe we didn't get to use on a daily basis inside our work here so I think that allowed is also to look at each other a little bit differently and you know understand some of the strengths that we were bringing to the table. So I think that broadened our vision a little bit, that definitely helped in that conversation

Antecedents to team membership. In addition to elaborating on the concept of *team membership*, the research findings also support prior literature which suggests personal motivation is a needed component to engage in creative work (Amabile, 1988; Dewitt, 2007). The study found participants to be both positively motivated early in the process through the results of the survey questions "I am personally motivated to work on this project and "I am personally motivated working in a team environment" and the themes emerging through interviews supported this positive perspective for most participants as the process continued. Being motivated to work cross-functionally and valuing cross-functional work could be considered antecedents to engaging in the creative process and as Amabile (1988) suggested, provide internal support and energy to work through the complexity and difficulty of the creative process.

Participants also found personal motivation through the work of the cross-functional team, primarily from the ability to broaden their own perspectives as well as a personal enjoyment for working on challenging and complex issues.

> To have this safe place where you can, not feel worried or anything about offering ideas that may not be the best idea but all of that in an effort to move forward
>
> You're getting perspective how many heads are better than one kind of thing it really lends itself to looking at something in a totality kind of way
>
> That's been really valuable for me to hear from other people on the team
>
> I enjoy solving complex problems. I enjoy these big multidimensional challenges that require a lot of finessing rather than something that's straightforward so that's just my own personality

This suggests that having team members with an openness to learning could be an important antecedent for team formation. The results of the baseline survey suggested the team members had a positive regard for learning. Responses to the learning orientation items in the survey were strongly positive: "I am open to learning from the others on the team" ($M = 4.93$, $SD = .27$) and "I believe being a part of a cross-functional team will increase my personal knowledge." ($M = 4.86$, $SD = .36$).

Despite the teams' positive motivation, value and learning orientation at the onset of the study, the teams still expressed challenges with effectiveness related to team membership. The findings suggest there is a need for both intentionality of the team structure in terms of who is a member of the team as well as clarity for the role they play on the team. The formation of the teams seemed to lack both intentionality of membership as well as role clarity.

> They are subject matter knowledgeable but they were just kind of randomly not entirely randomly I just don't think when we made the

> decision of who the co-leads were going to be that we really understood what that was going to mean
>
> I think again there were some dynamics that you know lessened the ability for there to be free flow of conversation to really push because of the way we structured it and who we had on there- it would've been better to maybe have the teams not have senior leadership and then just have them report out to senior leadership

Therefore, the findings suggest team membership as the input to the creative process requires more than just functional diversity, but rather requires intentionality around the structure of the team, ensuring team members bring a positive motivation and openness to learning and that team members understand the role they play as a member of the team. By having these elements in place, the ability for the team to engage in the process of sharing their diverse knowledge becomes more likely.

Knowledge sharing

The ability for teams to share their knowledge and perspectives as part of the creative process emerged as a theme of *member voice* as a supporting element of the creative process. The theme of *member voice* suggested the intentionality of sharing ideas and perspectives within the team:

> Making sure it's collective, making sure everyone had a voice and making sure there weren't as many blind spots all of those were positive

Member voice implied both intentionality as well as the importance of diverse perspectives:

> I always think it's beneficial when we have different people at different levels of the hierarchy you know on paper we fall on different levels of the org chart and it's nice to have all of the voices at every level represented at the table
>
> It was good to kind of get that spectrum...I would never think of because they're not within the scope of my work

However, the findings suggested that member voice was elicited through the use of intentional, visible practices such as brainstorming, sharing documents and engaging in group dialogue. These practices allowed for the team members to share ideas, bring in their knowledge and develop a collective shared understanding of different issues or topics.

> For us the most successful thing would be getting together as a team going through it
>
> In the meeting it was really just free form; you know everybody kind of like you know brainstorming; you know think about everything you do and everything you touch

The use of intentional practices that elicited information possessed by the participants is in line with the study's definition of knowledge as information possessed by and processed by individuals consisting of both know-how and know-what, regardless of whether this knowledge is universally understood by the other team members. The use of brainstorming techniques, dialogue and document sharing were all visible communication practices the team engaged in to share the knowledge possessed by team members. The role of intentional and various types of communication seemed to serve as a supporting mechanism for knowledge sharing in support of the conceptual model (Majchrzak et al., 2012). These practices seemed to result in the sharing of explicit knowledge or knowledge that is readily known to the possessor and easily understandable by others (Nonak & von Krogh, 2009). An example of this type of knowledge sharing stems from an observation of the Revenue team where the team was discussing different revenue strategies related to retirees as a potential target channel.

> Retaining a donor is 7 times higher in value than acquiring a new one so retention is important and if you look at individuals; from our individual revenue over 50% comes from baby boomers and there leaving the

> workplace, so if we don't focus there we are doing ourselves a disservice and to make it a really powerful stream outside of the workplace

In this example, the participant shared knowledge that was factual in nature, readily accessible and known to the participant and easily understood by others. The sharing of this type of explicit information was important to gaining a sense of *collective knowledge* in which there existed shared knowledge and ideas were readily generated.

> Going through the process of talking about what were the challenges and barriers that we have experiences with either telling our value proposition or knowing what our value proposition is and we went through a process where we actually tried to narrow that down and group that in to themes
>
> The four that I mentioned were the most represented explained in various ways but those four groups were the largest representation of ideas on the Post-it notes there were a couple of others that would be specific to new technologies or new outreach mechanisms but I couldn't put a total number to how many actual ideas it was more than four but it wasn't 100 it was probably between 10 and 20 truly unique ideas
>
> I think there's a lot of validation and agreement Sometimes people might not understand the question and so provide feedback that is out of alignment and it's okay to say we were talking about "this" so let's clarify and maybe put 'that' in the parking lot and talk about it later

The concept of knowledge sharing as part of the creative process supports the original conceptual model. However, an important finding from this study is the intentionality of including visible communication practices, such as brainstorming or group dialogue that allowed members to bring forth their ideas. Furthermore, the study also indicated there are barriers that existed which inhibited *member voice* and subsequently knowledge sharing, particularly related to the composition of the team.

Barriers to knowledge sharing. Throughout the study the importance of the composition of the team to support or inhibit the process was noted. In terms of barriers to the process, two organizational contextual elements of team membership were found throughout the study: 1) inconsistent membership presence and expertise and 2)

leadership dominance. Both of these elements were found to influence the internal dynamics of the team resulting in decreased trust and reduced willingness and/or ability for members to share their perspectives and related to how the process was established within the context of the organization rather than any individual participant-level influence

> Not everybody has the same knowledge to operate from
>
> When there are people missing in meetings you always end up feeling like you have to go back and bring them up to speed
>
> There were moments when strategic leadership team members either dominated the conversation or barriers and ideas weren't shared because there were at the table so I think there were times that maybe that did hinder some creativity and some progress
>
> There were a lot of trust issues in the room with the leadership piece there… we're not going to voice anything because we don't want to risk retribution

The Revenue team seemed to have the greatest challenge with leadership dominance. A search within the NVivo interview files for the reference to "leader*" resulted in 50 references, of which 18 came from the Revenue team participants (36%). Not all of these references were related to inhibitors but the Revenue team had the largest number of senior leaders as part of the make-up of the team and had the least defined outcomes resulting in a relatively lower rating of effectiveness by the stakeholders.

> It was also really difficult because especially in our team, and this was recognized after the fact, we had three strategic leaders for the organization on our team
>
> The really inconsistent thing on all three teams was the number of leadership team members. The revenue team had three [leadership] members … that was probably detrimental to the team's effectiveness
>
> But it is weird when you're leading a team and your boss is on the team

Leadership dominance was not only challenging for team members, but also was a challenge for the leader's themselves. The lack of clarity for how they were expected to engage with the team seemed to influence some of the inhibiting aspect of leadership presence or dominance.

> So what I found to be challenging is we were not put in these groups to be the leaders of these groups and to dominate these groups but a lot of times I felt like we would end up doing a lot of the talking because there was information that we had that they didn't have

The role of formal leaders within the process seemed to inhibit knowledge sharing when there was lack of clarity for the role they were supposed to play and as a result they over-represented their perspectives. Having formal, hierarchical leaders as representatives of the teams had the potential to reduce knowledge sharing, particularly if a subordinate-supervisor dynamic was present.

Despite the challenges of leadership presence inhibiting some aspects of knowledge sharing, leadership also served as a positive influence in regard to knowledge integration by providing guidance and support in the decision making aspect of the process. These paradoxical findings of the role of leadership were an interesting aspect of the study, because leadership was not initially considered a focus element for the study as these teams were self-managed cross-functional teams.

Leadership as Paradoxical Influence

The influence of leadership in the process was an unanticipated finding, but not surprising. Research has suggested leaders provide both direct and indirect support of the creative process (Hunter & Cushenberry, 2011). The findings from this study supports prior research which suggests leaders need to create a climate that supports the creative

process (De Jong & Den Hartog, 2007), particularly in regard to participants' sense of safety and trust (Bain, Mann, & Pirola-Merlo, 2001). The findings suggest leadership is an important influence regardless of whether the team is an intact team with a hierarchical leader or in the case of this study, a self-managed cross-functional team. When the climate of the team was overly dominated by leadership presence, the participants had a loss of trust which limited their willingness to share or evaluate ideas

> People not feeling free to share; people not wanting to put themselves out there

However, when the climate was safe, people could open up more authentically about their perspectives and motivations which were shaping the ideas they were generating and their evaluation of those ideas.

> There was an entire moment or series of moments where we all had to talk about our own competing priorities and what was and where did the recommendation to our own department or at least our own job responsibilities as far as why are they important to us moving forward that was kind of the an interesting moment with everybody

The role of leadership, whether in formal organizational structure or as influencers of team dynamics, seemed to be important in shaping the climate of the team and the sense of personal safety which influenced (or inhibited) participant voice and subsequently the outcomes of the creative process.

The role of leadership for this particular study was challenged because of the incorporation of both hierarchical or formal leaders and then informal "leads" on the teams. The teams expressed a lack of role clarity in regard to leadership.

> The term co-lead should not of been applied I think it was just a facilitator because everything had to be generated from the team

> There was also it seemed like a lack of clarity in the beginning about what the role of the co-leaders were and whether or not they were expected to provide input or just be in more of a secretarial or reporting role
>
> I said well we really want your input so please provide your input when you see an opportunity to add to the conversation and so I'm not sure if that was a misunderstanding or if that was what was instructed of them but I would think that anybody that was leading or co-leading a team should have equal input as anyone else on the team so that would be a point of clarification if we were going to have this type of structure again
>
> The message that I heard, was around senior leadership really wasn't going to be that involved it was going to be other co-lead the other folks who they don't always have the opportunity to lead

Therefore, how the organization defined the concept of leadership and the role formal and informal leaders needed to play may have served to negatively influence elements of the team climate and subsequently the creative outcomes. Despite the negative influence, leadership played an important positive role in the process as well.

Leaders were seen as necessary for providing subject matter expertise, shaping decisions and providing feedback and were specifically included in the process for this reason.

> Senior leaders were on the team. For their subject matter expertise because you know we sort of needed their voices on the team
>
> These teams would report out to us to get feedback, input and buy-in
>
> There were a few meetings interspersed in there where the senior leadership team got updates and gave feedback and then that feedback was delivered to the our small group and changed a little bit how we were approaching that detail or the degree at which we needed to make the recommendations
>
> [Leader] joined us and shared some of her thoughts and perceptions and I think that really added some clarity to what the task at hand truly was for our team to accomplish

The role of leadership as influencing the decision criteria was an important finding in this study. While the ability of the teams to generate novel ideas for addressing the team's purpose were fairly clear through the use of communication practices such as group dialogue and brainstorming activities, the ability to develop, refine and integrate those ideas into final recommendations was influenced by the role of leadership in serving as a mechanism for decision criteria. Mumford, Connelly, and Gaddis (2003) have suggested leaders play more than an indirect and supportive role, but serve an active and direct role in the creative process by integrating ideas into the contextual elements of the organization to determine how creative ideas can be applied or implemented by the organization. Therefore, leaders were seen as a positive influence when they could bring in their organizational expertise and a broader perspective that was helpful to the teams to shape, develop and refine the ideas for final recommendations or outcomes. This role of leader as influencer for decision criteria appeared to be an important element in supporting the creative process by influencing knowledge integration.

This influence, however, is not without risk, because leaders, like team members, can import their own bias into the evaluation and integration process (Mumford et al., 2003). This issue was evidenced in the findings of this study by the concept of silo perspectives serving as a barrier to the creative process, which may have inhibited knowledge integration.

> Data was important but there was also just simply working off of people's own personal agendas to push the work forward
>
> They came from looking at it from the organization they had bias based on their own departments
>
> I think there has been some challenges for us to share the contextual information that's informed our thoughts I don't think it's been a healthy

> item I think it's been more of a challenge to understand the different points of view of the different team members and where they gathered their information and how we all get on the same page about why it's the right recommendation I think that's been hard

Knowledge Integration

Knowledge integration is considered as the collectively held knowledge of a team and stems from the active sharing of ideas, work products, or relevant information using dialogue, active reflection, visualization or other methods which result in a shared collective knowledge or mental model from which the team can operate to solve problems and develop creative ideas (Gong et al., 2013; Hirunyawipada et al., 2010; Majchrzak et al., 2012; Ward et al., 2012). Knowledge integration is considered a dynamic, learning process whereby the team members' assumptions, beliefs and potentially their professional identities must be questioned to allow for the incorporation of new information which further shapes both the individual's and collective team's knowledge base (Majchrzak et al., 2012; Ward et al., 2012).

The results of this study suggest knowledge integration did occur as the teams engaged in group dialogue and shared their assumptions and beliefs regarding different ideas being developed and shared during the project. The process of knowledge integration was perceived by the team as consensus building and expanded thinking of the individual members through exposure to different perspectives.

> I feel like we worked it out as a team rather than somebody just saying okay well I can say we don't all agree that here's how it's going to be I don't think anybody dominated in that way I felt like we were respectful and if it was something we felt like we needed to come back to then we would sort of table it move on and then come back to it so I feel like we resolved it we worked it out and ultimately we all came to some sort of agreement as to what was going to go on the page

> I think we got to that point which meant each of us had to make compromises of what we wanted the group advocate for
>
> People's understanding expanded
>
> I have never had the opportunity to have a cross functional look at that and what it takes to do that so that definitely influences my thinking around how do we proceed

The findings also support prior literature which suggests knowledge integration occurs through an iterative and recursive process over time. Furthermore, the process appears to have occurred primarily through reflection and active questioning of beliefs and assumptions through the use of dialogue within the group.

> We stepped back and we reread them and started to share where did we see the weaknesses
>
> Yeah, I don't know that it was exactly that linear but I do think that there was brainstorm, then there was refine and then there was decide and then there was back to refine and then there was back to decide I don't think that the process always follows a step one, step two step three
>
> Yes as we discussed it as a team - that was great about having a team because people come at it from different points of view and different experiences and … there was a lot of I don't see it that way or that's not how I would take that - you know I don't want to say got tense per se but there were a lot of disagreements about things just because we were sort of thinking about them in different frames but I think that kind of thing is healthy
>
> So while we were each advocating for our own thing I think it finally occurred to us you know why we were passionately fighting for something As opposed to just being able to see it from a here is the numbers here is the stripped down kind of data that we have about why this is an important initiative, so I think we kind of called each other I little bit on it and I don't know that that was the most constructive way of viewing it

The findings also suggest this process was less perceptible to the participants and not formally planned in the process as opposed to the knowledge sharing process which was an intentionally planned set of activities as noted in the organizational documents (i.e. brainstorming as a planned step in the process and observed through post-it notes and

white board activities). When asked about specific practices used to facilitate or foster knowledge integration, the participants were less able to identify intentional techniques or methods used to build on their ideas or develop a collective knowledge. However, the use of seeking external information and bringing that back to the group to compare and contrast understanding appeared to be one practice used by the teams as a way to integrate and develop their collective knowledge. In addition, having team members with different work experiences who could bring in their outside perspectives to shape the teams' collective knowledge further supports the value of functionally diverse team membership as an input to the process.

> So we did actually take some time and do a little bit of research behind that to make sure we were moving forward with the common, common language
>
> She was able to bring to the table you know the success they had, the barriers that they had, kind of why the group was dissolved and what could be some strategies in the future in helping to make sure that we break down the barriers and build in ways to be successful, so that was super helpful to get her perspective on that
>
> But also roles responsibly that we may have had in you know previous job that we carried and I think really putting all of that together is what helped us you know drive

Barriers to knowledge integration. Although knowledge integration was an integral part of the process, there were also aspects where knowledge integration was constrained because of decreased trust and a lack of willingness to voice assumptions and engage in personal reflection around assumptions and beliefs that might need to change.

> We do not have a holistic view over the team at this point. Everyone is looking within their own silos
>
> It was not necessarily that people didn't think we need to have people assigned to a team was because they didn't want to raise that we needed people because they were trying for their own department and their own business planning that they wanted people

> It's really hard to do when there's not a level of trust in the room
>
> So even when you try to get them to change a process or you know try to kind of win them over to the idea that we all need to be in one place you do get a lot of resistance to that simply because you know their used to having it their way

These barriers seemed to result in an inability for the group to actively learn together and overcome dominantly held beliefs. Similar to the barrier for knowledge sharing, the precursor to the barrier of knowledge integration also seemed related to the role of leadership. In this case, leadership again played a paradoxical role, whereby leadership dominance was perceived as agenda pushing and decreased trust, which limited participants willingness to challenge assumptions.

Lastly, this role of decision criteria seems important to the knowledge integration process. When knowledge integration was positively described, the participants seemed to reference the ability to bring in outside perspectives and compare and contrast those ideas to criteria to shape their decisions and collectively held knowledge. However, there did not appear to be a uniformly held or known set of decision criteria (other than budget) for the teams to draw upon. The interview responses and organizational documents did not provide any evidence of established decision criteria or process used by the teams to shape and evaluate their decisions in order to support the learning process needed for developing and integrating their perspectives to create collectively held knowledge. This lack of formal and consistent decision criteria may have contributed as well to the constrained thinking and limited knowledge integration described by the teams. Despite this barrier, the teams were able to successfully complete their project and develop recommendations to inform the organization's budget and priorities. Although the teams' completed the recommendations, they were not considered creative in terms of novelty.

The result of these outcomes in terms of creativity and effectiveness is described next and addresses the remaining two research questions.

How do cross-functional team members and stakeholders assess effectiveness and creativity

The study findings support prior literature which suggests creativity relates to both novelty and usefulness attributes (Egan, 2005), however the value the organization places on usefulness over novelty was an interesting finding in this study. For this organization, novelty of ideas was less important than the usefulness of the ideas. Furthermore, creativity was also related less to the output of ideas created by the teams and more to the process the teams went through to develop the ideas, namely sharing ideas and integrating those ideas into recommendations as a collective group.

The concept of team effectiveness was also consistent with literature in regard to achievement of goal objectives and satisfaction indicators (Guzzo & Shea, 1992) but the findings offered a unique perspective that suggests team members' value satisfaction of the experience as an effectiveness measure whereby stakeholder were more concerned with the team's meeting of the objectives. These findings are described in more detail in the next section.

Creativity and Effectiveness as Outcomes

The purpose of this study was to explore in what ways cross-functional teams generate and develop creative ideas and how the team members and key stakeholders perceive effectiveness of the team. The concept of creativity for this study was operationalized as the process through which new or novel ideas are generated, developed and evaluated (Amabile, 1988; Anderson, Potocnik et al., 2014; West, 2002a)

and to that regard, the findings supported the importance of a diverse cross-functional team as well as the knowledge sharing and integration processes as factors which influence how ideas are generated, developed and evaluated. The research was not interested in the content of the output (in terms of whether the recommendations were ideas, products, new processes, etc.) but rather the degree of novelty, usefulness and originality of the output, if adopted or implemented (Egan, 2005), as evaluated by the team and key stakeholders.

Creativity as outcome. The findings suggest the teams' outcome in terms of creativity were not novel or original, but they were useful. Neither the stakeholders nor co-leads considered the outcomes of their work to be creative in terms of novelty. Yet, despite the initial perception by the teams that their purpose was to generate new ideas, the stakeholders did not expect any novel ideas in order for the process to be considered effective.

> I don't think there was a lot of new ideas, period. I think that this organization at this moment in time we don't need new ideas, we need a plan
>
> I think they met our expectations. They came up with recommendations that were in line with the direction that we wanted to go. Nothing was like completely out of left field. I don't know how creative and novel they were new things we haven't done before
>
> The objectives of the Value Proposition team really didn't lend itself to uniqueness or innovation
>
> I think stakeholder description would align with comments above. They are all solid strategies, but not all offer enough uniqueness or innovation

For this organization, creativity was more about the actual process the teams engaged in to develop organizational priorities. The novelty was the process and approach the organization used in setting direction, through the use of cross-functional teams and a

bottom-up approach to developing priorities and gaining commitment to needed action to move the organization forward.

> I think the value derived through this process was more centered around communicating with each other and being on the same page. I wouldn't say the process led to much innovation or uniqueness, but it allowed multiple people to hear parts of the business they didn't know much about
>
> I really think [Organization] has never thought about focusing on a couple things and doing them really well. I think that's novel for [Organization]
>
> We hadn't done that in that way before and so and to the extent that because we had these staff teams that were throughout the organization, involved in each of them, there is a better understanding of kind of what we are about to do, what we need to do, and why resources are being committed to that so to the extent that those are all really important parts of what value I think we got a lot out of that and I don't think- if the strategic team leadership team had done that by ourselves, we wouldn't have had the buy-in, we probably wouldn't have had the creativity, the push on some ways that we needed to have to think about all the parts and pieces and to challenge some of our perception. So I do think that although there was definitely frustration and there were challenges in that, we got a better product because we used this process.

The outcome of the creative process, therefore can be useful ideas which address an organizational problem or challenge without being particularly new or novel to the organization or industry. However, the ability for the teams to create these useful ideas stemmed from applying the creative process which is grounded in the elements of seeking different perspectives to generate ideas on how to solve a problem, integrating these ideas into higher order knowledge and evaluating the ideas against decision criteria for the feasibility or effectiveness of the idea to solve the problem (Amabile, 1988). The application of the creative process within this organization was in fact a new and novel approach.

Team Effectiveness. So while the teams' recommendations were generally related to internal process improvements and organizational structural changes that were

not particularly novel, the external stakeholders considered the teams to be effective. Given that team effectiveness is a poorly defined construct, this research considered team effectiveness as the outcome of value most salient to the members of the team and most valued by the key stakeholder(s) of the teams' primary work objective. The findings considered how the teams initially described what success would look like and how both the internal and external stakeholders described success at the end of the process.

The elements considered by the team early on for success included a positive team climate (consisting of trust and honesty), regular communication, incorporating diverse perspectives and attaining the goals of the project. Based on the external stakeholders (senior leaders) interviews at the end of the process, success from their perspective was primarily focused on the attainment of the project goals and incorporating diverse perspectives. This was an interesting finding that team climate and communication (internal dynamic elements) were particularly important to the teams but not described as effectiveness measures by the senior leadership team who served as external stakeholders. In addition, both the Data team and Value Proposition team considered effectiveness in terms of goal attainment as the creation of new ideas that would change how the organization works, whereas the stakeholders' expectation of goal attainment related more to providing focused and prioritized actions and completing the deliverables of the project and less around novelty or new ideas. These differences in perspectives may have influenced the differences found between the external stakeholders' and internal stakeholders' (co-leads) evaluation of effectiveness.

The Data team was considered highly effective for the delivery of the attainment of their goals by the external stakeholders. The external stakeholders found their

recommendations as both creative and useful with a clear point of view on what needed to be accomplished and a plan to accomplish those items. The Data team had a high degree of functional diversity (Blau index = .81) and the least amount of leadership presence which may have supported the ability of the team to develop a shared and collective perspective on which recommendations to move forward and prioritize. However, despite being considered highly effective by the external stakeholders, the co-leads did not consider the team recommendations to be novel or new, but rather foundational organizational work and therefore considered their effectiveness as poor.

For the Revenue and Value Proposition team, neither co-leads rated the effectiveness of the outcomes as novel, but did consider the recommendations useful, with which the external stakeholders agreed. However, the relative rating of effectiveness seemed to stem more from the dynamics of the team. The Revenue team seemed to be hampered by elements of the team composition both in terms of having the right mix of diversity (they were the lowest in terms of functional diversity, Blau index = .50) and had the highest representation of senior leadership presence. These inhibiting factors may have resulted in an inability to develop a more robust collective knowledge which would have shaped more definitive recommendations, whereas the team's recommendations were considered more general by the external stakeholders. In contrast, the Value Proposition team was able to provide a number of useful recommendations with a moderate degree of specificity and had generally positive perspectives on the internal dynamics. The Value Proposition team had the highest degree of functional diversity (Blau index = .88) and considered the focus of their team to be less about creating novel ideas and more focused on delivering prioritized

recommendations. In addition, the Value Proposition team had a strong focus on member relations and expertise as part of the team's composition. Although they expressed some challenges with leadership imbalance, they seemed to have a particularly strong focus on creating a safe and collaborative environment which may have helped influence a generally positive perspective effectiveness rating by both the external stakeholders and co-leads.

Team satisfaction. The aspect of attaining the team goals was a consistent measure of effectiveness across the teams, however achieving this outcome did not necessarily equate to satisfaction with the process. The concept of satisfaction was explored throughout the process as various sentiments were captured by the team participants. For some members the process was a positive experience and overall very satisfying.

> A very positive process from the beginning
>
> I think having these kinds of cross-functional teams shows that our organization is invested in doing things differently and that is extremely important to a lot of people here that we, you know that we see the work being done differently in order to get different outcomes
>
> Having the luxury of actually participating in the planning process and being able to think through why we would set goals a certain way or how we would roll out particularly responsibilities of the individuals who are going to be in the position that is extremely valuable to me. Having been brought along in the process has increased my buy-in and the importance of the role but also has made it possible for me to articulate it to other people how important they are and in supporting them in that way you know I feel like I have a better sense of where they fit in our overall departmental work-plan and goal setting process

However, for others the experience was difficult, confusing, frustrating and was not a satisfying experience.

> Super hard

> I feel like we - our group failed her we didn't give her truly strategic initiatives
>
> It was unclear what was necessarily going to come from you know what we were talking about and also unclear what we physically needed to do

This negative experience is important to understand and elevate as literature has suggested there is a darker side to the creative and innovative process that needs to be appreciated and explored (Anderson, Potocnik et al., 2014). While creativity can lead to new, novel and useful ideas which if adopted may result in innovative and beneficial outcomes to the organization, the aspects of change and dismantling of current beliefs, assumptions and even organizational structures and practices may be necessary aspects of the creative process. These elements of change can be difficult and cause stress and negative effects to the individuals engaged in the creative process. Therefore, team member satisfaction should be considered an important element to overall effectiveness of the creative process, in addition to attainment of team goals and relative novelty of the outcomes.

Summary

The study findings suggest the creative process begins with the intentional creation of cross-functional teams who are comprised of individuals with a mix of diverse work-related backgrounds, who understand the role they play on the team, are motivated by working in a team setting and have an openness to learning. The process unfolds through the use of active and visible communication practices that allow all team members to share ideas and perspectives about how to address the challenges the team is faced with solving. These practices are interactive and include group dialogue and

techniques such as brainstorming or documenting and organizing ideas into collective groups or themes.

However, the mere sharing of different ideas and perspectives is inefficient for creative ideas to develop and evolve. Teams must integrate their individual perspectives into a more holistic and integrated collective knowledge. In order to accomplish this, the team must engage in reflective thinking and utilize decision criteria to evaluate the ideas, elevate assumptions and beliefs, and refine the ideas in ways that can be useful and viable for the organization to adopt. This reflective process is iterative and recursive. It requires the ability of individuals to be open and vulnerable to one another and be willing to address the potential negative impacts the ideas may cause for them or the organization. This vulnerability and reflective thinking is supported by a climate that allows for openness and trust to flourish within the team. The findings suggest the knowledge integration process is less visible and easily understood. Furthermore, the findings suggest organizations may need more formal practices built into their creative processes to support teams in this knowledge integration process because without formal support, teams may fail to integrate their ideas and instead result in ideas decided upon through power positions or dominant thinking and therefore fail to achieve both novelty and usefulness of ideas.

An unanticipated but not surprising finding from this study is that leaders in the organization play a pivotal and paradoxical role. Leaders must provide guidance and support to the team and can do so by providing clarity around intentionality of team member selection, clarity regarding the roles team members are supposed to play, elevating the expectation that all voices need to be heard, and facilitating dialogue

focused on intentional surfacing of assumptions and challenging dominant thinking. Leaders can also provide guidance through criteria setting to allow teams to evaluate the potential effectiveness or usefulness of ideas. For the creative process, being clear about the degree of novelty expected in the outcomes at the onset may help the teams avoid undue frustration or set the expectation of challenge to think in ways that are uncomfortable to them, yet nevertheless helps them to prepare mentally for the process. Furthermore, having objective and known criteria in place may avoid decisions being made through positional power of leadership authority or inherent biases that may be held by ingrained organizational thinking.

Lastly the research findings suggest effectiveness for cross-functional teams who are tasked with developing creative ideas are multi-faceted and relate to the attainment of goals (which will be unique based on the team's established purpose and will influence the degree of novelty expected), the usefulness of the recommendations, regardless of the degree of novelty and the overall satisfaction with the experience. The findings suggest external stakeholders are more concerned with the attainment of goals and usefulness of the outcomes whereas team members are, unsurprisingly, concerned with the relative satisfaction of the experience. This subtle distinction is important because failure to consider and appreciate the experience team members undergo throughout the creative process may result in negative outcomes such as stress and disengagement which could have broader impacts to the organization beyond the immediate creative process (Anderson, Potocnik et al., 2014).

CHAPTER 6: IMPLICATIONS

Implications for Human Resource Development research and practice

This research study explored the creative process with cross-functional teams and in doing so attempted to address a number of limitations within the literature of creativity. First, the study utilized a qualitative dominant design to allow for a deeper and richer understanding of the experiences and perspectives of the participants within the process. Second, the study utilized a temporal approach to explore how cross-functional teams shared and integrated their knowledge over time to develop creative ideas. Third, the study considered a multi-dimensional conceptual framework using theoretical models of creativity and team performance to consider the inputs of team composition, the processes of knowledge sharing and integration and the outcomes of creativity and effectiveness. Lastly, the study utilized intact cross-functional teams within a services organization to expand understanding of the creative process outside of traditional manufacturing, technology or university settings.

The study provides a number of implications for both future research and Human Resource Development (HRD) professionals. First is the importance of team composition. While literature and common organizational practices have suggested using cross-functional teams are important for creative processes, this study finds that the make-up of the team's composition should be intentionally structured. Individual team members should come to the team with a positive motivation and value to working on complex and team-based projects as well as an openness to learning. In addition, teams

should consist of representatives whose knowledge and functional backgrounds reflect a diverse range of domains relevant to the problem or challenge the team is tasked with addressing. Future research should continue to explore whether assigned versus dominant functional diversity influences the creative process in order to aid in selection strategies for cross-functional membership on creative focused teams. Human resource professionals and leaders should consider a broad range of selection strategies such as interviews and assessments that can capture both the cognitive and personality attributes along with work-related experience (Hunter et al., 2012).

In addition to ensuring an intentional approach to selection of representatives to participate on the team, the ability to ensure team members are actively engaged in sharing their perspectives and voicing their ideas is important. The importance of trust and psychological safety suggests team membership is more than the representation of different perspectives and backgrounds but requires positive relationships among the members. The importance of a climate of psychological safety and trust has been found to be important within innovation literature for the implementation of ideas (West, 2002a) but this study suggests this type of climate is needed at the earliest stages of creativity as well. Teams that have positive membership relations which include being open to others' perspectives, showing genuine concern for each other and being explicit about what each member needs and then working to meet the needs of the team all help to establish trust and psychological safety within the team (Shaw, 1997). In addition, future research could explore whether team climate has a significant influence on creative outcomes in terms of novelty and usefulness. HRD professionals should consider practices which foster employees' ability to openly communicate with management and

actively participate in organizational decision-making efforts (Tzafrir, Harel, Baruch, & Dolan, 2004). Within this study, the organization's approach to bring in representatives from all levels of the organization to co-create recommendations for budget and work prioritization as well as making access to senior leadership for guidance were examples of trust-building efforts which HRD and other practitioners could implement as well.

However, even with open communication practices, trust building and psychological safety can be impeded by leadership. Therefore, HRD practitioners should consider training to develop leaders responsible for creative teams. Training should focus on the tenuous balance leaders need to model whereby they should provide general support, resources and encouragement in the early phases of the creative process and then provide more decisional guidance as the creative process unfolds (Hunter & Cushenbery, 2011). In addition, leadership development should focus on helping leaders develop collaborative behavior and relationship building skills (Gratton & Erickson, 2007). Future research might explore how leadership attributes relate to the paradoxical balance leaders need to achieve during the creative process. For instance, do certain leadership attributes support the ability to provide loose guidance and resources at the early stage of the process and more focused guidance and criteria setting later in the process?

The creative process requires the individual team members to not only share their perspectives, but to integrate their perspectives into a higher order collective knowledge or shared mental model (Hollenbeck, DeRue, & Guzzo, 2004). The use of intentional and explicit communication to establish roles, ask for clarification and proactively communicate with one another are mechanisms which can help teams develop shared mental models (Stout, Cannon-Bowers, Salas, & Milanovich, 1999). Again, the

implication for HRD practitioners is the need for training for both team members and team leaders to be skilled in communication and effective dialogue designed to elicit members' assumptions and beliefs, which the member may not even be consciously aware is shaping their thinking (McCarthy & Garavan, 2008). The findings suggesting the need to explore in more detail the role unconscious bias may play in creative focused teams. As creative idea generation, development and evaluation is influenced not only through explicitly held knowledge but also tacit or unconsciously held perspectives (Nonak and von Krogh, 2009), HR practice could focus on training both participants and leaders in making explicit the values individuals hold related to the ideas being developed and dialogue about the trade-offs that may be required to further develop or promote a particular idea or set of creative ideas. Future research which identifies relevant techniques and approaches which serve to help teams engage in dialogue which supports reflective thinking and knowledge integration would be beneficial both for expanding the body of knowledge and in support of practitioners.

In addition, the findings suggest having clear decision making approaches or criteria are needed to positively influence the creative process. Without criteria for team members to evaluate the potential success or failure of an idea, the team may fail to develop ideas to their full potential usefulness. Future research could explore how decision criteria are developed and whether specific criteria are more useful in supporting the creative process than others. HRD practitioners can support creative process teams by helping to develop and train practices that support both preference based decisions (e.g., voting techniques) as well as using information-driven decision making practices

(e.g., using established objective criteria) which can shape and change opinions as team members learn and exchange information (Stasser & Birchmeier, 2003).

Lastly, the social and cognitive demands placed on the participants of cross-functional teams should be explored. Research has alluded to the dark side of innovation (Anderson, Potocnik et al., 2014) but there may also be a dark side to the creative process. Future research should consider how cross-functional teams' sense of engagement and well-being evolve throughout the creative process and whether certain factors positively or negatively influence their engagement and well-being. In addition, exploring whether teams have a collective sense of engagement or well-being and how that influences creative outcomes would be helpful for future research.

Overall, this research study served to both reinforce existing understanding of literature related to the creative process as well as expand the understanding by providing a deeper and richer view of the experience of the creative process within cross-functional teams over time. A number of key findings provided deeper insight regarding the role of knowledge sharing and integration as incorporating both active and visible practices, such as brainstorming as well as less consciously held practices such as reflection and dialogue. In addition, the paradoxical role that leaders play was highlighted as a result of this study along with recommendations for how HRD practitioners and researchers can continue to evolve the understanding of team level creative processes.

REFERENCES

Amabile, T.M. (1988). A model of creativity and innovation in organizations. *Research in Organizational Behavior, 10*, 123 – 167.

Amabile, T. M., & Fisher, C. M. (2000). Stimulate creativity by fueling passion. *Handbook of Principles of Organizational Behavior*, *331*, 341.

Amabile, T. M., Barsade, S. G., Mueller, J. S., & Staw, B. M. (2005). Affect and creativity at work. *Administrative Science Quarterly*, *50*(3), 367-403.

Anand, N., & Daft, R. L. (2006). What is the right organization design? *Organizational Dynamics, 36*(4), 329-344. doi: 10.1016/j.orgdyn.2007.06.001.

Anderson, N., De Dreu, C., & Nijstad, B.A. (2004). The routinization of innovation research: a constructively critical review of the state-of-the-science. *Journal of Organizational Behavior, 25*, 147 – 173. doi: 10.1002/job.236.

Anderson, N., Potocnik, K. & Zhou, J. (2014). Innovation and creativity in organizations: A state-of the-science review, prospective commentary and guiding framework. *Journal of Management, 40*(5), 1297 – 1333. doi: 10.1177/0149206314527128.

Austin, J.R. (1997). A cognitive framework for understanding demographic influences in groups. *The International Journal of Organizational Analysis, 5*(4), 342 – 359.

Bain, P.G., Mann, L., & Pirola-Merlo, A. (2001). The innovation imperative: The relationship between team climate, innovation, and performance in research and

development teams. *Small Group Research, 32*(1), 5 – 73.

Bantel, K. A., & Jackson, S. E. (1989). Top management and innovations in banking: Does the composition of the top team make a difference. *Strategic management journal*, *10*(S1), 107-124.

Barrick, M.R., Stewart, G.L., Neubert, M.J., & Mount, M.K. (1998). Relating member ability and personality to work-team processes and team effectiveness. *Journal of Applied Psychology, 83*(3), 377 – 391.

Barsh, J., Capozzi, M.M., & Davidson, J. (2008). Leadership and Innovation. *McKinsey Quarterly*. Retrieved from: http://www.mckinsey.com/insights/innovation/leadership_and_innovation.

Bell, S.T., Villado, A.J., Lukasik, M.A., Belau, L., & Briggs, A.L. (2011). Getting specific about demographic diversity variable and team performance relationships: A meta-analysis. *Journal of Management, 37*(3), 709-743.

Birks, M., Chapman, Y., & Francis, K. (2008). Memoing in qualitative research. *Journal of Research in Nursing, 13*(1), 68 – 75. Doi: 10.1177/1744987107081254.

Blau, P.M. (1977). *Inequality and Heterogeneity: A Primitive Theory of Social Structure.* New York, NY: The Free Press.

Bo-Young, K & Bum-Kyu, K. (2008). Cross-functional cooperation with design teams in new product development. *International Journal of Design*, *2*(3), 43 – 54.

Boerner, S., Schäffner, M., & Gebert, D. (2012). The complementarity of team meetings and cross-functional communication: Empirical evidence from new services

development teams. *Journal of Leadership & Organizational Studies*, *19*(2), 256-266.

Bunderson, J.S. & Sutcliffe, K.M. (2002). Comparing alternative conceptualizations of functional diversity in management teams: Process and performance effects. *Academy of Management Journal, 45(5)*, 875-893.

Campion, M. A., Medsker, G. J., & Higgs, A. C. (1993). Relations between work group characteristics and effectiveness: Implications for designing effective work groups. *Personnel Psychology*, *46*(4), 823-847.

Cheung, S.Y., Gong, Y., Wang, M., Zhou, L.B., & Shi, J. (2016). When and how does functional diversity influence team innovation? The mediating role of knowledge sharing and the moderation role of affect-based trust in a team. *Human Relations, 69*(7), 1507 – 1531. doi: 10.1.177/0018726715615684.

Cohen, B.H. (2013). *Explaining Psychological Statistics (4th ed.).* Hoboken, NJ: Wiley.

Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of management*, *23*(3), 239-290.

Creswell, J.W. & Clark, V.L. (2011). *Designing and conducting mixed methods research, (2nd ed*.), Thousand Oaks, CA: Sage.

Creswell, J.W. (2013). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches (3rd ed.)*, Los Angeles, CA: Sage.

Creswell, J. (2014). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches (4th ed.)*. Thousand Oaks, CA: Sage.

Crossan, M.M. & Apaydin, M. (2009). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*, 47(6), 1154 – 1191. doi:10.1111/j.1467-6486.2009.00880.x.

Den Hertog, P., Gallouj, F., & Segers, J. (2011). Measuring innovation in a "low-tech" service industry: the case of the Dutch hospitality industry. *The Service Industries Journal, 31*(9), 1429 – 1449.

De Jong, J. & Den Hartog, D. (2007). How leaders influence employees' innovative behavior. *European Journal of Innovation, 10*(1), 41 – 64. http://dx.doi.org/10.1108/14601060710720546.

Dewett, T. (2007). Linking intrinsic motivation, risk taking, and employee creativity in an R&D environment. *R & D Management, 37*(3), 197.

Dillman, D.A., Smyth, J.D. & Christian, L.M. (2014). *Internet, Phone, Mail and Mixed-Mode Surveys: The Tailored Design Method (4th ed.),* Hoboken, NJ: John Wiley & Sons.

Drach-Zahavy, A. & Somech, A. (2001). Understanding team innovation: The role of team processes and structures. *Group Dynamics: Theory, Research and Practice*, *5*(2), 111 – 123. doi: 10. 10.1037/1089-2699.5.2111.

Drazin, R., Glynn, M. A., & Kazanjian, R. K. (1999). Multilevel theorizing about creativity in organizations: A sense-making perspective. *Academy of Management Review*, *24*(2), 286-307.

Egan, T.M. (2005). Factors influencing individual creativity in the workplace: An examination of quantitative empirical research. *Advances in Developing Human Resources, 7*(2), 160 – 181. doi: 10.1177/1523422305274527.

Fay, D., Borrill, C., Amir, Z., Haward, R. & West, M. (2006). Getting the most out of multidisciplinary teams: A multi-sample study of team innovation in health care. *Journal of Occupational and Organizational Psychology, 79*, 553 – 567.

Gilson, L. L., & Shalley, C. E. (2004). A little creativity goes a long way: An examination of teams' engagement in creative processes. *Journal of Management*, *30*(4), 453-470.

Glesne, C. (2016). *Becoming Qualitative Researchers: An Introduction (5th ed.)*, Boston: Pearson.

Gong, Y., Kim, T., Lee, D., & Zhu, J. (2013). A multilevel model of team goal orientation, information exchange, and creativity. *Academy of Management Journal, 56*(3), 827 – 851.

Gratton, L., & Erickson, T. J. (2007). Eight ways to build collaborative teams. *Harvard business review*, *85*(11), 100.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational evaluation and policy analysis*, *11*(3), 255-274.

Guba, E. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *ECTJ 29*(2), 75-91. doi:10.1007/BF02766777

Guba, E. G., & Lincoln, Y. S. (1994). Chapter 6: Competing paradigms in qualitative research. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (pp. 163-194), Thousand Oaks, CA: Sage.

Guzzo, R.A. & Shea, G.P. (1992). Chapter 5: Group performance and intergroup relations in organizations. In M.D. Dunnette & L.M. Hough (Eds.) *Handbook of Industrial and Organizational Psychology (2nd ed.)* (pp. 269 – 313). Palo Alta, CA: Consulting Psychologists Press.

Hackman, J. R. (1982). *A set of methods for research on work teams* (No. TR-1). Yale University New Haven Ct School of Organization and Management. Retrieved from: http://scholar.google.com/scholar?hl=en&q=a+set+of+methods+for+research+on+work+teams&btnG=&as_sdt=1%2C18&as_sdtp=&oq=a+set+of+methods+for+research+on+work+tea

Harvey, S., & Kou, C. Y. (2013). Collective engagement in creative tasks: The role of evaluation in the creative process in groups. *Administrative Science Quarterly*, *58*(3), 346-386. http://dx.doi.org/10.1108/09696470910960400

Hennessey, B. & Amabile, T. (2010). Creativity. *Annual Review of Psychology, 61*, 569 – 598. doi: 0066-4308/10/0110-0569.

Hirsch-Kreinsen, H., Jacobson, D. & Robertson, P. (2006). 'Low-tech' Industries: Innovativeness and Development Perspectives—A Summary of a European Research Project. *Prometheus: Critical Studies in Innovation, 24*(1), 3 – 21.Retrieved from https://s3.amazonaws.com/academia.edu.documents/40548105/Low-tech_Industries_Innovativeness_and20151201-6779-1giucdr.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1514826501&Signature=wIW%2BqI%2BEFcJ9ijwe0SSOWYTblXc%3D&response-content-disposition=inline%3B%20filename%3DLow_tech_Industries_Innovativeness_and.pdf.

Hirunyawipada, T., Beyerlein, M. & Blankson, C. (2010). Cross-functional integration as a knowledge transformation mechanism: Implications for new product development. *Industrial Marketing Management, 39*(4), 650 – 660. https://doi.org/10.1016/j.indmarman.2009.06.003.

Hollenbeck, J., DeRue, D., & Guzzo, R. (2004). Bridging the gap between I/O research and HR practice: Improving team composition, team training, and team task design. *Human Resource Management, 43*(4), 353 – 366. doi: 10.1002/hrm.20029.

Howells, J. (1996). Tacit knowledge, innovation and technology transfer. *Technology Analysis and Strategic Management, 8*(2), 91 – 106.

Hulscheger, U.R., Anderson, N. & Salgado, J.F. (2009). Team-level predictors of innovation at work: A comprehensive meta-analysis spanning three decades of research. *Journal of Applied Psychology, 94*(5), 1128 – 1145. doi: 10.1037/a0015978.

Hunter, S., Cushenbery, L., & Friedrich, T. (2012). Hiring an innovative workforce: A necessary yet uniquely challenging endeavor. *Human Resource Management Review, 22*(4), 303-322. doi:10.1016/j.hrmr.2012.01.001.

Jackson, S. E. (1992). Consequences of group composition for the interpersonal dynamics of strategic issue processing. *Advances in Strategic Management, 8*(3), 345-382.

Jackson, S. E. (1996). The consequences of diversity in multidisciplinary work teams. In M. West (Ed.) *Handbook of Work Group Psychology* (pp. 53-75). Chichester, UK: Wiley & Sons.

Jehn, K.A. (1999). Diversity, conflict, and team performance: Summary of program research. *Performance Improvement Quarterly, 12*(1), 6 – 19.

Kessel, M., Kratzer, J. and Schultz, C. (2012), Psychological Safety, Knowledge Sharing, and Creative Performance in Healthcare Teams. *Creativity and Innovation Management, 21,* 147–157. doi:10.1111/j.1467-8691.2012.00635.x

Kim, B.Y, & Kang, B.K. (2008). Cross-functional cooperation with design teams in new product development. *International Journal of Design, 2*(3), 43 – 54.

King, N. & Anderson, N. (1990). Innovation in working groups. In West, M.A. & Farr, J.L. (Eds.), *Innovation and Creativity at Work: Psychological and Organizational Strategies.* West Sussex, England: John Wiley & Sons.

Kozlowski, S. & Ilgen, D.R. (2006). Enhancing the effectiveness of work groups and teams. *Psychological Science in the Public Interest, 7*(3), 77 – 124. Doi/10.1111/j.1529-1006.2006.00030.x

Kratzer, J., Leenders, A. J. & van Engelen, J. (2004). Stimulating the potential: Creative performance and communication in innovation teams. *Creativity and Innovation Management, 13*(1), 63-71.

Kurtzberg, T. R., & Amabile, T. M. (2001). From Guilford to creative synergy: Opening the black box of team-level creativity. *Creativity Research Journal*, *13*(3-4), 285-294.

Majchrzak, A., More, P. H., & Faraj, S. (2012). Transcending knowledge differences in cross-functional teams. *Organization Science*, *23*(4), 951-970.

Martin, A. & Bal, V. (2015). *The state of teams*. Retrieved from Center for Creative Leadership website: http://www.ccl.org/wp-content/uploads/2015/04/StateOfTeams.pdf.

Mathieu, J.E. & Gilson, L.L. (2012). Criteria issues and team effectiveness. In Kozlowski, S. (Ed.) *The Oxford Handbook of Organizational Psychology, Volume 2,* Oxford, UK: Oxford University Press. doi: 10.1093/oxfordhb/9780199928286.001.0001.

Mathieu, J., Maynard, M. T., Rapp, T., & Gilson, L. (2008). Team effectiveness 1997-2007: A review of recent advancements and a glimpse into the future. *Journal of Management*, *34*(3), 410-476.

Mathison, S. (1988). Why Triangulate? *Educational Researcher, 17*(2), 13-17. Retrieved from http://www.jstor.org/stable/1174583.

McCarthy, A., & Garavan, T. N. (2008). Team learning and metacognition: A neglected area of HRD research and practice. *Advances in Developing Human Resources*, *10*(4), 509-524.

McGrath, J.E. (1991). Time, interaction, and performance (TIP): A theory of groups. *Small Group Research, 22*(2), 147-174.

McGrath, J. E., Arrow, H., & Berdahl, J. L. (2000). The study of groups: past, present, and future. *Personality and Social Psychology Review*, *4*(1), 95-105.

Miles, M.B., Huberman, A.M. & Saldana, J. (2014). *Qualitative Data Analysis: A Methods Sourcebook (3rd ed.).* Thousand Oaks, CA: Sage.

Mumford, M. D., Connelly, S., & Gaddis, B. (2003). How creative leaders think: Experimental findings and cases. *The Leadership Quarterly*, 14(4-5), 411-432.

Newell, S., Tansley, C., & Huang, J. (2004). Social capital and knowledge integration in an ERP project team: the importance of bridging and bonding. *British Journal of Management, 15*(S1), 43-57.

Nonaka, I. & von Krogh, G. (2009). Tacit knowledge and knowledge conversion: Controversy and advancement in organizational knowledge creation theory. *Organization Science, 20*(3), 635 – 652. doi: 10.1287/orsc.1080.0412.

Oldham, G. R., & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of Management Journal*, *39*(3), 607-634.

Omachonu, V.K. & Einspruch, N.G. (2010). Innovation in health care delivery systems: A conceptual framework. *The Innovation Journal: The Public Sector Innovation Journal, Volume 15*(1), 1 – 20. Retrieved from: http://innovation.cc/scholarly-style/omachonu_health care_3innovate2.pdf

Paulus, P.B. (2000). Groups, teams, and creativity: The creative potential of idea-generating groups. *Applied Psychology: An International Review, 49*(2), 237-262.

Paulus, P.B., & Yang, H.C. (2000). Idea generation in groups: A basis for creativity in organizations. *Organizational Behavior and Human Decision Processes, 82*(1), 76 – 87. doi: 10.1006/obhd.2000.2888.

Peshkin, A. (1988). In search of subjectivity. One's own. *Educational Researcher, 17*(7), 17 – 21.

Pirola-Merlo, A. & Mann, L. (2004). The relationship between individual creativity and team creativity: Aggregate across people and time. *Journal of Organizational Behavior, 25,* 235 – 257. doi: 10.1002/job.240.

Podsakoff, P. M., MacKenzie, S. B., Jeong-Yeon, L., & Podsakoff, N. P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the

Literature and Recommended Remedies. *Journal of Applied Psychology, 88*(5), 879.

Polanyi, M. (1966). *The Tacit Dimension*. New York, NY: Doubleday.

Potocnik, K. & Anderson, N. (2016). A constructively critical review of change and innovation-related concepts: towards conceptual and operational clarity. *European Journal of Work and Organizational Psychology, 25*(4), 481-494. http://dx.doi.org/10.1080/1359432X.2016.1176022

Pratt, M.G. (2009). From the editors: For the lack of a boilerplate: Tips on writing up (and reviewing) qualitative research). *Academy of Management Journal, 52*(5), 856-862.

Rank, J., Pace, V. L., & Frese, M. (2004). Three avenues for future research on creativity, innovation, and initiative. *Applied Psychology*, *53*(4), 518-528.

Richards, L. & Morse, J.M. (2013a). Choosing a method. Chapter 3. In *A Users Guide to Qualitative Methods (3rd ed.*) (pp. 49 – 86). Los Angeles, CA: Sage.

Richards, L. & Morse, J.M. (2013b). Coding. Chapter 6. In *A Users Guide to Qualitative Methods (3rd ed.*) (pp. 149 – 168). Los Angeles, CA: Sage.

Rietzschel, E., De Dreu, C., & Nijstad, B. (2009). What are we talking about, when we talk about creativity? Group creativity as a multifaceted, multistage phenomenon. *Creativity in Groups: Research on Managing Groups and Teams, 12*, 1 – 27.

Saldana, J. (2013). *The Coding Manual for Qualitative Researchers (2nd ed.)*. Thousand Oaks, CA: Sage.

Santamaria, L., Nieto, M., & Barge-Gil, A. (2009). Beyond formal R & D: Taking advantage of other sources of innovation in low- and medium-technology industries. *Research Policy, 38*(3), 507 – 518. Retrieved from https://e-archivo.uc3m.es/bitstream/handle/10016/12681/b?sequence=1.

Scott, S.G. & Bruce, R.A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *The Academy of Management Journal, 37*(3), 580 – 607.

Sethi, R., Smith, D. C., & Park, C. W. (2001). Cross-functional product development teams, creativity, and the innovativeness of new consumer products. *Journal of Marketing Research*, *38*(1), 73-85.

Shalley, C., Zhou, J., & Oldham, G. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here? *Journal of Management, 30*(6), 933 – 958. doi: 10.1016/j.jm.2004.06.007.

Shaw, R. B. (1997). *Trust in the balance: Building successful organizations on results, integrity, and concern*. San Francisco, CA: Jossey-Bass.

Sheehan, M., Garavan, T.N., & Carbery, R. (2014). Innovation and human resource development. *European Journal of Training and Development, 38*(1/2), 2 – 14. http://dx.doi.org/10.1108/EJTD-11-2013-0128.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for information*, *22*(2), 63-75.

Somech, A. & Drach-Zahavy, A. (2013). Translating team creativity to innovation implementation: The role of team composition and climate for innovation. *Journal of Management, 39*(3), 684 – 708. doi: 10.1177/0149206310394187.

Stasser, G., & Birchmeier, Z. (2003). Chapter 5: Group creativity and collective choice. In P. Paulus & B. Nijstad (Eds.) *Group creativity: Innovation through collaboration*, (pp. 85-109), New York, NY: Oxford University Press.

Stout, R. J., Cannon-Bowers, J. A., Salas, E., & Milanovich, D. M. (1999). Planning, shared mental models, and coordinated performance: An empirical link is established. *Human Factors*, *41*(1), 61-71.

Strauss, A. & Corbin, J. (1994). Grounded theory methodology: An Overview. In N.K. Denzin, & Y.S. Lincoln (Eds.) *Handbook of qualitative research* (pp. 217 – 285). Thousand Oaks, CA: Sage. Retrieved from http://www.depts.ttu.edu/education/our-people/Faculty/additional_pages/duemer/epsy_5382_class_materials/Grounded-theory-methodology.pdf.

Stroebe, W., & Diehl, M. (1994). Why groups are less effective than their members: On productivity losses in idea-generating groups. In W. Stroebe & M. Hewstone (Eds.), European review of social psychology (vol. 5, pp. 271–303). London: John Wiley.

Sung, S.Y. & Choi, J.N. (2009). Do big five personality factors affect individual creativity? The moderating role of extrinsic motivation. S*ocial Behavior and Personality*, *37*(7), 941-956. DOI 10.2224/sbp.2009.37.7.941.

Tzafrir, S. S., late Gedaliahu H. Harel, Baruch, Y., & Dolan, S. L. (2004). The consequences of emerging HRM practices for employees' trust in their managers. *Personnel Review*, *33*(6), 628-647.

Tagger, S. (2002). Individual creativity and group ability to utilize individual creative resources: A multilevel model. *Academy of Management Journal, 45*(2), 315 – 330.

Tiwana, A., & Mclean, E.R. (2005). Expertise integration and creativity in information systems development. *Journal of Management Information Systems, 22*(1), 13 – 43. doi: 10.1080/07421222.2003.11045836.

U.S. Bureau of Labor Statistics, Employment Projections (2017). *Employment by major industry*. Retrieved from https://www.bls.gov/emp/ep_table_201.htm.

Valtakoski, A. & Jarvi, K. (2016). Productization of knowledge-intensive services: Enabling knowledge sharing and cross-unit collaboration. *Journal of Service Management, 27*(3), 360-390. http://dx.doi.org/10.1108/JOSM-01-2015-0004.

Van Knippenberg, D., De Dreu, C. K., & Homan, A. C. (2004). Work group diversity and group performance: an integrative model and research agenda. *Journal of Applied Psychology*, *89*(6), 1008.

Wang, S. & Noe, R.A. (2010). Knowledge sharing: A review and directions for future research. *Human Resource Management Review, 20,* 115 – 131. doi: 10.1016/j.hrmr.2009.10.001.

Ward, V., Smith, S., House, A. & Hamer, S. (2012). Exploring knowledge exchange: A useful framework for practice and policy. *Social Science and Medicine, 74*(3), 297 – 304. https://doi.org/10.1016/j.socscimed.2011.09.021.

West, M. A. (1990). The social psychology of innovation in groups. In M. A. West & J. L. Farr (Eds.), *Innovation and creativity at work: Psychological and organizational strategies*, (pp. 309-333). Chichester, UK: Wiley.

West, M.A. (2002a). Ideas are ten a penny: It's team implementation not idea generation that counts. *Applied Psychology, 51*(3), 411 – 424. doi: 10.1111/1464-0597.01006.

West, M.A. (2002b), Sparking fountains or stagnant ponds: An integrative model of creativity and innovation implementation in work groups. *Applied Psychology: An International Review, 51*(3), 355 – 424.

West, M.A. & Anderson, N.R. (1996). Innovation in top management teams. *Journal of Applied Psychology, 81*(6), 680 – 693.

West, M. A., & Wallace, M. (1991). Innovation in health care teams. *European Journal of Social Psychology, 21,* 303–315

Wolfe, R.A. (1994). Organizational innovation: Review, critique and suggested research directions. *Journal of Management Studies, 31*(3), 405 – 429.

Woodman, R.W., Sawyer, J.E., Griffin, R.W. (1993). Toward a theory of organizational creativity. *Academy of Management Review, 18*(2), 293 – 321.

Zaltman, G., Duncan, R. & Holbek, J. (1973). *Innovations and Organizations*. New York, NY: Wiley-Interscience.

Zhang, L., Cheng, J., & Wang, D. (2015). The influence of informal governance mechanisms on knowledge integration within cross-functional project teams: A social capital perspective. *Knowledge Management Research and Practice, 13*(4), 508 – 516.

Zhou, J. & Shalley, C. (2003). Research on employee creativity: A critical review and directions for future research. *Research in Personnel and Human Resource management, 22*. 165 – 217. doi: 10.1016/S0742-7301(03)22004-1.

Yin, R.K. (2012). *Applications of Case Study Research (3rd ed.)*. Thousand Oaks, CA: Sage.

Yin, R.K. (2014). *Case Study Research: Design and Methods (5th ed.)*. Thousand Oaks, CA: Sage.

Appendix A: Interview Protocols

Interview Protocol: Idea Development (Phase 2)

Over the last few weeks/months the team has gone from brainstorming to further refinement of the solutions you are working on. I would like to talk with you about your experiences and reflections about this phase of your work.

1. Can you describe the last few weeks of work in terms of the process the team has undergone? Has the team moved into a clear transition or phase of work? If so, how would you describe that phase?
2. During these last few weeks with the team, what has helped you share information? Can you describe examples of outcomes that have resulted from this information sharing?
3. What has hindered your ability to share information? How has this shown up for you personally and/or the team?
4. In what ways has your professional background influenced the information you have shared?
5. Can you describe aspects of how the team has worked which have helped you to take information or ideas from others to create new ideas you wouldn't have thought of on your own?

(Probe through responses for informal and formal communication meetings, technology tools, intentional dialogue activities)—If necessary—ask: Can you describe the different ways you and the team communicate either formally or informally? How have these methods helped (or hindered) the team's ability to work together?

Interview Protocol: Idea Evaluation/Selection & Effectiveness (Phase 3)

1. How did the team evaluate the various ideas developed for this project?
2. What methods or processes did the team use to decide on a final idea or recommendation?
3. Can you tell me about what the team developed in terms of a final outcome or recommendation? How would you describe the idea or recommendation in terms of uniqueness or innovativeness?
4. How do you think the stakeholder would describe the team's idea in terms of uniqueness or creativity/innovativeness?
5. Overall, how would you describe the effectiveness of the team? In what ways would you say effectiveness was demonstrated? (*probe for satisfaction, quality of ideas, etc*.)
6. What else, if anything, could have been done to help the team be more effective?

Interview Protocol: Phase 3 (Stakeholder)

1. Can you tell me a little about the last few months you have engaged with Team X? Why did you engage with this team and what has been your experience working with them?
2. Can you tell me about what the team developed in terms of outcome for you? (probe for outcome product and description of creativity, novelty, usefulness)
3. How would you describe the team's idea in terms of uniqueness or creativity/innovativeness?
4. Overall, how would you describe the effectiveness of the team?
5. What else, if anything, could be done to help the team be more effective?

Appendix B: Observation Protocol

Date:_____ Purpose of meeting:_____

Phase of process: _____ Documentation relevant to meeting: _____

Description of room or elements supporting purpose: _____

Participant	Function Represented	Idea Number	Action of idea * (I, E, M, R, D)	Action of knowledge ** (S, C, R, I)	Additional context or processes occurring	Outcomes
Bob	*Finance*	*1*	*I*	*S*	*Facilitator asked for the group to talk about ideas they had to solve the problem*	*Idea written on flip chart*

* I = initiated, E= elaborated, M = modified, R= rejected, D = decision

** S = shared, C = clarified, R = rejected, I = integrated

Appendix C: Baseline survey question with descriptive statistics

Questions	Min	Max	Average	Std. Dev.
I am personally motivated to work on this project.	1	5	4.21	1.25
I am personally motivated working in a team environment.	4	5	4.86	0.36
I believe using a cross-functional team will produce better ideas than individuals working alone.	3	5	4.86	0.53
I find personal satisfaction being a part of this specific cross-functional team.	1	5	3.93	1.21
I believe I can contribute beneficial knowledge from my professional background towards ideas for this teams' work.	3	5	4.79	0.58
I am open to learning from the others on the team.	4	5	4.93	0.27
I believe being a part of a cross-functional team will increase my personal knowledge.	4	5	4.86	0.36
I believe this cross-functional team will produce more ideas for potential solutions than individuals working alone.	2	5	4.64	0.84
I believe this cross-functional team will produce better quality ideas than individuals working alone.	2	5	4.29	1.27
I believe this cross-functional team works effectively together.	1	5	3.43	1.28
I believe this cross-functional team communicates effectively.	1	5	3.50	1.22
I believe this cross-functional team manages conflict effectively.	1	5	3.50	1.45

Appendix D: Data collection strategy

Data Collection Type	Date	Proposed collection strategy	Actual collection	Notes
Observation (Revenue Team)	2/6/2018	1 hour session	Completed	
Observation (Data Team)	2/21/2018	1 hour session	Completed	
Observation (Value Team)	N/A	1 hour session	Unable to schedule	
Baseline Questionnaire	3/1/2018	Qualtrics survey sent to all participants and stakeholders (n = 31)	14 responses received (45% response rate)	Send reminder week of 3/5/18; additional reminders sent; attempted manual collection (received 2 additional responses by paper)
Interview - Phase 1	3/3/2018	Lead and random from each team (n = 6)	5 responses received - interviews completed and transcribed; lead from each team and random; coding started	2 respondents from VP team & Revenue; 1 from Data. Stopping requests for interviews as of 4/28 due to lack of interest/response from repeated requests
Interview - Phase 2	3/22/2018	Lead and highest/lowest (unique from observations) from each team - random for VP team since no observation (n = 9 anticipated)	n =7 interviews completed & transcribed	2 representatives per team and gatekeeper
Interview - Phase 3	5/1/2018 6/11/18	Key stakeholders/executives (n = 5); team representatives (requested feedback via e-mail or interview from each of the 6 co-lead)	Completed 6 stakeholder interviews and transcribed Co-lead interviews - 5 received via e-mail response; 1 phone interview (to be transcribed)	Completed end of July

Appendix E: Phase 2 themes, description and sub-codes

Themes	Description	Sub-codes
Hindering factors for process	Theme - description of key elements that hindered the process	• Culture of group decision making • Insufficient time • Lack of trust • Organizational context • Resistance to change • Silo perspectives • Starting from blank slate
Team Membership	Both negative elements that inhibited the process and positive elements that supported the process	• Team structure (-) • Team size (-) • Multiple voices (+) • Team member expertise (+) • Team member relationship (+) – *seems unique to Value Proposition which made intentional efforts to select members and build relationships*
Information integration processes	How information gets integrated into new ideas. Processes engaged by the group to make explicit different ideas or perspectives in order to get to shared understanding or consensus	• Group dialogue and perspective sharing • Outside-in thinking
Information Integration Outcomes	The process of dialogue allowed team members to gain agreement on ideas, perspectives or decisions. The process of sharing information and cross-functional dialogue resulted in expansion of individual's thoughts and perspectives	• Outcome - consensus and buy-in • Outcome - expanded individual thinking
Information Sharing processes	Processes or practices engaged in by group to share information	• "Divide and conquer" (assigning team members to gather information and bring back to the group

		• Document sharing • Formal group meeting • Informal communication • Re-visiting old ideas (*Information sharing for some teams was less about creativity and more about re-visiting ideas that have been discussed for a while but using the process to gain consensus and buy-in with a broader audience*)
Information sharing outcomes	Relational outcomes of information sharing process not related to specific ideas or recommendations documented as part of process deliverables	• Shared understanding
Process Outcomes	Final outcome recommendations made by the teams as part of the process. Outcomes were sub-coded related to the type of recommendation and comments that reflected a general lack of creative idea recommendation	• Internal organization re-structure • Adoption of external practices • Internal process changes • Sentiment - nothing new - improve existing work
Process Descriptions	Description of phase with temporal elements (early phase, middle, late) - descriptions related to sentiments about the process Some a priori codes considered (e.g., "refinement")	• Refining and reflecting process • Step-by-step process

Appendix F: Blau index for functional heterogeneity

Data Team (seven categories)	Proportion of participants/7 categories	Squared value for column b
1	0.09	0.01
1	0.09	0.01
3	0.27	0.07
1	0.09	0.01
1	0.09	0.01
1	0.09	0.01
3	0.27	0.07
Sum of squared values		0.19
1 - sum of squared values		0.81
Revenue Team (3 categories)	Proportion of participants/3 categories	Squared values for column B
4	0.67	0.44
1	0.17	0.03
1	0.17	0.03
Sum of squared values		0.50
1- sum of squared values		0.50
Value Team (8 categories)		
1	0.13	0.02
1	0.13	0.02
1	0.13	0.02
1	0.13	0.02
1	0.13	0.02
1	0.13	0.02
1	0.13	0.02
1	0.13	0.02
Sum of squared values		0.13
1- sum of squared values		0.88

The Blau (1977) Index is calculated $1 - \sum p_i^2$ where p is the proportion of group members in a given category and i is the number of different categories of the feature across all groups. If a group is homogeneous with regard to the feature in question, i.e., if all group members have the same nationality, the Blau Index of the group for nationality is 0. If all members of the group have a different nationality, the Blau Index of that group for nationality approaches 1. The maximum Blau Index for a feature in a given data set depends on the number of categories of that feature in the data set.

CURRICULUM VITA

NAME: Tracy Johnson Richardson

ADDRESS: Department of Educational Leadership, Evaluation and Organizational Development

347 Woodford R. and Harriett B. Porter Building

College of Education & Human Development

The University of Louisville

Louisville, Kentucky 40292

WORK EXPERIENCE:

Humana (Louisville, KY)

$30 B US Health Insurance and Care Delivery Company; 50,000 associates

Enterprise Transformation Lead ***2018 – present***

Design and consult on enterprise change management initiatives. Partner with six-sigma teams and executive leadership team to design change and communication strategies for organizational transformation. Design strategies for organizational culture shifts and cross-functional team performance development in support of process transformation.

Leadership & Organization Developer ***2015- 2018***

Strategic-level role serving top executives of two major corporate functions (6000+ associates) regarding succession management, talent development, leadership development and change capabilities. Provide coaching to executives on leadership development practices. Serve as lead HR Business Partner for organizational design and M & A implementation pre-planning for Aetna/Humana acquisition.

HR Consultant & HR Leader--Compensation ***2013- 2015***

Strategic HR leader responsible for partnering with sales and operation leaders for a $30+ billion division (13,000+ associates) to provide guidance around compensation and classification practices in support of business outcomes. Oversaw compensation processes including annual pay planning; leadership incentive plans, targeted incentive plans, sales plans and equity allocation.

Invensys Rail North America, a Siemens Company (Louisville, KY)

$350 M global manufacturing and engineering company; 800+ associates

Senior HR Business Partner ***2010- 2013***

Strategic-level HR leader responsible for partnering with CEO and executive team on key talent management strategies. Partner with regional and global centers-of-expertise for execution of payroll/benefits, employee relations, labor relations and training & development. Oversaw merger & acquisition integration activities for two M & A initiatives.

Commonwealth of Kentucky (Personnel Cabinet) (Frankfort, KY)

State government; 30,000+ associates

Division Director—Career Opportunities ***2009- 2010***

Provided HR leadership for the Talent Acquisition processes for the Commonwealth of Kentucky. Managed the business unit and budget with 6 direct reports and 22 indirect reports. Oversaw hiring practice and processes for 100,000+ applications annually

Lexington-Fayette County Health Department (Lexington, KY)

Local public health/primary care department; 350 associates

Chief Human Resources Officer ***2007- 2009***

Top HR leader for public health and primary care agency. Partnered with chief executives and Board-of-Directors to implement talent and policy strategies in support of mission and board imperatives. Managed and directed the recruiting, employee relations, compensation, benefit administration, training and compliance functions. Supervised 3 direct reports.

Blue Grass Airport (Lexington, KY)

Regional Airport Authority, 100 associates

Human Resources Manager ***2006- 2007***

Managed and directed the recruiting, employee relations, compensation, benefit administration, training and compliance functions. Supervised 1 direct report.

Lexington-Fayette Urban County Government (Lexington, KY)

Local government municipality, 5000+ associates

Human Resources Generalist ***1999- 2006***

Progressively responsible roles supporting large divisions (500+ employee population) in the areas of training & development, recruitment, compensation/classification and employee relations

EDUCATION &

TRAINING:

B.A., Communication

University of Kentucky

1988 – 1992

M.S. Ed., Counseling Psychology

University of Kentucky

1992 – 1996

Senior Professional in Human Resources

Human Resource Credentialing Institute

2003 – 2019

Senior Certified Professional

Society for Human Resource Management

2015 - 2021

SPEAKING ENGAGEMENTS:

2017 IT Learning Week (Humana)—"Leading in a matrix environment"

2016 Academy for Human Resource Development International Research Conference of the Americas—Published Manuscript and presentation—"Innovation and Organizational Culture"

2015 University of Louisville Spring Research Conference—"High Performance Work Systems and Organizational Culture"