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Determining How Team Communication and Project Outcomes Evolve in a Midwestern Healthcare Company: a Case Study Approach

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DETERMINING HOW TEAM COMMUNICATION AND PROJECT OUTCOMES EVOLVE IN A MIDWESTERN HEALTHCARE COMPANY: A CASE STUDY APPROACH

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ABSTRACT

The purpose of the study was to determine the perspective of the Business Operation team and IT team during project team communication and interaction towards an awareness of the critical business processes and systems needed to ensure project success. For companies to remain competitive, a catalyst for growth through software development projects is required. Impediments to successful software project outcomes include inefficient communication, one-sided team communication, siloed team interaction, lack of business knowledge, lack of information sharing, and insufficient training resources.

This study was a Convergent Parallel Mixed Methods Design with survey questions for the quantitative component and open-ended questions for the qualitative part. The mixed methods research study included an in-depth review of the Business Operation teams' and IT teams' perspectives concerning team communication and interaction. An Independent Samples T-test was conducted to understand the differences between the Business Operation team and the IT team regarding General Communication, Team Communication, Team Interaction, and Project Outcomes. The T-test results indicated a difference in the perspective between the groups with General Communication but no difference in the perspective of Team Communication, Team Interaction, and Project Outcomes. The themes emerging from the qualitative component indicated an opportunity for training to acquire the knowledge and skills required to understand the underlying business process to facilitate a software project discussion.

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The decision to pursue a doctoral degree was a decision that culminated during a difficult time in my life. After my mother had passed away in late 2011, I decided to do what I felt like doing in life. It was a decision long pondered while working as a Business Analyst for Payless Shoesource and being told that you learn in the workplace and not in the classroom. It was from that point on that the interest in the doctoral degree was on the horizon.

I also discussed the doctoral degree in great detail with my long-time friend Dr. Pat Obi. His continued advice on the topic was whether I would go into research or not, and if so, then go for it. I decided to listen respectfully, and I continued on the path. It was not until I was out to dinner with my wife that I brought the idea to her attention. I believe she was in support but was very concerned about how much time it might take away from my family. I continued again on my path and followed through on my educational pursuit. After researching many different doctoral programs, I came across the one at Indiana State University. I was amazed by the online setup across five different universities. I jumped on board and found my path within the program.

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INTRODUCTION

Overview

Companies operating within the healthcare industry face severe scrutiny from the United States government over escalating prescription drug prices and rebates paid by pharmaceutical manufacturers (U.S. Department of Health & Human Services [HHS], 2019). Pharmaceutical manufacturers argue that the increases in drug prices result from prescription benefit managers' demands, resulting in higher rebates for formulary consideration of the manufacturer's brand drug. A formulary brand drug receives preference on the drug lists offered by prescription benefit managers on behalf of health insurers, resulting in more favorable rebate benefits for customers (Dieguez, Alston, & Tomicki, 2018).

The healthcare industry's response suggests an immediate focus on transparency by directly providing the rebate benefit to the customer by reducing drug costs with lower out-of-pocket copays at the retail pharmacy (Dieguez et al., 2018). Healthcare companies are widening their moats to help counter the market's competitive pressures through consolidation to provide better healthcare offerings for plan participants. Health insurance and prescription benefit management companies have formed strategic partnerships to offer value-added services and lower healthcare costs for customers (Lewis, 2018). The changing landscape in the healthcare industry has forced integrating companies to focus on innovation and technical enhancement to help create a blueprint for growth (Loten, 2019).

Background

Focus on innovation and technological enhancement requires an organization to pursue technology-related projects to help achieve business objectives (Papke-Shields, Beise, & Quan, 2010; Leal, Rodriguez, & Gallardo, 2018). Each year, organizations allocate large sums of capital resources to enhance existing business processes and add functionality to support new business needs. The capital resource allocation process for software projects is inclusive of several steps.

The first step involves creating a high-level project placeholder discussion during the capital allocation budget meetings. Next, senior management decides what ideas are mandatory, like new business needs or government compliance requirements. All remaining project ideas go through a thorough review to determine which projects will yield a significant return. After the project ideas are approved, each business unit completes a project request form to request capital dollars for an IT software project. The project request form states the functions and capabilities that the business application or operational system must do or provide for the project to be successful. The Business Operation team prioritizes the software projects based on need. The IT Development team creates the schedule for the high-level project plan.

During the software project review meetings, bottlenecks exist with ensuring proper representation from the Business Operation team and the IT team for managing a project through the project life cycle. According to Alexander and Robertson (2004), some significant concerns during the pre-requirements phase include commitment, skill, discovery, maintaining, and communication amongst the different stakeholders. Commitment refers to improper planning by the Business Operation team and the IT team, leading to a lack of time and resources allocated to a project. Next, skill applies to the inability to participate in the requirement gathering sessions

from a lack of knowledge and know-how of the business and system processes. Furthermore, discovery relates to the failure to fully locate the appropriate stakeholders to participate in the requirement gathering sessions. The project planning process seeks feedback from the Business Operation team. However, it fails to seek the opinions of subject matter experts of the business and system processes. Then, maintaining refers to the transition to complacency among stakeholders where individuals become disengaged and tuned out. Finally, communication refers to the lack of discussion among the various stakeholders regarding project requirements (Alexander & Robertson, 2004).

Requirements Gathering

In the software development industry, there is a commonly shared belief that a project's success depends on the quality of the gathered requirements (Fricker, Gorschek, Byman, & Schmidle, 2010). Requirements should be accurate, unequivocal, flawless, categorized, stable, precise, adaptable, and trackable. Requirements completed in a careless and expedited fashion can cause a project to suffer exorbitant costs and delays (Fricker et al., 2010). Lack of user participation can impede the requirements phase leading to perception gaps between the user and developer stakeholder groups (Jia & Capretz, 2018).

The user-developer perception gap in requirements is the top reason why software projects fail. Perception gaps refer to the "existence of multiple and conflicting interpretations about an organizational situation by different stakeholders" (Jia & Capretz, 2018, p. 278). Users and developers can share different perspectives regarding the knowledge they possess and approaches to solving problems. The differing views impact how users and developers construe information for making project requirement decisions leading to gaps in defining project requirements (Jia & Capretz, 2018).

Communication among stakeholders is key to ensuring that requirements are fully understood before the design phase begins. Without a communication channel across the various stakeholders, project requirements might be misrepresented during the design phase and lead to a project not adequately meeting the customer's needs (Fricker et al., 2010). Creating a requirements document is often a one-way street with both the Business Operation team and the IT team communicating within silos.

Software Development Methods

The use of project management tools and implementation methods helps create a focus for a software development project's success moving through the planning lifecycle. The most common project implementation methods are the Waterfall (Traditional) and Agile (Scrum) software development methods (Kautz, Johanson, & Uldahl, 2014). Each approach incorporates a path towards completion, including requirement gathering, development, testing, and deployment. The Waterfall method follows a linear way, and the Agile methodology following a more iterative approach (Kautz et al., 2014).

According to Leal et al. (2018), companies that utilize a software methodology approach to manage project planning do not fully understand their components' chosen development method. According to the Project Management Institute, a study focused on each method's features, the phases of the project life cycle, including preparation, initiation, planning, development, testing, delivery, and project management's best practices. The inclusion of all three components created an environment for improved communication between project managers and clients to ensure a more precise gathering of project requirements. Most projects fail to meet the client's specifications due to the poor execution of defining a project (Leal et al., 2018).

A project's success is highly dependant on ensuring that the requirements phase is sound and of high quality (Fricker et al., 2010). A project's functional requirements can be tied back to the customer's needs and the organization's business objectives. The requirement phase is a two-way street where communication is dependent on both the project business owner and the project developer.

The research discussed in Fricker et al. (2010) eludes to problems with requirements as nothing more than a task of grievance and annoyance for both the project owner and developer. Feedback gathered from product managers illustrated how requirements impacted a project's quality without adequately addressing the customer's needs. Developers need to understand the requirements and refine them as necessary; however, the critical component missing from the developer's perspective is in-depth learning or understanding of the business process supported by the need (Fricker et al., 2010).

A software project failure can be the result of poorly defined requirements. As a result, a project laden with errors is very costly and expensive to fix. The risk of incomplete requirements ranks in the top three software development risks (Chari & Agrawal, 2018). A lack of understanding by stakeholders of a project's purpose and objectives is the main culprit of poor implementation. A lack of validation into the project team's knowledge base can also result in a challenging requirement session if team members are not fully aware of the business process in support of the project (Chari & Agrawal, 2018). Bajec, Vavpotič, & Krisper (2007) found that organizations that struggle with software development methods fail to understand how they relate to business process improvement.

Statement of the Problem

The problem of the study is the approach to defining software project requirements

between the Business Operation team and the IT team. The workplace issue needing a solution is difficulty managing communications and interaction between the project teams. As a result, the business process is not fully understood, which causes the requirement phase to lack clarity and specificity in documenting the project's business needs.

Furthermore, the Business Operation team and the IT team spend an enormous amount of time reviewing project documents with minimal emphasis on understanding the business rationale for changes to the operational process. The first component of the software project phase defines the project's need at a very high level. The next step is the requirement phase bringing together the Business Operation teams' and IT teams' responses to support changes to the operational process. The lack of understanding in the business process festers during this step in the software development phase. Before any software development work can begin, the Business Operation team and IT team need to sign-off that they clearly and concisely support the proposed software project's business process to ensure a successful project outcome.

Statement of the Purpose

The purpose of the study was to determine the perspective of the Business Operation team and IT team during project team communication and interaction towards an awareness of the critical business processes and systems needed to ensure project success.

Statement of the Need

The need to utilize and understand software development project method benefits is essential for any company looking to build a foundation of knowledge to garner software development success. In many instances, the project method serves as the basis for trying to understand what success looks like from a theoretical perspective resulting in problems with actual software project implementations (Boehm, 1996).

The problems realized from a lack of deep learning and understanding include requirements defined on paper, scope creep resulting in additional workload and inflexible solutions that are only addressing the main problem (Boehm, 1996). When all stakeholders have explicit knowledge of the requirement's phase components, a software project stands a better chance of success when everyone fully understands the needs.

Statement of Assumptions

The first assumption is that software projects using various project methods will continue to be essential for healthcare companies' growth. Companies need to focus on development to help mitigate the negatives impacts of the competition. The next assumption relates to the accuracy of survey feedback and the response rate. It will be critical to communicate the survey's reason, emphasizing accurate and honest feedback from respondents. Finally, the last assumption deals with sampling error by ensuring that the sample represents the population.

Statement of Limitations

The first limitation is the amount of time to complete the research study. Leadership may require that survey distribution and data collection be conducted around production deliverables by the employees. The second limitation is that data collection is specific to one geographic location due to the researcher's place of employment. The next hurdle is that the sample may not be random but more convenient if leadership in the company decides which teams can participate in the survey based on job demands and workload. Finally, the last limitation is with sample size. Leadership constraints placed on participants in the study could harm the response rate.

Statement of Methodology

The study's methodology utilizes a Convergent Parallel Mixed Methods Design to interpret the quantitative and qualitative results as one. The design intends to help the researcher understand the problem more clearly. The design is detailed to identifying real differences among participants instead of measuring differences after a change. The Convergent Parallel Mixed Methods Design interprets the magnitude of the research problem by fulfilling the obligation of providing precise research questions specific to the situation. The research design affirms the ability to accurately describe the data used to answer the research questions and data collection method (Creswell & Plano Clark, 2018).

The research design will focus on testing differences among the Business Operation team and the IT team, specifically, using related research questions. The goal will be to see if there are differences between the groups in defining communication and understanding software development projects' requirements. The data will be collected using a convenience sample to determine the population with the different teams in advance.

The utilization of an online survey instrument will capture data responses based on specific questions built around the research questions. The online survey will include a mixture of open-ended and closed-ended questions. The purpose of both types of survey questions is to triangulate a survey participants' response regarding their thoughts and feelings towards the research study focus or central phenomenon. According to Creswell (2016), a triangulation of multiple data sources helps determine the precision of the researcher's review of data. An email link to the online survey allows for timeliness of completion to support a better response rate than traditional type surveys.

Research Questions

The following research questions will guide the intent of the study.

1. How does the perspective of General Communication differ between the Business Operation team and the IT team?
2. How does the perspective of Team Communication differ between the Business Operation team and the IT team?
3. How does the perspective of Team Interaction differ between the Business Operation team and the IT team?
4. How does the perspective of Project Outcomes differ between the Business Operation team and the IT team?

Statement of Terminology

The following list of words is central to the research study. The reader needs to appreciate their meaning early in the research process.

Project management is a tool by which organizations use to help to improve productivity and efficiency. It is a subject that thrives in importance with other functional areas of an organization such as Finance, Operations, Sales, and Human Resources. The real value of project management depends on an organization's culture to help support a project's success (Mir & Pinnington, 2014).

Software development is a process involving software enhancements to an organized process through the initiation of a project. Software development must fit within the situational context of the organization. The result is that a project is suited to the organization's needs and not just implemented according to project management standards (Clarke & O'Connor, 2012).

The requirements phase of a software project is critical to the success of the project.

Without an adequately identified set of requirements, a software project is subject to failure. The requirements phase does not guarantee a project's success, even if all stakeholders believe the conditions are adequately defined. The requirements phase is characteristic of a set of artifacts gathered through the input of various stakeholder teams in addressing the needs of an organization (Ralph, 2013).

Business operation teams are the direct stakeholders for a project where the result of software deployment is the enhancement of new and existing business processes (Schulenklopper & Rommes, 2016).

The Waterfall software development method is a traditional approach to software development. The process is highly centralized, with the components of the process following a sequential path. Business stakeholders provide feedback during the requirements gathering phase and have limited input in subsequent project phases (Cram & Brohman, 2013).

The Agile software development method is a newer iterative approach to software development, addressing an organization's needs. Business stakeholder involvement resounds through each phase of the project, specifically, the development phase. The Agile method is more responsive to changing environments with flexibility and adaptability central to the project's success (Cram & Brohman, 2013).

Stakeholder - A project stakeholder is someone who has a vested interest in the completion of a project for their benefit or dis-benefit. For example, a person may gain additional functionality in the business system interface. Another example is that a person may be subject to additional audit oversight with the overall system.

Team communication is the transmission and sharing of information in a spoken and non-spoken manner between two or more individuals within a team or across teams (Marlow,

Lacerenza, Paoletti, Burke, & Salas, 2018). Team communication is fundamental to many different team processes leading to higher productivity (Marks, Mathieu, & Zaccaro, 2001 as cited in Marlow et al., 2018, p. 146).

Team interaction is the process of collaborating between one or more individuals within a team or across teams resulting in improved business partnerships (Yang, Wu, Wang, & Chin, 2012)

Finally, the process of requirements engineering is an in-depth review of the requirements gathered during the study of a software project. The approach intends to validate the needs of the organization through fully vetted requirements. The end goal is to address missing, incomplete, or non-transparent requirements (Fernández et al., 2017).

Researcher's Perspective

Philosophical Worldview

According to Creswell & Creswell (2018), when a researcher embraces a set of beliefs regarding the research, it strengthens the proposed research design and methodology. The ideas a researcher espouses and the approach to a research study are known as worldviews or paradigms. Worldviews or paradigms shape the researcher's policy towards the type of research study as quantitative, qualitative, or mixed-method approaches (Creswell & Creswell, 2018).

The four types of worldviews or paradigms include postpositivist, constructivism, transformative, and pragmatism. Each of these is relevant to a specific research design and methodology. The postpositivist approach leans towards a quantitative understanding of the world through the objective lens of the researcher. The constructivist approach is more subjective as the researcher seeks to understand the world through specific individuals' eyes. The transformative process identifies with dis-advantaged or marginalized groups where the

underserved seek specific actions from special interest groups. Finally, the pragmatism approach focuses on using all available methods to look at problems in the mixed methods approach (Creswell & Creswell, 2018).

Paradigm Further Defined

According to Kuhn (1962), the definition of a paradigm is an intellectual way of thinking (as cited in Kivunja & Kuyini, 2017, p. 26). Guba and Lincoln (1994) define a paradigm as a set of beliefs that guide research, inquiry, and investigation into a problem or phenomenon under study (as cited in Kivunja & Kuyini, 2017, p. 26). Denzin and Lincoln (2000) delineate paradigm as something originating in the human mind with subjective meaning to data collected within the research study (as cited in Kivunja & Kuyini, 2017, p. 26). Paradigms influence the research topic under consideration, the investigation, and how the research study outcomes are interpreted (Kivunja & Kuyini, 2017).

Components of a Paradigm

A paradigm contains four different components, including epistemology, ontology, methodology, and axiology. The elements are essential as they lay the groundwork for the researcher's assumptions and beliefs in the research study. Epistemology deals with knowledge and how one goes about obtaining it (Kivunja & Kuyini, 2017). The key is to enhance comprehension and garner a deep understanding of the literature in the field of study. At this stage, the researcher is concerned with finding out the truth. Lastly, epistemology defines the researcher's path to gain knowledge from a social setting (Kivunja & Kuyini, 2017).

Ontology deals with the presumptions a researcher makes to find out what is right or real. The component helps to define the significance a researcher assigns to the data under research. It helps to compare and contrast what is natural versus what the human mind thinks is real

(Kivunja & Kuyini, 2017). By making assumptions in advance, a researcher can attempt to define the research questions' scope further to address in the study.

The methodology defines the blueprint for conducting research on logistics and planning for how a researcher will address the research questions (Kivunja & Kuyini, 2017). The main goal is to understand what the world means and how to interact with knowledge about it.

Axiology includes the ethical considerations regarding decisions reflecting a value-seeking behavior for conducting research (Kivunja & Kuyini, 2017). Some reviews include privacy, accuracy, property, and accessibility. Privacy relates to what information individuals are willing to share with the researcher. Accuracy refers to having control in place so that all collected information is accurate. The researcher is held accountable for any errors or omissions in the data. Property refers to who will own the data and with the dissemination of information. Accessibility refers to how data is secured and who will have access to it (Kivunja & Kuyini, 2017).

A paradigm's components are essential as it highlights the stance the researcher will take for the research study. By understanding the philosophical assumptions, the researcher can approach the research study with better confidence and a formal plan to conduct the research.

Social Constructivist Paradigm

The paradigm guiding the research study is the social constructivist paradigm. A researcher seeks a subjective understanding of the world through the participants' eyes (Creswell, 2016). The paradigm relates closely to the qualitative research design, where theory is garnered towards the end of the study and based on the researcher's interpretation of the collected data (Creswell, 2016).

Concerning the four components of a paradigm, certain assumptions will define the

researcher's perspective for the research study (Creswell, 2016). Epistemology refers to providing a subjective understanding of the data through the eyes of the researcher. An interpretation of the data involves dialogue and discussion with participants to become immersed in the individual's mind. The ontology component favors a multiple reality approach. The researcher uses all available data sources to triangulate a meaning or perspective of the data. The methodology component takes a natural approach to research design through several data collection modes, including a survey, document inspection, and open-ended questions. Finally, the axiology component strives for a well-balanced method to ensure participant identification and feedback are protected. The researcher abides by all ethical considerations for conducting research.

CHAPTER 2

LITERATURE REVIEW

The Current View on Software Development Methodologies

Software Development Methods

Approaches to software development come in many forms and concentrate on a basic set of steps. Specifically, software methods following a sequential or iterative approach to project management consist of a series of development stages. The stages represent the formal approach from the start to the completion of a software development project. The first phase consists of defining the need for the project through research. The research phase consists of sharing information between the Project Manager and the Business Operation team through a definition of requirements. The research phase causes the most grief for developers when the needs change during development (Despa, 2014).

The next phase is the planning phase, where all critical components come together to support the project. Planning is crucial as it indicates the project's path to reach the end (Despa, 2014). The third phase is the design phase, where the Business Operation team acknowledges how the new software interface will look and feel (Despa, 2014). After looking into the software interface design, the next phase is the development phase consisting of the actual coding to support the business processes. While the IT project staff is busy with the development phase, the Business Operation team spends time testing the software screens' functionality to identify any potential errors (Despa, 2014).

The next phase, after testing, is the go-live or setup phase of the project with the deployment of code into production (Despa, 2014). After go-live, a project may be under scrutiny by the Business Operation team. At the same time, it is subject to maintenance and a warranty period (Despa, 2014). Most software development methods are comparable in the steps each follows from start to completion with the end goal of deploying a project into a business process (Despa, 2014).

Why Companies Use a Specific Development Method

For a software development project to be successful, a company must focus on the requirements phase, which is more critical with the traditional or Waterfall type software method (Geambaşu, Jianu, Jianu, & Gavrila, 2011). Certain factors are vital to ensure the success of a software project. Specifically, identifying a gap in a business process leading to a business requirement is one factor (Geambaşu et al., 2011). Another vital factor for a software project's success is a proper estimate of costs and time for the development work (Geambaşu et al., 2011).

Upon conclusion of the requirements definition phase, the development team will complete a best-educated guess cost and time scenario for each requirement. The cost and time estimates will help to ensure that resources are identified for work to begin on the project. Allowing for the submission of additional business requirements during the development phase of a project will strengthen the project's outcomes instead of setting up a failed project. The Business Operation team can identify other business requirements missed during the initial requirements phase.

A functional requirement is a requirement that connects the initial need to a specific business process. The applicable provision helps the developers to ensure the project is addressing all business requirements. The complexity of the existing system and the requested

software enhancement can lead to developers' difficulty understanding the business need (Geambaşu et al., 2011). Incremental costs and the exceeding of project timelines are impediments in managing a project's constraints during development.

Another important factor leading to using a specific project method incorporates communication between the Business Operation team and the IT team (Geambaşu et al., 2011). When there is conflict or miscommunication among the project stakeholders, a project is at risk of delay or failure. Lastly, a software project could be at risk when the IT team is too small or too large (Geambaşu et al., 2011). If there are too few resources, then a project could be delayed. If there are too many resources, then there is potential for errors from a lack of clarity with the work completed by specific IT team members.

Failure to Understand Requirements

To fully appreciate the requirements phase of a project, a definition explaining the context is warranted. Requirements are "a structural or behavioral property that a design object must possess" (Ralph & Wand, 2009 as cited in Ralph, 2013, p. 293). Another definition of requirements posits the understanding as "a statement that identifies a capability or function that is needed by a system in order to satisfy its customer's needs" (Bahill & Dean, 2009 as cited in Ralph, 2013, p. 293). Another viewpoint on requirements having a customer service focus defines it as "a property which must be exhibited to solve some problem in the real world" (Bourque & Dupuis, 2004 as cited in Ralph, 2013, p. 293). The three definitions of requirements serve as a baseline in understanding what a project must exhibit to support enhancements to business-related problems.

The requirements phase is also synonymous with the goal-setting process. It is essential to understand the difference between the two as goal-setting could complicate defining requirements. Goal-setting is the process of setting expectations for an attribute of the system

(Ralph, 2013). Requirements are the process of determining a system's functional capabilities, including technical specificities of the software project like a blueprint created before building a building. Design is the process of implementation of the project requirements. A project team can strive for accountability in defining requirements by clearly understanding criteria and goals.

Rational Model of Design Theory

The software development industry's fundamental understanding is that requirements are essential in software design (Ralph, 2013). According to Brooks (2010), project requirements are non-existent before the design phase begins. The complexity with requirements is such that the design process fails to recommend different design approaches to satisfy the project requirements.

The Rational Model of Design Theory posits that a disparity exists between understanding requirements and design from a knowledge and skills perspective compared with real-world situations utilizing software development techniques (Brooks, 2010). The issue with the Rational Model of Design is that it guides project teams towards the formulation of requirements at the start of a project. The model anticipates a working relationship to form between the project stakeholder teams due to the requirements document. As a result, potential disagreements between the stakeholder teams and a possible delay in the project completion could result. Brooks (2010) suggested a more flexible version of the model striving for better efficiency and less rework in the project.

The perceived problems of defining requirements at the start of a project are many. For example, some practitioners view the requirements gathering for a task as nothing more than a list of desires without fulfilling the perceived problem setting's wants. The project designers may provide only opinions and decisions not based on facts regarding the problem situation.

Requirements then deviate from the ideal view of input from stakeholders possessing profound knowledge and understanding of the business processes (Brooks, 2010).

The Rational Model of Design is the model that many project teams try to emulate in software development (Brooks, 2010). According to Simon (1969), "Few engineers and composers … can carry on a mutually rewarding conversation about the content of the other's professional work. What I am suggesting is that they carry on such a conversation about design, [and then] begin to share their experiences of the creative professional design process" (as cited in Brooks, 2010, p. 3).

Shortcomings of Software Development Methods

During the 1970s, software development methods correlated to a sequential type of project steps known as the Waterfall or Traditional type method (Boehm, 1996). The process fused all components of a software project as one to address several operational needs. The timing of the sequential steps did not align well with the operational goals of the company. Notably, the requirements phase fell short of expectation in many instances.

First, a requirement document could not describe the fundamental needs or the business process. A requirement's summary was not as picturesque as the features of a prototype. Next, requirements gathered in advance of design entice stakeholder teams to address wants and not necessarily needs. Finally, requirements produced instant solutions to problems causing complexity with changing business needs.

The matters related to the Waterfall method were part of a new approach called Evolutionary Development (Boehm, 1996). The attempt was to address concerns with the Waterfall method. The process created an initial project solution for stakeholders to allow for testing in a real-time environment. The approach is also not without pitfalls.

The first problem dealt with the point-in-time solutions, which were not flexible when stakeholders required changes. Next, ancillary downstream processes not considered part of the original resolution may require additional time to deploy, putting the whole project at risk. Lastly, the first solution may detract so widely from the stakeholder's needs, rendering it impossible for potential changes. Companies continue to utilize Waterfall and other similar software development methods despite their shortcomings.

Communication and Teamwork

Communication Skills in a Technical Setting

According to the research literature, the number of articles regarding what industry favors technical employees in communication skills is exceptionally diminutive (Donnell, Aller, Alley, & Kedrowicz, 2011). Several studies focused on the traits for which industry deemed appropriate for technical individuals to possess. The first of those traits included being concise and well-organized. Being concise implies communicating with as few words as possible to get the point across to an audience.

Another trait documented in the literature relates to the process of technical writing. Less than 10% of the industry experienced creating detailed technical reports (Donnell et al., 2011). Next, companies did little to no training in enhancing an individual's communication skills during the onboarding of new employees.

Attempting to identify the traits of communication skills as preferred by industry, Donnell et al. (2011) utilized a survey targeting industry executives seeking their feedback on the skills required for effective communication. The input received pointed to different types of communication deemed as relevant skillsets to possess. The first one is the ability to conduct a conversation with senior management. The skillset is essential when employees make

recommendations; they must articulate their perspective to the executive decision-makers. The second one is making presentations. The ability to convey a person's perspective on a topic is essential when making a presentation. The final one is face-to-face communication. The ability to conduct a meeting through face-to-face communication is vital as the in-person experience lends credibility to the presenter (Donnell et al., 2011).

Project Planning and Team Involvement

A software project's success depends on integrating project planning and project team development (Thomas, Jacques, Adams, & Kihneman-Wooten, 2008). A software project can become sidelined if either the planning or the team or both become jeopardized. Today, some companies regard that project planning as a technical component of software development. In contrast, project team development is more of a human resource development activity (Thomas et al., 2008). To elaborate further, the Project Management Institute does not discuss these two activities as one holistic project function (Thomas et al., 2008). It is essential to focus on both areas equally in software development. Creating a project team involves team development, team effectiveness, team commitment, and team communication (Thomas et al., 2008).

Communication and Project Planning

IT projects are still subject to a high percentage of failures. Projects are either shut down before completion, fail to meet the objectives, or did not pass user acceptance testing. The central theme contributing to the vast majority of failures is communication. According to Müller (2003), communication management refers to "the processes for planning, information distribution, performance reporting, and administrative closure, together with the social and integrative characteristics of communication, which link people, ideas and information necessary for project success" (as cited in PMI, 2000, p. 117).

According to the literature, the communication process's perception exists within the project team only (Müller, 2003). The project managers and business process owners need to develop a strategy that supports the communication process's content, frequency, and delivery method (Müller, 2003). The process should be done as early as possible in the project planning process to ensure accountability across all stakeholders.

The three components of the communication process indicate a system of interrelated components to ensure a project's success. The communication process's content refers to updates on status and achievements, changes to the project plan, open issues, upcoming project tasks, trend analysis, and progress toward projective objectives. The communication process's frequency refers to the timely update of information shared with the immediate project team. Lastly, the communication process's delivery method refers to how project teams receive communication (Müller, 2003).

In Ford & Randolph's (1992) study, a review of project success with team interaction found no relationship of increased performance with the level of team interaction. The study's key outcome was that project success increased when more exceptional shared communication was across the team. When team members evenly participated in the communication across a project, the project was more likely to succeed. The more cohesive a group results in more success for the group (Ford & Randolph, 1992).

Organizational Barriers to Communication

Mackenzie (2010) pointed out that with the advent of digital communications flowing throughout an organization, face-to-face communication frequency begins to decrease where trust in relationships exists (as cited in Monteiro de Carvalho, 2013, p. 42). Fox (2001) suggests that reduced communication hinders the relationship-building phase required for successful

project planning (as cited in Monteiro de Carvalho, 2013, p. 42). The impediment festers into negative feelings of trust, causing a lack of encouragement and self-esteem (Monteiro de Carvalho, 2013). The relationship between the Business Operation team and the IT team within the communication integrated framework is in Figure 1.

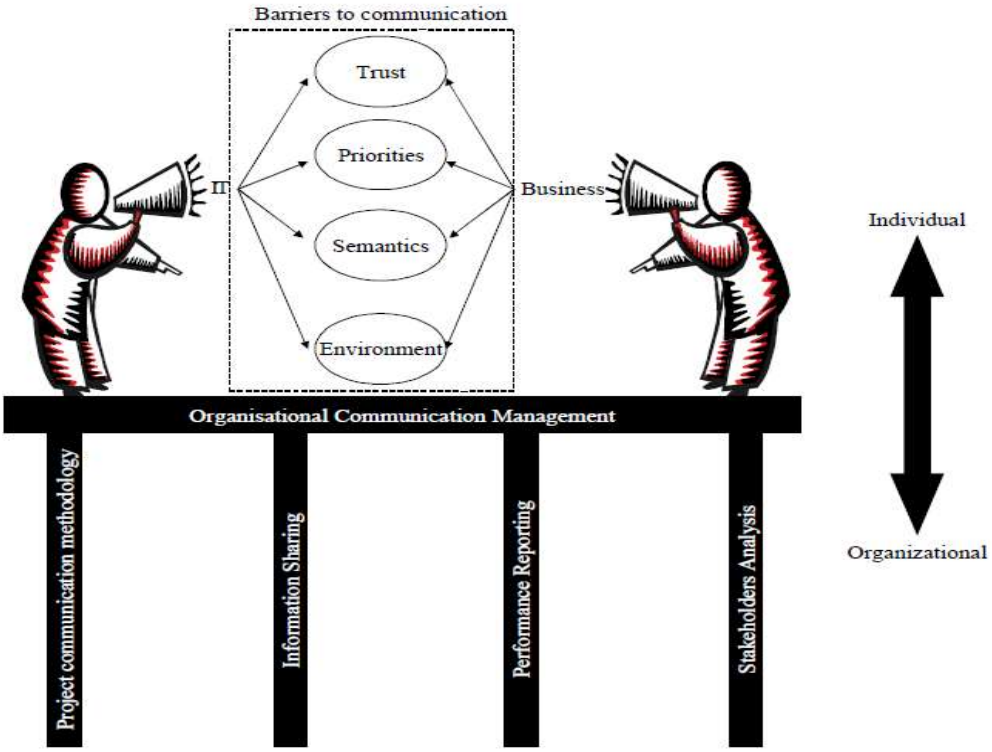

Figure 1. Communication Integrated Framework

Team Interaction

Team Interaction involves five different processes linking individuals and information. According to the PMI (2008), Team Interaction components include identifying Business Operation and IT stakeholders, communication planning, distributing information, managing stakeholder aspirations, and sharing performance results (as cited in Monteiro de Carvalho, 2013, p. 39).

Managing the aspirations of stakeholders can help with garnering their approval during

requirements gathering. Boonstra et al. (2008) and the PMI (2008) emphasize the communication process is organized based on the power and level of interest of the different stakeholders leading to several secondary reviews by management (as cited in Monteiro de Carvalho, 2013, p. 40).

The sharing of performance results ensures that all stakeholders are aware of any impediments in the project plan. It is essential to know if the project is on target or not meeting its objectives. Bartis and Mitev (2008) acknowledge that sometimes a successful project status could be shared with senior management when a project fails to satisfy its users (as cited in Monteiro de Carvalho, 2013, p. 40). Desouza and Evaristo (2006) highlighted that projects built upon a project management office concept ensure that project results are shared, lessons learned gathered, and best practices documented for future reference (as cited in Monteiro de Carvalho, 2013, p. 40)

Thompson et al. (2007) suggested to ensure consistent performance level reporting is to implement a secondary communication level of reporting to ensure review of performance reporting in a non-biased manner (as cited in Monteiro de Carvalho, 2013, p. 40). The secondary consideration is essential when a project manager has to report to different levels of stakeholders. A secondary review of the information ensures a performance audit type check of the information regarding project status and reporting.

Summary

For organizations to grow and sustain profitability, a mechanism for growth through the management of software development projects is critical. The software development process comprises a series of steps from the business need for a project through its final implementation. The software development process can take on a couple of different formats, from the traditional

Waterfall method to a more iterative approach like the Agile method. Each plan aims to start with an idea, then move through requirements gathering, enhance the project with development work, and finally implement the end product for the Business Operation end-user team.

The two critical components of the software development process are communication and teamwork. Without these two components working in tandem, a software project may fail. Requirements gathering and IT development work are the software development processes impeded the most when the communication and teamwork functions fail to cooperate, thus causing concerns over deadlines and potential project failure.

Communication and teamwork, as an interrelated system, function successfully when individuals, teams, and organizations work towards a common goal of being concise and well-organized; by ensuring the appropriate people are satisfied with accurate information and positive results, the system functions successfully as a whole.

CHAPTER 3

METHODOLOGY

This research sought to investigate the Business Operation team and the IT team perspectives during project team communication and interaction towards an awareness of the critical business processes and systems needed to ensure project success.

This study utilized a Convergent Parallel Mixed Methods Design to address the answers to the research questions. This chapter will describe the research methodology implemented during the research and the data collection and analysis methods.

Research Design

Survey Design

A three-part questionnaire (see Appendix A) consisted of demographic items, Likert-type scale questions, and open-ended questions regarding personal experiences towards team communication and interaction facilitated data collection. Questionnaire usage provided basic patterns and observations from the participants' viewpoints regarding their communication skills and communication within project teams. A multi-page web form within *Qualtrics* collected data for input into a relational database, *SPSS* statistical software, for statistical analysis. A screening device within the survey (i.e., asking respondents to select a specific number on a given question) ensured the research outcome's validity. The researcher placed the open-ended questions randomly to allow participants to break from the Likert-type scale questions.

The survey questions represented the four constructs of General Communication, Team

Communication, Team Interaction, and Project Outcomes based on themes and constructs identified in the literature review found in Chapter 2. The four areas described the most critical concerns regarding the management of software development projects. In a review of the literature, Donnell et al. (2011) guided questions regarding General Communication skills lacking in the workplace. Thomas et al. (2008) clarified the importance of Team Communication during project planning. Müller (2003) suggested that Team Interaction works best when communication across individuals, teams, and the organization works in tandem with project planning to form a concise system to ensure project success. Finally, Papke-Shields et al. (2010) introduced a Project Outcomes questionnaire matrix for which participants could rate each project's success compared to the project's goals.

The research survey instrument utilized a 6-point Likert scale to capture responses, to perform parametric statistical tests to measure data (Cooper & Johnson, 2016). Additionally, the 6-point Likert scale eliminated concerns regarding the mid-point dilemma (Nemoto & Beglar, 2013). Finally, the 6-point Likert scale is one of the most widely used tools for collecting data (Willits, Theodori, & Luloff 2016).

Survey Components

Demographic Variables

The survey included demographic variables such as age, gender, education level, tenure, and department assignment.

General Communication

This section measured an employee's general communication preferences. Respondents indicated their agreement with 16 statements, such as "I am willing to initiate communications with others to obtain information" and "I am comfortable communicating with senior

management." Each item used a scale of 1 to 6, with one = Strongly Disagree to 6 = Strongly Agree. The alpha coefficient to measure reliability was .844.

Team Communication

This section measured an employee's preferences for team communication. Respondents indicated their agreement with 20 statements such as "We resolve issues quickly" and "Communication in our group is open and honest." Each item used a scale, with one = Strongly Disagree to 6 = Strongly Agree. The alpha coefficient to measure reliability was .957.

Team Interaction

This section measured an employee's preferences for communication during the project planning process. Respondents indicated their agreement with ten statements, such as "The choice of communication delivery method between the IT team and the Business Operation team is essential" and "The management of communication between the IT team and the Business Operation team has the most significant impact on the success of a project." Each item used a scale of 1 to 6, with one = Strongly Disagree to 6 = Strongly Agree. The alpha coefficient to measure reliability was .895.

Project Outcomes

This section utilized the six-item *Project Success Scale* (Papke-Shields et al., 2010) that determines the frequency of completion for each goal for projects in which the team members were involved during the last two years. Each item used a scale, with 1 = Never to 6 = Always. The alpha coefficient to measure reliability was .914.

Open-Ended Questions

The purpose of the open-ended questions was to seek additional feedback from survey participants regarding their views and perspectives on General Communication, Team

Communication, Team Interaction, and Project Outcomes. According to Creswell (2016), the number of questions required to address the central phenomenon is between 7-10 sub-questions.

Survey Participants

Sample

The participants for this study were employees of a prescription benefit management company in the Midwest. A request was made to the privacy office seeking approval in performing the research study in the workplace (see Appendix B). The chosen sample selection included various teams representing the Business Operation team and the IT team departments involved with IT Development, IT Quality Assurance, and IT Production Support. The researcher obtained the sample's starting point from the company organizational charts with a random selection for each participant. The total participant sample was 244, and 125 completed the survey, for a response rate of 51.2% (see Table 1).

Table 1

Survey Response Rate

Department	# Survey	% total	# Consent	% total	% Received
Business Operations	96	39.3%	61	48.8%	63.5%
Information Technology	148	60.7%	56	44.8%	37.8%
No Response			8	6.4%	
	244	100.0%	125	100.0%	51.2%

Data Collection Process

Employees received an email (see Appendix C) explaining the study's purpose and how to participate. The email also included a link to the online questionnaire in *Qualtrics*. To ensure consistency, all survey participants received the same email link to the same questionnaire, which contained the exact amount and types of questions. The survey participants completed the

questionnaires anonymously. After one week, the researcher sent a follow-up email asking participants to complete the survey if they have not done so, with a second email sent a week later. The online questionnaire remained open for one additional week. Approval of this data collection process was provided by the Institutional Review Board at the researcher's university (see Appendix D).

Data Analysis

The researcher used the *IBM SPSS* statistical software package to compute descriptive statistics such as mean comparisons and Cronbach's Alpha coefficients to ensure the questionnaire's scales were reliable. Comparing the means between the two different groupings was analyzed using an Independent Samples T-Test (presented in Table 2). The highest statistical mean was for the Team Interaction construct at 5.16, with the lowest at 4.85 for Team Communication.

Table 2

Construct Means

Construct	N	Mean	Std. Deviation
General Communication	117	4.900	0.493
Team Communication	106	4.850	0.710
Team Interaaction	96	5.160	0.587
Project Outcomes	83	4.880	0.878

Demographics

Table 3 illustrates each demographic variable (age, gender, educational level, employment tenure, and department distribution) for all respondents with the highest scores in bold. A total of 53 participants were female, with a total of 63 participants as male. The majority of respondents were in the age groups 24-39 (49) and 40-55 (46). A total of 61 participants held

a Bachelor's degree, and 44 held a Master's degree. Fifty-three participants have worked between one and five years, and 22 participants have worked between six and ten years. Sixty-one participants worked in Business Operations, and 23 of the participants worked in IT Quality Assurance. The total number of participants working in IT was 56.

Table 3

Demographic Variables

		N	%
Gender	Male	53	44.54%
	Female	63	**52.94%**
	Prefer to not answer	3	2.52%
Age	18-23	3	2.59%
	24-39	49	**42.24%**
	40-55	46	**39.66%**
	56-74	21	18.10%
Education Level	High school/GED	11	9.17%
	Associate	4	3.33%
	Bachelor's	61	**50.83%**
	Master's	44	**36.67%**
Years of Employment	0 months to 6 months	6	5.50%
	7 months to 11 months	1	0.92%
	1 year to 5 years	53	**48.62%**
	6 years to 10 years	22	**20.18%**
	11 years to 15 years	20	18.35%
	16 years to 20 years	7	6.42%
	+20 years	10	9.17%
Department	Business Operations	61	52.14%
	IT Development	21	17.95%
	IT Service Delivery	12	10.26%
	IT Quality Assurance	23	19.66%

Chapter 4 highlights the results of the data analysis in more detail.

CHAPTER 4

RESULTS

The purpose of the study was to determine the perspective of the Business Operation team and the IT team during project team communication and interaction towards an awareness of the critical business processes and systems needed to ensure project success. The study utilized a Convergent Parallel Mixed Methods Design, which brings together the results from the survey's quantitative and qualitative components with an evaluation of both data sets (Creswell & Plano Clark, 2018). Both data components were included within the initial study instrument to minimize the time spent collecting the results. The research design highlighted how the constructs interacted to elicit more in-depth feedback into the research problem using the survey data and open-ended questions (Creswell & Plano Clark, 2018).

Reliability

The first part of the quantitative survey data analysis utilized the Cronbach's Alpha reliability test. The process for completing the statistical test using *IBM SPSS* version 27 required a separate data analysis for each of the four constructs, including General Communication, Team Communication, Team Interaction, and Project Outcomes.

General Communication Construct

The first part of the output summary analysis of this 16-item scale was the Case Processing Summary. The output highlighted the number of valid and excluded cases. An

omitted record was the result of the survey participant not answering a specific question in the survey. There were 142 cases with 104 or 73.2% as valid cases and 38 or 26.8% as excluded cases concerning the first construct of General Communication.

The second part of the output summary analysis was the Cronbach's Alpha Statistic. The summary statistic had a value of .844, which is above the acceptable reliability level of .700 (Taber, 2018). The importance of using the Cronbach's alpha statistic as a measure of reliability is that it is "one of the most important and pervasive statistics in research involving test construction and use to the extent that its use in research with multiple-item measurements is routine" (Cortina, 1993, p. 98 as cited in Taber, 2018).

The third part of the output summary analysis was the Item Statistics. The study highlighted the mean score for each item for the General Communication construct. The question rated with the highest mean score of 5.45 was "I am comfortable listening to what others have to say." The survey question with the lowest mean score of 4.37 was "I am comfortable in preparing long written reports."

The last part of the output summary analysis was the Item-Total Statistics. The output indicated an increase in the Cronbach's Alpha Statistic after removing specific questions. The question leading to the largest increase in the statistic was "I would benefit from a communication skills training program provided by our company." Since the statistic's initial value was higher than .70, all of the questions remained within the analysis.

Team Communication Construct

Concerning the second construct, the 20-item scale measuring team communication, there were 142 cases with 96 or 67.6% as valid cases and 46 or 32.4% as excluded cases.

The second part of the output summary analysis was the Cronbach's Alpha Statistic. The summary statistic had a value of .957, which is above the acceptable reliability level of .700 (Taber, 2018).

The third part of the output summary analysis was the Item Statistics. The data analysis highlighted the mean score for each item for the Team Communication construct. The question rated with the highest mean score of 5.21 was "Our team has a shared, meaningful purpose," The question with the lowest mean score of 4.51 was "We focus on big-picture strategic issues, and Group meetings are very productive."

The last part of the output summary analysis was the Item-Total Statistics. The output indicated an increase in the Cronbach's Alpha Statistic after removing specific questions. No questions resulted in a higher statistic, so all of the survey questions remained within the analysis.

Team Interaction Construct

Concerning the third construct, the 10-item scale measuring Team Interaction, there were 142 cases with 93 or 65.5% as valid cases and 49 or 34.5% as excluded cases.

The second part of the output summary analysis was the Cronbach's Alpha Statistic. The summary statistic had a value of .895, which is above the acceptable reliability level of .700 (Taber, 2018).

The third part of the output summary analysis was the Item Statistics. The analysis highlighted the mean score for each item for the Team Interaction construct. The question rated with the highest mean score of 5.43 was "The clarity of communication content between the Business Operation team and the IT team is essential." The question with the lowest mean score

of 4.76 was "The communication between teams regarding projects includes a discussion of trends."

The last part of the output summary analysis was the Item-Total Statistics. The output indicated an increase in the Cronbach's Alpha Statistic after removing specific questions. The question leading to the largest increase in the statistic was "The choice of communication delivery method between the Business Operation team and the IT team is essential." Since the statistic's initial value was higher than .70, all of the questions remained within the analysis.

Project Outcomes Construct

Concerning the final construct, the 6-item scale measuring Project Outcomes, there were 142 cases with 81 or 57.0% as valid cases and 61 or 43.0% as excluded cases.

The second part of the output summary analysis was the Cronbach's Alpha Statistic. The summary statistic had a value of .914, which is above the acceptable reliability level of .700 (Taber, 2018).

The third part of the output summary analysis was the Item Statistics. The analysis highlighted the mean score for each item for the Project Outcomes construct. The question rated with the highest mean score of 5.04 was "For projects completing within the last two years, please indicate how the following goals were met – Business objectives." The question with the lowest mean score of 4.63 was "For projects completing within the last two years, please indicate how the following goals were met – Cost targets."

The last part of the output summary analysis was the Item-Total Statistics. The output indicated an increase in the Cronbach's Alpha Statistic after removing specific questions. The question leading to the largest increase in the statistic was, "For projects completing within the

last two years, please indicate how the following goals were met – Cost targets." Since the statistic's initial value was higher than .70, all of the questions remained within the analysis.

Data Analysis

An Independent-Samples T-Test determined if there was a difference in two independent groups on a dependent variable. The independent variable was the Business Operation team and the IT team. The dependent variables were General Communication for question one, Team Communication for question two, Team Interaction for question three, and Project Outcomes for question four. The purpose of the statistical test was to determine if the two teams' perspectives were statistically significant.

Before performing an Independent-Samples T-Test, the following assumptions were reviewed including: (1) a dependent variable must exist on a continuous level, (2) an independent variable must exist with at least two different categories, (3) there is no relationship between the participants in each grouping, (4) no outliers should be present within the grouping data, (5) the dependent variable should be normally distributed for each group, and (6) there should be a homogeneity of variances (Laird Statistics, 2015).

A data transformation allowed for calculating the mean for each of the four constructs to perform the statistical test. The assumptions test validated whether or not there were outliers and that the data indicated a normal distribution. The generated output consisted of a boxplot for the identification of any outliers in the data. A Q-Q Plot showed whether or not the data appeared normally distributed. The Independent-Samples T-Test procedure box popped up, prompting for inputs for the test variable and grouping variable. The test produced a group statistic summary for each category for the independent variable. The Independent-Samples Test was the

following output produced to determine if the variances are equal in the population and if the mean difference of the independent variable's groupings was statistically significant.

Research Questions

Research Question 1. *How does the perspective of General Communication differ between the Business Operation team and the IT team?* A review of a box plot diagram indicated no significant outliers existed in the data (see Figure 2). The categories for the independent variable for IT was a one and the business with a two.

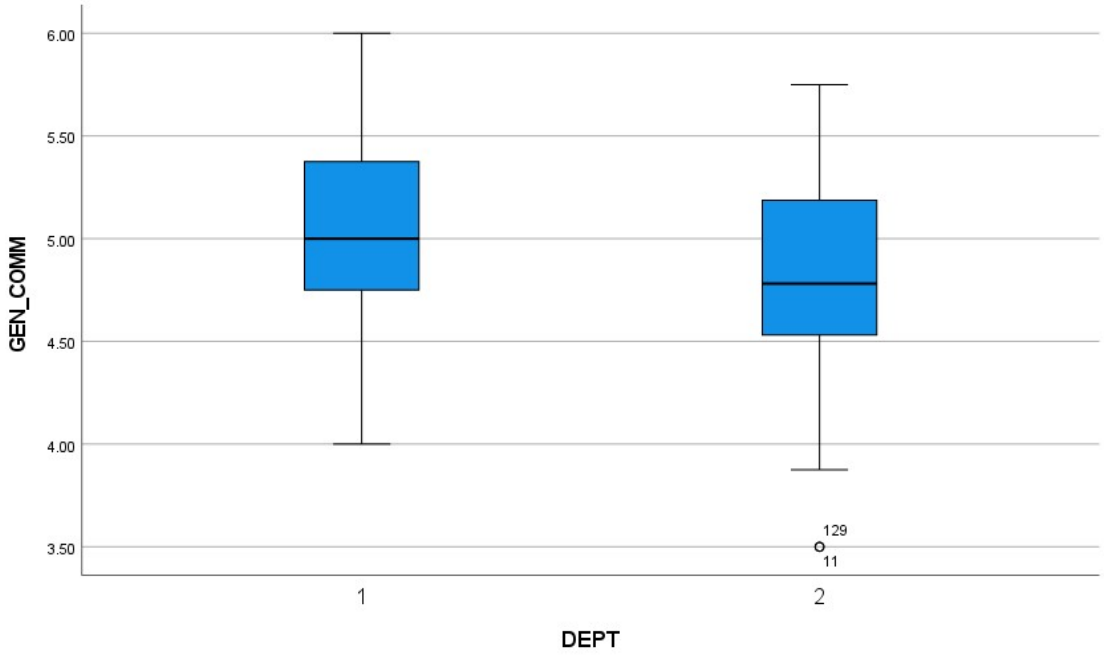

Figure 2. Box Plot Diagram – General Communication

The normality assumption was verifiable from the Q-Q Plot for the IT grouping's communication construct. The graph visually confirmed that the sampling data came from a normally distributed population (see Figure 3).

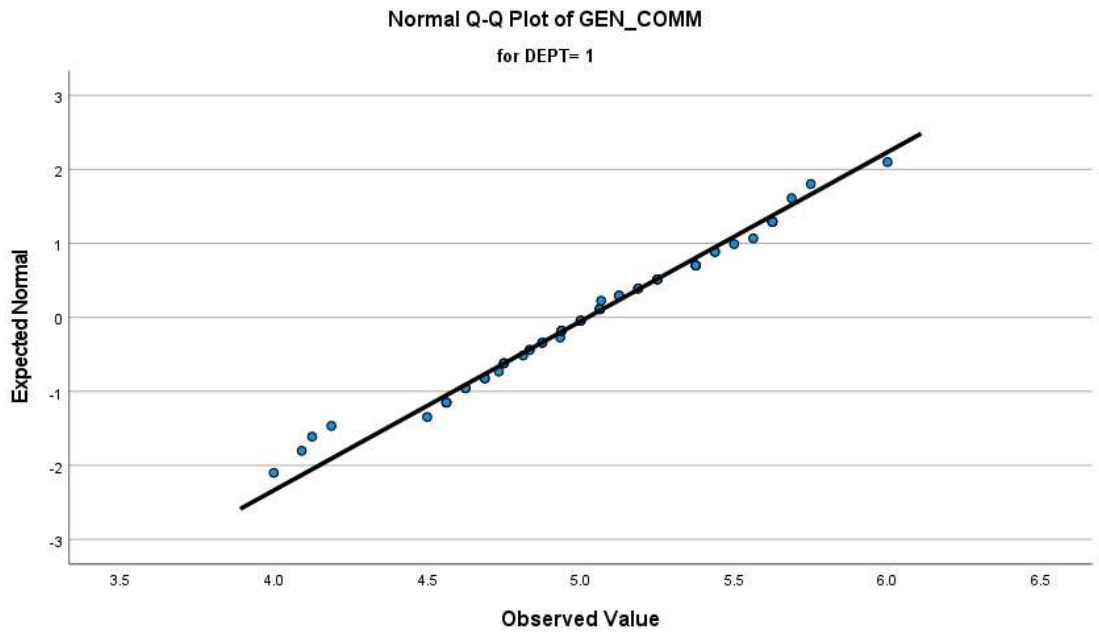

Figure 3. Normal Q-Q Plot – General Communication – IT Grouping

The normality assumption was visually seen from the Q-Q Plot for the General Communication construct for the business grouping. The graph visually confirmed that the sampling data come from a normally distributed population (see Figure 4).

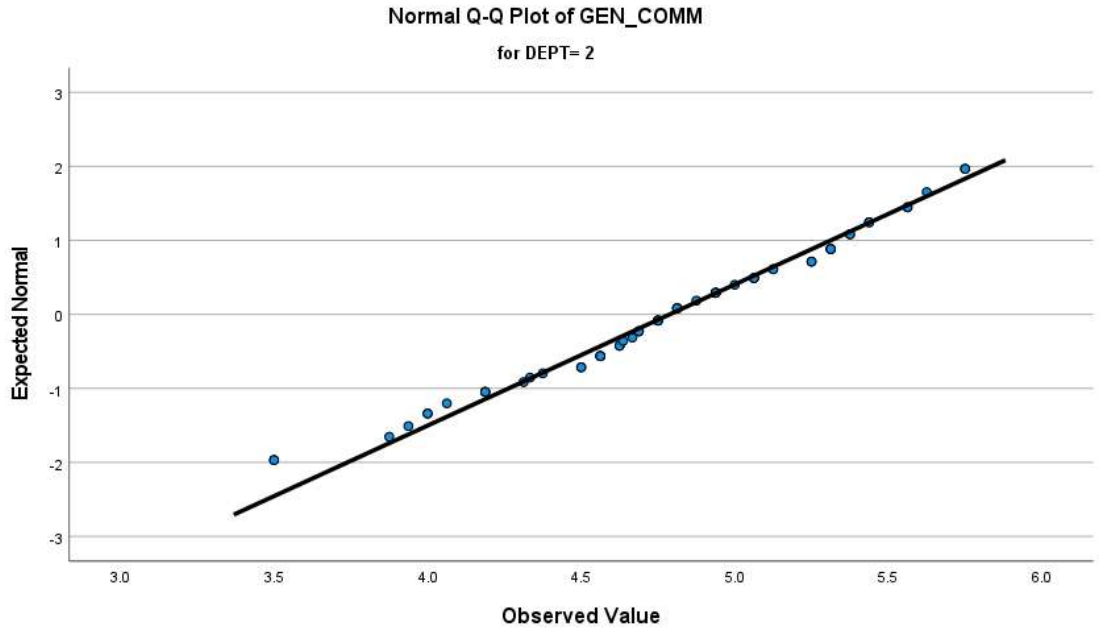

Figure 4 - Normal Q-Q Plot – General Communication – Business Grouping

A group statistics output was generated, highlighting a mean of 5.0226 for the IT team and 4.7877 for the Business Operation team. The perspective towards General Communication was more favorable for the IT team (see Table 4).

Table 4

Group Statistics – General Communication

Group Statistics

	DEPT	N	Mean	Std. Deviation	Std. Error Mean
GEN_COMM	1	55	5.0226	.43759	.05900
	2	60	4.7877	.52454	.06772

An Independent-Samples T-test indicated if the variances were equal or not for the population. The significant value of .234 exceeded the p-value of .05, indicating that the assumption of homogeneity of variances was met (see Table 5). Finally, the IT team and Business Operation team had statistically significant different mean General Communication scores with a significant value of .011, which was less than the p-value of .05 (see Table 5). There were 55 IT team participants and 60 Business Operation team participants. An Independent-Samples T-test indicated if there were differences or not in the General Communication mean scores. There were no significant outliers in the data after a review of a boxplot diagram. General Communication scores for each team seemed normally distributed, as determined by the Q-Q Plot, and variances were homogeneous, as assessed by Levene's test for equality of variances ($p = .234$). General Communication was appealing to IT team participants ($M = 5.02$, $SD = 0.44$) than Business Operation team participants ($M = 4.79$, $SD = 0.52$), a statistically significant difference, $M = 0.23$, 95% CI [0.06, 0.41], $t(113) = 2.595$, $p = .011$.

Table 5

Independent Samples Test – General Communication

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
GEN_COMM	Equal variances assumed	1.430	.234	2.595	113	.011	.23487	.09053	.05552	.41422
	Equal variances not assumed			2.615	112.037	.010	.23487	.08982	.05691	.41283

Research Question 2. *How does the perspective of Team Communication differ between the Business Operation team and the IT team?* A review of a box plot diagram indicated that one significant outlier existed in the data (see Figure 5). The outlier was left in the data set. The categories for the independent variable for IT was a one and the business with a two.

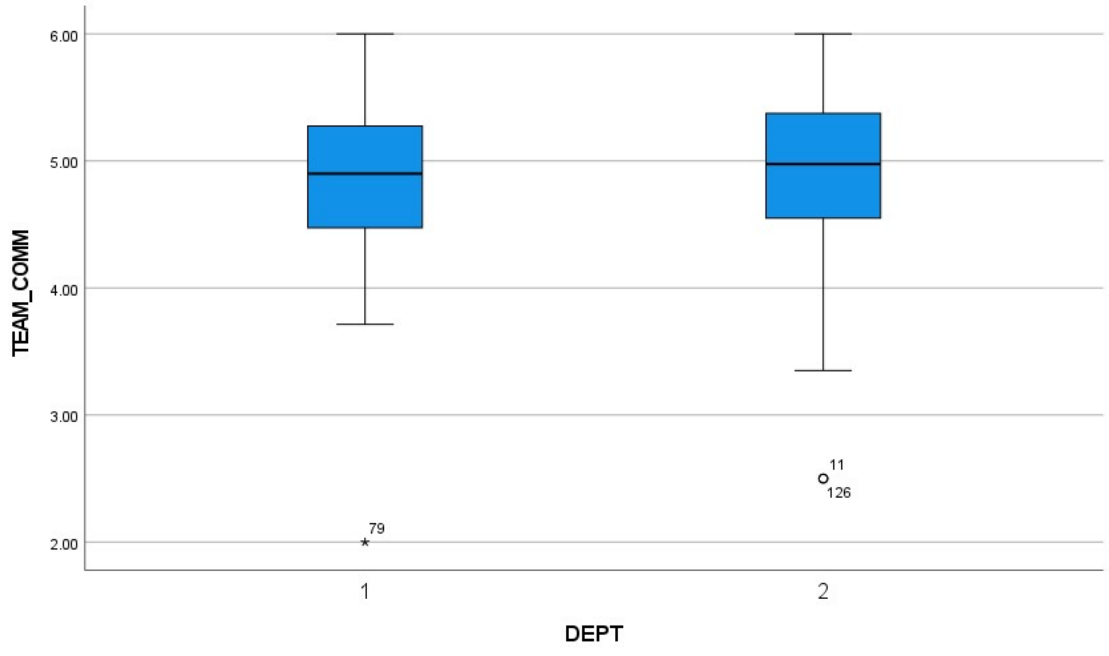

Figure 5. Box Plot Diagram – Team Communication

The normality assumption was visually seen from the Q-Q Plot for the Team Communication construct for the IT grouping. The graph visually confirmed that the sampling data came from a normally distributed population (see Figure 6).

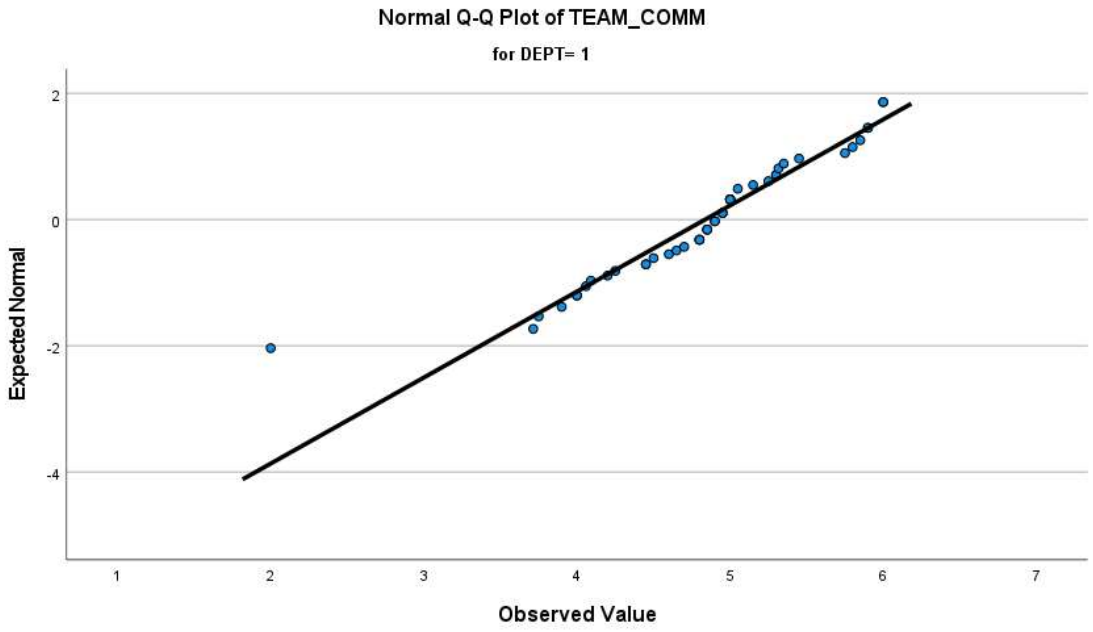

Figure 6. Normal Q-Q Plot – Team Communication – IT Grouping

The normality assumption was verified from the Q-Q Plot for the Team Communication construct for the Business Operation grouping. The graph visually confirmed that the sampling data came from a normally distributed population (see Figure 7).

A group statistics output was generated, highlighting a mean of 4.8357 for the IT team and 4.8563 for the Business Operation team. Team communication was slightly more favorable for the Business Operation team (see Table 6).

An Independent-Samples T-Test indicated if the variances were equal or not for the population. The significant value of .941 exceeded the p-value of .05, indicating that the assumption of homogeneity of variances was met (see Table 7).

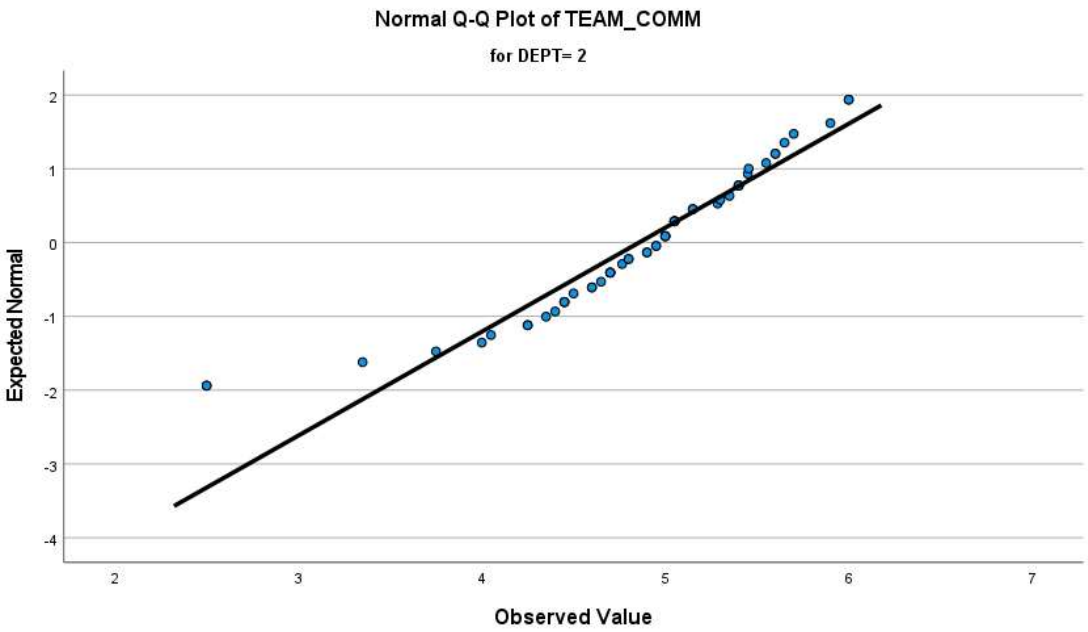

Figure 7. Normal Q-Q Plot – Team Communication – Business Grouping

Table 6

Group Statistics – Team Communication

Group Statistics

	DEPT	N	Mean	Std. Deviation	Std. Error Mean
TEAM_COMM	1	47	4.8357	.73354	.10700
	2	56	4.8563	.70974	.09484

Finally, the IT team and Business Operation team did not have a statistically significant different mean Team Communication score with a significant value of .885, which is more than the p-value of .05 (see Table 7).

Table 7

Independent Samples Test – Team Communication

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
TEAM_COMM	Equal variances assumed	.006	.941	-.144	101	.885	-.02060	.14257	-.30341	.26222
	Equal variances not assumed			-.144	96.736	.886	-.02060	.14298	-.30439	.26319

There were 47 IT team participants and 56 Business Operation team participants. An Independent-Samples T-Test indicated if there were differences or not in Team Communication mean scores. There was one significant outlier left in the data after a review of a boxplot diagram. Team communication scores for each team seemed normally distributed, as determined by the Q-Q Plot, and variances were homogeneous, as assessed by Levene's test for equality of variances ($p = .941$). Team communication was slightly more appealing to Business Operation team participants ($M = 4.86$, $SD = 0.71$) than IT team participants ($M = 4.84$, $SD = 0.73$), not a statistically significant difference, $M = -0.02$, 95% CI [-.30, 0.26], $t(101) = -.144$, $p = .885$.

Research Question 3. *How does the perspective of Team Interaction differ between the Business Operation team and the IT team?* A review of a box plot diagram indicated that one significant outlier existed in the data (see Figure 8). The outlier remained in the data set. The categories for the independent variable for IT was a one and the Business with a two.

The normality assumption from a review of the Q-Q Plot for the IT grouping's Team Interaction construct confirmed that the sampling data came from a normally distributed population (see Figure 9).

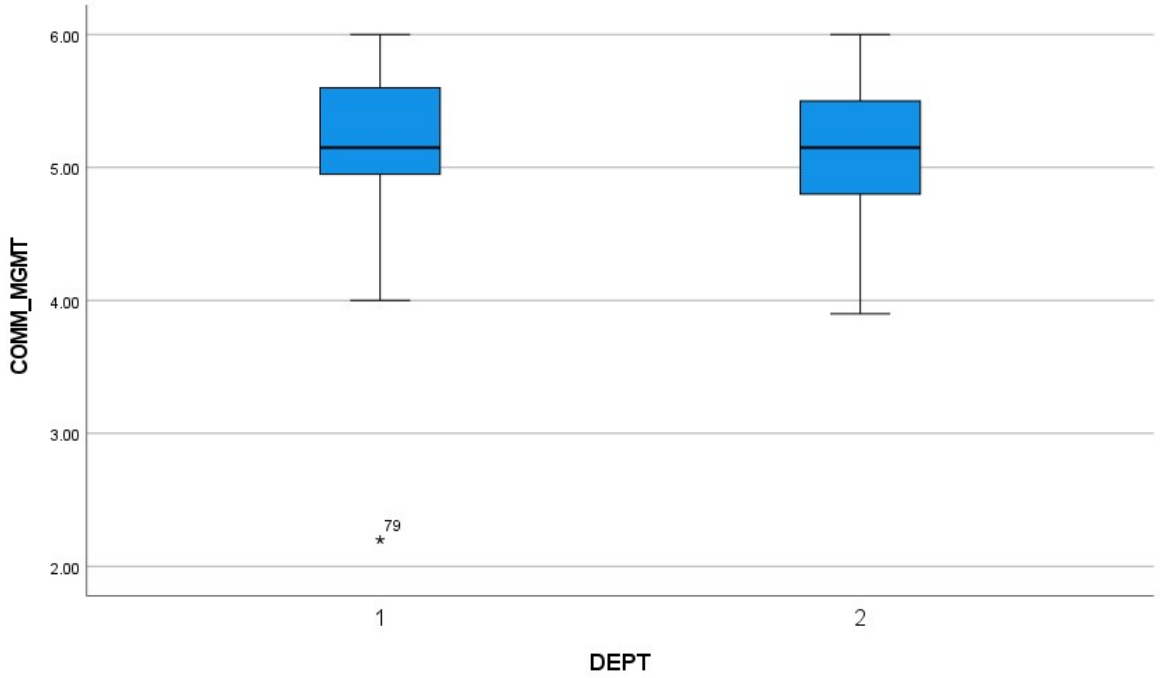

Figure 8. Box Plot Diagram – Team Interaction

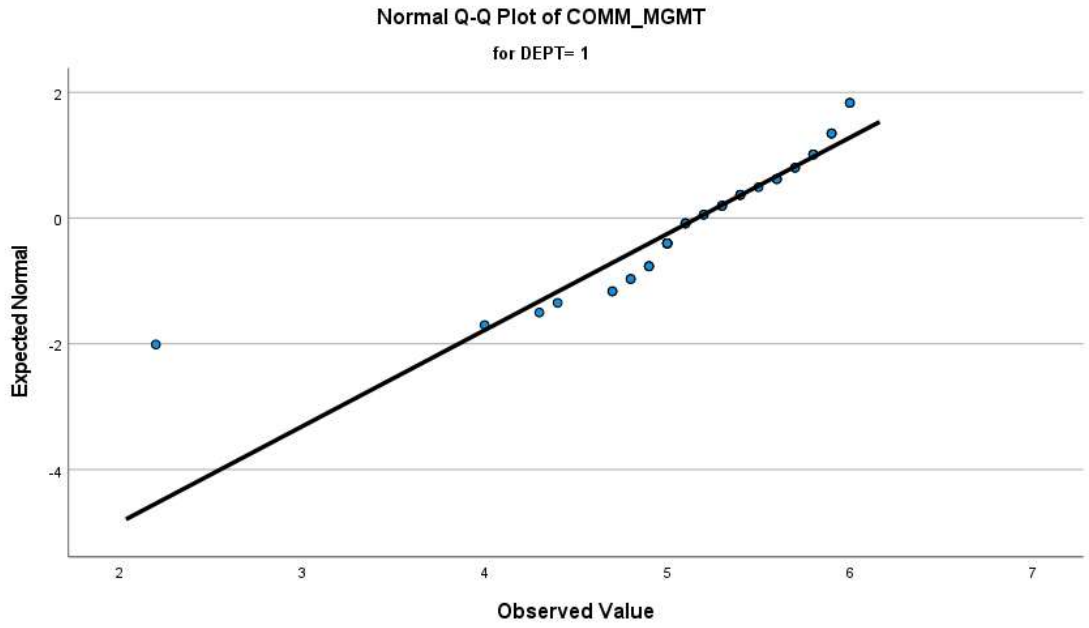

Figure 9. Normal Q-Q Plot – Team Interaction – IT Grouping

The normality assumption was visually seen from the Q-Q Plot for the Team Interaction construct for the business grouping. The graph visually confirmed that the sampling data came from a normally distributed population (see Figure 10).

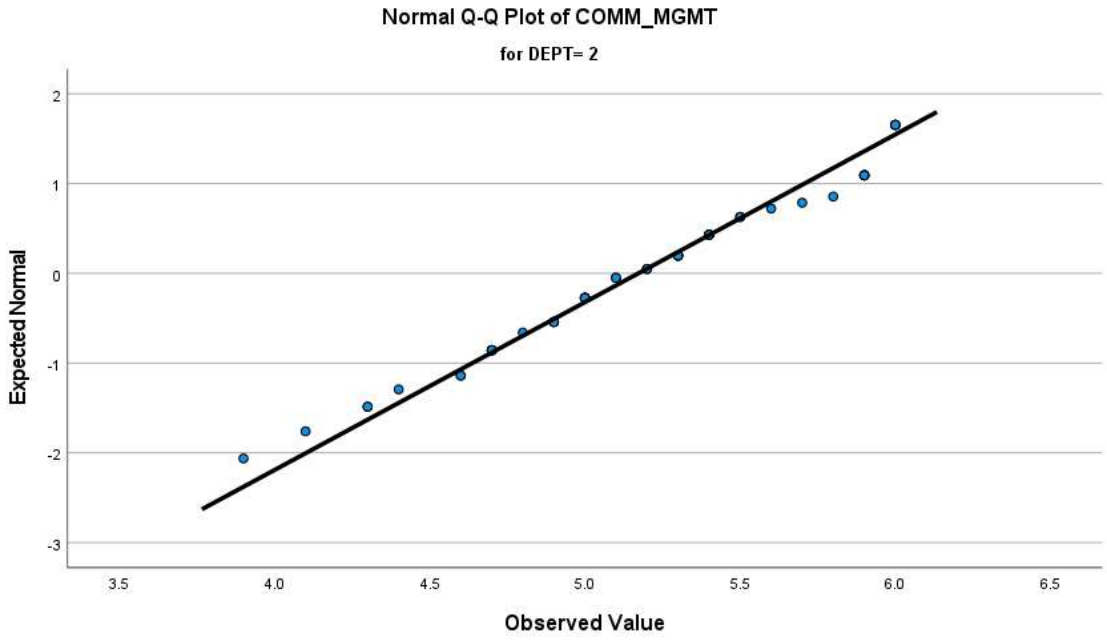

Figure 10. Normal Q-Q Plot – Team Interaction – Business Grouping

A group statistics output indicated a mean of 5.1636 for the IT team and 5.1720 for the Business Operation team. Team Interaction's perspective was slightly more favorable for the Business Operation team (see Table 8).

An Independent-Samples Test indicated if the variances were equal or not for the population. The significant value of .952 exceeded the p-value of .05, indicating that the assumption of homogeneity of variances was met (see Table 9).

Finally, the IT team and the Business Operation team did not have a statistically significant different mean Team Interaction scores with a significant value of .946, which was more than the p-value of .05 (see Table 9).

Table 8

Group Statistics – Team Interaction

Group Statistics

	DEPT	N	Mean	Std. Deviation	Std. Error Mean
COMM_MGMT	1	44	5.1636	.65275	.09841
	2	50	5.1720	.53492	.07565

Table 9

Independent Samples Test – Team Interaction

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
COMM_MGMT	Equal variances assumed	.004	.952	-.068	92	.946	-.00836	.12256	-.25178	.23505
	Equal variances not assumed			-.067	83.308	.946	-.00836	.12412	-.25523	.23850

There were 44 IT team participants and 50 Business Operation team participants. An Independent-Samples T-Test indicated if there were differences or not in Team Interaction mean scores between both groups. There was no significant outlier in the data after a review of a boxplot diagram. Team Interaction scores for each team appeared normally distributed, as determined by the Q-Q Plot, and variances were homogeneous, as assessed by Levene's test for equality of variances ($p = .952$). Team Interaction was appealing to Business Operation team participants ($M = 5.17$, $SD = 0.53$) than IT team participants ($M = 5.16$, $SD = 0.65$), not a statistically significant difference, $M = -0.09$, 95% CI [-.25, 0.24], $t(92) = -.068$, $p = .946$.

Research Question 4. *How does the perspective of Project Outcomes differ between the Business Operation team and the IT team?* A review of a box plot diagram indicated no significant outliers existed in the data (see Figure 11). The categories for the independent variable for IT were a one and the Business with a two.

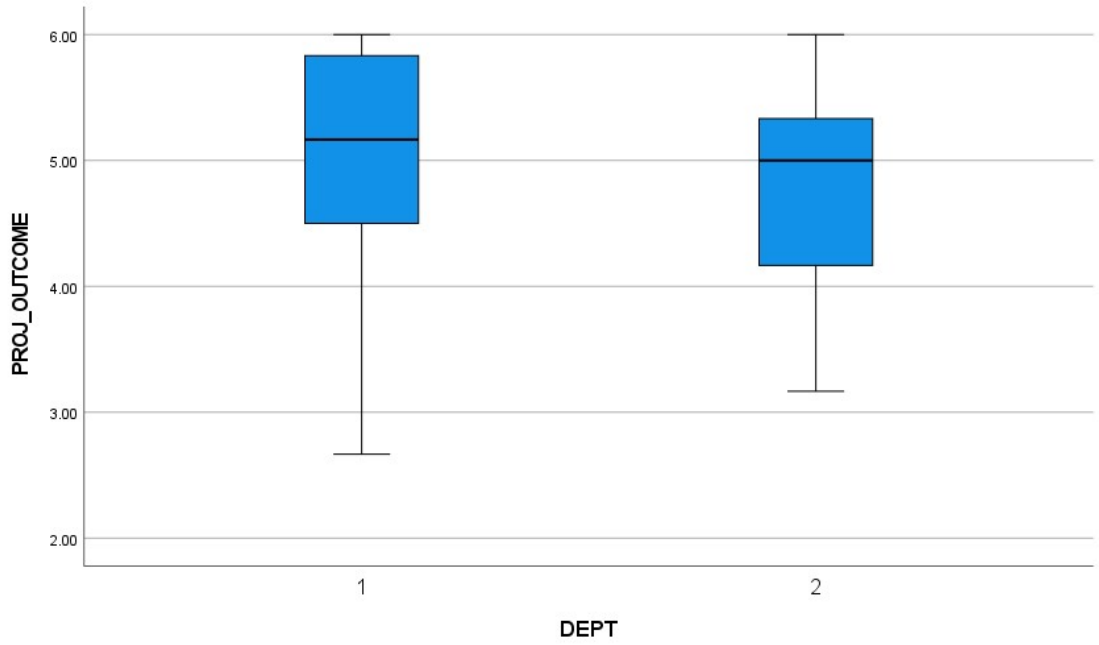

Figure 11. Box Plot Diagram – Project Outcomes

The normality assumption was visually seen from the Q-Q Plot for the Project Outcomes construct for the IT grouping. The graph visually confirmed that the sampling data come from a normally distributed population (see Figure 12).

The normality assumption can be visually seen from the Q-Q Plot for the Project Outcomes construct for the Business grouping. The graph visually confirmed that the sampling data came from a normally distributed population (see Figure 13).

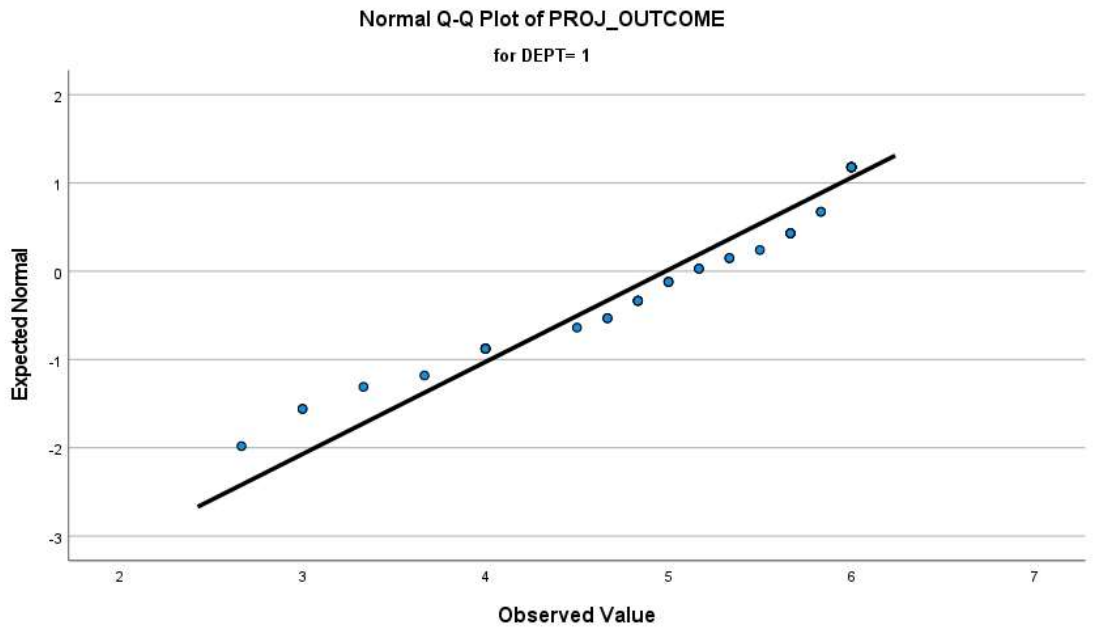

Figure 12. Normal Q-Q Plot – Project Outcomes – IT Grouping

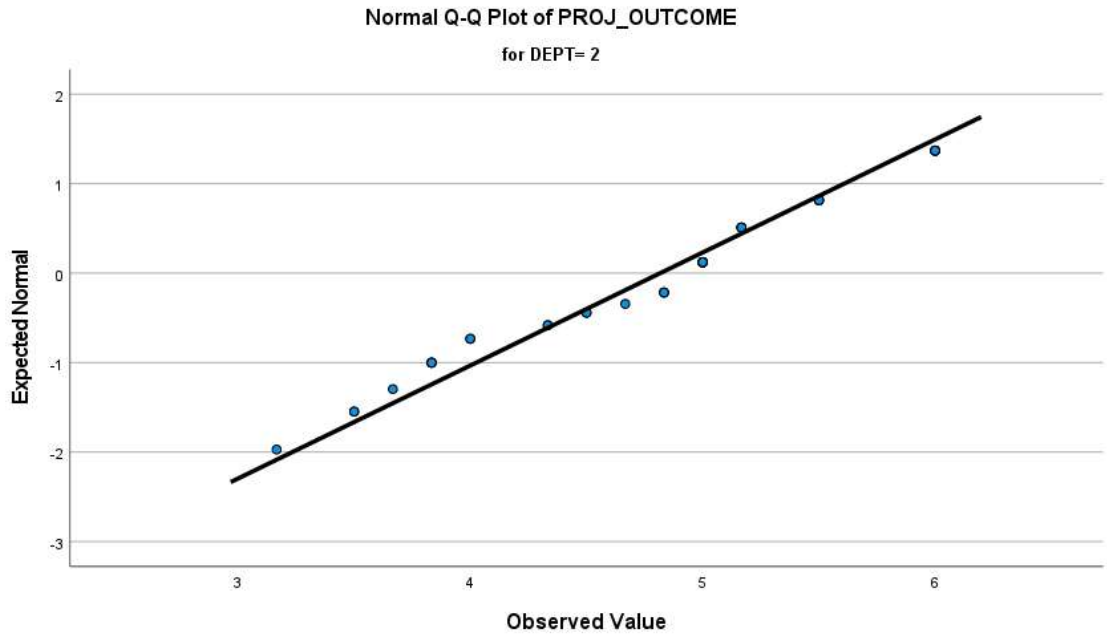

Figure 13. Normal Q-Q Plot – Project Outcomes – Business Grouping

A group statistics output indicated a 4.9837 mean for the IT team and 4.8167 for the Business Operation team. The perspective towards Project Outcomes was more favorable for the IT team (see Table 10).

Table 10

Group Statistics – Project Outcomes

Group Statistics

	DEPT	N	Mean	Std. Deviation	Std. Error Mean
PROJ_OUTCOME	1	41	4.9837	.95801	.14962
	2	40	4.8167	.79151	.12515

An Independent-Samples Test indicated if the variances were equal or not for the population. The significant value of .225 was more than a p-value of .05, indicating that the assumption of homogeneity of variances was met (see Table 11). Finally, the IT team and the Business Operation team did not have statistically significant different mean Project Outcomes scores with a significant value of .395, which was more than the p-value of .05 (see Table 11).

Table 11

Independent Samples Test – Project Outcomes

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
PROJ_OUTCOME	Equal variances assumed	1.496	.225	.855	79	.395	.16707	.19552	-.22210	.55624
	Equal variances not assumed			.857	76.930	.394	.16707	.19506	-.22134	.55549

There were 41 IT team participants and 40 Business Operation team participants. An Independent-Samples T-Test indicated if there were differences or not in Project Outcomes mean scores between both groups. There was no significant outlier in the data after a review of a boxplot diagram. Project Outcomes scores for each team appeared normally distributed, as determined by Q-Q Plot, and variances were homogeneous, as assessed by Levene's test for equality of variances ($p = .225$). Project Outcomes was slightly more appealing to IT team participants ($M = 4.98$, $SD = 0.96$) than Business team participants ($M = 4.81$, $SD = 0.79$), not a statistically significant difference, $M = .167$, 95% CI [-.22, 0.56], $t(79) = .855$, $p = .395$.

Qualitative Data

Throughout the survey, seven open-ended questions provided better data triangulation with the research study's quantitative components of General Communication, Team Communication, Team Interaction, and Project Outcomes. The next step included a coding process of the data. After reading through the responses, similar answers were identified and clustered together with abbreviated codes and categories. The categories were then reduced by grouping answers related to each other and then grouped into themes. The data were organized in the order of the open-ended questions and highlighted the themes that emerged. Evidence supporting each survey theme was presented primarily in the form of direct quotations from the responses.

Question 1: What was the most significant opportunity experienced with Team Communication while collaborating on a project?

Three themes emerged from the analysis of the data. The most common theme was the utilization of project management tools and processes for collaborating on a project. Individuals responded that the key to Team Communication was with the procedure contained within the

project management process. Participants commented on the project life-cycle components, including scope, purpose, timing, and testing. All stakeholders identified with the features as one would do if handling ingredients for a recipe. Table 12 details further on the specific participant feedback for the project management process theme.

Table 12

Project Management Process Theme

"The biggest opportunity was to make sure all parties involved understood the scope and purpose of the project."
"Provide valid use cases on how end-users access data, which in turn helped with the design and ensure expected performance."
"Ensuring everyone knew the scope and timing of the project."
"Ensuring all stakeholders are identified and informed."
"Daily status reports to all team members."
"Communication makes problem-solving much easier by identifying risk and challenges."
"Being a project owner and providing a design solution was very well communicated to all stakeholders."
"Presenting demos in collaboration with peer teams to Executive leadership on a highly visible project."
"Opportunity to lead a team of 20+ Sr Directors through the design process."
"My idea of automating the process was accepted once we brought it into the project after it was already live."
"Able to negotiate and convince business partners on what is needed as a minimum viable product."

The second most common theme was understanding how other teams communicate and their style of communication. The central theme was a proactive approach for Team Communication and Interaction. Table 13 detailed further the specific participant feedback for the style of communication theme.

Table 13

Style of Communication Theme

“Working with other IT teams and business team to overcome technical issues with a significant business impact.”
“The biggest opportunity was to learn how others communicate and be able to navigate a coworker's various ways of communicating.”
“Reaching out to other teams for support more proactively.”
“Learning the language of other teams and how they work compared to how my team works.”
“I have seen time and again, good communication invariably results in a great project outcome, with minimal misses in the requirements and understanding of business needs. The defects/rework are kept to the minimum.”
“Internal team meetings where we would discuss plans, objectives, etc., so that we are uniform in our message and needs when going back to the client.”
“In IT, there are so many different cultures, which means that communication can sometimes be more difficult due to language. Finding a way to understand others and communicate needs to them is a challenge.”
“Work with new tools to collaborate with various teams.”
“My past & current projects both involve cross-teams, so I get an opportunity for team communication almost every day.”
“Making connections with a wider, more diverse group of resources.”
“Learning other points of view and suggestions.”
“Learning more about the team's culture or mindset.”
“Getting to know other team members better by working with them.”
“Exposure to outside team resources, jargon and communication methods.”
“Dealing with different communication styles.”
“Better communication helped in completing the project successfully without too much rework. It also helped in building relationships outside of QA team felt a team spirit.”

The third most common theme was idea generation and the sharing of knowledge. Individuals found it necessary to have a common platform for sharing information and soliciting new ideas. Table 14 detailed further the specific participant feedback for the idea generation and sharing of knowledge theme.

Table 14

Idea Generation and Sharing of Knowledge Theme

"Bridging the Communications GAP between Technical Teams (I.E., IT Development and Support) and Non-Technical Business teams. I have often been called on to act as a Liaison or Translator between the Business and IT teams."
"The ability to share ideas which can change the scope of the project."
"Different Ideas are welcome in an open forum."
"Building training decks to present to the whole department."
"Learning something new."
"Ability to express my views."

Question 2: How do you deal with changes while working on a project?

Two themes emerged from the analysis of the data. The most common themes dealing with changes on a project were that of acceptance and understanding. Acceptance dealt with just going with the status quo. Understanding dealt with asking questions to determine what the changes meant to the company. Table 15 detailed further the specific participant feedback for the acceptance theme. Table 16 pointed also to the particular participant feedback for the understanding theme.

Table 15

Acceptance Theme

"Roll with changes to the best of my ability for the good of the project and team."
"If the change is required, then all in the team must deal with it, but if you disagree, just state the reason why."
"I work in technology; there are changes daily. You go with the flow."
"I try to frame in the context of what outcomes are going to be different due to this change. Like an unexpected issue/problem, I try to quickly diagnose and move on without creating any negative feelings about the change. Go with the flow as they say."
"I take notes, try not to overthink it, and just deal with it."
"For me, it is hard to deal with changes on a project since I already have a mindset about where the project is going from the beginning."
"I try to be flexible, ask questions for clarity, and go with the flow."
"I go with the changes in my field. There are always changes daily."
"As long as the need for the change is explained and the benefits are positive, I am good with change."

Table 16

Understanding Theme

“Try to put me in their shoes and understand what they are trying to say.”
“Take scope of the change and how is it going to impact the project delivery as well as your other daily deliverables and then plan your work accordingly.”
“I like to analyze them first, come up with recommendations, talk to the team, and device a plan to deal with it.”
“I communicate the advantages and disadvantages of the change, and based on the business team's direction; I will decide whether to make the change or not.”
“First, define "What kind of change"? Change can change in deliverables, budget, direction, scope, platform, software, network, personnel, and delivery time. Then research/mitigate on those aspects.”
“Assess benefits and risks of change requested. Make a calculated decision based on assessment and timing when the change is requested in a project. Ensure change details are documented in Project-specific tools, and all impacted parties are notified and agree to change recommended.”
“Will try to understand the purpose of the proposed change and will proceed if its genuine and very much needed.”
“While it can be difficult to handle Huge changes to a project, ultimately it depends on the level of duplicative effort that is associated with said change. Regardless of the outcome is Communicate the level of effort required, determine the Priority level that this change will entail, and either reassign or Remove other duties to accommodate the work.”
“Take scope of the change and how is it going to impact the project delivery as well as your other daily deliverables and then plan your work accordingly.”
“Prioritize based on business needs, and deliver solutions for important and urgent ones.”
“I need to understand why the change is being made but can be convinced it is the right thing to do.”
“I evaluate the scope of the changes, dependencies, and required effort, then prioritize the changes based on those parameters.”
“I believe the most important part is communicating the changes with the team, identifying the risks raised by the changes, and working together to find a resolution. Studying the impact of the change and communicating it is important.”
“I adjust to changes by making sure I understand why or what is changing, communicate any questions I have, or research the change.”
“Evaluate how the changes impact the overall project, timelines, any contingencies; communicate changes as needed and document outcomes.”
“Ensure everyone understands the need for the change.”
“Do my best to understand why changes are being made by discussing them with all involved colleagues.”
“Determine the impact to quality and work with the team.”
“Define the change, communicate the impact of not making the change and any risk to the timeline if the change is made, and ensure proper change control documents are created.”

Question 3. How can we build a workplace environment which emphasizes acquiring new knowledge?

The most predominant theme emerging from the data was that of training and resources. Many participants were open to garnering unique expertise with the use of skill training and workshops. Table 17 detailed further the specific participant feedback for the training and resources theme.

Table 17

Training and Resources Theme

"By providing effective training that is somewhat individualized to account for best learning styles. Give people the proper time to spend to learn and be comfortable with learning new knowledge."
"Creating process documents and training. Much of the job is on the job learning, and unique one-off scenarios often come up which broaden the individuals' knowledge."
"CVS would have to be truly interested in this as a goal. Then would require a complete restructuring of current team development strategies."
"Hard to do when there is so much work that is not shared evenly across the team members. Some can learn as they have more time, and others are overworked and have no time to acquire new knowledge."
"Have the right resources with the right skillset in the appropriate roles. Once the resources are comfortable supporting their core products, you start thinking about expanding their knowledge base and integrating them with new products/apps. Once organizations/management start having their resources mix in with different products, their team is still not comfortable with their current products. The team resources will become disfranchised, bored and unhappy."
"Having tools and communicate where those tools are so that people can acquire new knowledge."
"We should be open to new ideas and new technologies that will help enable new features for the applications."
"Knowledge sharing session, point of the contact person to bring in new technology and initiative details to table."
"Present team members with opportunities to learn via training and hands-on experience with the project."
"Business skills and technical skills go hand in hand."
"The ability to adapt, overcome and mandatory training."
"Provide sufficient time for training."
"Training programs, data dictionaries, knowledge sharing sessions, and lunch-and-learns."

“Setting up meeting and knowledge transfer from subject matter expert and sharing the detailed documentation for recommendation and follow up meeting to respond to any questions.”
“We can ask employees to do a self-evaluation to identify knowledge gaps in their respective fields and provide learning opportunities to close those gaps. We can also ask them if there is a new technology or skill they are interested in learning, including skills that fall out of their roles.”
“Fewer Meetings - more up-to-date documentation.”
“Acknowledging team members when they try to show new ways to do the work.”
“It can be done in many ways; one of them is to have a learn day or cross-functional training.”
“The big picture information should be provided to each team member, and leadership should be open-minded to take feedback from the resources. Honest feedback should be considered and ensure team members will not be mistreated because of the feedback.”
“Currently QA is all about project hours, yet there are usually not enough hours given in a project, so training would have to be ADDED to these project hours, and the Business will most likely not want to fund that, so QA staffing would need to be more fluid.”
“Sharing of ideas; working together on projects; rotating responsibilities so everyone has a chance to experience and learn various processes and techniques.”
“Support training both internal and external; allowing people to take time away from work to attend sessions.”
“Defined roles with skills defined, personnel gaps listed. Fund training: Provide time and resources to train, provide opportunities to use new skills.”
“I think understanding what other teams do, and their daily responsibilities will help to acquire new knowledge.”
“Consistent cross-training with various departments, training manuals for guidance or to have access to.”
“The learning process never ends. We learn new things from each other every day. Cross-training is one way to do it. A mentor-mentee relationship is another. The knowledge base in SharePoint will also be very beneficial. However, just putting stuff in SharePoint will not suffice; people should be made aware of such a thing exists.”
“Take time for monthly, or at least quarterly to share the multiple activities occurring, have time to learn about future roadmap plans & associate next steps for knowledge growth and if one has an aptitude, passion in a certain area.”
“Monthly learning sessions that involve different departments to understand their day-to-day work better.”
“Through planning, foresight, and a willingness to adapt. While our methods are well-practiced and accomplish our monthly and quarterly goals, it is important to take a step back and assess whether or not we need to be changing our methods if it is not adequately addressing our changing field.”
“Can do a team interaction periodically to share knowledge on different projects/platforms, so everyone in the team benefits out of it.”
“Innovation and technology are forever moving forward; thus we need to as well by gaining more knowledge about the evolving environment.”
“My org, like many others, seems to struggle with prioritizing a DATA-centric methodology. There are Analytical units that exist within the business. However, many areas of the org still function in an Operational/Transactional manner. Suppose the goal is to promote an

environment of learning and acquire new knowledge. In that case, leadership must ultimately take the first steps toward fostering and encouraging that type of environment. Suppose Leaders do not value developing new knowledge and skills amongst their teams. In that case, there will not be any progress to adopt a new operational model focused on creating a unique experience."
"Offer opportunities for individuals to interact socially. Building relationships are key for acquiring new knowledge concerning other teams within our overall organization."
"Keep an open mind and constantly look for better tools, system improvements, and listening to the group's ideas."
"Specific knowledge seems to be siloed to certain members of teams; It would be great to have access to dept-specific, practical training that is available at different tiers/difficulty depending on the trainees comfort level of knowledge; having a structured training program that assists team members to acquire new knowledge will challenge them, assist in resource retention and bring higher understanding & purpose to our employees. The current MySuccess environment is inclusive and vague, which does not incentivize employees to seek out their training modules."
"Setting up more KT sessions to introduce new technology and also I think it will be good to shuffle the teams, so resources get the opportunity to work on new functionalities and acquire knowledge instead of always being stuck on the same kind of work."
"Although individual development and ongoing learning are important, they take a back seat to initiatives in our current culture. We have to change the culture that not everything else is a higher priority."
"KT sessions within the team so team members can share their experience and functionality knowledge acquired from their projects. Encourage the team to participate in different pieces of training."
"We are slow to develop training modules when new technology is developed and also do not have excellent written procedures in place to transfer that knowledge to new people when handing off tasks."
"Having the right resources with the right knowledge in the right roles is crucial to supporting products from a service delivery standpoint. Once you have comfortable with their core products(apps), you start thinking about expanding their knowledge and expertise. That could be up training them, involving them in supporting new products/applications, etc. However, if your team is not yet fully comfortable supporting the core apps and then involving them in supporting new products/apps, it creates a serious lack of skills and expertise. You now also have a resource who is bored and tired."

Question 4. What knowledge and skills are required for individuals to function successfully within and across project teams?

Two themes emerged from the analysis of the data, including communication skills and understanding the business. Participants responded that communication skills are an essential skill that facilitates critical knowledge needed to function successfully. The second theme of

understanding the business is vital when an individual tries to provide feedback during a requirement gathering session. Table 18 detailed further the specific participant feedback for the communication theme. Table 19 pointed also to the particular participant feedback for understanding the business theme.

Table 18

Communication Theme

“Communication and team skills are the most essential, technical & domain knowledge do help, but those can be acquired if time & effort are invested.”
“Communication, technical mindset and willing to listen and take constructive criticism.”
“Empathy, engagement and a commitment to take responsibility for the project's success.”
“I believe communication skill and dedication is the most important for an individual to work successfully and also need deep knowledge on the business requirements and application functionality.”
“Project Planning, Ability to communicate with other technology teams across the organization as well as business. Strong IT skills are needed to perform production support activities.”
“Communication skills, writing skills, and functional knowledge.”
“Good communication (verbal and written), the base level of understanding between operational and strategic objectives, ability to translate business requirements into technical requirements, ability to translate technical results into business-oriented actions.”
“Flexibility, listening skills, knowledge of the company and company processes, willingness to go above and beyond.”
“Technical knowledge, mindset to learn, communicate and should be a good team player.”
“Communication Skills: Organized direction of thought, clear, concise details. List of personnel/SME involved. Set expectations, timelines, deadlines.”
“The ability to communicate, to take the work seriously and use one's time effectively. Being able to understand each team's needs is essential to finding solutions and methods that satisfy our shared goals and efforts.”

Table 19

Understanding the Business Theme

“A thorough knowledge of Business and relevant technology is essential. One cannot expect everyone to be an SME in every aspect of the project that has to be cross-training and knowledge transfer.”
“Adjudication knowledge, time management skills, being able to do their resource finding and researching, self-help skills, information processing skills.”
“Combination of Business experience in related area with strong tech skills across many platforms such as AS400, Teradata, DB2, Oracle, Cloud applications. A hybrid of Developer, Data Warehousing, Data Reporting experience combined with business experience is very helpful. Enthusiasm might be most important here.”
“Depending upon the role, industry knowledge is not required but helps determine if values in reports make sense. Training individuals on new technologies tend to be a little slow and self-driven rather than coordinated for the team. Often, SME's just optimize a query, for example, rather than explaining to the requestor how to optimize it for themselves.”
“Having a high-level end-to-end knowledge of the invoicing process, dependent processes, and associated processes such as POS Rebates. Open to seeing their and others work from alternate points of view as well as being open to automation v. so much manual work.”
“Strong urge to understand the purpose of our business, the value we provide to customers. Understanding our department's role and how the applications we build and enhance help achieve department goal will immensely help team members run and deliver projects effectively.”
“Attention to detail, analytical, organization, ability to adapt and ability to multi-task.”
“Knowledge of the systems and supporting documents we use, good communication, and team participation.”
“Understanding the team's goals, having desire and passion for contributing, and bringing skillset to the table.”
“The most successful team members that I have dealt with can distill complex problems into simple sentences."
“Knowledge of who is on every team and what their role so you can communicate effectively and know whom you need to be communicating with.”
“The first thing I would say is collaboration. When project team helps each other sharing the information and willingness to help, each other make much difference.”
“Need to get end-to-end business knowledge and how the application fits in the health care industry and what is my contribution to the benefits.”
“Functional knowledge is essential and along with that communication skills, collaboration, and coordination.”

Question 5. What knowledge and skills complement the Business Operation team and the IT team to understand better the business processes tied to a software project?

One central theme that emerged from the data analysis was the need to understand the business process connected to a software project. Table 20 detailed the specific participant feedback to understand the business process for which a project is enhancing.

Table 20

Understanding the Business Process Theme

“More inputs from Business partners in providing the purpose of the requirements.”
“Fundamental knowledge of the use cases, data structures, and day-to-day operations for which the software will support the business. Clear requirements are gathering.”
“The ability to communicate clearly and transparently and listening to others.”
“Broad understanding of how the system currently works, what is needed to be modernized or enhanced, visions for how it can be improved and innovation.”
“I think they need to understand that they may be working with people who do not completely understand their language. Communicate for comprehension checking in now and again for understanding.”
“An understanding of the team's process and result. The need to provide workarounds for different projects may not fall into the standard need for the rest of the organization. IT needs to be more flexible and work to find alternate solutions for the project's needs or a team.”
“Business team should understand system limitations while providing the requirements.”
“Knowledge of how the software is used in the course of the normal workflow to optimize it towards that use.”
“If IT members can 'shadow' train with their business member, it would give them a better viewpoint.”
“Application knowledge and adequate meetings between IT and Business team to make sure all are on the same page.”
“Understanding what the other side is doing helps the overall picture. This can be done by communicating effectively and listening to explanations.”
“An understanding of what is required and process flow to identify efficiency opportunities.”
“The business owner must have clear strategy, goals, timeline, budget for the project. A clear understanding of the expected inputs and outputs and how they can be acted upon throughout the process, internal and external forces that act upon the organization that uses the software tied to the project. Skills would involve project management and design from end to end, implementation and support."
“Business will need to be apprised of what can be achieved thru automation and what is out of bounds to set expectations, and IT will have to make maximum effort to provide IT solutions to all business needs and provide convincing reasons in areas that cannot be automated or solutions cannot be provided, be it infrastructure or otherwise.”
“How the project is intended to be used. Does it tie into any pre-existing processes that are currently in use? Looking ahead, anticipating any complications or obstacles that this project could create for current and future teamwork.”
“Knowledge of the software development life cycle and security, training can help educate one on the business processes.”

“To understand how each area works - not necessarily in detail, but general overview so that both sides understand the intent, requirements, and execution of what is at hand.”
“There is a large gap on the purpose of discovery or ideation sessions. Many team members want to just "Solve" the problem as it exists today without questioning the process as it exists today. When starting a project, one must ask what we are doing make sense, are there additional efficiencies that we should look at? "
“This is a challenging question to answer since there are two different IT Methodologies at play. XP Resources need to understand the business process sometimes at a detailed level to design and code User Stories correctly. The Waterfall IT Team needs to understand PRF Scope Items well enough to estimate the amount of work to be completed. The Business needs to be open to what both methodologies request for all to be successful.”
“First, they would have to care about business processes instead of being focused on "gate dates" and getting signatures. There needs to be an atmosphere of cohesion instead of competition.”
“Business operations should know the use of each technology how it can play a role in an application. Similarly, the IT team should know what technology can best fit business process.”
“Business knowledge on what is the purpose of our department, how the applications support this purpose. What are the changing Business needs, and how can our applications be enhanced or reengineered to meet Business needs? A team member should actively participate and understand the Business purpose and convey that back to the project team in the form of requirements that deliver efficient and accurate products to end-users.”
“Communication and ability to draw a picture on what is needed, often business is not clear enough on what they need. Rather than concentrating on how IT design the application, they need to think about what they need as a given application's functionality. Moreover, Trust in the IT team.”
“I would not tie it down to skills and knowledge here; there needs to be an open partnership with technology and the business, which both need to be in the project meeting to get better results.”
“The business requirements should be clear, and also all parties should have good knowledge on the application. I believe project meetings can help in the process as we can discuss all this information with the project team.”
“For the IT group, it is important for them to learn and listen to the business operation side to understand the business and reason for the IT project. For the business operations team, they need to understand the IT process and making sure they understand the work IT will be providing.”
“Having a liaison between the business partners and IT would help eliminate some of the confusion in adapting to the new environment.”
“If we have a better communication of what kind of work we are doing to help each other understand, that would be the first step.”

Question 6. What was the most significant opportunity gain that you experienced while working with a project team?

One central theme that emerged from the data analysis was the need to focus on collaboration and communication across different groups. Collaboration and communication were the glue required to form a cohesive team supporting a software project. Table 21 detailed the specific participant feedback to understand the cooperation and communication across different teams.

Table 21

Understanding Collaboration and Communication Theme

"How to design & strategize mitigation plan when things do not go as planned."
"Not understanding what was being asked for - so that it could be delivered correctly."
"Changing the focus of IT Status meetings to be working sessions between IT and the Business to align or resolve concerns. IT Status can be sent via email. Resolving miscommunications or concerns is challenging to do via email."
"Demonstrating the benefits of working in one database environment over another and proving results in a visual group presentation with senior management."
"Being able to understand a role different from my own better."
"Pushed to understand and process flow for the business process completely."
"Presenting the benefits and outcome of the project once it is rolled out to production and show the return on process improvements accomplished."
"Interpretation of Business requirements and how they get translated to workable features."
"It is an opportunity as QA for me to bring up my concerns on the project. Discuss the risk and challenges identified. As a team find a resolution."
"I feel the biggest opportunity was able to learn new functionalities from all of the team meetings."

Question 7. What was the most significant opportunity that you experienced during a project with Team Communication?

The central theme which emerged from the data analysis was the sharing of information across the teams. Feedback from participants concluded that communication between individual groups was valuable when everyone shared knowledge to level the playing field. Table 22 detailed the specific participant feedback to share information across different teams.

Table 22

Sharing of Information Theme

“Ensuring everybody has knowledge of the problem, scope, and proposed solution.”
“Being able to drive the conversation to clearly communicate specific issues, their resolution and their impact to create a level of understanding in both technical and non-technical stakeholders.”
“Have had issues where parts of a project team do not relay information well. This caused downstream impact to where we had to redo and rehave conversations to ensure quality on the project.”
“Sharing how our timeline/schedule is very heavily date driven, being able to communicate when data and/or code will be needed in order to make projected go-live date.”
“During cross-team discussions where each party has an idea ahead of time of what the other teams are expecting from the meeting. This gives each party an opportunity to prepare what they believe needs attention while also taking into account the needs or missing pieces of information the other parties require from them.”
“Working in silos -- not acceptable. Key Stakeholders need to be informed even if it does not directly impact them.”
“Having strong background experience with different platforms allowed me to communicate my ideas confidently on many different projects.”
“Teaching the team to use electronic face-to-face communication whenever possible. Yes, turn the damn cameras on.”
“Get to know the whole picture of the project when there is good collaboration and open discussions with all stakeholders.”

Summary

The survey's quantitative and qualitative components indicated a specific concern for how communication and team interaction impacted a software project's outcomes. Specifically, understanding general communication between the Business Operation team and the IT team was garnered from the quantitative survey results. After further reviewing the qualitative results, more in-depth information resulted in additional Business Operation team and the IT team concerns regarding communication and team interaction. A deeper dive into the findings appear in Chapter 5.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

This study utilized a Convergent Parallel Mixed Methods analysis of the perspectives of two teams involved in Business Operations and IT. An investigation attempted to understand if there was a difference in both teams' views involving the constructs of General Communication, Team Communication, Team Interaction, and Project Outcomes. This chapter described the researcher's final thoughts specific to the discussion topics, implications for practice, future practice recommendations, and conclusion.

Discussion

The research study integrated a quantitative component consisting of Likert scale item questions. A qualitative part comprised open-ended questions seeking in-depth knowledge of Team Communication and Team Interaction related to project planning. Feedback received from the surveys provided a snapshot of the perspectives between the Business Operation team and the IT team. Comments gathered from the open-ended questions helped to provide clarity around the analysis of the survey questions. Together both sets of data provided a better understanding of the research problem.

The survey data comprised of questions specific to General Communication, Team Communication, Team Interaction, and Project Outcomes were evaluated between the Business Operation team and the IT team. The research questions asked for feedback to measure any differences between the two groups regarding the four constructs. After performing an

Independent-Samples T-Test on each of the four constructs, only the General Communication construct had a higher statistically significant mean for the IT team compared to the Business Operation team.

A couple of reasons for this could be related to the fact that the IT teams have more urgent communication needs regarding a project and the tools utilized in the project management life cycle. The IT teams spend an excessive amount of time in meetings and providing status updates on projects. Their work is very labor-intensive when communicating. Status updates are done almost daily with meeting presentations on trends and updates on costs versus budget. The Business Operation team is the recipient of how their software projects are performing from a financial perspective.

According to Donnell et al. (2011), less than 10% of individuals operating within a workplace technical setting have experienced writing technical reports. Since the IT team produces consistent updates on the status of projects within the project management tools, it would make sense that the General Communication construct is more favorable with this group.

The other constructs, including Team Communication, Team Interaction, and Project Outcomes, did not have a statistically significant mean difference between the two teams. Team Communication within the Business Operation team and the IT team is usually done when the IT team asks the Business Operation team if they have any questions regarding the updates on an existing project regarding status. The project management area's communication tools are so technical that the IT team presents the report results without digging into the pieces. The Business Operation team acknowledges the findings and responds that there are no outstanding questions. This is the primary communication pattern between both of the units. Donnell et al. (2011) pointed out that project communication between teams should be concise and well-

organized. The project management report presentation does not fulfill this requirement as the reports' information is communicated verbatim without an understanding of the business value. The Business Operation team is left with an unclear perspective of the project and closes the communication with no questions.

Team Interaction between both teams is the result of completing specific steps in the project management life cycle. The Business team and IT team interact on several phases of a project, including requirements. Both groups conduct their due diligence on completing the necessary inputs to satisfy the project management requirements with specific form inputs and meeting deadlines. Donnell et al. (2011) emphasized that the Team Interaction process is successful when teams make recommendations, conduct presentations, and face-to-face communication. These three areas are challenged in the current work environment.

Lastly, the Project Outcomes perspective is impacted when Team Communication and Team Interaction are status quo. Thomas et al. (2008) suggested a project's success is dependent on the carefully planned integration of project planning and team development. When both are siloed within the respective teams, then project outcomes are severally impacted. It makes sense that neither team see the Team Communication, Team Interaction, and Project Outcomes constructs differently.

The responses from the open-ended questions provided a better perspective to these findings. The major themes included project management tools, style of communication, communication skills, collaboration, sharing of knowledge, understanding the business process, acceptance, understanding, and training resources—some of the themes overlapped throughout the seven open-ended questions.

The acceptance and understanding theme stood out to be the most impactful theme in describing the team's behaviors towards project planning. Acceptance was a little more prevalent across the groups as compared to the understanding theme. Individuals described acceptance as just going with the flow and dealing with change as a normal part of the process. The understanding was more relevant to successful project outcomes and acceptance as a detriment to the project planning process. Müller (2003) pointed out that integrating various teams should incorporate a communication strategy, including content, frequency, and delivery. If not done early in the process, teams become disengaged and revert to accepting project communication's status quo.

Another critical theme was having a training program in place. Participants responded that the company would need to change the culture to support training and development. A participant suggested completing a self-evaluation to assess learning gaps and determine what knowledge and skills would close those gaps. Brooks (2010) posited that teams that lack an in-depth understanding of the business process will put the requirements phase of project planning at risk. The lack of training and resources is one impediment to garnering knowledge in support of the project planning process. These themes pose the most significant opportunity to counter project planning's negative impacts if put in place. Finally, Thomas et al. (2008) indicated that a well-organized project team structure is built upon team development, team effectiveness, team commitment, and team communication. These components are intertwined within the themes emerging from the qualitative feedback from participants and are critical for project success.

Implications for Practice

This study has implications for HR practitioners in the workplace. The first implication deals with acknowledging the concern for training and resources. The training department

should understand the situation for the lack of training in Business Operations, and IT related to project planning. As suggested in one participant's response, a self-evaluation could be implemented across all the project stakeholders to understand these teams' thoughts better. Training needs could be evaluated and determined if it should be a standalone training response or built within a project plan (Thomas, et al., 2008).

The second implication is the concern for the lack of knowledge existing across the teams. HR practitioners could evaluate how subject matter experts possess and retain their understanding of the system and business process. This could be built into a newly implemented training program for each functional area in the company. A needs assessment could be distributed to define the most concerning areas needing attention. Whether this relates to the business process or how IT functions with a project, required knowledge could be identified and built into a pre-project planning training program (Brooks, 2010).

The third implication related to understanding concerns is that HR practitioners could enact an immediate change. By changing the mindset of just doing to that of learning, project planning could lead to more team collaboration and better project outcomes. This could be an argument for moving forward with a training program to ensure all teams obtain the needed knowledge and skillsets to properly access project concerns (Donnell et al., 2011).

The final implication relates to the overall process of communication. HR practitioners should understand how communication could be the catalyst to help bring all the concerns under consideration early in the project planning process. As requirements planning is critical for a project's success, training and knowledge attainment are crucial to foster Team Communication and Interaction. These components work as a system, and if one part of the system is non-functioning, then the whole system is in jeopardy of failure (Müller, 2003).

Recommendations for Future Research

Future research on the topic of Team Communication and Interaction could result in several potential research opportunities. The first one is expanding the study to compare several other teams in Business Operations and IT. These teams represent several other functional areas within the company and within other geographic regions. The second one is comparing how the different demographic variables compare within the Business Operation team and the IT team. A third research opportunity could be to conduct the survey with other industry-related companies and compare the results against the actual study results. These are research opportunities that could be done on a much smaller scale and allow more time to analyze data differently. The researcher would also propose building upon the research study into a template for how others new to research could understand the process.

Conclusion

This study began out of necessity for better understanding the perspectives between different teams related to project planning. The researcher's workplace role has allowed for an understanding of both teams' issues, including Business Operations and IT. The decision to utilize the Convergent Parallel Mixed Methods Design ensured a better triangulation of the data. It was critical to get at the root of understanding in a multitude of different ways. The quantitative data was collected using an online survey with the qualitative component collected through feedback using open-ended questions. For the most part, the results indicate no difference in the Business Operation team and IT team mean perspectives concerning Team Communication, Team Interaction, and Project Outcomes. The differences in the General Communication construct's perspective are understood to be that the IT team must spend more time communicating the project results on a more formal and reoccurring basis. The feedback

from participants from the open-ended questions compellingly described the teams' issues. The feedback complemented the understanding of the perspective garnered from the quantitative analysis. Lastly, the study encourages the company's leaders to take the findings and put a plan into action to help manage the complexities between teams with the project planning process.

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APPENDIX A:

SURVEY INSTRUMENT

I. Demographic Variables

1. What is your age (as of your birthday in the year 2020)?

    - 18-23
    - 24-39
    - 40-55
    - 56-74
    - 75 or older

2. With what gender do you identify?

    - Male
    - Female
    - Other
    - Prefer Not to Answer

3. What is your highest completed educational level?

    - High school/GED
    - Associate
    - Bachelor's
    - Master's
    - PhD

4. What is the amount of time you have worked at the current organization?

    - 0 months to 6 months
    - 7 months to 11 months
    - 1 year to 5 years
    - 6 years to 10 years
    - 11 years to 15 years
    - 16 years to 20 years
    - +20 years

5. Please indicate your current department.

    - Business Operations
    - IT Development
    - IT Service Delivery
    - IT Quality Assurance
    - Other _____

II. The purpose of this section is to learn more about your general communication preferences.

1. I can communicate by getting to the point quickly.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

2. I can communicate by using as few words as possible.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

3. I strive for well-organized written communications.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

4. I am comfortable in preparing long-written reports.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree

- Agree
- Strongly agree

5. I would benefit from a communication skills training program provided by our company.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

6. I am comfortable communicating with team members from other departments.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

7. I believe that my skills related to communication are strong.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

8. I am comfortable communicating with senior management.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

9. For quality control purposes, please select the choice slightly agree.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree

- Strongly agree

10. I am comfortable making presentations.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

11. I am comfortable with face-to-face communication.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

12. I am comfortable making recommendations when communicating.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

13. I am comfortable saving the details to support recommendations until the end of a presentation.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

14. I am comfortable with face-to-face communication without technology.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree

- Strongly agree

15. I am comfortable communicating in strategy-setting conversations.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

16. I am willing to initiate communications with others to obtain information.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

17. I am comfortable listening to what others have to say.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

III. The purpose of this section is to learn more about your preferences for team interaction.

1. Our team has a meaningful, shared purpose.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

2. Team members clearly understand their roles.

    - Strongly disagree
    - Disagree

- Slightly disagree
- Slightly agree
- Agree
- Strongly agree

3. Team members appreciate one another's unique capabilities.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

4. Team members take personal responsibility for the effectiveness of our team.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

5. We have the skills we need to do our jobs effectively.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

6. We resolve issues quickly.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

7. Team members are active listeners.

    - Strongly disagree
    - Disagree
    - Slightly disagree

- Slightly agree
- Agree
- Strongly agree

8. We focus on big-picture strategic issues.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

9. Team members understand one another's roles.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

10. For quality control purposes, please select the choice slightly agree.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

11. Communication in our group is open and honest.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

12. People are proud to be part of our team.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree

- Agree
- Strongly agree

13. Group meetings are very productive.

- Strongly disagree
- Disagree
- Slightly disagree
- Slightly agree
- Agree
- Strongly agree

14. Team members help to resolve issues.

- Strongly disagree
- Disagree
- Slightly disagree
- Slightly agree
- Agree
- Strongly agree

15. Communication in our group is adequate.

- Strongly disagree
- Disagree
- Slightly disagree
- Slightly agree
- Agree
- Strongly agree

16. Our work helps the organization achieve its strategic goals.

- Strongly disagree
- Disagree
- Slightly disagree
- Slightly agree
- Agree
- Strongly agree

17. Our team is adaptable to changing business needs.

- Strongly disagree
- Disagree
- Slightly disagree
- Slightly agree
- Agree
- Strongly agree

18. We can work through differences of opinion.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

19. Team members embrace continuous improvement as a way of life.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

20. The goals of our group help to support others on project teams.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

21. Team members work to ensure we are using best-practice methods.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

IV. The purpose of this section is to learn more about your preferences for communication management during the project planning process.

1. The frequency of communication between the IT team and the Business Operation team is essential.

    - Strongly disagree
    - Disagree

- Slightly disagree
- Slightly agree
- Agree
- Strongly agree

2. The choice of communication delivery method between the IT team and the Business Operation team is essential.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

3. The clarity of communication content between the IT team and the Business Operation team is essential.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

4. The management of communication between the IT team and the Business Operation team has the most significant impact on a project's success.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

5. For quality control purposes, please select the choice slightly agree.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

6. The communication between teams regarding projects includes updates on status and achievements.

- Strongly disagree
- Disagree
- Slightly disagree
- Slightly agree
- Agree
- Strongly agree

7. The communication between teams regarding projects includes any changes made to the project.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

8. The communication between teams regarding projects includes issues and open items.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

9. The communication between teams regarding projects includes a timeline of the next steps in the projects.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

10. The communication between teams regarding projects includes a discussion of trends.

    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Slightly agree
    - Agree
    - Strongly agree

11. The communication between teams regarding projects includes progress measures.

- Strongly disagree
- Disagree
- Slightly disagree
- Slightly agree
- Agree
- Strongly agree

V. The purpose of this section is to determine the frequency that each goal was met for projects during the last two years.

1. Cost targets

    - Never
    - Infrequently
    - Occasionally
    - Often
    - Frequently
    - Always

2. Time targets

    - Never
    - Infrequently
    - Occasionally
    - Often
    - Frequently
    - Always

3. Technical performance specifications

    - Never
    - Infrequently
    - Occasionally
    - Often
    - Frequently
    - Always

4. Required quality standards

    - Never
    - Infrequently
    - Occasionally
    - Often
    - Frequently

- Always

5. Satisfied clients or end-users

    - Never
    - Infrequently
    - Occasionally
    - Often
    - Frequently
    - Always

6. Business objective

    - Never
    - Infrequently
    - Occasionally
    - Often
    - Frequently
    - Always

VI. The purpose of this section is to seek additional feedback regarding views and perspectives on Team Interaction and team interaction.

1. What was the most significant opportunity gain that you experienced during a project with Team Communication?

2. How do you deal with changes while working on a project?

3. How can we build a workplace environment which emphasizes acquiring new knowledge?

4. What knowledge and skills are required for individuals to function successfully within and across project teams?

5. What knowledge and skills complement the Business Operation team and the IT team to understand better the business processes tied to a software project?

6. What was the most significant opportunity gain that you experienced while working with a project team?

7. What was the most significant opportunity gain with Team Communication that you experienced during a project?

APPENDIX B:

CVS HEALTH PERMISSION

From: Sharma, Vaibhav
Sent: Tuesday, April 21, 2020 1:06 PM
To: Ash, Gregory <Gregory.Ash@CVSHealth.com>
Subject: RE: CIAR Case 9128462

Hi Gregory,

Your request has been approved. I have updated the CIAR request.

Thanks & Regards,
Vaibhav Sharma(VB)
CVS – Information Governance

From: Ash, Gregory
Sent: Thursday, April 16, 2020 12:13 PM
To: Data Governance <DataGovernance@CVSHealth.com>
Cc: Thiemann, Chad <Chad.Thiemann@CVSHealth.com>; Dixon, James M. <James.Dixon@CVSHealth.com>
Subject: CIAR 9128462

Hello

I submitted CIAR 9128462, seeking approval to conduct a research study for my doctoral program. I initially reached out to Chad Thiemann regarding my request, and he suggested I complete the CIAR request. I am currently in the dissertation phase seeking a Ph.D. in Technology Management at Indiana State University.

Let me know if you have any questions or require further information to support this request.

Thanks

Gregory Ash | Advisor, Industry Analysis | CVS/Caremark | (847) 559-3570 | CVS Health 2211 Sanders Road, NBT-8 | Northbrook, IL 60062 Gregory.Ash@cvshealth.com

APPENDIX C:

EMAIL INVITATION

Welcome to our survey about communication in the workplace. Because communication in the workplace is vital to all of us, I would like to ask you to participate in our survey about communication in the workplace related to project planning.

This comprehensive survey will ask you about your awareness, perceptions, and preferences for communication in the workplace while participating in the project planning process.

You can answer the majority of the questions based on your own opinions, regardless of whether you have had the experience of participating in the project planning process.

Your answers are crucial for the research study. It should take about 10 - 15 minutes of your time. I am interested in your open and honest opinions; I have no judgment about how you may respond.

All responses will be compiled together and analyzed as a group, meaning you will never be identified or contacted as an individual.

Thank you for your continued cooperation and your help with this critical survey.

APPENDIX D:

IRB APPROVAL LETTER

Indiana State University
More. From day one.

Institutional Review Board
Terre Haute, Indiana 47809
812-237-3088
Fax 812-237-3092

DATE:	December 11, 2020
TO:	Gregory Ash, PhD
FROM:	Indiana State University Institutional Review Board
STUDY TITLE:	[1691131-1] DETERMINING HOW TEAM COMMUNICATION AND PROJECT OUTCOMES EVOLVE IN A MIDWESTERN HEALTHCARE COMPANY: A CASE STUDY APPROACH
SUBMISSION TYPE:	New Project
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	December 11, 2020
REVIEW CATEGORY:	Exemption category # 2

Thank you for your submission of New Project materials for this research study. The Indiana State University Institutional Review Board has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations (45 CFR 46). You do not need to submit continuation requests or a completion report. Should you need to make modifications to your protocol or informed consent forms that do not fall within the exempt categories, you will have to reapply to the IRB for review of your modified study.

Internet Research: If you are using an internet platform to collect data on human subjects, although your study is exempt from IRB review, ISU has specific policies about internet research that you should follow to the best of your ability and capability. Please review Section L. on Internet Research in the IRB Policy Manual.

Informed Consent: All ISU faculty, staff, and students conducting human subjects research within the "exempt" category are still ethically bound to follow the basic ethical principles of the Belmont Report: 1) respect for persons; 2) beneficence; and 3) justice. These three principles are best reflected in the practice of obtaining informed consent.

If you have any questions, please contact Anne Foster within IRBNet by clicking on the study title on the "My Projects" screen and the "Send Project Mail" button on the left side of the "New Project Message" screen. I wish you well in completing your study.