# Chapter 3: Research Method

 The primary research question explored what strategies can transformational leaders use to improve the effectiveness and efficiency of virtual IT teams? This chapter outlined the qualitative research methodology and design applied to research to understand the perception and experience of the transformational leaders in information technology. The population and participant sample selection process described in detail and supported through scholarly references (Yin, 2014). Furthermore, the semi-structured interview plan will outline details regarding how the interviews conducted and the data recorded and analyzed. The study procedures, data collection and analysis, assumptions, limitations, delimitations, and ethical assurances outlined and laid out in this chapter. As a result, the researcher will define the details required to create the conduct conducted research. This qualitative research will seek to contribute to the body of knowledge by providing transformational leaders’ experiences and perceptions in attaining leadership in information technology.

## Research Methodology and Design

 This qualitative case study will explore how transformational leaders create trust, encourages conflict resolution, and addresses inefficiencies in communication among team members in IT organizations. This methodology will be applied to make use of a data collection approach and analysis to inform the construction of the study, as recommended by Silverman (2016). A qualitative research methodology will be appropriate for this research because, according to Marshall and Rossman (2016), the purpose of a qualitative study is to explore and understand individual or group in a natural setting. By examining the subject in its physical context, as recommended by Marshall and Rossman (2016), the researcher will gain insight and discover new concepts. The qualitative research methods will be suitable because researchers can help identify phenomena that provide information and its occurrences (Lewis, 2015). Researchers will use qualitative methods to obtain a deeper understanding of lived experiences through the viewpoints of the participants directly (Fujiura, 2015; Yin, 2014).

 The qualitative methodology will be appropriate because it is possible for transformational leaders to address inefficiencies in communication among team leaders in the IT organization. Quantitative methods will be necessary when testing a scientific theory using quantifiable statistical data (Marshall & Rossman, 2016; Yin, 2015). Mixed methods research will only be appropriate when the researcher will be collecting corresponding data to conduct parallel or convergent qualitative and quantitative analysis ( Enosh & Ben-Ari 2016; Yin, 2014). A quantitative, mixed method will be inappropriate because the researcher will perform a critical case study. This qualitative case study will focus on identifying and exploring strategies transformational leaders use to lead virtual IT teams effectively, and the phenomenon that will take place in its context.

 The qualitative case study design will be applicable when the foundation is in a constructive paradigm and understanding of the phenomenon will depend on the researcher’s perspective (Yin, 2014). Design of the research instruments will purposely minimize the possible interference with the behavior of the respondents by the researchers. A case study researcher subjectively keeps its meaning but does not reject objectivity (Yin, 2014). In their exact sense, case studies, thus, investigate and explore new real-life observable facts through comprehensive background study of a small number of conditions or events, as well as their relations. Using a case study design can provide an understanding of what happens in real life (Yin, 2014). Lockwood (2015) wrote a proposal for a different communication problem within virtual teams. One of the main elements found was that much of this communication was the result of cultural differences as well as the fact that employees did always feel like they could adequately express their concerns. Similarly, Carlson, Hunter, Vaughn, and George (2017) posited one reason that virtual teams had specific issues with cohesion was that they might not share information. Chen (2014) similarly attempted to understand phenomena associated with virtual team management and found that it was a different process, although he did not see exactly why the process was so different. It becomes clear that a qualitative approach will be appropriate.

 The most appropriate structure for this research is a case study. Case studies are necessary for obtaining a more in-depth understanding of a phenomenon (Yin, 2017). Sutton and Austin (2015) defined a case study a research technique used to analyze the information within a specific context carefully. In this study, the researcher will choose a small geographical region and a restricted number of persons as the study’s subject. In their exact meaning, case studies, thus, investigate and explore new real-life observable facts through comprehensive background study of a small number of conditions or events, as well as their relations. Ponelis (2015) described the case study research process as an experimental investigation that explores an incident when the limits between context and phenomenon are not apparent.

 A case study allowed this researcher to explore and understand difficult subjects that can be a reliable method of research, especially when there is a need to carry out a holistic and in-depth examination of an issue. Research had become very prominent when subjects regarding sociology, education, and community-based like illiteracy, drug addiction, unemployment, and poverty raised (Choi, Goh, Adam, & Tan, 2016). A critical reason for recognizing a case study as a method of research is that it provides a holistic explanation about behavioral and social challenges in question. Additionally, a case study enables a researcher top advance past quantitative numerical finding and comprehends the behavioral situations through the actors’ viewpoint. It can, thus, explain the procedure and the result of an event via complete reconstructive, observation, and analysis of the situation that is under study. There had been many individuals who have observed phenomena in the context of virtual IT teams, but few who have attempted to understand how and why these phenomena occur. The study research method is appropriate to use because it aims to have an in-depth understanding of how transformational leadership affects various aspects related to virtual team leadership.

 The researcher explored the phenomenon in question using purposive inquiry. The case study was that of Hutu and Zahariah (2016) titled Transformational Leadership and Trust. The research method would be rooted in an incorporated approach that aims at exploring the trust level of employees in their leader as well as their attitude on a variety of subjects that relate to leadership. Design of the research instruments minimized the possible interference with the behavior of the respondents by the researchers. Also, the study’s approach would fundamentally concentrate on the corresponding elements of the studied premises with trust being the transformational leadership’s core ingredient. Transformational leadership’s success evaluated by the intensity of the perception of employees regarding their leader as being unbiased, fair, and motivational as he interacts with employees (Hutu & Zaharia, 2016). Leadership success measured by having the ability to induce respect and satisfaction by using work techniques. The case study, in no small extent, presents the examination of transformational leadership and how it helps in building the trust of employees in their leader as they work as a virtual team in a technology company.

 With what the above case study presents, it thus, becomes evident that case studies are often prospective, obtaining data from the documentation, direct observations, archival records, artifacts, participant observation, or as in the case of this study, interviews (Yin, 2014). This qualitative case study research is appropriate for examining virtual IT team members’ perceptions and experiences with transformational leaders through the participants’ interpretations from open-ended interviews (Yin, 2013).

 Case study research intended to influence business practices and theory within the modern business environment through an exploration of the real-life context of virtual IT team members (Yin, 2013). Qualitative research study intended to answer a research question that explored the perception of IT team members concerning positive communication, conflict resolution, and trust between team members and leaders within virtual teams. The selection of qualitative case study as the methodology to accomplish this goal based on the intended purpose of case study research. The experience of IT team members examines through case study methodology to assess their perception of transformational leadership interactions and underlying behaviors for future business practices within modern business environments (Yin, 2013; Rudestam & Newton, 2014).

 The exploration of IT team members’ perceptions and experiences with transformational leaders in case study research incorporate the concept of validity. Hard and soft techniques have implications for how leaders of teams in IT firms measure the knowledge, skills, and attitude (KSA) that members apply towards completing individual assignments and collaborative projects (Macke & Crespi, 2016). The qualitative data analysis tool recorded every interview using iPad, Nvivo Pro, and IBM SPSS Statistics. Following the recording, the conversation would transcribe verbatim, and accuracy confirmed by the interviewee (Yin, 2013; Scholz & Tietje, 2013). The researcher relied on the unstructured interview because of its informal way of approach to issues, thus, making it possible for the interviewee to be at ease. Also, it does not restrict the interviewer to rely on any strict format when formulating questions since the questions are generally open-ended. The researcher finds it imperative to use unstructured interview due to their flexibility in the sense that it adapts and change items depending on the answers of the respondent (Vought, 2017). Also, the interviewee does not have to follow any schedule.

 The unstructured interview would also be important in this research because it can produce qualitative data via the application of open questions. Qualitative data is essential because the respondent had the chance to talk in depth using his own words. As such, the researcher had the opportunity to generate an exact sense of an individual’s understanding of an event. It would also be imperative to use unstructured interview because of its enhanced validity. Such a trait provides the interviewer with the chance to ask for explanations (Vought, 2017). It also permits the interviewee to guide the interview in the direction he/she prefers. The recording data protected along with all archived records and documents in a secure location to preserve the chain of evidence.

 A different research method, such as a survey, observational or ethnographic study, as well as quantitative experimental methods, are not appropriate for this research. Reviews do not provide a sufficiently broad explanation of the phenomena in question. Instead, a survey would give a narrow understanding of the effects of transformational leadership. A case study allows for in-depth research as well as observations of multiple phenomena. Case studies are compelling because they are less limited by the researcher’s biases (Yin, 2017).

## Population and Sample

 The population for the case study would be virtual team leaders within organizations located in the Northwestern region of the United States. The most recent census data show 4.6M IT workers in the United States (Jorgenson, Gollop & Fraumeni, 2016). The purposeful sampling would be suitable because it is a non-random way to be sure that the study’s participants would be capable of addressing the research and interview questions (Robinson, 2014). I use purposeful sampling to identify ten potential participants as recommended by researchers Lewis (2015) and Yin (2014). The purposive sampling method allows the researcher to judge or analyze the interview participants (Rudestam & Newton, 2014). Participants’ experiences working for an IT organization provided the basis for their selection in this study. The participants would be from the United States, who hold various internal positions must be eligible to have successfully led a virtual IT team and met sampling criteria. Per my sampling requirements, I only selected leaders who work for the same virtual company, had been working at the same organization for at least one year, and a minimum of 1 year in successfully leading a virtual team at this organization as identified by their manager. These selection criteria helped to ensure interview validity with knowledge and experience of virtual teams as recommended by Robinson and Yin (2014). The sample of this study would be opened to both male and female IT leaders, aiming at a target sample size of 10 IT team leaders who might be interested in participating in this qualitative case study. Gender sample would not be incorporated into this study. This diversity helped to provide alternatives to judge the performance and philosophies of transformational leaders. This population will help to facilitate more significant amounts of data because of the ease to find a valid candidate ((Jorgenson et al., 2016).

 The participant criteria required that the participant use appropriate technological tools to improve their team performance. The participants must have worked with various geographical locations and time zones, including Central Standard Time, Eastern Standard Time, Pacific Standard Time, and Mountain Standard Time. Due to geographically distributed participants, I used Skype and telephone calls to interview each participant with semi-structured, open-ended interview questions.

 A qualitative case study should demonstrate data saturation and can involve triangulation (Keutel et al., 2014). Methodological triangulation consists of using more than one kind of data to study a phenomenon (Houghton et al., 2013). According to Yin (2014), semi-structured, open-ended interviews can provide rich, more extensive data than survey instruments. Using a case study model, I reviewed documentation, tools, and conduct semi-structured interviews with the team leaders. A qualitative case study with detail and in-depth description can illustrate a unique case that has an interest in and of itself (Morse et al., 2014).

 A thematic data analysis technique will facilitate a deep understanding of the leadership strategies of these virtual teams (Yin, 2014). Data saturation indicates that the sample size is enough (Elo et al., 2014). Saturated data confirm replication in the categories, which then confirms comprehensiveness (Elo et al., 2014; Fusch & Ness, 2015). However, data saturation is not complete if the data are difficult to group thematically to create concepts (Elo et al., 2014).

## Materials and Instrumentation

 The researcher would be the primary data collection instrument for this case study. Semi-structured interviews questions conducted via Skype and telephones call. The interview protocol contained a method for participants to self-identify and select a leadership style. The researcher also used open-ended questions on the questionnaire. The respondents had space and freedom to provide detailed answers with no bias. Extra facts aid to clarify their responses, thus, resulting in inaccurate data and insight (Yin, 2017). The respondents informed the researcher about all the information they feel are relevant.

 Data saturation achieved when the data collection process reaches the point data information is not available to identifying new themes (Fusch & Ness, 2015; Morse, Lowery, & Steury, 2014). A researcher achieves data saturation with enough information to replicate the study when the ability to obtain additional new information attained, and when further coding is no longer feasible (Fusch & Ness, 2015; Morse et al., 2014). Achieving a data saturation contributes to assuring the quality of research and validity (Fusch & Ness, 2015), which is especially critical when conduction interviews during data collection. Researchers achieve data saturation only when they obtain adequate information to replicate their study (Fusch & Ness, 2015). Achieving data saturation through semi-structured interviews is facilitated by using an interview protocol that contains the same central questions for all participants (Bernard, 2012). The depth of data collection is the bases of data saturation (Fusch & Ness, 2015).

 To achieve triangulation, the researcher reviewed documentation and technological tools. The reliability of a case study model will support more than one data collection instrument (Elo et al., 2014; Lewis, 2015; Yin, 2014). Popli and Rizvi (2015) provided a theoretical foundation for all the questions on the survey and conducted a study on leadership styles, looking at the level of service orientation. Measuring leadership styles framed questions that focus on six aspects that include charisma, vision, delegation, social, transformational, and execution. The transformational leader used open-ended questions that focus on employees’ self-development, trust-building amongst employees, and setting standards that everyone agrees with (Wojtara-Perry, 2015). The physical component of the study involved observation during the interview process. The researcher recorded and replayed the data to extract meaning. The qualitative nature of the study means that there would not be materials used for gathering the data.

**Study Procedures**

Data collection procedure began immediately after approval is granted by the Institutional Review Board (IRB) of Northcentral University. The transformational leaders within the information technology organization obtained the data. The gathered data used a purposive sampling methods approach to interviewing. These IT leaders remained within a relatively wide geographical radius. The interview conducted and recorded through video chat programs such as Skype and telephone. The interview process helped to remove any potential geographic biases that might exist within a given sample size. This data gathered as soon as possible and gleaned through purposive sampling approach. If the participants agree to join this study, they would be asked to answer the interview questions through Skype and telephone. Participants would agree to have their responses maintained securely and electronically during the research and for seven years after the conclusion of the study. After 7-years storage period, I would destroy, incinerate, and dispose of all data digitization and encryption related to this study, according to the university policies. Participants engaged in a follow-up phone call where the researcher might be asked questions to clarify the provided information. The researcher used member-checking to verify what the participants wanted to convey to ensure the accuracy of the data (See Figure 1). **Data Collection and Analysis**

**Collection of Data**

Semi-structured interviews

Reading data

Use of memos

**Synthesizing the Data**

Explaining the links between categories

Looking for patterns and links

Mapping the findings’ interpretation

Develop model

Creating attributes

Check for new ideas

**Working with the Textual Data**

Identify premises associated with the research question

Develop categories

Creating the coding of chosen data

Develop/relate relationship between categories

**Research Question**

Figure 1. Data collection and analysis

 NVivo11 for Mac would be used to analyze the qualitative data that the researcher intends to gather. The software was critical for the data analysis because it made it possible for qualitative inquiry that went beyond data retrieval, sorting, and coding. The design enabled a researcher to incorporate coding together with qualitative modeling, shaping, and linking. To make use of Nvivo 11 for mac, the researcher developed a project to hold the study data. This data made it easy to create and explore nodes and documents when the study data coded, linked, and browsed. It was possible to develop materials in Nvivo 11 for Mac by importing from MS Word in a rich text format into the project. This technology presented the researcher with the chance to save interview data as documents in Nvivo and view it in the document browser using short descriptions. The researcher then coded the data. This process entailed reconciling textual information into groups, examining differences and similarities, and aligned together theoretically comparable data in the relevant nodes. The researcher then analyzed the data through memos.

 A qualitative case study design was appropriate for this research to develop a precise case study that involves careful consideration of validity and potential bias (Hyett, Kenny, & Dickson-Swift, 2014). The target population included 10 IT leaders of various organizations located in the United States. The participant's selection strategy was through a social medial flat form. The participant's selection strategy employed was through purposeful sampling Lewis (2015) and Yin (2014). The participants must have worked with various geographical locations and time zones, including Central Standard Time, Eastern Standard Time, Pacific Standard Time, and Mountain Standard Time.

 This data ensured no subtle influence or preferences within the findings of the study. All questions were in simple language. Each item would be sufficiently open-ended so that the problem did not infer what the answer should be. The interview questions would be innocuous and posed no apparent risks or threats to the participants. Using tested and peer-reviewed interview questions will improve reliability and validity in data collection (Bernard & Russell, 2013).

**Interview Questions**

The nine open-ended Semi-structured interviews questions were conducted with IT team leaders of different organizations organization.

Table 1.

 *Interview Questionnaires*

|  |  |
| --- | --- |
|  |  *Question* |
| 1. | What aspects do you consider before ranking a leader as a transformational one? |
| 2. | What are your perceptions and experiences with transformational leaders? |
| 3. | What are your perceptions concerning positive communication, conflict resolution, and trust between team members and leaders within virtual teams? |
| 4. | What do transformational leaders do in their capacities as transformational leaders? |
| 5. | How do you identify the approach of transformational leadership as associated with the traits of transformational leadership?  |
| 6. | Is the style of transformational leadership considerably and associated with job performance? |
| 7. | What is the difference between transformational leadership and other forms of leadership? |
| 8. | Are there any differences in the scores of leaders along the traits of transformational leadership? |
| 9. | Which features descriptively contribute most to the characteristics of transformational leadership? |

## Assumptions

There were assumptions about the way’s transformational leadership impact IT professionals. The most critical assumption was that IT professionals work more efficiently when they were given the agency to govern their problems. The researcher argued that a more hands-off style of leadership, which transformational leadership emphasized, would be ideal. Another assumption was that transformational leadership was desirable over the other forms of direction for this purview. The two key leadership styles to project commitment were transactional and transformational leadership (Tyssen, Wald & Heidenreich, 2014). Therefore, these leadership styles were necessary for some way, but that transformational allows for greater autonomy.

 Perhaps the most long-term assumptions were that transformational leadership applied to this purview of information technology organizations would allow new ideas. Another source found that the application of transformational leadership brought about possibilities of innovation (Birasnav, Albufalasa & Bader, 2013). Scholars agreed that direction is an essential element that facilitates change in the IT industry. Leadership had a fundamental function in creating a project’s spirit. Transformational leaders had their focus on ensuring that they met the higher inherent demands of their followers. Such requests encompassed individualized consideration, intellectual stimulation, visual stimulus, and charisma. Transformational leadership of a virtual IT team might generate a deeper appreciation and understanding from all members of the team to engage in innovation (Ping-Jen, Peiyu, Tingling & Jun-Yu, 2015). Transformational leaders would, therefore, manipulate the pro-activity of the members of the IT team, and promote their active participation in creative or developmental activities.

 A transformational leader could also choose a project manager to lead the rest of the IT team members. The manager would be under instruction to motivate his members to ensure that they can achieve innovation through the company’s vision. Transformational leadership lead to the creation of a conducive climate that was necessary for change, especially at the group level. It also encouraged group members to have collective prospects of support for cognitive innovation. Modernization climate was the central innovation element derived from team members (Jiang, Zhao & Ni, 2017). As such, it was possible that a transformational leader can coordinate the members of an IT team in a way that encouraged them to become innovative in their operations.

 Earlier studies had discovered empirical proof of the affirmative link of transformational leadership with a resourceful managerial atmosphere at the level of a firm. The command could be used to create a supportive environment in an IT team. A transformational leader could develop a climate that makes team members feel motivated when taking part in innovative activities. Transformational leaders also played significant functions in building a creative environment. The leaders did so by questioning the team members’ thoughts and establishing a shared vision. Transformational leaders can provide an opportunity for the members of an IT group to build up the need for innovation or creativity (Jiang, Zhao & Ni, 2017). Transformational leadership made it possible for the group members to come up with creative traits effectively. Research projects helped the existence of a positive relationship between transformational leadership and innovation that was done by IT members who work in a group.

**Limitations**

Limitations are restrictions within the study that the researcher has minimal control (Rudestam & Newton, 2014). The barrier would likely inhibit the ability of this study to be applied at a more practical level. Simultaneously, this limitation would prevent the layman from being able to understand and ultimately use the implications gleaned from this study.

 The other limitations within the study were representative of the response of the Virtual IT team members perceptions and experiences with leaders’ issues related to trust development, conflict resolution, and communication inefficiencies (Hall, 2013). There was not in-person interviewing, nor in the way of follow-up interviews or exams. The restriction would make the interviewee feel "one-way," which limited the ability of researchers to ask and respond to questions and would likely lead to the research exploring more one-dimensional. But it should not significantly impact the interview results.

## Delimitations

The key delimitations of the research would not focus on quantitative polling and performing the interviewing process remotely. The rationale for not focusing on the quantitative aspect is simple: there is already a wealth of research that exists which addresses these more quantitative elements. Transformational leadership often involves leading virtual teams, especially within the IT environment, and this necessitates structural supports, hierarchical leadership, and shared team leadership in equal measure (Hoch & Kozlowski, 2014). Although not quantitative in the conventional sense, these sorts of results speak to the quantitative methodologies, and the main delimitation of the study was that these sorts of quantitative methods not utilized.

 The remote nature of the interview process would be calculated to ensure that there was a large amount of efficiency within the data-gathering process. Through the remote interview, it was possible to gather data from a much fuller pool of participants than would have been possible if the meetings were face-to-face. These research decisions might initially be controversial, allude to the existing literature in some fundamental ways, as well as the theoretical and conceptual framework.

 These delimitations purposefully moved away from management and quantifying of employee performance. Employee performance was a purview that involves a prominent relationship between mission valance, transformational leadership, and overall performance (Caillier, 2014). This employee perhaps to elucidate why there was not more of a focus on the employees: there would have just been too much to focus.

 Another component of these delimitations was that they intentionally avoid some of the more intricate of qualitative elements, particularly as they relate to the employees. This aspect was elucidated by a large amount of literature. For instance, one article states that there are clear correlations between the proper application of transformational leadership and job satisfaction, especially within smaller and more confined groups, and it is easy to see how these results can be extrapolated to information technology as well (Top, Tarcan, Tekingündüz & Hikmet, 2013). Therefore, focusing on qualitative elements within the employees was not necessary.

 Lastly, the fundamental rationale behind these initially glaring delimitations is that transformational leadership can engender commitment, and this process works both ways. Therefore, it is prudent to take a snapshot of how these transformational leaders within it function and think, rather than making a more long-term approach. This concept is also elucidated in some of the literature, as one source states that there is a clear and linear relationship between transformational leadership behaviors and overall levels of organizational commitment (Selamat, Nordin & Adnan, 2013). Keeping the research focused would ensure the importance of the elements.

**Ethical Assurances**

This case study received approval from Northcentral University's Institutional Review Board (IRB) before its data collection because of the minimal amount of risk for all parties involved. The high level of potential for this research advances much of the understanding of transformational leadership. There are no relevant ethical issues for this case study. Participants will remain confidential and provided with a unique identifier for that purpose (Moule et al., 2016). Confidentiality ensured that the participants in these interviews do not feel compelled to anything, and their characters remain protected.

 The data from this research would be carefully secured and protected under IRB requirements. This data stored in multiple locations, each password protected and encrypted if need be to ensure that this data would not be stolen or used for anything other than its intended purpose. This storage would help to provide stability and trust for these participants and their responses (Moule et al., 2016). The role of the researcher in this study was not merely the one that gathers data, but also one that actively facilitates the interview process. Because they are the ones asking questions throughout part of this data-gathering process, they would be able to slightly influence and guide the interview to ensure that the participants are providing the necessary information and opinions.

 Biases are always an issue when it comes to the qualitative elements of research, but even so, this need not be a significant problem (Moule et al., 2016). The researchers for each of these interviews asked specific questions. The only biases would come from generating the items, which is unlikely to cause prejudice because the problems are rooted in the literature, a way of decreasing the impact of bias (Moule et al., 2016). Therefore, the overall effect of preferences in this regard would be relatively low, ensuring that the results remain reliable.

**Summary**

 The purpose of this qualitative case study was to explore strategies transformational leaders used to improve the effectiveness and efficacy of the virtual IT team. Successful virtual organizations in the United States were the focus of the qualitative case study. The participants included successful virtual IT team leaders from virtual IT companies in the United States.

 The participants worked in various locations and time zones in the United States. Key points presented in this chapter would be a purposive sampling approach used for gathering data that favor a qualitative method. There would also be an interview process utilized by researchers, which include insights and perspectives from participants who respond to interview questions delivered in a semi-structured format. I sent e-mails to potential participants to introduce the study. The participants provided formal consent via e-mails after reviewing the granted informed consent to participate. The interview included nine open-ended questions with a focus on leadership strategies of virtual team leaders. The data from the study will remain locked in a safe place for seven years

 I recorded each interview to assure the inclusion of all the information and took detailed descriptive notes in a password protected online journal to accompany the recording. Using thematic analysis and transcript review facilitated assuring, the study’s results were valid and reliable.