

**CAUTIOUS CONNECTIONS:
AN EMPIRICAL INQUIRY INTO MANAGERS' ATTITUDES TOWARDS
THE EFFECTIVENESS OF PHARMACEUTICAL GLOBAL VIRTUAL TEAMS**

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ABSTRACT

As organizations shift from traditional office settings to virtual work environments, attitudes toward virtual teams have become increasingly varied. This transition has sparked significant academic debate over how to best assess virtual team effectiveness. While existing research highlights strategies for optimizing global virtual teams, the attitudes of the managers who lead them remain a critical missing piece. This study examines those attitudes, laying the groundwork for future research on how managerial perspectives influence the performance of global virtual teams within the pharmaceutical industry. We apply cognitive-based attitude theories to explore the feelings, emotions and perceptions of managers working on global virtual teams. Our findings reveal that positive attitudes influence perceived virtual team effectiveness. To thrive, virtual teams require clarity of goals, trust, communication, and accountability. By addressing these areas, organizations can build stronger, more resilient teams that support long term success. This research also provides actionable guidance for improving team structures, organizational practices, and value creation.

INTRODUCTION

Virtual teams have become the norm and core of most organizations. The transition from onsite to remote work environments has sparked a fiery amongst researchers grappling to identify the most effective framework for evaluating the performance of virtual teams.

According to the U.S. Bureau of Labor Statistics, 34 million people over age 25 worked remotely during the first half of 2024 (U.S. Bureau of Labor Statistics). The COVID-19 pandemic led to millions of workers in the European Union and worldwide working from home (Sarfraz, et al, 2021). Virtual team formation is inevitable, as evidenced by the upward trend of remote work. According to (Taras, 2025), virtual teamwork had become increasingly common before the onset of COVID-19 pandemic. Recent studies reveal that virtual team implementation is still rising (Unal, 2023). Environmental and economic conditions may have accelerated firms' decisions to move from traditional office environments. Additionally, firms and people accustomed to working within traditional office environments may have varying attitudes towards remote work.

Merging individuals with differing cultures, nationalities and experiences into virtual teams can create many challenges (Unal, 2023). Incorporating a global characteristic adds to the complexity of the virtual teams and could impact the effectiveness of such teams. Further, attitudes of virtual team members could influence the effectiveness of virtual teams. These attitudes could influence individual and team member contributions and impact firm performance. According to Fishman, Yang, & Mandell (2021) attitudes are the sum of positive and negative beliefs weighted by evaluations of those beliefs. Past and present experiences on virtual teams can shape how team members perceive and approach future collaboration. When

individuals carry positive attitudes into these environments, their contributions tend to be stronger, which in turn enhances overall virtual team effectiveness. In high performance organizations, such as pharmaceutical firms, top talent is acquired and dispersed into global virtual teams to deliver products and services throughout the entire nation. Pharmaceutical firms traditionally acquire top executives and managers with esteemed educational background and experiences. These highly skilled individuals are dispersed into global virtual teams throughout the organization. A human resource pool with this intellectual capacity should consistently result in a high degree of effectiveness.

Problem Statement. Despite many researchers outlining strategies for optimizing global virtual teams and factors to consider when forming them, there is limited research that explores the attitudes of pharmaceutical managers towards the effectiveness of global virtual teams that lead them. We posit that managers' attitudes towards global virtual team effectiveness should be examined to enable future research to examine how attitudes could impact global virtual team performance.

Research Aim. Our study explores the feelings, emotions, and perceptions of managers working on global virtual teams within the pharmaceutical industry. Literature examines factors such as trust and its impact on team performance. However, our research reveals how managers' attitudes about the performance of themselves and others could influence global virtual team effectiveness.

LITERATURE REVIEW

Virtual Teams

For this study, we define virtual teams as “two or more persons who work together on a mutual goal or work assignment, interact from different locations, and therefore communicate and cooperate by means of information and communication technology” (Geister et al., 2006, pp. 459-460) cited by El-Kassrawy (2014). Virtual teams can also be comprised of members located on the same site on different floors or in different buildings. According to Hart (2009), many firms were forced to transition to virtual teams after the 9/11 attacks on the United States of America (U.S.). Vying to communicate across the U.S. and adapt to diminishing budgets, virtual teams rapidly adopted digital forms of communication.

Within the pharmaceutical industry, virtual teams are formed to manage highly regulated functions such as drug development, drug safety, marketing, clinical trials, mergers, and acquisitions. The success of these virtual teams is critical to firm success. Prior research reveals a multitude of factors that contribute to the success and failures of virtual teams. A study by (Clark, Marnewick, A. L., & Marnewick, C. , 2019) highlights interpersonal characteristics as one of the top two positive factors impacting virtual team performance, and dispersion and cultural diversity as the top two negative factors.

Global Virtual Teams

We define global virtual teams as teams that are distributed across national boundaries and connected through advanced information technology such as email, instant messaging, and video conferencing (Scott & Wildman, 2014). Global virtual teams bring additional risks due to the challenges associated with trust, knowledge sharing, cultural difference, language

differences, distance, and time differences (Ünal, 2023). Team members' attitudes could reveal unknown challenges that may hinder virtual team effectiveness. Further, geographic separation can impact a manager's ability to lead and influence team members through personal traits and strong presence (Hart, 2009). Hart (2009) reveals that effective virtual teams can significantly reduce operational effort to bring products to market. Within the pharmaceutical sector, such delays could have serious consequences, potentially slowing the launch of critical disease-treatment therapies. Research conducted by (Jones, Bellenger & Johnston, 2016) reports that pharma projects are an extremely high risk (fewer than 10 percent make it to market), expensive (a single project can cost hundreds of millions of dollars) and have long time frames (typically 3-8 years) as reported by (Mestre-Ferrandiz, Sussex, and Towse, 2012) and cited by (Smith and Sonneblich, 2013). Global virtual teams comprised of research scientists and regulatory personnel and other pertinent roles play a vital role in R&D success.

Global Virtual Team Effectiveness

Our study defines global virtual team effectiveness as the total satisfaction and perceived performance expressed by a subjective process measure (Walters, 2004), cited by Hart (2009). We adopted this definition because some pharmaceutical managers are still members of their respective virtual teams at the time of this study. Lurey & Raisinghani (2001) states that process measure is the most accurate form of measuring the perceived team effectiveness because it allows the thorough assessment of the team effectiveness while team members are still working on a project requirement (cited by Hart, 2009). Therefore, global virtual team effectiveness is expressed in terms of a process measure.

The effectiveness of global virtual teams is shaped by a range of environmental, economic, external, and organizational factors. Taras (2025) reveals that institutional differences, lack of informal communication, and competing project commitments emerged more significantly as the critical barriers to global virtual team success as opposed to time zone differences, cultural diversity, and language barriers. Cordery and Soo (2008) propose additional challenges to virtual teams relating to (a) accessing, sharing, and capitalizing on team knowledge; (b) developing a sense of collective engagement in respect of the team task; and (c) experiencing the sense of collective competence that is often associated with performance excellence. These challenges are likewise relevant to global virtual teams.

Attitudes and Perspectives

Attitude Theory. Schwartz (2012) provides insight into how humans hold multiple values (e.g., achievement, security, benevolence) that are important to an individual with varying degrees of importance. Schwartz (1992, 2006a) as cited by Schwartz (2012) states that people decide what is good or bad, justified or illegitimate, worth doing or avoiding, based on possible consequences for their cherished values. Managers' perceptions of the effectiveness of global virtual teams may influence the performance outcomes of virtual teams.

What are the attitudes and perspectives of managers working on global teams requiring a blanket of trust and implied confidence that all members can achieve common organization goals? What influences these attitudes, and do they contribute to the perceived effectiveness of global virtual teams? Our analysis reveals these attitudes relative to how their individual contributions, as well as others, influence the effectiveness of global virtual teams.

Theory of Narrative Thought. Jones, et al., (2016) research utilizes Theory of Narrative Thought to help explain managers' attitudes and behaviors during pharmaceutical mergers and acquisitions. We apply the Theory of Narrative Thought to explain managers' attitudes towards global virtual team effectiveness. According to Wise (2016), Theory of Narrative Thought describes how narrative thinking results in actions that manage the future by influencing the ongoing course of events in attempt to ensure that the future, when it arrives, is desirable (where desirable means that it conforms to the narrator's values and preferences). Managers' attitudes towards global virtual teams based on past and present experiences could influence their attitudes while working on global virtual teams. These attitudes could influence their contributions and confidence in others.

The responses to the open-ended questions in our survey provide rich perspectives into how managers' prior experiences on global virtual teams influence attitudes relative to the effectiveness of these teams. Considering the confidentiality agreements and intellectual property protections mandated by the pharmaceutical industry, it is surprising to reveal the transparency of individuals' attitudes towards global virtual teams. Figure 1: Theoretical Framework outlines the theoretical framework for this study.

<Insert Figure 1 Here>

Literature Gap

Although the literature extensively identifies factors influencing global virtual team effectiveness, pharmaceutical managers' perceptions of these teams' effectiveness have, to our knowledge, not yet been explored. Our study examines the beliefs, feelings and perceptions of

managers working on global virtual teams within the pharmaceutical industry. We provide insight into how managers feel about global virtual teams and how these attitudes provide context into their perceived effectiveness of global virtual teams. Our research also provides insight into challenges of global virtual team effectiveness, as well as expectations of other team members. We explore attitudes towards perceived virtual team performance relative to milestones and goals. Lastly, this study examines managers' perspectives on working with new team members, their individual contributions, as well as their confidence in other team members.

Research Question. Our research question is: What are managers' attitudes towards the effectiveness of Global Virtual Teams within the pharmaceutical industry?

Hypotheses

Our survey measures individuals' attitudes relative to four constructs to determine if there are correlations/relationships. The four constructs are:

1. Virtual Teams, in general
2. Effectiveness of Global Virtual Teams
3. Confidence in Team Members
4. Individual Contributions towards Global Virtual Teams

We tested the following three hypotheses:

Hypothesis 1: Managers who enjoy working on global virtual teams have a more positive attitude towards global virtual team effectiveness.

Hypothesis 2: Managers feel global virtual team effectiveness is strongly related to their individual contributions.

Hypothesis 3: Managers who have confidence in team members have a positive attitude towards global virtual team effectiveness.

Feedback from managers in this study offers evidence that supports our hypotheses and provides additional insight into their attitudes toward global virtual team effectiveness.

METHODOLOGY

Research Design

The goal of this research is to gain insight into pharmaceutical managers' attitudes towards the effectiveness of global virtual teams. A mixed-method design was chosen so that quantitative and qualitative data could be collected and analyzed in parallel and then merged for a complete understanding of a phenomenon (Venkatesh, Brown, and Bala, 2013). Further, we chose this mixed study approach so that qualitative data and results can provide rich explanations of the findings from the quantitative data and analysis (Venkatesh, Brown, and Bala, 2013).

The unit of analysis in this study is the pharmaceutical industry. The unit of observation are pharmaceutical managers working on global virtual teams. Since this research employs quantifiable measures of variables and hypothesis testing, a positivist philosophical perspective was adopted (Myers 2009, p.37). As suggested by Creswell and Clark (2007), an explanatory design was chosen so that qualitative data could be used to help explain or elaborate quantitative results.

Schwartz (1992) research reveals a universal structure of human values, differentiating between 10 value types: power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security (Boer and Fischer, 2013). The pharmaceutical sector is characterized by "high competition for specialized talent and rising turnover" (IQVIA Institute for Human Data Science, 2023). Since over 70 percent of managers in this study possess a bachelor's degree or higher, we infer the value of achievement and its

influence on managers' attitudes towards the effectiveness of global virtual teams. As adapted by Boer and Fischer (2013), the degree in which a person values achievement will guide, motivate, and influence attitudes and behaviors.

Research Method

Sampling. There are two sampling criteria for participation in this study: participants are (a) members of a global virtual team and (b) are currently or were formerly employed within the pharmaceutical industry in any capacity. We define managers as members of a pharmaceutical global virtual team, past or present. Global team members are in any country and collaborate with colleagues across national borders. Participants were asked to provide their perspectives based on their most recent experience on global virtual teams.

Data Collection: To measure managers' attitudes, we administered a web based Qualtrics survey to a population of pharmaceutical industry managers. The questionnaire is comprised of 20 questions: 1 qualifying item, 5 quantitative items, 4 open-ended qualitative items, 7 items focused on employment and professional roles, and 3 items capturing demographic information.

First, we asked participants a qualifying question to verify that managers work or have worked on a pharmaceutical global virtual team in any capacity. Second, we asked participants to respond to multiple-choice questions relating to their professional role on global virtual teams. We asked participants to specify the size of the organization in which they are currently or were employed, namely - small, mid-size, or big pharma. We then asked participants for their functional roles, such as Quality, Regulatory, and Research and Development. Participants were then asked to indicate their tenure of their respective virtual teams ranging from less than one year to over five years. Next, participants selected their face-to-face meeting cadence. Finally,

we asked participants to identify their country of residence. Identifying information about companies or individual managers was not collected due to the confidential nature of the pharmaceutical industry.

Managers then selected their responses on a Likert-type, 7-point scale asking their attitudes of global virtual teams in general, as well as their attitudes on the effectiveness of global virtual teams from an individual and team perspective. A multiple response question asked managers to choose from a list of possible impediments to virtual team effectiveness that we adapted from prior literature. The open-ended questions provided valuable insight into managers' perceptions of global virtual team effectiveness and the specific challenges they experience in these roles. We then asked managers their preference for working with team members whom they know and their attitudes towards global virtual team performance.

Population. The survey was administered to a full sample of 100 managers with any title and affiliation relative to the pharmaceutical industry. The survey was also administered to LinkedIn members currently employed by the approximately 30 pharmaceutical companies classified as small, mid-sized and big pharma based on financial data of the organization. These managers' LinkedIn profiles indicated affiliations with the pharmaceutical industry as an employee, consultant, vendor, or other professional titles. The survey was also posted on the primary author's Twitter site. To ensure further that the sample pharmaceutical managers, 'snowball sampling' was used (Myers, 2009, p.88). Participants had 45 days to respond to this research study and voluntarily participate during the timeframe of February and March 2026.

Out of the total population of approximately 30 pharmaceutical companies, there were 71 participants. Of these, 43 managers (sample size) passed the qualifying question confirming their affiliation with pharmaceutical global virtual teams to continue with the survey. Our

sample size is small due to the discrete and highly regulated nature of the pharmaceutical industry. Managers typically operate under strict confidentiality agreements, and companies enforce rigorous standard operating procedures that limit access to personnel for research purposes. This is consistent with industry analyses showing that more than 80 percent of pharmaceutical organizations classify internal processes and workforce information as ‘highly confidential,’ restricting external data sharing and participation in research studies (Deloitte, 2023). Though no identifying information is captured for our research, the small sample size also infer reluctance to share attitudes about experiences within their respective organization.

Data Analysis

Quantitative Data. Quantitative survey data was exported from Qualtrics and imported into IBM SPSS for analysis. To test our hypotheses, we used select cases to determine correlations between the four variables: Individual attitudes towards virtual teams, attitudes towards global virtual team effectiveness, attitudes towards individual contributions, and attitudes towards team confidence in one another. For each variable, the numerical values from each subscale were summed, and the mean was taken to produce a total score as suggested by Burns and Burns (2008, pp.473-474). To analyze the data, we assumed the appropriate mean rating criteria for each variable as suggested by Burns and Burns (2008, p.473). The variable mean rate of the constructs is displayed in Table 1: Variable Mean Rate of Constructs.

<Insert Table 1 Here>

The mean rating criteria for each variable is shown in Table 2: Variable Mean Rating Criteria. Higher scores indicated positive or strong attitudes, while lower scores indicated negative or weak attitudes.

<Insert Table 2 Here>

A set of Pearson correlations were computed to determine if there were significant relationships between the following:

Hypothesis 1: Managers who enjoy working on global virtual teams have a more positive attitude towards global virtual team effectiveness.

Hypothesis 2: Managers feel global virtual team effectiveness is strongly related to their individual contributions.

Hypothesis 3: Managers who have confidence in team members have a positive attitude towards global virtual team effectiveness.

The variables examined in this study are outlined in the following section. Three statements using a 7-point Likert scale were used to measure participants' attitudes, where 1= Strongly Agree, 2= Agree, 3 = Somewhat Agree, 4 = Neither Agree Nor Disagree, 5= Somewhat Disagree, 6=Disagree, 7= Strongly disagree.

Attitudes Towards Global Virtual Teams. This variable measures managers' attitudes towards working on virtual teams (enjoyment). We chose this variable to measure the attitudes adapted by the work of Bock (2003) cited by El-Kassrawy (2014) that reveals beliefs that virtual team environments can produce more innovations and gain more benefits than their more traditional face-to-face counterparts. A positive attitude indicates that managers rule out other factors such as preference for face-to-face meetings.

Global Virtual Teams Effectiveness. This variable measures managers' beliefs on team performance relative to goal attainment (achievement). Given that achievement is widely regarded as an important value among pharmaceutical managers, we chose it as the measure for evaluating their attitudes toward global virtual team effectiveness. Since values occupy a central position in an individual's cognitive makeup, they may influence attitudes and behaviors (Rokeach 1973) cited by Cho, Mier, Jones, & Bellenger (2017).

Managers' Confidence in Team Members. Confidence among team members is a critical factor in shaping virtual team effectiveness, as higher levels of interpersonal trust and reliability enable teams to collaborate more efficiently despite geographic dispersion (Jarvenpaa & Leidner, 1999). When team members lack confidence in one another, virtual team performance may decline because diminished trust can slow productivity and introduce uncertainty. We chose this variable to determine if managers have a positive or negative attitude towards their confidence in team members.

Managers' Individual Contributions. This variable represents the attitudes of managers towards the effectiveness of global virtual teams relative to their own contributions. Managers often perceive their involvement as essential to the success of virtual teams, believing that team performance would decline in their absence (Hoch & Kozlowski, 2014).

Qualitative Data. The open-ended responses from our questionnaire were carefully reviewed to gain insight into managers' attitudes towards global virtual teams. We tabulated and coded responses following descriptive coding methods and standards as outlined by Miles, Huberman, and Saldana (2014, p. 73) using a six-step process.

First, we used the eight impediments listed within our multiple response question that asked managers to select what they think are impediments to global virtual team effectiveness as

labels for first cycle coding. Part IV of the survey listed in Appendix D-1: Abbreviated Questionnaire lists the impediments used for first-cycle coding. These labels were also used for the open-ended questions where participants stated challenges of global virtual teams, expectations of team members, managers' preferences towards working with people whom they know and attitudes towards perceived team performance. We applied sub coding to responses that required more extensive categorizing.

Second, one author applied the content analysis technique to develop a set of categories of words and phrases from each manager's response for the open-ended questions as outlined by Myers (2009, p.172). Third, the other two authors coded each response in accordance with the coding scheme. Fourth, the three authors generated patterns to be used for second cycle coding. Themes were identified for each category.

Fifth, we mapped these themes to the eight predefined impediments from our quantitative data. Lastly, we collaborated on common themes until full agreement was reached and assigned categories to summarize them. To address intercoder reliability (Miles, Huberman, and Saldana, 2014), three authors independently coded each response, demonstrating an agreement of 95 percent after cycle 1, and 100 percent after cycle 2.

RESULTS AND DISCUSSION

Our research provides rich perspectives relative to the attitudes towards effectiveness of global virtual teams including impediments, challenges, and expectations. We deepened our insights by examining perceived team performance, and team member preferences. The Pearson correlation coefficient test was computed to determine if there is a significant relationship

between managers' attitudes towards global virtual teams and managers' attitudes towards the effectiveness of global virtual teams. We assumed attitudes towards global virtual teams would function as a key driver of perceived effectiveness of global virtual teams. The correlation between the two variables is 0.60 with a sample size of 40; this is significant at the 0.01 level with an effect size (confidence interval) of 0.36 to 0.97. This indicates that the more positive attitudes towards global virtual teams the more likely managers perceive global virtual teams are generally effective. Table 3: Summary of Pearson Correlations shows the statistical results of the correlation tests performed for the variables used in this study.

We applied the correlation coefficient statistical test to determine if managers' attitudes towards their individual contributions are related to global virtual team effectiveness. The correlation between these two variables is 0.36 with a sample size of 40. This is significant at the 0.05 level with an effect size of 0.57 and 0.65. This indicates a positive correlation between attitudes towards individual contributions and global virtual team effectiveness. There is a moderately strong belief that managers feel their teams will fail without their contributions.

We also performed a correlation coefficient statistical test to determine if managers' confidence in others would influence managers' perceived global virtual team effectiveness. The correlation between these two variables is 0.55 with a sample size of 40. This is significant at the 0.01 level with an effect size of 0.28 and 0.73. There is a strong belief that when virtual team members have confidence in one another, the team is effective.

<Insert Table 3 Here>

Impediments and Challenges to Global Virtual Teams.

Impediments: To address our research question, we analyzed the responses from our multiple response question asking managers' views of impediments of global virtual teams.

Table 4: Selected Impediments of Global Virtual Team Effectiveness displays managers' selections to the multiple response question containing the most frequently mentioned impediments in the literature. The top three items selected overall are fluctuating membership of global virtual team structures (41.02 percent), a lack of collective competencies (35.90 percent), and geographic separation (33.33 percent).

<Insert Table 4 Here>

Open Ended Responses: Table 5: Challenges of Global Virtual Team Effectiveness summarizes the managers' responses to the open-ended question, "What challenges, if any, have you faced while working within global virtual teams?" Our coding scheme and subsequent content analysis identified five major categories of challenges of global virtual team effectiveness: Fluctuating membership (dynamic), Trust (amongst new team members), Time Zone Boundaries (schedule conflicts), and Connectedness (lack of human interactions).

<Insert Table 5 Here>

Expectations of Global Virtual Teams Effectiveness. Table 6: Expectations of Virtual Team Members summarizes managers' responses to the open-ended question, "What do you expect team members to do, if anything, to enhance the effectiveness of global teams? Our coding

scheme and subsequent content analysis identified four major categories of team member enhancement of global virtual team effectiveness: Accountability, Engagement, Time Management and Goal Alignment. Our results align with prior literature that reveals geographic separation (Cordery & Soo, 2008) as one of the eight impediments to virtual team effectiveness. Our study reveals that 66.67 percent of managers identified engagement as essential to enhancing team performance. Steven (2026) reveals that higher levels of team engagement can result in 21 percent higher profitability.

<Insert Table 6 Here>

Attitudes Towards Working with New Team Members. Table 7: Team Member Preferences summarizes managers' responses to the open-ended question, "Do you feel you are more effective when working with team members whom you know? Why or Why not? We divided Yes, No, and Neutral responses and coded based on managers attitudes. Feedback reveals that 73.91 percent of managers feel they are more effective when working with team members whom they know, and projected attitudes categorized by safety and relationships.

Managers who do not feel they are more effective with team members whom they know (13.04 percent) welcome diverse perspectives and rely on achieving collective goals regardless of the team members. Managers with these beliefs feel members should be open minded and seek to learn from diverse skillsets and cultures. Collectively, managers feel that communication, and team cohesion could attribute to team effectiveness and that knowing team members may not alter goal outcomes. Managers acknowledge that rapport certainly could contribute to virtual team effectiveness but won't necessarily eliminate or minimize team challenges.

Trust and relationships are the most prevalent theme important to managers when working with team members. Managers feel more comfortable and safer when they have prior experience working with team members with whom they know. This finding is consistent with earlier research, where trust is described as the extent to which individuals collectively rely on their remote team members (El-Kassrawy, 2014). Team members viewed their teams as more effective when they had established relationships with one another. Managers further observed that team morale was higher when members collaborated with individuals they are familiar with.

<Insert Table 7 Here>

Perceived Team Performance. Managers' responses to our ended question, "*Do you feel your team is less effective if a deadline or milestone is missed? Please explain*" are alarming. We are surprised that more than half (56.62 percent) feel their teams are effective, even when deadlines or milestones are missed. Table 8: Attitudes Towards Team Performance details managers' attitudes toward perceived team performance. Managers' insights reveal a potential gap in how organizations plan and establish timelines. Our themes reveal that these attitudes are a result of managers believing that achievement is not based on timescales, but rather value. This finding is evident by the themes uncovered from the depths of managers' attitudes about timelines set by the organization. Managers believe that missed timelines or milestones are a result of goals being unrealistic and arbitrarily set by the organization. Deeper insights reveal that frequently these goals are not met due to circumstances beyond the team's controls, such as technical hurdles, resource misalignment, lack of risk management and lack of project controls. It is interesting that managers with these beliefs view missed timelines and milestones as an

opportunity to improve organizational processes. More enlightening is the attitude that the team's ability to overcome challenges while missing targets could be viewed as effective. Our belief is that this perspective is a result of the team's confidence to deliver value over an extended amount of time despite organizational and environment constraints.

Managers who feel their team is less effective when a deadline or milestone is missed have similar attitudes as those who feel the team is not less effective under these same conditions. Whereas managers with negative perceptions of team effectiveness emphasized missed deadlines or milestones, those with positive perceptions identified similar underlying issues—namely uncontrollable circumstances and a lack of clear goals. Managers' open-ended responses indicated that chaotic virtual team environments undermine team effectiveness by contributing to low morale, diminished trust, and weak communication. Managers (21.74 percent) also exhibit ambivalence toward team effectiveness when milestones and deadlines are not met, frequently attributing these outcomes to unrealistic timelines and systemic uncertainty, including unclear root causes and broader organizational constraints. Managers further indicated that repeated missed deadlines and milestones contribute to a decline in team effectiveness.

<Insert Table 8 Here>

Summary of Key Findings

This study explored pharmaceutical managers' attitudes regarding the effectiveness of global virtual teams. Our findings, interpreted through Attitude Theory and the Theory of Narrative Thought, revealed several key themes deserving further consideration. Figure 2: Enhanced Global Virtual Team Effectiveness Model visually summarizes our findings and recommendations.

Attitudes Towards Virtual Team Effectiveness. Our findings indicate that managers enjoy working on global virtual teams over co-located teams and view them as effective when they collaborate with team members whom they know and trust. Managers reported that they are more transparent and trusting when working with familiar team members. The theme of psychological safety emerged, and managers noted that strong rapport and familiarity enhance team effectiveness. Building strong relationships through in-person interactions helps establish synergy and enables managers to learn team members' work styles.

We consider the most surprising finding of our research to be the attitudes of managers' perceptions towards global virtual team effectiveness relative to common key performance metrics, such as budget, schedule, and goal attainment. Most managers in our study generally do not feel their teams are ineffective when key performance metrics are missed. Managers indicated that missed metrics stem from organizational deficiencies, including unrealistic timelines and insufficient project controls. Our study reveals that managers regard these instances as opportunities to enhance organizational agility by emphasizing value and addressing systemic issues in timeline development. Contrary to the belief that teams are not less effective

when targets are missed, managers who perceive reduced effectiveness in these situations pointed to an accountability gap. This gap aligns with recurring themes in the study, including unclear goals, lack of trust, and communication barriers.

Attitudes Towards Individual and Team Performance. It was unexpected to learn that managers feel their teams would not succeed without their personal involvement and that they rely on themselves more than others to ensure the team is effective. At the same time, managers reported high confidence in their team members' capabilities. This contrast highlights a complex dynamic between individual and collective contributions and suggests that personal attitudes may shape perceptions of team effectiveness. It further prompts consideration of whether negative attitudes might undermine team performance.

Challenges and Impediments to Global Virtual Team Effectiveness. Three key themes emerged from our study that align with prior literature relative to impediments to virtual team effectiveness: (1) Fluctuating membership of virtual team structures, (2) Lack of competencies, and (3) Geographic separation. Throughout this study, these themes emerged from managers' shared experiences with global virtual teams. Managers revealed team fragmentation as the top challenge of virtual team effectiveness. Managers feel that team effectiveness can be hindered when roles are conflicting and ambiguous. Further, the formation of too many sub teams with fluctuating team members disrupts collaboration. When collective engagement is low, managers experience a diminished sense of social connectedness. These challenges become more pronounced when managers must collaborate with new team members, as sharing knowledge becomes difficult. Managers proceed with caution when new members are introduced to the team. Limited personal familiarity lowers trust, further hindering knowledge exchange. Lastly, time-zone differences hinder work-life balance, healthy routines, and efforts to prevent burnout.

Team Member Expectations. Reflecting the themes that surfaced in this study, managers articulated several ways in which team members could contribute to improving global virtual team effectiveness. The most significant expectations expressed by managers center on the need for greater engagement—specifically, finding effective ways to communicate and collaborate, demonstrating accountability and preparedness, minimizing distractions, managing time efficiently, and aligning personal and organizational goals.

<Insert Figure 2 Here>

Managerial Implications

The formation of virtual teams now seems to be a lasting feature of workplaces nationwide. Companies that emphasize teamwork and collaboration grow five times faster, achieve stronger results, and show greater resilience during challenges compared to those that do not (Steven, 2026). We've captured some perspectives from pharmaceutical leaders with leadership positions that may aid firms seeking to enhance virtual team effectiveness.

Firms should prioritize constructing virtual teams composed of members with complementary competencies. Moreover, pairing team members with individuals with whom they have had prior success may enhance team effectiveness. Our study suggests that trust and respect within these relationships foster greater productivity, transparency, and overall wellbeing. Ensure that virtual teams engage at a frequency that supports a sense of connectedness.

Finally, firms should transition from relying solely on traditional performance metrics like schedules, budgets, and milestones to focusing on strategies that drive meaningful outcomes

and organizational value. We found that managers emphasize value creation over metrics, focusing instead on navigating obstacles and achieving favorable outcomes.

Contribution to Knowledge

Our findings further contribute to the existing body of knowledge, as managers' attitudes toward global virtual team effectiveness had not been documented prior to this study. Our study documents the first empirical evidence underlying this issue within the pharmaceutical industry. With these findings, coupled with the suggestions from our discreet population, we provided recommendations firms should consider for improving global team effectiveness. We feel that enhanced virtual team effectiveness could improve firm performance. Aligned with our study's implications, we hope to contribute to faster delivery of medicinal therapies to patients, ultimately enhancing patient outcomes.

Limitations

Our survey focused on an expert population within a highly confidential industry, which constrained overall response rates. It is also possible that participants misinterpreted the definition of a global team and responded inaccurately to the qualifying question, leading to early removal from the survey. Another limitation arises from the highly regulated nature of the pharmaceutical industry, which may have constrained the depth of insight provided by our sample. Lastly, as most of the managers in this study reside in the U.S., the range of perspectives from international team members may be limited.

Future Research

Global virtual team performance based on financials should be explored. Future research may reveal how the attitudes towards global virtual team effectiveness could impact global virtual team performance. Future research should also examine attitudes between groups based on department, meeting cadence, and position. Additionally, future research should examine virtual team performance based on team structures. To gain deeper insight, future researchers should examine the impact of individual performance on team performance. Managers' attitudes could serve a vital role to the success or failure of a virtual team based on attitude. A qualitative study leveraging focused interviews to derive more contexts relative to our identified themes may provide deeper insight into the attitudes of managers working on virtual teams.

CONCLUSION

We achieved our research objectives by analyzing and presenting managers' attitudes regarding global virtual team effectiveness. Our results suggest a shift from traditional ways of managing virtual teams. We suggest firms place less reliance on meeting performance metrics and emphasize more focus on how to deliver to achieve profits and reach target financial goals. Though global virtual teams are effective, firms should seek ways to make teams feel more connected with people with whom they know. Firms should minimize team rotations and leverage high performance teams by enabling them to serve as an exemplar to share their team successes in achieving goals. High achieving individuals have the propensity to think teams will fail without their contributions. There needs to be a shift in this attitude to a more collaborative and shared knowledge attitude where competencies should be expanded within teams. A focus

on inter team enhancement and development should be considered as opposed to personal development.

Managers' confidence in virtual teams supports the industry's need for speed, flexibility, and global reach. When managers embrace virtual collaboration, organizations can scale expertise across borders, accelerate decision-making, and streamline operations. This contributes directly to business growth, innovation, and competitive advantage in a rapidly evolving pharmaceutical landscape.

Insights from this research highlight the conditions necessary for virtual teams to thrive—clarity of goals, trust, communication, and accountability. By addressing these areas, organizations can build stronger, more resilient team structures that support long-term success. The findings also provide actionable guidance for improving team structure, organizations practices, and value creating.

This study underscores how virtual teams can enhance employee experience when trust, respect, and psychological safety are present. Managers' expectations for transparency, collaboration, and mutual support point to a work environment where individuals feel valued and empowered. This contributes to higher engagement, well-being, and job satisfaction.

Finally, the implications extend to society. Within the pharmaceutical industry, effective global virtual teamwork can accelerate the development and delivery of life-saving treatments. When teams collaborate efficiently across time zones and cultures, the result is faster innovation, improved access to medicines, and ultimately better patient outcomes.

Engaged Scholarship Perspective

Research on pharmaceutical managers' attitudes toward global virtual teams offers a powerful lens into how organizations can drive meaningful and sustainable change. The overall positive attitudes revealed in this study—paired with a clear understanding of the challenges, impediments, and expectations for team members—demonstrate that virtual collaboration is not merely a structural shift but a strategic opportunity for growth. In this way, strengthening virtual team effectiveness becomes not just a business imperative but a societal contribution.

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APPENDIX A

Table 1: Variable Mean Rate of the Constructs

Variable	Sample Size (n)	Mean	Standard Deviation
Attitudes Towards Global Virtual Teams	40	2.34	1.406
Attitudes Towards Effectiveness of Global Virtual Teams	40	2.25	1.214

Attitudes Towards Confidence in Team Members	41	1.88	0.927
Attitudes Towards Individual Contributions	40	3.15	1.545

Table 2: Variable Mean Rating Criteria

Variable	Mean Rating Criteria ≤	
	$\bar{X} \leq 3.15$	$\bar{X} \geq 3.16$
Attitudes Towards Global Virtual Teams	Positive	Negative
Attitudes Towards Effectiveness of Global Virtual Teams	Positive	Negative
Attitudes Towards Confidence in Team Members	Positive	Negative
Attitudes Towards Individual Contributions	Strong	Weak

Table 3: Summary of Pearson's Correlations

Hypothesis	Variables	Pearson Correlation (r)	Significance (p)	Confidence Interval Lower	Confidence Interval Upper
1	Attitudes Towards Global Virtual Team and Attitudes Towards Global Virtual Team Effectiveness	0.608	<0.001*	.366	.9773
2	Attitudes Towards Individual Contributions and Attitudes Towards Global Virtual Team Effectiveness	0.362	<0.022**	.057	0.605
3	Attitudes Towards Team Confidence and Attitudes Towards Global Virtual Team Effectiveness	0.546	<0.001*	0.283	0.733

*Correlation is significant at the 0.01 level (2-tailed).

**Correlation is significant at the 0.05 level (2-tailed).

Sample size is 40.

Table 4: Selected Impediments of Global Virtual Team Effectiveness

Rank	global virtual teams Impediments	Number of Responses	Percentage
1	Fluctuating membership of virtual team structures	16	41.02 %
2	Lack of collective competencies	14	35.90 %
3	Geographic separation	13	33.33 %
4	Difficulty accessing, sharing, and capitalizing on team knowledge	12	30.76 %
5	Cultural differences	11	28.20 %
6	Difficulties with establishing trust amongst team members	11	28.20 %
7	Electronic (vs. verbal and face-to-face) communications	9	23.07 %
8	None	1	2.56 %

Question: What, if any, do you feel are impediments to global virtual teams? (Please select all that apply).

Sample size is 39.

Table 5: Challenges of Global Virtual Teams

Category	Coded Response	Representative Response	Number of Responses/Percentage of Total
Team Fragmentation	Unclear roles Too many sub teams Lack of consistency in reporting team performance Conflicting roles Too many new team members Changing team members	<i>Establishing clear accountability and empowering people is key to success, as is tracking progress in a consistent way. The latter is proving challenging especially when new team members are onboarded.</i> <i>Challenges associated with teams changing based on drug development phase. This is challenge because you have to learn everything about your new team members.</i>	7 / 29.16 %

Time Zone Boundaries	Time zone boundaries Time Management	<i>Time zone challenges. Corporate HQ time zone is typically the default time zone which causes inconvenience to those in other time zones. More work hours. People are working more while at home. Earlier mornings and later evenings. During meals. People are working while they are sick.</i>	10 / 41.67 %
Connectedness	Communication barriers Lack of collective engagement Geographic separation Weak Social Connectedness Difficulty sharing team knowledge Lack of teamwork Limited Interpersonal Familiarity Lack of Trust	<i>Lack of focus on virtual meetings. Team members are always multitasking or give in to distractions on virtual calls. Lack of human in person interaction. It can sometimes be difficult to get to know folks outside of those with whom I work most closely.</i>	13 / 54.16 %

*Question: What challenges, if any, have you faced while working within global virtual teams?
Sample size is 24.*

Table 6: Expectations of Virtual Team Members

Category	Coded Response	Representative Response	Number of Responses/Percentage of Total
Accountability	Responsible team members Accountability Eliminate distractions Prepare and participate	<i>I trust they are all great professionals with several years of experience so I expect them to manage their work somehow the best way they can and if something is happening, look for support and steer. They are all capable to manage.</i>	7 / 33.33 %
Engagement	Enhance communication Respect team members Team Cohesion Collaborate effectively Improved Communication Enable social connectedness	<i>Team members can enhance the effectiveness of global virtual teams by meeting regularly with teammates even if there is no particular business to discuss in order to maintain and foster relationships.</i>	14 / 66.67 %
Time Management	Work life balance Flexibility Time efficiency Manage time in meetings	<i>Be present and focused. Try to create a consistent work routine separate from home life. Turn cameras on. Be professionally presentable. Communicate effectively (IM/DMs can be huge distractions).</i>	5 / 23.81 %
Goal Alignment	Team alignment with core competencies Understand the goal	<i>Form a team with like-minded team members. Assign work based on common competencies.</i>	3 / 14.28 %

		<i>I personally work best with team members who have similar goals as myself. Establish core team with proven success and created pods and assign to initiatives that match their collective core competencies.</i>	
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What do you expect team members to do, if anything, to enhance the effectiveness of global teams?

Sample size is 21.

Table 7: Team Member Preferences

		Number of Responses/Percentage of Total			
		Yes	No	Neutral	
		17 / 73.91%	3 / 13.04%	3 / 13.04%	
Category	Coded Response	Representative Response			Count/ Percentage of Total
“Yes”, More Effective					13 / 59.09 %
Trust	Comfortable Known expectations Familiarity Safety Transparency Good Rapport High morale	<i>The team understands my expectations and I don't have to explain inquiries. Yes, having a feeling of trust and safety with team members generally produces better results. I am more confident sharing ideas and feedback if I know and trust the people I'm sharing with.</i>			11 / 50.00 %
Relationships	Physical interactions Face to Face meetings Communication Synergy	<i>Absolutely. The personal relationship matters first. The work follows.</i>			

	Relatable Known work styles		
“No”, Not More Effective			
Diverse Perspectives	Open minded Learn from others Culturally diverse		2 / 9.09 %
Neutral			
Collaborative Flow	Open communication Team Cohesion Familiarity	<i>Yes and no. Communication and ways of working are easier if rapport already established. I could “know” someone, and they could still be challenging to work with.</i>	2 / 9.09 %

Do you feel you are more effective when working with team members whom you know? Why or Why not?

Sample size is 22.

Table 8: Attitudes Towards Performance

		Number of Responses/Percentage of Total		
		Yes	No	Neutral
		5 / 21.74 %	13 / 56.52 %	5 / 21.74 %
Category	Coded Response	Representative Response	Count/ Percentage of Total	
No, not less effective				
Organizational Agility	Opportunity to improve Technical Issues Overcome challenges. Focus on value Organizational issues	No because sometime deadlines and milestones are offset by factors outside of the team’s contributions. Frequently missed deadlines and milestones are symptomatic of a bigger organizational problem.	5 / 21.74 %	

Unrealistic Timelines	Arbitrary timelines Unachievable timelines	<i>No, typically the deadlines aren't realistic.</i>	3 / 13.04 %
Lack of Project Controls	Lack of Risk Management Inadequate progress tracking Resource Misalignment	<i>No, I feel less effective either because I did not track the project progress correctly, or because I did not have a mitigation plan in place.</i>	2 / 8.69 %
Yes, less effective			
Accountability Gap	Lack of Clear Goals Blame others No Discipline Causes low morale Acknowledge failures early and pivot Explore root cause Lack Communication Lack of Trust	<i>Yes, because team should look at why. If it is something resulting from uncontrollable circumstances, then something should be in place to readjust the initiative along the way versus staying off the rails knowing you are already failing. How can anyone think a team is effective met when deadlines and milestones are missed?</i>	5 / 21.73 %
Neutral			
Unrealistic Timelines	Lack of concurrence on timelines Misaligned expectations	<i>It depends. Some milestones/deadlines can be arbitrarily set. Some are negotiable based on tolerance of stakeholders. If a deadline is missed, it does not necessarily speak to the effectiveness of the team and may be more of a failure to set proper expectations.</i>	3 / 13.04 %

Systemic Uncertainty	Unknown root cause	<i>Depends on the circumstances about why the deadline was missed. Things happen, so there is an understanding there and it does not speak to effectiveness. If it becomes a pattern, then effectiveness comes into question.</i>	4 / 17.39 %
	Lack of due diligence		
	Unknown Failures		
	Systemic issue		
	Communicate misses		
	Team Cohesion		
	Overallocation		

*Do you feel your team is less effective if a deadline or milestone is missed? Please explain.
Sample size is 23.*

Table A-9: Definition of Key Terms Used in This Study

Term	Definition
Managers	Individuals who work on a global virtual team within the pharmaceutical industry.
Remote Work	Remote Work is typically characterized as work that is done at some physical distance from the office
Virtual Teams	Virtual Teams can be defined as two or more persons who work together on a mutual goal or work assignment, interact from different locations, and therefore communicate and cooperate by means of information and communication technology.
Global Virtual Teams	Global Virtual Teams are essentially teams that are distributed across national boundaries and connected through advanced information technology such as email, instant messaging, and video conferencing.
Virtual Team Effectiveness	Virtual team effectiveness is defined in this study as the total satisfaction and perceived performance expressed by a subjective process measure.
Attitude	Attitude is “the sum of (positive and negative) beliefs weighted by evaluations of those beliefs.
Attitude Theory	Individual's attitude towards an object is a result of their salient (cognitive)

	beliefs about the object and the evaluative aspect of those beliefs (EV Model).
Theory of Narrative Thought	The overarching concept of Theory of Narrative Thought (TNT) is that human beings take charge of their situations by understanding how the future derives from the past and present, and using that knowledge to guide actions aimed at making the future more desirable than it might otherwise be.

Table A-10: Compositional Style Elements
(Mathiassen, Chiasson, and Germonprez (2012), Mathiassen (2015))

A (Area of Concern)	Organizational Behavior
P (Problem Setting)	Pharmaceutical Companies
F (Conceptual Framework)	Theory of Narrative Thought (Decision-Making Theory) & Attitude Theory
RQ (Research Question)	What are managers' attitudes towards the effectiveness of Global Virtual Teams within the pharmaceutical industry?
M (Research Method)	Concurrent Mixed – Methods Design
C (Contribution)	C(Fa): Examine global virtual teams to provide empirical insights into attitudes towards global virtual team effectiveness C(P): Plausible Explanations Global Virtual Team Performance

APPENDIX B

Table B-11: Managers' Tenure

Years at Firm	Percentage
Less than 1 year	12 / 27.30 %
2-5 Years	20 / 45.50 %
Over 5 Years	12/ 27.30 %

Sample size is 44.

Table B-12: Managers' Firm Size

Firm Size	Number of Participants/Percentage
Small	12/ 26.70 %
Mid-Sized	19 / 42.20 %
Big Pharma	14 / 31.10 %

Samples size is 45.

Table B-13: Managers' Position

Position	
Position	Participants/ Percentage of Total
Executive	4 / 9.10 %
Director	13 / 29.5 %
Manager	18 / 40.90 %
Other	9 / 20.50 %

Samples size is 44.

Table B-14: Managers' Region

Continent	Percentage
United States of America	24 / 72.70 %
Europe	8 / 24.30 %
Africa	1 / 3.00 %

Samples size is 33.

Table B-15: Managers' Department

Department	Number of Responses/ Percentage
Technology	9/ 20.00 %
Project Management	9 / 20.00 %
Research and Development (R&D)	7 / 15.60%
Marketing	6 / 13.30 %

Other	6 / 13.3 %
Quality	3 / 6.70 %
Regulatory	2 / 4.40 %
Manufacturing	2 / 4.40 %
Legal	1 / 2.20 %

Samples size is 45.

Table B-16: Managers' Meeting Cadence

Meeting Cadence	Number of Responses/ Percentage
Daily	5 / 11.40 %
Weekly	4 / 9.10 %
Monthly	6 / 13.60 %
Quarterly	9 / 20.50 %
Yearly	14 / 31.80 %
Never	6 / 13.60 %

Samples size is 44.

Table B-17: Managers' Educational Background

Education level	Numbers of Responses/Percentage
High School	2 / 5.60%
Some College but no degree	1 / 2.80%
Associate or technical degree	4 / 11.10 %
Bachelor's degree	9 / 15.0%
Graduate or professional degree	20 / 55.60%

Sample size is 36.

Table B-18: Variable Mean Rate of Sub Constructs

Variable	Sample Size (n)	Mean	Standard Deviation
Attitudes Towards Preference for Working on Virtual Teams	40	2.35	1.406
Attitudes Towards Reliance on Self, More Than others	40	3.15	1.610
Attitudes Towards Completing Work on Time	39	2.33	1.344
Attitudes Towards Completing Work within Budget	40	2.45	1.339

Attitudes Towards Team Morale	41	2.20	1.209
Attitudes Towards Respect for Team Members	41	1.85	1.152

Appendix C

Quality of Mixed Methods Research Study

Table C-19: Adapted from Venkasha, Brown, and Bala 2013 (cited by Cho et. al., 2017)

Quality Aspects	Quality Criteria	Description	How This Study Met Criteria
<i>Design Quality:</i> The degree to which a researcher has selected the most appropriate procedures for answering the research questions.	Design suitability/ Appropriateness	The degree to which methods selected and research design employed are appropriate for answering the research question. For example, researchers need to select appropriate quantitative (e.g., survey) and qualitative (e.g., interview) methodologies and decide whether they will conduct parallel or sequential mixed methods research.	A concurrent mixed-method design was chosen so that quantitative and qualitative data could be collected and analyzed in parallel and then merged for a complete understanding of the attitudes toward the effectiveness of global virtual teams. A web-based survey with opened ended questions was administered so that the qualitative data could be used to help explain or elaborate quantitative results.
	Design adequacy	Quantitative: The degree to which the design components for the quantitative part (e.g., sampling, measures, data collection procedures) are implemented with acceptable quality and rigor. Indicators of inference quality include reliability and internal validity.	Likert 7-point scaled questions were used to measure attitudes and beliefs. Expert and snowball sampling was exercised to identify participants who work within the pharmaceutical industry in any capacity. To address internal validity, our findings proved that beliefs in virtual teams, in addition to how much achievement is valued, will influence attitudes towards the effectiveness of Global Virtual teams.
		Qualitative: The degree to which the qualitative design components	For credibility, our opened ended questions specifically asked

Quality Aspects	Quality Criteria	Description	How This Study Met Criteria
		are implemented with acceptable quality and rigor. Indicators of inference quality include credibility and dependability.	managers to provide feedback regarding their perspective towards impediments, challenges of global virtual team effectiveness. We also asked managers their expectations for global virtual team members. Additionally, we asked managers their attitudes toward global virtual team perceived performance. We detail the utilization of global virtual teams within the pharmaceutical industry.
	Analytic adequacy	Quantitative: The degree to which the quantitative data analysis procedures/strategies are appropriate and adequate to provide plausible answers to the research questions. An indicator of inference quality is statistical conclusion validity.	We used screening questions in our survey to ensure all participants are or have recently been a part of a pharmaceutical global virtual team. The sample size is N=43 for this study, which allowed us to perform the appropriate statistical tests suitable for smaller sample sizes relevant to our study of hard to reach managers within the pharmaceutical industry. The data from our quantitative measures directly mapped to the open-ended responses that provided more insight on their perspectives towards the effectiveness of global virtual teams.
		Qualitative: The degree to which qualitative data analysis procedures/strategies are appropriate and adequate to provide plausible answers to the research questions. Indicators of quality include theoretical validity and plausibility.	Open-ended responses were coded, and patterns of common themes were used to draw conclusions on the attitudes towards the effectiveness of global virtual teams. These conclusions answered our research questions in that we were able to state the attitudes and beliefs of managers and its impact on their

Quality Aspects	Quality Criteria	Description	How This Study Met Criteria
			attitude towards the effectiveness of global virtual teams.
<i>Explanation quality:</i> The degree to which credible interpretations have been made on the basis of obtained results.	Quantitative inferences	The degree to which interpretations from the quantitative analysis closely follow the relevant findings, consistent with theory and the state of knowledge in the field and are generalizable. Indicators of quality include internal validity, statistical conclusion validity, and external validity.	Pertaining to statistical conclusion and external validity, our findings were consistent with the attitudes of managers in prior literature, as well as experts within the pharmaceutical industry. We predict that managers on non-global virtual teams will display similar attitudes towards the effectiveness of virtual teams. We also predict that these attitudes will exist and that pharmaceutical companies should examine the establishment and makeup of global virtual teams.
	Qualitative inferences	The degree to which interpretations from the qualitative analysis closely follow the relevant findings, consistent with theory and the state of knowledge in the field and are transferable. Indicators of quality include credibility, confirmability, and transferability.	Since open-ended responses were allowed, we've demonstrated credibility in that we used participant responses to draw conclusions from their perspectives. We've searched prior literature to ascertain perspectives from managers as it relates to the effectiveness of global virtual teams. Our study brings a unique perspective in that it measures the attitudes of managers on global team that help explain why such attitudes exist. Transferability is high in that the qualitative results (opened ended responses) of our study can be transferred to a non-global setting.
	Integrative inference/meta-inference	Integrative efficacy: The degree to which inferences made in each strand of a mixed methods research inquiry are effectively integrated into a theoretically	We adhered to integrative efficacy criteria by coding qualitative data, generating themes and patterns from it and mapping it to our quantitative findings. Our research findings using

Quality Aspects	Quality Criteria	Description	How This Study Met Criteria
		consistent meta-inference.	this strategy adequately addressed our research objective in understanding why manager possess various attitudes towards the effectiveness of global virtual teams.
		Inference transferability: The degree to which meta-inferences from mixed methods research are generalizable or transferable to other contexts or settings.	We obtained a high degree of inference transferability in our research by developing a questionnaire that could be administered to any manager who works on a global pharmaceutical virtual team. By doing so will allow researchers to measure the attitudes towards the effectiveness of global virtual teams within the entire pharmaceutical industry.
		Integrative correspondence: The degree to which meta-inferences from mixed methods research satisfy the initial purpose.	Our research goal was to measure the attitudes of managers. We were successful with meeting integrative correspondence criteria in that we obtained rich insight that from managers within the pharmaceutical industry that helped explain how the value of achievement, beliefs virtual teams and attitudes towards virtual teams general influenced attitudes towards the effectiveness of the global virtual teams.

APPENDIX D – Abbreviated Questionnaire

(Adapted from Jarvenpaa and Lediner, 1999)

Assume Teams are Global Virtual Team throughout this survey. Thinking back on your most recent virtual team experience, please answer the following:

PART I

Demographics & Background Information

1. Do you work within a virtual team in any capacity? – Qualifier; No -terminate survey
2. Demographics: Age, Gender, Education Level, Department, Position, Firm size, Tenure on team, Meeting Cadence, Country of Residence, Company Location

Part II

Attitudes Towards Teams

3. I prefer to work on virtual teams.
4. I enjoy being a member of this team.
5. I feel I am more productive when working on virtual teams over co-located teams.

Attitude Towards Effectiveness of Teams (Attitudes & Beliefs)

6. I believe my team will likely fail without my contributions.
7. I rely on myself more than others to ensure my team is effective.

PART III

Team Effectiveness – Perceived Performance

8. Currently, my team is effective in reaching its goals.
9. When the team completes its work, it is generally on time.
10. When the team completes its work, it is generally within budget.

Team Effectiveness – Attitude/Satisfaction

11. My team has confidence in one another.
12. Team member morale is high in the team.
13. There is respect for individuals in the team.
14. What, if any, do you feel are impediments to team effectiveness? Choose 8

PART IV

4 Open Ended Questions: 15. Challenges, 16. Improvements, 17. Team Member Preferences and 18. Team Performance

APPENDIX E

FIGURES

Figure 1: Theoretical Framework

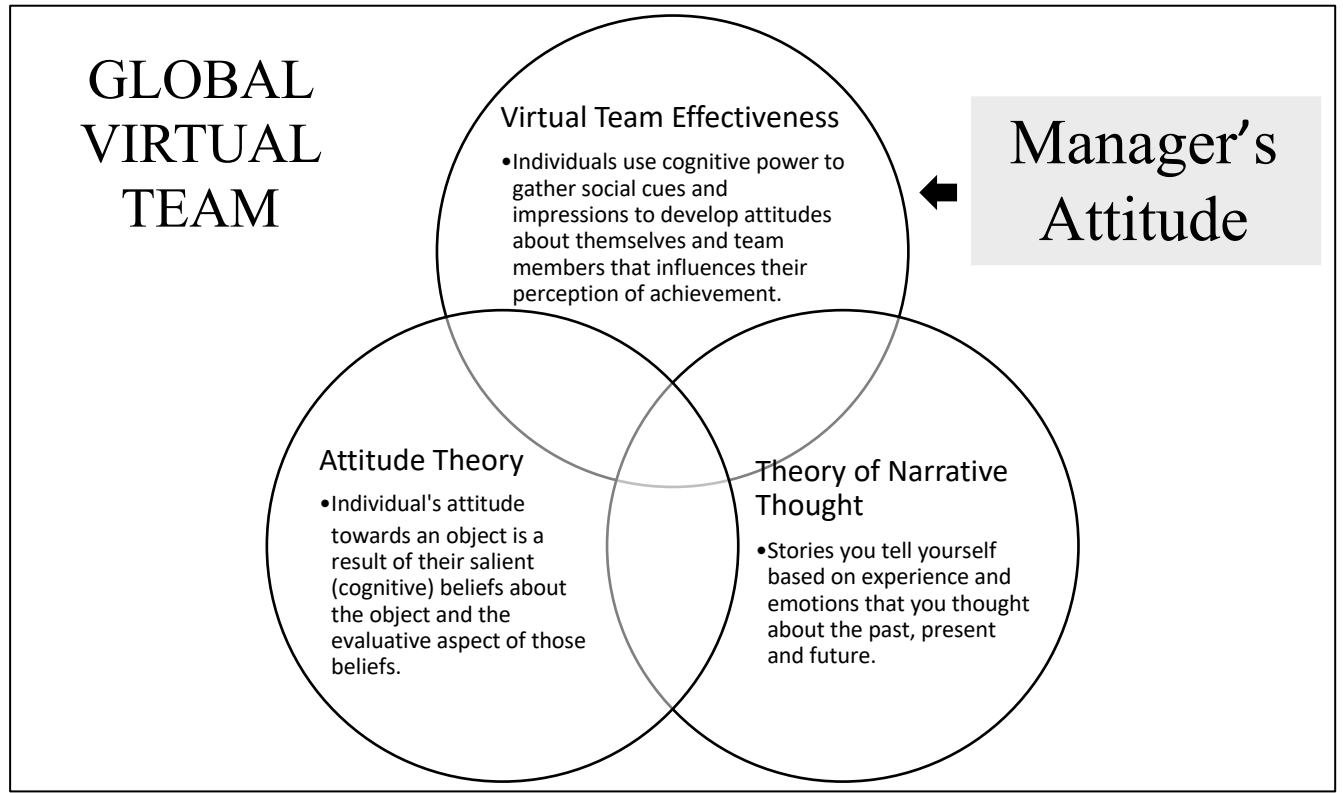


Figure 2: Enhanced Global Virtual Team Effectiveness Model

