4-3-2018

Addressing Virtual Work Challenges: Learning From the Field

Julia Eisenberg
Pace University

Aparna Krishnan
Georgia State University

Routledge
Taylor & Francis Group

Check for updates

Addressing Virtual Work Challenges: Learning From the Field

Julia Eisenberg[a] and Aparna Krishnan[b]

[a]Department of Management and Management Science, Lubin School of Business, Pace University, Pleasantville, New York, USA; [b]Department of Managerial Sciences, Robinson College of Business, Georgia State University, Atlanta, Georgia, USA

ABSTRACT

Companies increasingly rely on virtual teams. Despite numerous studies examining the challenges of geographically dispersed work, the findings are often mixed. The purpose of this article is to identify themes of challenges associated with virtual collaborations based on academic literature and do a gap analysis with industry trends. First, we identify five overarching categories of virtual team challenges based on reviewing the latest trends in the academic literature: trust and relationships, communication and knowledge sharing, perceptions and decision making, leadership, and diversity. Second, we utilize these categories to qualitatively code and analyze the company data from the *Fortune* Best Places to Work surveys from 2014 to 2017, using the document analysis technique. Our contribution is to identify similarities and differences in scholarly and industry approaches to addressing virtual teamwork challenges and thus highlight opportunities for development and future research.

Introduction

Technology advances have led to unprecedented levels of geographically dispersed work by connecting employees, allowing access to expertise unbounded by location, providing greater flexibility, and often reducing costs. According to a 2012 report by the Society for Human Resource Management, at least 46% of organizations and approximately 66% of multinational organizations rely on virtual teams. Furthermore, "experts project that within a few years, more than 1.3 billion people will work virtually" (Johns & Gratton, 2013, p. 68).

Given continued increase in geographically dispersed team prevalence in modern organizations, it is important to understand how such teams collaborate. A recent review of themes and opportunities in virtual teams research highlighted a growing number of studies in this area, summarizing various factors that influence dynamics and outcomes of geographically dispersed teams ranging from leadership to global context (Gilson, Maynard, Jones Young, Vartiainen, & Hakonen, 2015). Despite increasing research of virtual teams, there is a disconnect in integrating specific challenges and their respective solutions across academic literature and industry practices. Management scholars are increasingly highlighting the need to bridge theory and practice. For example, the theme statement of the 2010 Academy of Management (AOM) conference is "challenges management scholars to care broadly and deeply

about what they study and consider whether what they study will make a difference in the world of practice" (Tsui, 2010, p. 1). More recently, the AOM conference included sessions for connecting theory and practice, such as the "Errors in Healthcare Organizations: Building Synergy Between Theory and Practice across Disciplines" (AOM Program 2016, p.13) and "Learning from Errors in Organizations: Linking Theory and Practice"(Academy of Management Conference Program, 2016, p. 365). A recent study advocated the importance of increasing the mutual understanding of what is relevant to both academia and industry (Radaelli, Guerci, Cirella, & Shani, 2014). Other scholarship has also highlighted the importance of identifying tensions associated with the academic–practitioner gap and how both sides can benefit from building on increased understanding of each other's perspectives (Bartunek & Rynes, 2014), creating "knowledge that is both socially useful and academically rigorous" (Hodgkinson & Rousseau, 2009, p. 534). This approach has been notable across multiple disciplines ranging from human resource management (Rynes, Giluk, & Brown, 2007) to corporate finance (Trahan & Gitman, 1995). A recent *Economist* article suggested the need to make management theory more relevant for practitioners (*Economist*, December 2017), further highlighting the importance of bridging academia and practitioner approaches.

Following the trend of identifying and bridging the gaps between theory and practice (Akella, 2013) and

shifting the research agenda to focus more on practice-driven theory rather than theory-driven practice, our aim is to highlight the unique approaches of some of the best companies, as rated by *Fortune* (Fortune.com), and contrast them to the themes in the research literature. Specifically, we highlight theory that helps explain virtual teamwork phenomenon, summarizing both challenges and solutions.

Rather than review the literature and provide an all-inclusive review of what has been done, we chose to take a different route. Specifically, we examined the teams literature with a particular focus on recent publications using keywords such as "virtual team," "geographically dispersed team," and "geographically distributed team," as our analysis showed these to be the most relevant terms. We next identified and categorized major themes of challenges associated with geographically dispersed teams based on the research literature, to contrast them to industry-based findings. We were inspired to take this approach by the review of team effectiveness over the decade from 1997 to 2007 by Mathieu and colleagues, who chose to highlight themes and trends rather than conduct a comprehensive literature review (Mathieu, Maynard, Rapp, & Gilson, 2008). We believe this approach is well suited to enabling contrast

analysis of trends and themes in the virtual team literature to those in the industry.

Our contribution is twofold. First, we highlight theory that helps explain the virtual teamwork phenomenon, summarizing both challenges and solutions. The five categories of challenges we have identified are trust and relationships, technology-mediated communication and knowledge sharing, perceptions and decision making, leadership, and diversity. A summary of the challenges is presented in Table 1.1.

Second, we integrate these themes from the literature with industry practices, based on document analysis of secondary data from recent *Fortune* reports. We identify gaps and the associated potential areas of future research.

> Research question: What are the differences in solutions to challenges of geographically dispersed teams between academia and practice?

Theory development

Given the flexibility and cost savings associated with geographically dispersed work, it is widely expected to grow (Johns & Gratton, 2013). Virtual or geographically

Table 1.1. Virtual work categories of challenges.

Category	Summary of challenges	References
Relationships and trust	Relationships are hard to develop without face-to-face interaction and thus trust takes much longer to build	Cheng et al. (2016) Cheng et al. (2016) Cheng et al. (2016) Gibbs and Boyraz (2015) Gilson et al. (2015) Jarvenpaa et al. (1998) Jarvenpaa and Leidner (1999)
Communication and knowledge sharing	Communication over technology-mediated channels is more difficult, particularly for knowledge-sharing types of tasks, resulting in diminished levels of sharing; additional challenges include fighting the "out of sight, out of mind" dynamics	Alsharo et al. (2016) Ferrell and Herb (2012) Leenders et al. (2003) Johnson et al. (2009) Pinto and Pinto (1990)
Perceptions and decision making	Higher perceptions of unfairness and bias, make team members less likely to disclose all of the pertinent details or to seek clarifications, in turn making effective decision making more challenging	Chae (2016) Gibbs, Kim, and Boyraz (2017) O'Neill et al. (2016) Tangirala and Alge (2006) Wilson, Boyer O'Leary, Metiu, and Jett, (2008)
Leadership	Lack of personal connection with geographically dispersed members, difficulties monitoring activities and preferences, making virtual leadership more challenging; geographically dispersed environment also makes it more challenging for shared and emergent leadership among virtual team members	Gilson et al. (2015) Iorio and Taylor (2015) Hoch and Kozlowski (2014) Liao (2017) Maynard et al. (2012) Malhotra et al. (2007) Charlier, Stewart, Greco, & Reeves, 2016 Zander et al. (2013)
Diversity	Differences among team members may affect team identification, posing challenge for collaboration and mutual understanding of team norms	Au and Marks (2012) Batarseh et al. (2017) Carlson et al. (2013) Eisenberg and Mattarelli (2017) Hardin et al. (2015) Tenzer et al. (2014)

dispersed teamwork is defined here as efforts by organizational members who are not co-located and who utilize some form of computer-mediated communication to collaborate. Geographically dispersed work is associated with feelings of isolation, detachment, and alienation, making it harder to create a positive psychological experience, negatively influencing effectiveness (Gibson & Gibbs, 2006; Gibson, Gibbs, Stanko, Tesluk, & Cohen, 2011). Furthermore, geographically dispersed work may lead to reduced identification with the organization (Wiesenfeld, Raghuram, & Garud, 2001), negatively influencing effective communication and knowledge sharing processes. In a review of geographically dispersed collaborations, Olson and Olson find that despite improving communication technology, distance still presents a challenge(Olson & Olson, 2000).

Frequently, geographically dispersed work is carried out in teams. As teams are a popular work structure, many organizations employ teams in order to bring together the expertise, skills, and talents of multiple team members regardless of their location and without incurring additional costs (Gilson et al., 2015). Geographically dispersed teams are characterized by team members who are geographically dispersed, sometimes working out of different countries and time zones, belonging to different cultures and having different functional as well as organizational experience, and are associated with various challenges (Martins, Gilson, & Maynard, 2004).

Geographically dispersed team challenges

Trust and relationships

Trust is defined as willingness to be vulnerable to the actions of others (Mayer, Davis, & Schoorman, 1995), and it is based on the assumption that others' actions toward themselves will not have negative consequences (Robinson, 1996). More recently, trust has been suggested to be crucial in the context of the global workspace and geographically dispersed teams, but it may be particularly hard to foster among these types of teams because dispersed team members lack strong relationships, which often come more naturally to those who work face-to-face (Cheng, Fu, & Druckenmiller, 2016; Cheng, Fu, Sun, Han, & Shen et al., 2016; Cheng, Yin, Azadegan, & Kolfschoten, 2016; Jarvenpaa, Knoll, &Leidner, 1998). Despite multiple studies examining trust in virtual teams over the years, there continues to be interest in improving our understanding of factors that influence trust in a geographically dispersed context, such as diversity among team members, their abilities, open communication behaviors, levels of feedback, and timely responses (Gibbs & Boyraz, 2015; Gilson et al., 2015). There are a number of reasons

why developing trust may be particularly challenging in a dispersed environment. For example, geographically dispersed team members do not have the luxury of in-depth personal interactions like team members in face-to-face teams, where they can develop trust sequentially. Isolation and alienation may further exacerbate relationships among geographically dispersed team members, making them less likely to feel comfortable and less likely to trust those they do not know well. Lack of access to side conversations taking place before and after the meeting is likely to further diminish the quality of interactions.

Limited social interactions likely exacerbate the ability of remote team members to form strong interpersonal relationships. Lack of social exchanges that facilitate trust (Jarvenpaa & Leidner, 1999) negatively influences virtual team dynamics. The absence of nonverbal cues and the inability to infer the nature of others' intentions may hamper relationship building and thereby interpersonal trust. Some organizations have started to increase spending on various technological tools, such as Enterprise Social Media (Gibbs, Rozaidi, & Eisenberg, 2013), to facilitate relationships and trust among dispersed team members. However, while technology may help in some cases, it may not be sufficient to foster relationships in geographically dispersed teams (O'Hara-Devereaux & Johansen, 1994). Furthermore, technological affordances associated with some of the latest collaborative technology, such as social media, may actually enable team members to hide rather than increase their interactions (Gibbs et al., 2013).

While trust development in face-to-face teams follows a sequential approach, in geographically dispersed teams, this process can be ad hoc (Kuo & Yu, 2009), thereby making the process unpredictable. In fact, teams that interact virtually were found to be less likely to engage in trusting behaviors (Robert, Denis, & Hung, 2009), and trust was shown to be dependent on behaviors related to the frequency of interactions (Zolin, Hinds, Fruchter, & Levitt, 2004), which is challenging in dispersed settings.

Meta-analytic research has shown that team trust is an important element determining team effectiveness since trust affects whether team members approach each other for help, share feedback, and openly discuss conflicts and issues (Breuer, Hüffmeier, & Hertel, 2016). Teams that execute time-bound projects require commitment to the team as well as the project itself, which is greatly influenced by trust in team members (Buvik & Tvedt, 2017). Thus, when trust is lower or takes longer to develop in a geographically dispersed environment, several important outcomes related to collaboration, such as team innovation and

performance, are negatively affected. These outcomes are also likely affected by communication and knowledge sharing, which are challenging in geographically dispersed teams.

Communication and knowledge sharing

Virtual teams rely heavily on communication media for their day-to-day work. Recent research highlighted team communication as one of the key challenges associated with virtual teams (Alsharo, Gregg, & Ramirez, 2016). Virtual team communication is an important predictor of a variety of outcomes such as increased commitment and improved performance (Ferrell & Herb, 2012; Leenders, van Engelen, & Kratzer, 2003; Pinto & Pinto, 1990). Successful communication is associated with competent communication styles, such as efforts to understand and respond to teammates. Effectiveness of communication also depends on levels of interdependence, organizational structure and systems, and media richness (ranging from face-to-face to documents), which in turn varies based on the medium's capacity for immediate feedback, number of channels and availability of cues, and personalization (Daft & Lengel, 1986; Klitmøller & Lauring, 2013). Lack of nondirect and nonverbal interactions, such as body language or even facial expressions, associated with computer-mediated exchanges greatly hinders communication in geographically dispersed teams.

Computer-mediated communication is very different from face-to-face interaction due to the lack of social cues and lack of access to nonverbal behavior such as smiles and headshakes, and the lack makes interactions more difficult to manage and adjust when necessary (Gressgård, 2011). The choice of media influences communication because each alternative will offer a unique capacity to convey verbal and nonverbal cues as part of the message (Montoya, Massey, Hung, & Crisp, 2009). Quite often, recurrent use of communication tools leads to team members developing certain habitual patterns (Erickson, 1999). Further, the choice of mediated communication tools guides these habitual behaviors or genre rules (Bartlett, 2014). This also raises important challenges and questions about the task–technology fit, as well as how shared norms are not just created but maintained in response to the needs of the task or project. Sometimes the mere presence of a transcript, as in the case of instant messaging, can impact interaction norms (Darics, 2014). Team members' reliance on communication influences their choice of media and technology use. It also plays an important role in deciding the extent as well as target of communication, influencing knowledge sharing.

Knowledge sharing in geographically dispersed teams requires a different set of norms and expectations and thus can pose a challenge. In virtual teams, communication is often more formal than in co-located settings, focusing on work related issues due to limited opportunities to exchange informal and unintentional information that is shared in places such as the hallway, water cooler, or the parking lot(Berry, 2011). Decreased informal chats and discussions among geographically dispersed employees in turn diminish their ability to share knowledge(Gressgård, 2011).

Team members who rely on computer-mediated communication have been shown to be more likely to experience less positive affect and diminished affective commitment to their teams (Johnson, Bettenhausen, & Gibbons, 2009). Distributed communication often changes the team dynamics related to knowledge sharing. For example, research on knowledge sharing in a geographically dispersed environment has suggested that "the combination of information technology and geographically dispersed work may serve to change the distribution of different types of knowledge across individuals, teams, and the organization"(Griffith, Sawyer, & Neale, 2003, p. 265). To add to these, team members can often use their own methods of processing information that is subject to individual biases and preferences (Kayworth & Leidner, 2002). Coupled with lack of face-to-face contact, individual differences may exacerbate coordination of work (Medsker, Tan, & Turban, 1995) and in turn make it more difficult to create and capture team members' knowledge (Chiravuri, Nazareth, & Ramamurthy, 2011), contributing to the knowledge-sharing challenge associated with geographically dispersed work. Research by Maynard and Gilson (2014) has shown that it is more difficult for geographically dispersed teams to develop a shared mental model, negatively influencing their ability to understand each other's context and norms, in turn hindering their collaborative interactions and performance. It may also influence team members' perceptions and their decision-making processes, which are the next set of challenges we discuss.

Perceptions and decision making

One of the latest trends related to virtual teams relates to examining perceived proximity of team members rather than actual geographical distance, which influences team interactions (Chae, 2016; Gibbs, Kim, & Boyraz, 2017; O'Leary, Wilson, & Metiu, 2014; Wilson, O'Leary, Metiu, & Jett, 2008). Perceptions of proximity also influence decision making, which has been shown to be less effective in virtual team settings (O'Neill, Hancock, Zivkov, Larson, & Law, 2016). For example, compared

to collocated teams, geographically dispersed teams often choose a less optimal decision alternative (Dennis, 1996). In the study, Dennis showed that geographically dispersed teams decided to select a less optimal solution than their co-located counterparts due to reasons ranging from less information sharing to bias and lack of full disclosure of all implications.

When team members perceive injustice, they may be less likely to focus on making decisions that are better for the greater good of the team. Thus, unfairness may be more salient in geographically dispersed teams due to uncertainty (Tangirala & Alge, 2006). Informational uncertainty arises from the inability to seek clarifications, lack of clarity about the other person's intentions behind the unfair treatment, and diminished personal and social knowledge about the other person. Over time, teams with greater reliance on mediated communication resulting from their geographical dispersion report higher perceptions of unfairness, leading to negative reactions from team members (Tangirala &Alge, 2006). Further, computer-mediated feedback is associated with reduced perceptions of fairness compared to face-to-face feedback (Alder, Noel, & Ambrose, 2006), increasing the likelihood of virtual team members perceiving unfairness that may influence their decisions.

Some researchers have found that geographically dispersed teams can be at a disadvantage for certain types of tasks related to decision making(O'Neill et al., 2016), which may help explain earlier findings suggesting that decision quality can be negatively affected by the geographically dispersed context (McNamara, Dennis, & Carte, 2008). McNamara and colleagues further note that often in the absence of face-to-face interactions, geographically dispersed teams rely on supplemental collaborative technologies like instant messaging, which may exacerbate the decision-making process. Unfortunately, team members filter information coming from such collaborative tools by perceiving a potential bias toward majority opinion or by selectively paying attention only to some messages, thus affecting the quality of their decisions. In searching for ways to improve virtual team issues related to team members' perceptions and in turn effectiveness in making decisions, organizations often turn to team leadership.

Leadership

Leadership has received a lot of attention among scholars, and this area includes leaders who have to manage their followers in geographically dispersed environments(Bell & Kozlowski, 2002; Connaughton & Daly, 2004; Hoch & Dulebohn, 2016; Joshi, Lazarova, & Liao, 2009). A geographically dispersed

environment presents unique challenges to management because effective leadership is highly dependent on quality interactions, which are substantially more complex to foster across distance(Malhotra, Majchrzak, & Rosen, 2007). Recent studies suggested that understanding the functions of leadership in virtual teams is critical for organizations (Iorio & Taylor, 2015; Liao, 2017). Furthermore, recent studies have highlighted multiple leadership-related challenges in virtual teams, such as fostering an environment that facilitates creativity (Han, Chae, Macko, Park, & Beyerlein, 2017), dealing with different personalities (Hoch & Dulebohn, 2017), and one that encourages emergent leadership (Charlier, Stewart, Greco, & Reeves, 2016). Other studies highlighted challenges such as having to manage teams across time, distance, and cultural boundaries (Avolio, Sosik, Kahai, & Baker, 2014) with different levels of task complexity (Bell & Kozlowski, 2002). Recent reviews of the virtual teams literature highlighted the central role of leaders in helping teams overcome challenges associated with geographically dispersed work by facilitating satisfaction and motivation among other factors(Gilson et al., 2015; Maynard, Mathieu, Rapp, & Gilson, 2012).

A number of different leadership styles have been examined for their effectiveness in geographically dispersed settings, with mixed results. For example, hierarchical leadership has been found to be less effective in geographically dispersed teams than in co-located teams(Hoch & Kozlowski, 2014). Geographically dispersed team leaders need to make sure that the team's work is given priority by the team members, as this has been found more challenging in geographically dispersed teams (Kayworth & Leidner, 2000, 2002). Other leadership challenges associated with geographically dispersed context include establishing and maintaining trust, monitoring team progress, and enhancing team visibility inside and outside the organization (Malhotra et al., 2007).

For geographically dispersed teams that are global, there are additional leadership challenges related to managing cultural differences that exacerbate the way leaders sense, interpret, and respond to problems (Zander, Zettinig, & Mäkelä, 2013). Therefore, it is important for leaders to have cultural intelligence and "global competence" while focusing on both task-related and relationship behaviors (Chin & Geynier, 2006). Studies of expatriates have highlighted the importance of having competencies, such as communication ability and team building, that are necessary for managing a foreign organizational unit (AlMazrouei & Zacca, 2015). These competencies may help address various issues, including diversity.

Diversity

Composition of team members includes but is not limited to differences in age, nationality, cultural backgrounds, religious beliefs, language, ethnic background, functional background, reporting structure, and more. Collaborating with a diverse groups of people using technology can be particularly difficult. It requires understanding how to collaborate via technology, utilizing the opportunities it offers while overcoming the barriers.

A recent study suggests that deep and functional diversity types have divergent effects on innovation in virtual teams (Batarseh, Usher, & Daspit, 2017). More generally, differences among global virtual team members may create additional tensions related to divergent subgroup identification (Eisenberg & Mattarelli, 2017), and as a result may negatively influence team interactions and performance. Levels of self-efficacy beliefs about virtual teamwork were higher for team members from individualistic cultures than from collectivist cultures, demonstrating that some cultures are more open to working in geographically dispersed environments (Hardin, Fuller, & Davison, 2015). This makes the success of geographically dispersed collaborations dependent on the composition of teams. For example, employees with different cultural backgrounds may be more likely to differ in their behaviors within teams, including how they engage with their teammates (Jarvenpaa & Leidner, 1999). Furthermore, uncertainty and ambiguity associated with lack of social contact and different office locations are likely to be compounded by differences in employee backgrounds or experience in geographically dispersed team collaboration(Carlson, Carlson, Hunter, Vaughn, & George, 2013). Diversity in language preferences and proficiency (Tenzer, Pudelko, Harzing, & Tenzer, 2014), as well as religious differences, may make it harder for distributed team members to understand each other's traditions and norms, exacerbating collaborations(Saunders, Van Slyke, & Vogel, 2004). These factors may also negatively influence social identities, in turn affecting group processes such as socialization of new members into the group (Levine, Moreland, & Choi, 2001), making it harder for dispersed team members to collaborate.

Generational differences may be a challenge in terms of differences in how employees respond to collaborating via an electronic medium because not everyone can be classified as a "digital native" associated with high levels of technical expertise (Kaplan & Haenlein, 2010). The challenge is to foster collaboration across employees representing different generations. The U.S. Census Bureau suggests that by 2030 the number of U.S. residents 65 years old or older is projected to be more than 20%, in contrast to 13% in 2010 (U.S. Census Bureau,

2012). Such trends are likely to influence the country's workforce dynamics, since many workers are now delaying retirement and staying in the workplace longer. Increasing generational diversity, exacerbated by the geographically dispersed context, may make it harder for team members to work together using the constantly changing technology, in turn posing additional challenges for collaboration.

Methods

Sample and procedures

We started our study by conducting an analysis of trends in the virtual teams literature. To keep our work more relevant and to draw better parallels between theory and practice, we focused particular attention to highlighting themes that are relevant in recent academic literature to make it more fitting to compare it to the data in the recent *Fortune* reports. We studied the virtual teams research, using keywords like "virtual teams," "geographically dispersed teams," and "geographically distributed teams" in Google Scholar, as well as business and communication research databases. We also paid particular attention to the literature review studies to help us identify the major categories of challenges and solutions, as well as trends and themes, in the literature. Our analysis first examined latest trends identified in the literature, followed by coding the qualitative responses from *Fortune*'s survey from 2014–2017. Specifically, all the qualitative responses directly or indirectly relating to virtual teamwork and telecommuting were considered. This approach enabled us to compare and contrast the trends that emerged between recent academic work and recent initiatives deployed by the industry related to dispersed work.

First, we developed major categories by identifying and qualitatively coding challenges highlighted in the research literature related to virtual teamwork. To identify these themes, we first created a higher level categorization for the challenges mentioned in the seminal articles as well as more recent literature. The authors independently analyzed the literature, identifying and coding the challenges, and later merged the analysis and resolved inconsistencies. The authors then fitted every challenge identified in the literature into its appropriate category. As a result of this process, five categories of challenges were identified. These challenge categories are trust and relationships, communication and knowledge sharing, perceptions and decision making, leadership, and diversity.

Next, to identify solutions that worked in the field, we analyzed a secondary data source: publicly available data from *Fortune*'s Best Companies to Work For reports from 2014, 2015, 2016, and 2017 (*Fortune*, 2014, 2015, 2016, 2017). These reports are published annually. We integrated the themes that emerged from the literature with analysis we conducted of the *Fortune* data using the document analysis approach (Bowen, 2009). Document analysis is a systematic process of evaluating secondary data such as news articles, institutional reports, and survey data for the purposes of interpreting these to gain understanding and develop empirical expertise (Bowen, 2009; Corbin & Strauss, 2015). Furthermore, Bowen suggests that researchers often review the literature and incorporate it in their analysis of secondary data such as excerpts and quotations, which may be interpreted and organized into categories (2009). The document analysis approach enabled us to examine publicly available *Fortune* report data and qualitatively code them using categories we established based on our analysis of the literature.

Our aim was to better understand the ways in which companies recognized by *Fortune* have successfully addressed challenges associated with geographically dispersed teamwork. We reviewed available data for each of the 100 companies from the *Fortune* reports. Next, we created a subset of employee quotes and other facts from the report that directly refer to geographically dispersed work or could be inferred to be relevant in addressing the five categories of challenges we have identified from the literature. This subset of employee quotes and company information then became our data file. Next, we meticulously went over each quote in our data file to match solutions suggested by employees to challenges we have identified earlier based on reviewing the literature. Using information about company policies and employee experiences through publicly available *Fortune* data and quotes, we identified alternatives for addressing the various geographically dispersed work challenges. Our aim was to discover practices followed by top companies identified by *Fortune*'s metrics in addressing these challenges.

We believe this approach enabled us to delve into the different strategies of some of the top companies recognized by *Fortune* without the limitation of the almost impossible task of gaining access to each of the 100 companies. Having evaluated *Fortune*'s methodology, we believe our approach enabled us to do a gap analysis between academic scholarship and successful industry practices. As part of their approach, to identify companies to include in the 100 Best Companies to Work For ® report, Fortune collaborates with Great Place to Work, 2017. Fortune engages over 232,000 employees in their in-depth survey, which is then used to identify companies that are better than others in creating a great environment for their employees. The companies are analyzed and ranked using the "Trust Index© survey and Culture Audit© questionnaire." (Fortune, 2017). As part of the Fortune survey, employees across different companies have an opportunity to anonymously evaluate their organization across a number of factors ranging from quality of communication to degree of support they receive. To further ensure avoidance of bias, we cross-referenced the companies on Fortune's list with data available on the Glassdoor.com website, which lets employees anonymously share reviews about their company and confirmed similar trends.

Findings

The solutions corresponding to the challenge themes from academic literature are presented in Table 1.2. In sum, to foster relationships and trust, academic literature suggests a focus on shared identity that improves perceived proximity (O'Leary, Wilson, & Metiu, 2012), making everyone's actions more visible and providing adequate resources (Goh & Wasko, 2012), facilitating timely and open responses, and giving feedback (Henttonen & Blomqvist, 2005). To improve communication and knowledge sharing in geographically dispersed settings, the literature recommends an increase in informal and unplanned communication (Hinds & Mortensen, 2005). Such communication provides additional opportunities for teammates to interact, in turn facilitating their relationships and virtual team collaboration(Connaughton & Shuffler, 2007). These informal interactions may also influence the presence of a psychologically safe communication climate where virtual team members feel comfortable sharing their thoughts and ideas (Gibson & Gibbs, 2006), in turn helping create a "collective mind" where team members are aware of each other's areas of knowledge (Yoo & Kanawattanachai, 2001). To address challenges related to perceptions and decision making, academic studies suggest creating opportunities for employees to be more engaged and take initiative (Day, Gronn, & Salas, 2004; Pearce & Conger, 2003), as well as investing in collaborative technology, which has been shown to improve perceptions as well as group decision making (Chidambaram & Jones, 1993; McNamara et al., 2008; Weisband, Schneider, & Connolly, 1995).Virtual team environment adds a level of complexity across different leadership styles, making it crucial to select leaders with a good fit. Newer research suggests leadership emergence in virtual teams is influenced by an individual's cognitive ability, extraversion, and self-efficacy, as well as density of ties among team members (Serban,

Table 1.2. Solutions to challenges from academic literatures.

Challenge	Solution from academic literature related to virtual teams
Relationships and trust	• Shared identity enhances perceived proximity even if members are objectively far apart, which further enhances relationship quality among team members (O'Leary et al., 2012), making everyone's actions more visible (Goh & Wasko, 2012). • Within virtual teams, trust is influenced by timely and open responses, as well as by giving feedback (e.g., Henttonen & Blomqvist, 2005).
Communication and knowledge sharing	• Frequent informal and unplanned communication has been shown to be related to an increase in information sharing (Hinds & Mortenson, 2005). • Teams with a history of working together report higher levels of performance, even in an environment characterized by electronic communication (Connaughton & Shuffler, 2007). • Psychologically safe communication climate (PSCC), i.e., creating an atmosphere conducive for freely expressions one's ideas, enhances knowledge sharing (Gibson & Gibbs, 2006). • Knowing each team member's expertise helps create a collective mind, in turn enhancing effective knowledge sharing (Yoo & Kanawattanachai, 2001).
Decision making and perceptions	• Environment where members are more engaged and take initiative is associated with a mutual influence process characterized by collaborative decision making and shared responsibility (Day et al., 2004; Pearce &Conger, 2003). • Collaborating technology, such as instant messaging, coupled with demonstrating credibility can lead to better decision quality(McNamara et al., 2008). • Electronic meeting systems can improve decision-making performance (Chidambaram, Jones, 1993). • Information technology, such as group decision support systems, encourages equality and lower social inhibitions, positively influencing perceptions and group decision making (Weisband et al., 1995).
Leadership	• Newer research suggests leadership emergence in virtual teams depends on cognitive ability, extraversion, self-efficacy, and density of ties among team members (Serban et al., 2015). Thus, choosing well-connected leaders is key. • Factors such as perceived team support, rewards, and information facilitate shared leadership (Hoch & Dulebohn, 2013), which has been shown to positively influence virtual team performance (Hoch & Kozlowski, 2014). • Leader–member exchange style of leadership has been shown to consistently produce higher follower performance across various environments, including in teams characterized by geographical dispersion (Howell & Hall-Merenda, 1999).
Diversity	• Some types of mediated communication can reduce status differences between team members (Anderson et al., 2007). • Development of team cohesion reduces the negative effects of member diversity on individual performance (Garrison, Wakefield, Xu, & Kim, 2010). • Cognitively preparing team members for novel and unexpected situations reduces coordination problems associated with diversity (Austin, 1997).

Yammarino, Dionne, Kahai, & Hao et al., 2015). Shared leadership, shown to positively influence virtual team performance (Hoch & Kozlowski, 2014), may be fostered by factors such as perceived team support, rewards, and information (Hoch & Dulebohn, 2013). Lastly, to address challenges associated with diversity among virtual team members some of the studies have suggested solutions ranging from picking certain types of technology (Anderson, McEwan, Bal, & Carletta, 2007), to focusing on developing team cohesion (Garrison, Wakefield, Xu, & `Kim, 2010), to developing cultural intelligence and building a global mind set for culturally diverse teams (Gibbs & Boyraz, 2015).

Next, we proceed to present solutions from the industry corresponding to the challenge themes from the literature. Table 2.1 contains the overall solutions top companies identified by *Fortune* that are related to the "relationships and trust" category. These companies often foster commitment to building a strong culture that bonds employees and enables cooperation and collaboration, which are often the by-products of trustworthy relationships among employees themselves, as well as between employees and management. One of the most important aspects here is creating shared goals and also the belief that employees' jobs are meaningful for other people (such as customers). In fact, a culture

Table 2.1. Relationships and trust: summary of challenges and solutions from *Fortune* rated companies.

Challenge	Solutions from practice
Relationships and trust	1. Empowerment to individuals, teams, and offices; trust in employees, fair treatment of employees 2. Collaborative, collegial, and nonwork fun and social events 3. Providing flexibility and telecommuting options 4. Creating a sense of purpose and meaning in work

where respect for the individual and trust are cornerstones is key.

Many of the top companies identified by *Fortune* provide support for remote work, thereby enabling better work–life balance, and also place great emphasis on a culture of teamwork. Enabling remote work, sometimes by providing satellite offices, helps employees achieve a balance between their personal and professional lives. Because remote work necessitates great teamwork, these companies seek to hire not just capable individuals, but team members who can work well together, placing a lot of emphasis on their hiring practices and "fit." Further, no amount of teamwork is possible if employees do not trust management. To this extent, companies that treat their employees fairly regardless of their office location, and that empower

employees and teams to figure out the best approach to their work, are more successful. At one level higher, this translates into local offices being empowered without much interference from their headquarters.

Above all, such companies focus on non-work activities and provide ample opportunities for fun and other social events to help employees bond together. These activities also enhance camaraderie and in turn help build good relationships among team members.

Table 2.2 presents the field solutions for addressing the communication category of challenges.

Fortune-rated companies believe in open communication and transparency in information sharing. Important happenings are shared with all employees, irrespective of their office size or roles or level in the hierarchy. A distinguishing feature is often the fact that there are open lines of communication right up to the chief executive officer (CEO), indicating approachable top management. One such company is known for a CEO who can remember everyone's names and strikes up a casual conversation with employees. The same high-quality training is imparted to employees in all locations. Further, employees and teams are also empowered to initiate and organize their own opportunities for knowledge sharing, learning and communicating important social or political events that affect the company. Employees frequently have open and clear communication of ideas and collaborate with each other. Strong emphasis is laid on sharing information and knowledge to prevent hoarding.

In Table 2.3, the main solutions highlighted around the challenge category of "perceptions and decision making" are presented. To begin with, there is always an ongoing hands-on approach to help employees understand and alleviate bias in decision making and thereby improve the decision-making process. Additionally, in these companies, creative ideas are nurtured by giving employees a say and helping them pursue their ideas. Again, a strong and persuasive culture of teamwork stands out. Going one step further, these companies also drive an entrepreneurial spirit. A flat structure aids in the decision-making process. There are often company-wide initiatives for teams to come up with business ideas. Selected teams are given an opportunity to present in front of live as well as a video audience to empower employees across office locations.

Table 2.2. Communication and knowledge sharing: summary of challenges and solutions from *Fortune* rated companies.

Challenge	Solutions from practice
Communication and Knowledge Sharing	1. Transparent and open communication with all, across hierarchical levels 2. Providing support for telecommuting 3. Same quality of training across all locations 5. Facilitating voluntary knowledge transfer

Table 2.3. Perceptions and decision making: summary of challenges and solutions from *Fortune* rated companies.

Challenge	Solutions from practice
Perceptions and decision making	1. Investing in training employees on improving decision-making process (including training to remove biases) 2. Focus on employee voice 3. Flat structure 4. Empowering teams to innovate and learn constantly 5. Setting the tone for a culture that fosters teamwork at its best

In Table 2.4, we find that the leadership category challenges are often addressed with a twofold approach: First, there is an abundant and consistent support from the top management to focus on cooperation and respect, and also to keep sight of goals. Top management is not only approachable but also takes interest in getting to know employees. Apart from being approachable, leaders set clear expectations and goals and are also understanding. Leaders genuinely seek and respond to ideas and suggestions. They communicate frequently and appropriately, while being responsive to employee queries. An example of being approachable is a company in the *Fortune* list where the leaders give their cell phone numbers to their employees to demonstrate their constant availability. Leaders also involve themselves in the orientation and put efforts toward getting employees to imbibe the company's culture.

In Table 2.5, we find the solutions to the diversity challenge are centered on fostering belongingness and encouraging and promoting diversity. First and foremost, top management is absolutely committed to encouraging and promoting diversity and inclusion. Many of these companies have a formal diversity program with a high representation of women and minorities (as high as 42% women and 35% minorities), along with different age groups of employees. Employees are strongly encouraged to participate in various inclusion initiatives. Organizations foster a sense of community by encouraging employee networks, such as the Black Employee Network. This is critical in providing mentorship, providing leadership development, and facilitating personal growth. Further, it helps formation of a support network. Employee networks bring together people of shared interests and background to promote leadership development, personal growth, and company values.

Building shared identity may help enable trust, in turn reducing the negative effects of diversity. Solutions to communication challenges have to do not only with quality and frequency of communication but also with creating shared knowledge and a psychologically safe climate for communication. Mediated communication

Table 2.4. Leadership: summary of challenges and solutions from *Fortune* rated companies.

Challenge	Solutions from practice
Leadership	1. Leaders' (including top management) genuine interest in knowing their employees 2. Leaders' ability to balance goal orientation with concern and care for employees 3. Leaders responsive to employees' concerns and queries, available when needed 4. Leaders' ability to role-model the culture and values of the company

Table 2.5. Diversity: summary of challenges and solutions from *Fortune* rated companies.

Challenge	Solutions from practice
Diversity	1. Informal interventions: (a) voluntary employee networks based on shared interest or background; (b) enabling employee teams to initiate and participate in inclusion activities 2. Formal interventions: (a) formal diversity programs; (b) higher representation (in terms of percentage) of women and minorities

(such as electronic media) can greatly reduce status differences and thus reduce challenges of diversity. Shared leadership helps address some of the challenges associated with leadership in geographically dispersed teams. Creating shared norms through increased leadership by team members helps to overcome some of the virtual team challenges related to decision making.

Table 3 compares the solutions from the field with the findings from academic literature, highlighting areas that are unique recommendations from the field.

As highlighted in Table 3, transparency is particularly valued by geographically dispersed workers, especially as the means to facilitate trust. Furthermore, other key recommendations that emerged were greater equality in top-down communications across all of the locations, and flatter organizational structure to give greater voice to dispersed employees and make them feel less "out of sight out of mind."

In analyzing quotes from companies included in recent *Fortune* reports (*Fortune*, 2014, 2015, 2016, 2017), we find that a less hierarchical structure that encourages employees to be independent was an important aspect of addressing some of the challenges associated with geographically dispersed work. For example, at Google one employee mentioned that "everyone here is given a chance to contribute regardless of their position," and at Edward Jones, "individual branches are given the opportunity to run their branches mostly as they see fit without too much input from the home office." As highlighted in the report (*Fortune*, 2014), a DPR Construction employee highlighted how much freedom they have because of their flat organizational structure, which "gives folks a

sense of empowerment to speak up when they believe their point to be valid. Quite often this leads to great ideas for problem solving." More generally, top management support, making employees feel more valued, is suggested to improve perceptions of employees towards their work environment and colleagues, improving collaborative processes across geographical boundaries.

Companies had different ways of addressing some of the other challenges. For example, encouraging and promoting diversity is important. At Intuit, "diversity is honored and respected." In addressing trust-related issues, some, like DPR, have chosen to do it by giving employees "the freedom to do your job and not be micromanaged. They entrust their employees." Another challenge, communication, is prioritized by companies like Camden Property Trust, where employees feel that "the effort this company goes [to] communicate is amazing," demonstrating the positive influence of top-down communication in addition to facilitating improved peer to peer communication. An additional solution that emerged from the field is that an avenue for employees to air their concerns and receive immediate communication or honest answers from management or leaders is very helpful in building trust.

By fostering an atmosphere where an employee feels a greater level of satisfaction on a personal level and by offering "perks" to their employees, organizations foster commitment by building a stronger culture to facilitate bonding and increased identification and trust among employees, and in turn improve cooperation. For example, *Fortune* reports suggest that Google "has teams that work specifically to help everyone [here] achieve a satisfying work/life balance, regardless of position and level." At QuickenLoans, employees were quoted saying, "We participate in social events as a company, which promote a positive atmosphere." Social events for employees across locations may help address some of the challenges related to communication and more generally to work across geographical distance where employees are more likely to be limited in their opportunities to interact.

Some of the employees of companies highlighted by *Fortune* commented on the increased opportunities for geographically dispersed work presented by their organizations. For example, a Google employee mentioned that they have been "given great support for a remote work-at-home" setup, while at Intuit they have a "great policy on working from home," thereby fostering an atmosphere of flexibility and work–life balance. While this increases the likelihood of geographical dispersion among team

Table 3. Comparison between solutions from academic literature and the field.

	Academic solutions	Solution theme from the field	Parallels between academic literature and field results	Unique recommendations from the field
Relationships and trust	Relationships: foster shared identity, making everyone's actions visible and therefore accountable. Trust: requires timely responses, open communication, and feedback.	Organizational culture focused on teamwork and bonding among employees, work–life balance, enabling virtual work via telecommuting option and providing required information technology tools.	Field data suggest that culture of teamwork enhances trust, and that providing certain information technology tools to enable employees to work remotely facilitates trust. Academic solutions are focused more on accountability, feedback and communication. Agreement on the importance of open communication.	Enabling virtual work necessitates transparency, which in turn has the potential to facilitate trust. Placing trust in employees enables them to work better with each other virtually and manage commitments and deliverables.
Communication and knowledge sharing	PSCC, structural aspects of communication such as frequency and timing, shared context such as being driven by the same goals, project requirements, etc.	Transparency, excellent top-down communication regardless of organizational size, unbiased communication across all locations without favoritism, enabling employees to teach and learn from one another and initiate communication of important events, including impact of exogenous social, economic, and political events.		Content and timing of management's communication should be comparable across all locations, making sure to involve everyone. Enabling employee teams to teach and learn from each other and communicate the impact of internal as well as external events.
Decision making and perceptions	Enabling employees to create shared knowledge by working together.	Giving voice, encouraging employees to be independent; flat organizational structure facilitates knowledge sharing and in turn better decision making	Academic and field data suggest somewhat different solutions. Flat structure and giving voice to employees may give rise to greater knowledge sharing and in turn improved team performance. On the other hand, research has found that teams that work together can create shared knowledge and thereby enable better decision making.	Flatter structures, giving voice to employees, enabling creation of a shared pool of knowledge.
Leadership	Shared leadership, strength of ties, i.e., social network of leaders, cognitive ability of leaders.	Focus on fostering teamwork, approachability of senior management, excellent communication.	Solutions from academia and the field seem to focus on different aspects of leadership. While academic literature is rich in the recommendation of shared leadership among virtual team members, field solutions seem to suggest "what leaders do" as opposed to "who leaders are."	A highly communicable leader who keeps his or her "ear to the ground" and is constantly involved using an integrated approach to facilitate a more cohesive and collaborative team environment.
Diversity	Computer-mediated communication (CMC) can help reduce status differences between team members	Dedicated employee networks and commitment to diversity, fostering diversity such as with formal institutionalized diversity programs.	Common role of communication, but different aspects are highlighted. While field data suggest dedicated employee networks, academic literature suggests mediated communication. Additionally, field data suggest that top management commitment to diversity and inclusion is absolutely essential for the success of any diversity initiative.	Organizations can encourage employees to use CMCs to create employee networks, thereby leveraging the benefits of having a support network

members with the negative connections, it also motivates them by providing more autonomy to make decisions about their work.

In sum, despite challenges that are associated with geographically dispersed collaborations, there are a number of approaches that companies highlighted in the *Fortune* reports of 2014–2017 have chosen, to foster a better environment for their employees. In some cases, they went as far as to facilitate increasing levels of geographically dispersed work to improve overall employee satisfaction and morale, resulting in happier

and more productive employees, who in turn were more likely to contribute to their team.

Companies in the Fortune reports also seemed to encourage teams to take responsibility for initiating and instituting mechanisms to support their own development in the areas of learning, communication, and diversity. At Google, it was found that in a given year more than 6,000 Googlers taught more than 3,000 classes in a variety of topics to fellow Googlers. Online classes helped facilitate the message that everyone, regardless of their office location, is encouraged to

participate by improving their skills or helping others improve. The same goes for employee teams that were encouraged to organize and participate in various inclusion activities for women and minorities. To facilitate virtual team learning, Boston Consulting Group provides a special round the clock portal to their employees where they can access over 1400 resources from a variety of areas. There are also programs to facilitate the development of skills ranging from problem solving to leadership. Managers can recommend specific resources from the portal to their teams, helping facilitate more targeted learning (Fortune, 2016; Boston Consulting Group).

A combination of technology enablement and teamwork helps teams makes teams invest in their learning across geographical locations. In summary, a quote from one of the law firms highlights the importance of facilitating virtual work to help improve client-centric performance: "Many of our employees are able to work remotely to serve our clients better" (Baker Donelson, in *Fortune*, 2017).

Discussion

In this article we analyze the challenges of geographically dispersed work and the associated potential solutions. By utilizing publicly available data from the *Fortune* reports from the last three years, we are able to highlight solutions from practice that correspond to challenges highlighted in the literature. Since summaries of issues and solutions were suggested by employees themselves, coupled with facts about the company, such as various policies they have instituted, we believe that our approach enables us to highlight solutions that have utility in the field as well as future scholarship. Our study contributes to the literature by incorporating data from the field to inform and ground our research. First, we identify, categorize, and summarize the various challenges suggested by the literature. We then couple these with employee quotes from the qualitative comments available in the *Fortune* reports and the company facts from the companies identified by the report as "best" to work for in recent issues (2014; 2015, 2016; and, 2017).

Some of the approaches used by the companies identified by *Fortune* are supported by and consistent with the research findings from the academic literature, while others are not. For example, field solutions suggest that demonstrated top management commitment and employee team's initiative contribute to the success of virtual teamwork. Further, the impact of top management's involvement in setting goals for virtual teams, direction for their collaboration, and personal input and diversity has been highlighted in the field to a much greater extent than in the literature. Transparency and flat structure come up quite often in the field solutions, which do not necessarily figure in the virtual team literature. Industry also highlights the value of voluntary employee groups (social or interest-based) for their positive impact on inclusion and teamwork to a much greater extent than the literature.

Second, field solutions appear to have a greater dependence on macro exogenous factors such as political and economic conditions, location of the headquarters and satellite offices, and ability to attract talent where and when it is needed, among other factors that we have found to be largely missing from the majority of academic studies. This also contributes to the way field solutions emerge. For example, many of the companies in the survey have excellent top management support, as well as individuals who can work very well in a team amidst empowerment. Thus, an offshoot of the exogenous factors is the confluence of top-down (top management initiatives) and bottom-up (employees' contributions) approaches.

Third, field solutions demonstrate that virtual team challenges are often interrelated and therefore any one solution can have positive impact in one area but a different set of implications in another, which is difficult to examine in empirical studies that usually focus on a limited set of concepts due to feasibility constraints of one study's scope. A controlled study may be able to tease apart the influence of various solutions. Fourth, field solutions focus on intangible initiatives to help employees bond, such as functions, celebrations, sports, and other fun-filled activities, the impact of which has not been fully empirically evaluated for its utility and influence on the five themes of challenges we have identified for virtual teams. Finally, in practice, many companies have to address challenges of dealing with multiple virtual team configurations that include members who contribute virtually for reasons ranging from business travel, to flexible work arrangements, to geographically and globally distributed office locations.

In sum, it would be interesting to empirically contrast solutions advocated by practice (Table 2.1 to 2.5) in a large sample of differently configured virtual teams to study the effects on challenges we have discussed. While empirical research is often used to drive changes in the industry (theory driven practice), we advocate the merits of also using the practice-driven theory approach to advance our understanding of the issues and the variety of ways to address them.

Theoretical and practical implications

The overall implications of our findings highlight that there are various potential solutions that companies can employ for successful geographically dispersed work. Several of these are at the organizational level, such as flatter structure, formal programs for diversity and inclusion, and top management communication. Research suggests that leaders play a central role in enhancing team effectiveness by increasing satisfaction and motivation (Gilson et al., 2015), monitoring and reducing tensions (Wakefield, Leidner, & Garrison, 2008), and demonstrating empathy and a great deal of understanding while articulating role and relationship expectations for team members (Kayworth & Leidner, 2002). Practitioners seem to agree. In a number of companies leaders play an important role, from providing access to high-ranking leaders via Hangouts (video conference) to having employees discuss their ideas with executive leadership through a special intranet site.

Industry practices suggest that building camaraderie among team members and non-work-related fun, as well as social activities, seem to go a long way in enhancing trust, facilitating stronger bonds and relationships among the geographically dispersed team members, in turn increasing the effectiveness of virtual work. Thus, initiatives are required at different levels within an organization. In more general terms, when organizations are committed to making geographically dispersed work a success, no effort is small or irrelevant.

In lower echelons of management, additional steps could also be taken by managers to make sure that even employees who are not co-located with their managers do not feel left out. Having an outlet to contribute ideas that are then shared with others in the company, including senior management, seems to help to bridge geographical distance and reduce perceptions of unfairness. Involving team members in group decision making and considering the opinions of all team members, regardless of their office location, may help facilitate teamwork. Providing numerous opportunities to learn and contributing to the education of others also seem to facilitate greater comradery and improve relationships.

Managers need to understand that challenges associated with geographically dispersed teams are often interrelated. For example, lack of trust impairs knowledge sharing, which in turn affects relationships among team members and thereby, performance. Theoretically, this implies that any research studying geographically dispersed teams should take multiple interaction factors into account before empirically testing the unique field solutions for generalizability across organizations, which might be very complex to do methodologically. While studies are limited by the number of variables they can study in any one project, meta-analysis studies can expand our understanding on how to address virtual team challenges. Additionally, large studies of multinational companies could perhaps provide more of a complete picture and fill in more gaps (Hofstede, 1991, 2001).

It is important for industry managers to understand the underlying themes of challenges associated with the virtual team environment and how solutions may potentially be constrained in ways they facilitate resolutions of these challenges. Empirical research could help tease out the conditions under which the field-based interventions would work, across different industries, sizes of companies, and types of geographical and global distributions.

Limitations and future research

Among of the main limitations of this study are that the data from the *Fortune* report are not specific to geographically dispersed teams and that this is a secondary source where the focus was different than our study. Hence, our qualitative analysis teased out the relevant factors. Future studies can carry out empirical studies of some of the gaps we have identified between academic and industry approaches (Table 3). In addition, since the survey purpose was not necessarily confidential (employees participating may have known the purpose of the survey), it is possible that employees gave favorable opinions in some cases. However, we think this is a minor concern since some of the survey quotes contain less favorable opinions and suggest drawbacks and areas of weakness. Furthermore, future studies may want to study some of the companies on the *Fortune* report directly, examining the challenges and company's responses in more depth.

Another limitation relates to the practically limitless list of challenges associated with virtual work, which made it impossible for us to list and discuss each possible challenge in detail.

Building on this study, future research can explore the conditions under which effectiveness of geographically dispersed work can be undermined or the contextual conditions under which the proposed solutions from practice may be more effective. For example, since the companies in our preliminary analyses are highly admired and respected, it is possible that they incorporate all or at least a few solutions. Hence, future research could examine the interaction effects of these various solutions and test the validity of these solutions across various points in time.

Conclusion

Finding synergies between theory- and practice-based solutions to challenges associated with geographically dispersed work is likely to benefit both sides. Rather than working in parallel, by learning from each other, more effective solutions may emerge. Our article presents a summary of challenges associated with virtual work and the respective solutions that some of the "top" companies, as rated by *Fortune*, have been relying on. By following the trend of bringing together theory and practice, we can expand our knowledge base and enrich the state of the art.

About the authors

Julia Eisenberg is an assistant professor in the Department of Management and Management Science at Pace University's Lubin School of Business. Her research interests include leadership, innovation, and collaborative processes among geographically distributed colleagues. Prior to getting her PhD from Rutgers University, she worked on Wall Street in information technology and finance for a decade. She can be reached at jeisenberg@pace.edu.

Aparna Krishnan is an instructor at Georgia State University, Robinson College of Business. She received a PhD in organizational behavior from Rutgers University, New Jersey, and her research focuses on negotiations and decision making, virtual teams, and mediated communication. She can be reached at akrishnan@gsu.edu.

References

Academy of Management Conference Program. (2016).

Akella, D. (2013). Theory to Practice: Practice to Theory. *Organization Management Journal*, 10(1), 75.

Alder, G. S., Noel, T. W., & Ambrose, M. L. (2006). Clarifying the effects of Internet monitoring on job attitudes: The mediating role of employee trust. *Information and Management*, 43(7), 894–903.

AlMazrouei, H., & Zacca, R. (2015). Expatriate leadership competencies and performance: A qualitative study. *International Journal of Organizational Analysis*, 23(3), 404–424.

Alsharo, M., Gregg, D., & Ramirez, R. (2016). Virtual team effectiveness: The role of knowledge sharing and trust. *Information & Management*. doi:10.1016/j.im.2016.10.005

Anderson, A. H., McEwan, R., Bal, J., & Carletta, J. (2007). Virtual team meetings: An analysis of communication and context. *Computers in Human Behavior*, 23(5), 2558–2580.

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

Au, Y., & Marks, A. (2012). "Virtual teams are literally and metaphorically invisible" Forging identity in culturally diverse virtual teams. *Employee relations*, 34(3), 271–287.

Avolio, B. J., Sosik, J. J., Kahai, S., & Baker, B. (2014). E-leadership: Re-examining transformations in leadership source and transmission. *The Leadership Quarterly*, 25(1), 105–131.

Bartlett, R. S. (2014). *Virtual escapes and intercultural explorations : How members of interpals are using their online community as a window to the world*. Retrieved from: https://scholarsarchive.byu.edu/etd/4387/

Bartunek, J. M., & Rynes, S. L. (2014). Academics and practitioners are alike and unlike: The Paradoxes of academic–practitioner relationships. *Journal of Management*, 40(5), 1181–1201.

Batarseh, F. S., Usher, J. M., & Daspit, J. J. (2017). Collaboration capability in virtual teams: Examining the influence on diversity and innovation. *International Journal of Innovation Management*, 21, 4. doi:10.1142/S1363919617500347

Bell, B. S., & Kozlowski, S. W. J. (2002). A typology of virtual teams: Implications for effective leadership. *Group & Organization Management*, 27(1), 14–49.

Berry, G. R. (2011). Enhancing effectiveness on virtual teams: Understanding why traditional team skills are insufficient. *Journal of Business Communication*, 48(2), 186–206.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27–40.

Breuer, C., Hüffmeier, J., & Hertel, G. (2016). Does trust matter more in virtual teams? A meta-analysis of trust and team effectiveness considering virtuality and documentation as moderators. *Journal of Applied Psychology*, 101(8), 1151–1177.

Buvik, M. P., & Tvedt, S. (2017). The influence of project commitment and team commitment on the relationship between trust and knowledge sharing in project teams. *Project Management Journal*, 48(2), 5–21.

Carlson, J. R., Carlson, D. S., Hunter, E. M., Vaughn, R. L., & George, J. F. (2013). Virtual team effectiveness: Investigating the moderating role of experience with computer-mediated communication on the impact of team cohesion and openness. *Journal of Organizational and End User Computing*, 25(2), 1–18.

Chae, S. W. (2016). Perceived proximity and trust network on creative performance in virtual collaboration environment. *Procedia Computer Science*, 91(Itqm), 807–812.

Charlier, S. D., Stewart, G. L., Greco, L. M., & Reeves, C. J. (2016). Emergent leadership in virtual teams: A multilevel investigation of individual communication and team dispersion antecedents. *Leadership Quarterly*, 27, 5. doi:10.1016/j.leaqua.2016.05.002

Cheng, X., Fu, S., & Druckenmiller, D. (2016). Trust development in globally distributed collaboration: A Case of U. S. and Chinese mixed teams. *Journal of Management Information Systems*, 33(4), 978–1007.

Cheng, X., Fu, S., Sun, J., Han, Y., Shen, J., & Zarifis, A. (2016). Investigating individual trust in semi-virtual collaboration of multicultural and unicultural teams. *Computers in Human Behavior*, 62, 267–276.

Cheng, X., Yin, G., Azadegan, A., & Kolfschoten, G. (2016). Trust evolvement in hybrid team collaboration: A longitudinal case study. *Group Decision and Negotiation*, 25(2), 267–288.

Chidambaram, L., & Jones, B. (1993). Impact of communication medium and computer support on group perceptions and performance: A comparison of face-to-face and dispersed meetings. *MIS Quarterly*, 465–491.

Chin, C., & Geynier, L. 2006. Global leadership competence: A Cultural intelligence perspective. *MBAA Conference*.

Chiravuri, A., Nazareth, D., & Ramamurthy, K. (2011). Cognitive conflict and consensus generation in virtual teams during knowledge capture: Comparative effectiveness of techniques. *Journal of Management Information Systems*, 28(1), 311–350.

Connaughton, S. L., & Daly, J. (2004). Leading from afar: Strategies for effectively leading virtual teams. In S. H. Godar & S. P. Ferris (Eds.), *Virtual and collaborative teams: Process, technologies and practice* (pp. 49–75). Hershey, PA: Idea Group Publishing.

Connaughton, S. L., & Shuffler, M. (2007). Multinational and multicultural distributed teams: A Review and Future Agenda. *Small Group Research*, 38(3), 387–412.

Corbin, J., & Strauss, A. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (4th ed.). Thousand Oaks, CA: Sage.

Daft, R. L., & Lengel, R. (1986). Organizational information requirements, media richness, and structural determinants. *Management Science*, 32, 554–571.

Darics, E. (2014). The blurring boundaries between synchronicity and asynchronicity: New communicative situations in work-related instant messaging. *International Journal of Business Communication*, 51(4), 337–358.

Day, D. V., Gronn, P., & Salas, E. (2004). Leadership capacity in teams. *Leadership Quarterly*, 15(6), 857–880.

Dennis, A. R. (1996). Information exchange and use in small group decision making. *Small Group Research*, 27(4), 532–550.

Hoch, J. E., & Dulebohn, J. H. (2017). Team personality composition, emergent leadership and shared leadership in virtual teams: A theoretical framework. *Human Resource Management Review*, 27(4), 678–693.

Eisenberg, J., & Mattarelli, E. (2017). Building bridges in global virtual teams: The role of multicultural brokers in overcoming the negative effects of identity threats on knowledge sharing across subgroups. *Journal of International Management*, 23(4), 399–411.

Erickson, T. (1999). Persistant Conversation: An Introduction. *Journal of Computer-Mediated Communication*, 4(4)

Ferrell, J. Z., & Herb, K. C. (2012). Improving Communication in Virtual Teams. *Society for Industrial and Organizational Psychology*, (October), 1–7.

Fortune. 2014. 100 Best companies to work for. Retrieved from http://archive.fortune.com/magazines/fortune/best-companies/2014/list/

Fortune. 2015. 100 Best companies to work for. Retrieved from http://fortune.com/best-companies/2015/

Fortune. 2016. 100 Best companies to work for. Retrieved from http://fortune.com/best-companies/2016/

Fortune. 2017. 100 Best companies to work for. Retrieved from http://fortune.com/best-companies/2017/

Fortune. 2017. 100 Best Companies to Work For® 2017. Great Place to Work, 2017, Retrieved from https://www.greatplacetowork.com/best-workplaces/100-best/2017.Accessed 17 May 2018.

Garrison, G., Wakefield, R. L., Xu, X., & `Kim, S. H. (2010). Globally distributed teams. *ACM SIGMIS Database*, 41(3), 27.

Gibbs, J., & Boyraz, M. (2015). International HRM's role in managing global teams. In D. G. Collings, G. Wood, & P. Caligiuri (Eds.), *The Routledge companion to international human resource management*. (pp. 532–551). New York, NY: Routledge.

Gibbs, J., Kim, H., & Boyraz, M. (2017). Virtual Teams. *The International Encyclopedia of Organizational Communication*, 1–14.

Gibbs, J., Rozaidi, N. A., & Eisenberg, J. (2013). Overcoming the "Ideology of Openness": Probing the affordances of social media for organizational knowledge sharing. *Journal of Computer-Mediated Communication*, 19, 102–120.

Gibson, C., & Gibbs, J. (2006). Unpacking the concept of virtuality: The Effects of geographic dispersion, electronic dependence, dynamic structure, and national diversity on team innovation. *Administrative Science Quarterly*, 51, 451–495.

Gibson, C., Gibbs, J., Stanko, T., Tesluk, P., & Cohen, S. (2011). Including the "I" in virtuality and modern job design: Extending the job characteristics model to include the moderating effect of individual experiences of electronic dependence and copresence. *Organization Science*, 22(6), 1481–1499.

Gilson, L., Maynard, M. T., Jones Young, N. C., Vartiainen, M., & Hakonen, M. (2015). Virtual Teams Research: 10 Years, 10 Themes, and 10 Opportunities. *Journal of Management*, 41(5), 1313–1337.

Goh, S., & Wasko, M. (2012). The effects of leader-member exchange on member performance in virtual world teams. *Journal of the Association for Information Systems*, 13(10), 861–885.

Gressgård, L. J. (2011). Virtual team collaboration and innovation in organizations. *Team Performance Management*, 17(1/2), 102–119.

Griffith, T. L., Sawyer, J. E., & Neale, M. A. (2003). Virtualness and knowledge in teams: Managing the love triangle of organizations, individuals, and information technology. *MIS Quarterly*, 27(2), 265–287.

Han, S. J., Chae, C., Macko, P., Park, W., & Beyerlein, M. (2017). How virtual team leaders cope with creativity challenges. *European Journal of Training and Development*, 41(3), 261–276.

Hardin, A. M., Fuller, M. A., & Davison, R. M. (2015). I Know I Can, But Can We? Culture and efficacy beliefs in global virtual teams. *Small Group Research*, 38(1), 130–155.

Henttonen, K., & Blomqvist, K. (2005). Managing distance in a global virtual team: The evolution of trust through technology-mediated relational communication. *Strategic Change*, 14(2), 107–119.

Hinds, P., & Mortensen, M. (2005). Shared identity, shared context, and spontaneous communication distributed understanding conflict in geographically teams: The moderating effects of shared identity, shared context, and spontaneous communication. *Organization Science*, 16(3), 290–307.

Hoch, J. E., & Dulebohn, J. H. (2013). Shared leadership in enterprise resource planning and human resource management system implementation. *Human Resource Management Review*, 23(1), 114–125.

Hoch, J. E., & Dulebohn, J. H. (2016). Team personality composition, emergent leadership and shared leadership in virtual teams : A theoretical framework. *Human Resource Management Review*. doi:https://doi.org/10.1016/j.hrmr.2016.12.012

Hoch, J. E., & Kozlowski, S. W. J. (2014). Leading virtual teams: hierarchical leadership, structural supports, and shared team leadership. *The Journal of Applied Psychology*, 99(3), 390–403.

Hodgkinson, G. P., & Rousseau, D. M. (2009). Bridging the rigour–Relevance gap in management research: It's already happening! *Journal of Management Studies*, 46(3), 534–546.

Hofstede, G. (1991). *Cultures and Organizations: Software of the mind*. London, UK.: McGraw-Hill.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Howell, J. M., & Hall-Merenda, K. E. (1999). The ties that bind: The impact of leader-member exchange, transformational and transactional leadership, and distance on predicting follower performance. *Journal of applied psychology*, 84(5), 680.

Iorio, J., & Taylor, J. E. (2015). Precursors to engaged leaders in virtual project teams. *International Journal of Project Management*, 33, 2. doi:10.1016/j.ijproman.2014.06.007

Jarvenpaa, S., Knoll, K., & Leidner, D. E. (1998). Is anybody out there? Antecedents of trust in global virtual teams. *Journal of Management Information Systems*, 14(4), 29–64.

Jarvenpaa, S., & Leidner, D. E. (1999). Communication and trust in global virtual teams. *Organization Science*, 10(6), 791–815.

Johns, T., & Gratton, L. (2013). The third wave of virtual work. *Harvard Business Review*, 91(1), 66–73.

Johnson, S. K., Bettenhausen, K., & Gibbons, E. (2009). Realities of working in virtual teams: Affective and attitudinal outcomes of using computer-mediated communication. *Small Group Research*, 40(6), 623–649.

Joshi, A., Lazarova, M. B., & Liao, H. (2009). Getting everyone on board: The role of inspirational leadership in geographically dispersed teams. *Organization Science*, 20(1), 240–252.

Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of social media. *Business Horizons*, 53(1), 59–68.

Kayworth, T. R., & Leidner, D. E. (2000). The global virtual manager: A prescription for success. *European Management Journal*, 18(2), 183–194.

Kayworth, T. R., & Leidner, D. E. (2002). Leadership effectiveness in global virtual teams. *Journal of Management Information Systems*, 18(3), 7–40.

Klitmøller, A., & Lauring, J. (2013). When global virtual teams share knowledge: Media richness, cultural difference and language commonality. *Journal of World Business*, 48, 3. doi:10.1016/j.jwb.2012.07.023

Kuo, F. Y., & Yu, C. P. (2009). An exploratory study of trust dynamics in work-oriented virtual teams. *Journal of Computer-Mediated Communication*, 14(4), 823–854.

Leenders, R. T. A., van Engelen, J. M., & Kratzer, J. (2003). Virtuality, communication, and new product team creativity: A social network perspective. *Journal of Engineering and Technology Management*, 20(1–2), 69–92.

Levine, J. M., Moreland, R. L., & Choi, H. S. (2001). *Group socialization and newcomer innovation. Blackwell handbook of social psychology: Group processes* (pp. 86–106). Malden, MA: Blackwell Publishers.

Liao, C. (2017). Leadership in virtual teams: A multilevel perspective. *Human Resource Management Review*. doi:10.1007/s10787-012-0152-6

Malhotra, A., Majchrzak, A., & Rosen, B. (2007). Leading Virtual Teams. *Academy of Management Perspectives*, 21 (1), 60–71.

2016. Management theory is becoming a compendium of dead ideas. *The Economist*, December 17th. https://www.economist.com/news/business/21711909-what-martin-luther-did-catholic-church-needs-be-done-business-gurus-management

Martins, L., Gilson, L., & Maynard, M. T. (2004). Virtual Teams: What do we know and where do we go from here? *Journal of Management*, 30(6), 805–835.

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

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). an integrative model of organizational trust. *Academy of Management Review*, 20(3), 709–734.

Maynard, M. T., Mathieu, J. E., Rapp, T. L., & Gilson, L. (2012). Something (s) old and something (s) new : Modeling drivers of global virtual team effectiveness. *Journal of Organizational Behavior*, 365(November 2011), 342–365.

Maynard, M. T., & Gilson, L. L. (2014). The role of shared mental model development in understanding virtual team effectiveness. *Group & Organization Management*, 39(1), 3–32.

McNamara, K., Dennis, A. R., & Carte, T. A. (2008). It's the thought that counts: The mediating effects of information processing in virtual team decision making it s the thought that counts. *Information Systems Management*, 25, 20–32.

Medsker, L., Tan, M., & Turban, E. (1995). Knowledge acquisition from multiple experts: Problems and issues. *Expert Systems With Applications*, 9(1), 35–40.

Montoya, M. M., Massey, A. P., Hung, Y.-T. C., & Crisp, C. B. (2009). Can you hear me now? Communication in virtual product development teams. *Journal of Product Innovation Management*, 26(2), 139–155.

O'Hara-Devereaux, M., & Johansen, R. (1994). *Global Work: Bridging distance, culture, and time*. San Francisco, CA: Jossey-Bass.

O'Leary, M. B., Wilson, J. M., & Metiu, A. 2012. The role of communication and identification in the emergence of perceived proximity in virtual work. *Academy of Management Annual Meeting*.

O'Leary, M. B., Wilson, J. M., & Metiu, A. (2014). Beyond being there: The symbolic role of communication and identification in perceptions of proximity to geographically dispersed colleagues. *MIS Quarterly*, 38(4), 1219–1243.

O'Neill, T. A., Hancock, S. E., Zivkov, K., Larson, N. L., & Law, S. J. (2016). Team decision making in virtual and face-to-face environments. *Group Decision and Negotiation*, 25(5), 995–1020.

Olson, G., & Olson, J. (2000). Distance Matters. *Human-Computer Interaction*, 15(2), 139–178.

Pearce, C. L., & Conger, J. A. (2003). *Shared leadership: Reframing the hows and whys of leadership*. Thousand Oaks, CA: Sage Publications.

Pinto, M. B., & Pinto, J. K. (1990). Project team communication and cross-functional cooperation in new program development. *Journal of Product Innovation Management*, 7(3), 200–212.

Radaelli, G., Guerci, M., Cirella, S., & Shani, A. (2014). Intervention research as management research in practice:

Learning from a case in the fashion design industry. *British Journal of Management*, 25(2), 335–351.

Robert, L. P., Denis, A. R., & Hung, Y.-T. C. (2009). Individual swift trust and knowledge-based trust in face-to-face and virtual team members. *Journal of Management Information Systems*, 26(2), 241–279.

Robinson, S. L. (1996). Trust and breach of the psychological contract. *Administrative Science Quarterly*, 41(4), 574.

Rynes, S. L., Giluk, T. L., & Brown, K. G. (2007). The very separate worlds of academic and practitioner periodicals in human resource management: Implications for evidence-based management. *Academy of Management Journal*, 50(5), 987–1008.

Saunders, C., Van Slyke, C., & Vogel, D. R. (2004). My time or yours? Managing time visions in global virtual teams. *Academy of Management Executive*, 18(1), 19–31.

Serban, A., Yammarino, F. J., Dionne, S. D., Kahai, S. S., Hao, C., McHugh, K. A., ... & Peterson, D. R. (2015). Leadership emergence in face-to-face and virtual teams: A multi-level model with agent-based simulations, quasi-experimental and experimental tests. *The Leadership Quarterly*, 26(3), 402–418.

Tangirala, S., & Alge, B. J. (2006). Reactions to unfair events in computer-mediated groups: A test of uncertainty management theory. *Organizational Behavior and Human Decision Processes*, 100(1), 1–20.

Tenzer, H., Pudelko, M., Harzing, A.-W., & Tenzer, H. (2014). The impact of language barriers on trust formation in multinational teams. *Journal of International Business Studies*, 45, 508–535.

Trahan, E. A., & Gitman, L. J. (1995). Bridging the theory-practice gap in corporate finance: A survey of chief financial officers. *The Quarterly Review of Economics and Finance*, 35(1), 73–87.

Tsui, A. S. (2010). *AOM Theme 2010: Dare to Care: Passion and compassion in management practice and research*.

U.S. Census Bureau. (2014, May). An Aging Nation: The Older Population in the United States (Report No. P25-140). Retrieved from https://www.census.gov/prod/2014pubs/p25-1140.pdfaaaa

Wakefield, R. L., Leidner, D. E., & Garrison, G. (2008). A model of conflict, leadership, and performance in virtual teams. *Information Systems Research*, 19(4), 434–455.

Weisband, S. P., Schneider, S. K., & Connolly, T. (1995). Computer-mediated communication and social information: Status salience and status differences. *Academy of Management Journal*, 38(4), 1124–1151.

Wiesenfeld, B. M., Raghuram, S., & Garud, R. (2001). Organizational identification among virtual workers: The role of need for affiliation and perceived work-based social support. *Journal of Management*, 27(2), 213–229.

Wilson, J. M., O'Leary, M., Metiu, A., & Jett, Q. R. (2008). Perceived proximity in virtual work: Explaining the paradox of far-but-close. *Organization Studies*, 29(7), 979–1002.

Yoo, Y., & Kanawattanachai, P. (2001). Developments of transactive memory systems and collective mind in virtual teams. *The International Journal of Organizational Analysis*, 9(2), 187–208.

Zander, L., Zettinig, P., & Mäkelä, K. (2013). Leading global virtual teams to success. *Organizational Dynamics*, 42, 3. doi:10.1016/j.orgdyn.2013.06.008

Zolin, R., Hinds, P. J., Fruchter, R., & Levitt, R. E. (2004). Interpersonal trust in cross-functional, geographically distributed work: A longitudinal study. *Information and Organization*, 14(1), 1–26.