Examining the Relationship Between Knowledge-Sharing, Individual Trust, and Multinational Team Performance in a Virtual Setting: A Non-Experimental Study

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This correlational, nonexperimental study examined the relationship between trust, knowledge-sharing, and performance in multinational virtual teams (MNVTs). Surveying 70 employees from a global tech firm, multiple regression analysis revealed that trust and knowledge-sharing accounted for 65.2% of the variance in team performance ($R^2 = .652$, $F(2,68) = 65.714$, $p < .001$). Findings suggest these variables are significant predictors of MNVT success. Without fostering a culture of trust and knowledge-sharing, global organizations risk team breakdowns. Promoting these factors enhances MNVT effectiveness and supports the strategic advantages of diverse, virtual collaboration.

Keywords: globalization, intercultural work relationship, interpersonal trust, managerial cognition, international organizations, multinational virtual teams

INTRODUCTION

Technological advancements have made collaborating and doing business with people worldwide possible. These advancements have also enabled companies to search for expertise not always available in a single geographic location, and to seek reduced labor costs, thereby driving a greater demand for talent regardless of physical location (Horwitz et al., 2006). The global workplace is therefore rapidly evolving due to the influx of new ideas from the diverse workforce that comprises it, and multinational virtual teams (MNVTs) are the result (Morgan et al., 2014). An MNVT is an example of an organizational form comprised of members who are not collocated but are dispersed across two or more geographical locations (Huang, 2016; Sridhar et al., 2018). Sridhar et al. (2018) stated such teams rarely meet in-person and are primarily linked through computer and telecommunication technologies. Morrison-Smith and Ruiz (2020) stated that MNVT members, by their nature, came from different cultural backgrounds. These differences created barriers to team members identifying with one another and fostered mistrust due to a lack of clarity among members regarding each individual's roles, responsibilities, and abilities (Morrison-Smith & Ruiz, 2020). Reduced trust caused by cultural differences could result in the working relationships between MNVT members being less personal. This impact was exacerbated when combined with geographic distance, which resulted in members rarely, if ever, meeting face-to-face (Nielsen & Lyndgaard, 2020).

With the integration of people from various cultures comes many opportunities for misalignment within MNVTs. These can result in delays, errors, cost-overruns, or ultimately a critical breakdown of the team (Barnwell et al., 2014). Therefore, leaders of MNVTs must understand the factors that impact their teams' success.

Huang (2016) stated that managing people from varying social backgrounds and their diverse ways of thinking were the biggest challenges for managers of MNVTs. Nevertheless, despite the obstacles presented by MNVTs, their prevalence is growing. Powered by a dramatic increase in the availability of the Internet, personal computers, and cell phones, as well as globalization, the remote virtual workforce has continued to grow (Walvoord et al., 2008). In 2008, nearly 2.5 million workers indicated that their primary work location was home, and by 2010, the number had grown to 9.4 million workers, or 6.6% of the U.S. workforce. By 2012, it was estimated that 40% of the working population in the United States, or over 50 million workers, were working at least part of the time remotely. The number of people working remotely worldwide was estimated to have grown 173% between 2005 and 2018 (Lister & Harnish, 2019). In March 2020, the Covid-19 pandemic caused 42 states to issue stay-at-home orders, affecting 73% of U.S. counties (Moreland et al., 2020). During this period, 3.9 billion people in 90 countries (50% of the world's population) were affected by shelter-in-place orders (Euronews, 2020). By the end of 2020, 71% of employees worldwide were working from home at least part of the time (Pew Research Center, 2020). Teams had evolved from people working together in visual proximity to being comprised of members from around the globe, who now interacted electronically (Johnson et al., 2001).

Pinjani and Palvia (2013) noted that, compared to their collocated counterparts, MNVT members took longer to assess the trustworthiness of their colleagues, which was essential to effective knowledge-sharing and MNVT success. Mortensen (2015) noted non-collocated team members were at risk of failing to establish a *shared identity*, or what Elton Mayo described as *cohesiveness* and *norms* (Tolibovna, 2020). Pinjani and Palvia (2013) defined knowledge sharing as information, expertise, and feedback exchanged between team members, regarding a task or process, via formal or informal communication methods. When members experienced less cohesiveness, knowledge-sharing decreased or was incomplete (Griffith et al., 2003; Tolibovna, 2020). Lin et al. (2017) found that virtual teams who experienced positive knowledge-oriented leadership, including knowledge development and sharing, in turn, engaged in these same positive practices, leading to increased feelings of job satisfaction and benefits among members.

Though team members who interact face-to-face develop higher trust levels leading to more effective communication and collaboration (Han et al., 2016), previous researchers have not thoroughly explored if trust and knowledge sharing impacted team success in non-collocated teams. The problem addressed by this study was that there was a risk of experiencing delays, errors, cost-overruns, or ultimately a breakdown of the team if the leaders of multinational virtual teams (MNVTs) were not aware of the critical variables that impact MNVT success (Barnwell et al., 2014). The purpose of this quantitative correlational study was to survey members of an MNVT environment in a Fortune 500 company to determine the extent to which the variables of trust and knowledge-sharing impacted the performance of multinational teams in a virtual setting.

METHODOLOGY

Participants

Although 70% of organizations are believed to contain MNVTs (RW-3, 2018), the exact population parameter of people working in MNVTs worldwide remains unknown. It was, therefore, not possible to accurately identify a representative sample from an unknown population (Zikmund et al., 2013). In 2020, 10 of the 50 largest multinational companies by revenue were in the technology sector, making it the third-largest global category overall. These companies employed 1,580,088 individuals, generating a combined annual revenue of $1.5 trillion (Forbes, 2020). Based on these statistics, the technology sector was chosen as the sector from which to recruit study participants. Due to the unknown MNVT population size, a convenient, non-probability sampling method was applied for this study. The study sample consisted of employees from a single Fortune 500 multinational technology company headquartered in the United

States, with international operations in Canada, the United Kingdom, Ireland, the United Arab Emirates, Hong Kong, Australia, and South Africa. All employees were members of an MNVT within the company.

Instrumentation

A unique instrument measuring the three variables of knowledge sharing, trust, and team performance in MNVTs was field-tested with a content validity ratio by three subject matter experts (SME): a multi-lingual leader of several company MNVTs, a human resource (HR) professional from the company who supported the MNVTs, and a survey professional from a regional university who offered analysis on item efficacy. The field test results were used to adjust the instrument to achieve maximum response participation in the survey research.

Knowledge-Sharing. This variable was measured using eight questions that pertained to how often and how much MNVT members shared knowledge within the team. An eleven-point Likert scale was employed to assign a fixed choice response format to each question, in which ordinal data were treated as interval data. The eleven-point scale was comprised of 0, which indicated "does not apply," and 1 to 10, which indicated strong disagreement to strong agreement.

Team Performance. This variable was measured using nine questions that pertained to the team's ability to successfully meet its members' expectations. As with the variable of knowledge sharing, an eleven-point scale was employed to assign a fixed-choice response format to each question, in which ordinal data were treated as interval data.

Trust. This variable was measured using ten questions that asked about the confidence one member has in another. As with the variables of knowledge sharing and team performance, an eleven-point scale was employed to assign a fixed-choice response format to each question, in which ordinal data were treated as interval data.

Study Procedures

Upon approval from the Institutional Review Board (IRB), we had the company's HR department circulate the Qualtrics link to the instrument and consent form via the corporation's email. The company's entire U.S.-based MNVT employee population of 110 people was contacted to ensure the required level of response and confidence was achieved. Two reminder emails were sent to all potential participants three days and five days after the first recruitment email. The survey closed at the end of the fifth day, when a total of 70 responses were received.

Assumptions

The study had several assumptions. The first assumption was that study participants would answer the study questions truthfully, believing their responses would remain anonymous. If study participants believed their responses could be attributed to them personally, they might not have been truthful to avoid possible repercussions from their team members or manager. The second assumption was that study participants answered the study questions based on their perspectives and experiences and refrained from conveying any personal biases through their answers. For example, if a study participant had a personal bias against the culture of a team member, it was assumed that the participant answered the questions based on their own experiences, rather than their personal feelings about the other team member's culture. The third assumption was that the study participants faced challenges related to trust and knowledge sharing, which were similar to those experienced by MNVTs in other industries. The final assumption was that the SMEs chosen to field-test the survey instrument represented universally accepted expert opinion.

RESULTS

Recruitment of the target population of 110 U.S.-based employees of a single technology company who were members of a team or working group in which one or more team members were located outside of the United States was conducted by company email containing a link to the instrument housed in the Qualtrics website. A total of 70 MNVT members followed the link and completed the survey. All 70 respondents

answered all 27 study questions associated with the variables. This provided a response rate of 63.6%. Participants were also asked five demographic questions about their gender, age, ethnicity, the highest level of education, and tenure with the company.

An a posteriori reliability test was conducted on the measures in the investigator-created questionnaire to determine their reliability. Cronbach's alpha was applied to test the scales measuring knowledge-sharing ($\alpha = .814$, $N = 70$), trust ($\alpha = .895$, $N = 70$), and team performance ($\alpha = .829$, $N = 70$), and all demonstrated a high degree of reliability.

Multiple regression analysis was used to test if team performance ($M = 79.10$, $SD = 10.824$) was significantly predicted by knowledge sharing ($M = 73.57$, $SD = 9.645$) and trust ($M = 93.16$, $SD = 13.142$). Results showed that multinational virtual team performance was significantly impacted by the combination of knowledge sharing and trust, $F(2,68) = 65.714$, $p < .001$, $R^2 = .652$. Upon examining the individual predictors, we found that trust ($t[68] = 4.186$, $\beta = .404$, $p \leq .001$) and knowledge sharing ($t[68] = 3.139$, $\beta = .413$, $p = .003$) both positively predicted team performance. This suggests that as the participants' knowledge-sharing and/or trust increased, the team performed better. The team did not need both trust and knowledge sharing to occur to increase their performance. However, if both did occur, knowledge sharing and trust together accounted for 65% of the variance of the team's performance.

DISCUSSION

Managing a team that is not collocated and whose members come from different cultural backgrounds presents a unique challenge to leaders. Global diversity and distance impact team interactions in a variety of ways. Johnson & Rosin (2011) explained that MNVT leaders must create an environment that enables virtual team members to exercise their talents, thereby achieving job satisfaction and benefiting the organization. Previous research on MNVTs has focused on the impact cultural differences and distance, both physical and psychological, have on MNVT performance. However, Han et al. (2016) observed that a more detailed study of the specific variables of individual trust and communication in the form of knowledge sharing, and their impact on the success of MNVTs, was a gap in existing research.

Horwitz et al. (2006) posited that MNVTs could provide their organizations with several advantages, including business speed, expertise not available in a single geographic location, diverse creativity, and reduced costs. However, to realize these advantages, MNVT managers needed to understand that these teams required a different leadership approach than collocated teams. For example, teams that operated face-to-face could form interpersonal bonds more quickly among members due to their ability to interpret body language, facial expressions, and tone (Mark, 1998). These bonds led to trust, which was linked to successful communication and transfer of knowledge (McAllister, 1995). As Sridhar et al. (2018) observed, MNVT members rarely met in person and were primarily linked through technology. They may also face additional challenges, including language barriers, time zone differences, and cultural biases. Therefore, additional facilitation and intervention by leaders were required to foster interpersonal bonds within MNVTs (Mark, 1998).

The pandemic increased the prevalence of geographically dispersed teams, as over 70 percent of the world's workforce transitioned to working from home (Pew Research Center, 2020). Although not all home-located workers were part of an MNVT, knowledge of the factors that impact MNVT success could be beneficial to all team leaders who want to have highly productive and inclusive virtual teams, whether homogenous or multinational. Therefore, we sought to fill the gap in the research by asking if there was a relationship between knowledge sharing, trust, and team performance in multinational virtual teams. We found that there was a significant increase in team performance when participants shared knowledge and had trust in each other. We believe that this is a significant discovery, as team performance was found to have a positive relationship with trust and knowledge sharing.

Our findings aligned with Homans' social exchange theory, which posits that when a high level of trust exists between MNVT members, they experience higher job satisfaction, resulting in improved team performance (Harzing et al., 2014). Homan's theory also indicated that the trust between MNVT members

was variable. He stated that MNVT members frequently assessed the potential positive and negative outcomes of engaging with their coworkers based on changes in the work environment, including changes in leadership or a leader's approach. These decisions directly impacted MNVT performance, as members assessed whether or not to trust their globally dispersed teammates (Blau, 2017); indicating that if leaders create an environment of trust, they have the ability to positively impact team performance and the job satisfaction of individual members.

Within this study, we found knowledge-sharing (p = .003) and trust (p = <.001) were both predictors of team performance. These results were consistent with the contemporary research, indicating both knowledge-sharing (A'yuni & Parahyantib, 2019: Pangil & Chan, 2012: Song et al., 2015) and trust (Bhat et al., 2017: Hacker et al., 2019: Jaakson et al., 2019) impacted MNVT performance. Although we were not the first to study the effects of trust or knowledge sharing on team performance in MNVTs, we were able to take the additional step of detailing the relationship between all three variables. Song et al. (2015) and Pangil and Chan (2012) researched only knowledge sharing when they found that knowledge-sharing was a significant predictor of MNVT success. Jackson et al. (2019) and Bhat et al. (2017) researched the single variable, trust, when they found that trust was a significant predictor of team performance. A'yuni and Parahyantib (2019) measured trust and knowledge sharing in globally diverse teams from Indonesia. They found a significant correlation between knowledge-sharing and team performance but did not find a correlation between trust and team performance. Hacker et al. (2019) postulated that knowledge-sharing practices within an MNVT impacted trust between members, but did not investigate the impact of knowledge-sharing on team performance. We were able to determine the equation for how trust and knowledge sharing worked to create team performance. We also found that when MNVT members shared their knowledge and/or trusted each other, the team was predicted to perform better (with similar strong associations between variables). The team did not have to have both trust and share knowledge to perform better. However, the combination of knowledge sharing and trust explained 65.2% of the variance in team performance.

In our study, trust did not predict knowledge sharing or vice versa. This finding differed from that of Rolland and Chauvel (2000), who believed trust to be "the single most important precondition for knowledge exchange" (p. 239), and Staples et al. (2008), who found that within MNVTs, trust was a significant predictor of knowledge sharing. Recent studies by Kipkosgei et al. (2020) and Davidaviciene et al. (2020) also indicated that trust significantly impacted knowledge-sharing in globally dispersed teams. Still, our study results indicated no relationship between trust and knowledge sharing at the alpha we chose (α = .05, p = .070). Although the relationship between trust and knowledge sharing did not exist at the 95% confidence level for our group, there is a suggestion that a relationship could have existed if we lowered our confidence level or decreased the effect size within the sample parameters in which we worked. Therefore, indicating that there may be an effect between knowledge and trust, but that effect is small. Thus, the reason we did not observe a relationship between these two variables was that we forced a medium effect size within the *a priori* sample parameters.

The implications of the findings for MNVT leaders are that a lack of engaging and enabling trust and the exchange of knowledge within their teams could impede team performance, and only performing MNVTs provided leaders with the expected advantages. Leaders must recognize that how they influence trust and knowledge-sharing in MNVTs differs from how they influence collocated teams. Horwitz et al. (2006) posited that MNVTs provided their leaders and organizations with several advantages. However, to realize these advantages, MNVT leaders needed to understand that these teams required a different leadership approach than the approach they applied to collocated teams. Segil (1999) stated that MNVT success required leaders to engage in activities unique to MNVTs. Business leaders who approached MNVTs with the same playbook they used for their collocated teams doomed the MNVTs to failure (Segil, 1999).

Anatatmula and Thomas (2010) concurred and stated that as opposed to how they approach their collocated teams, inexperienced MNVT leaders were often tempted to micromanage their globally dispersed teams. Micromanagement from new MNVT leaders was due to a lack of understanding of members' cultural differences, which led to an erosion of trust between members and between the leader

and members (Anatatmula & Thomas, 2010). Yasin et al. (2000) observed that MNVT leaders without prior experience directing culturally diverse teams often missed team goals and were perceived as unsuccessful by their organizations. Caligiuri and Tarique (2012) noted that in order for MNVT leaders to create an environment of trust, they needed experience and training to be culturally flexible and value and learn from the uniqueness of workers from other cultures. Derven (2016) explained that a leader's unconscious bias could inflict critical damage on MNVT members' enthusiasm and willingness to participate, causing them to withdraw their trust and inclination to share information. As suggested by the current research, this withdrawal could negatively impact team performance.

A leader's awareness of the impact of knowledge sharing and trust on team performance is even more urgent in light of the increase in remote work. By the end of 2020, 71% of employees were working from home at least part of the time, and given a choice, more than 50% of workers would prefer to continue working from home post-pandemic (Pew Research Center, 2020). These figures indicated that teams collocated before March 2020 were largely virtual and could remain so in the future, meaning collocated teams and their leaders could now face many of the same challenges as MNVTs. Because of this, leaders need to maintain a continued focus on creating a team environment that fosters knowledge sharing and trust, thereby addressing two significant predictors of their teams' success (Wei & Ko, 2021).

For MNVT leaders to positively impact their team's performance, they need to create an environment that encourages knowledge-sharing and trust by personally engaging in activities that model these behaviors. Researchers Behm-Morawitz (2013) and Wei and Ko (2021) agree that leaders of virtual teams are key influencers in creating a collaborative work environment that strengthens virtual members' trust and knowledge-sharing behaviors. Nielsen and Lyndgaard (2020) noted that leaders, especially those with no previous experience leading globally dispersed teams, could have difficulty interpreting cultural markers which differed from their own. MNVT leaders may not be aware of their culturally based prejudices or preconceptions, which could lead them to misinterpret or negatively judge employees. Therefore, new MNVT leaders need to take steps to bridge the knowledge and experience gap. Such steps could include participating as an MNVT member before assuming a leadership role or seeking a mentoring relationship with a globally experienced colleague. Leaders of MNVTs should actively seek diversity and inclusion (D & I) training to increase their sensitivity to cultural differences and encourage contributions from every team member. MNVT leaders should also embrace communication training, including a basic understanding of the native language of team members. Rad and Anatatmula (2009) postulated that MNVTs were denied traditional methods of synchronous communications, which presented a significant obstacle to trust-building, especially when combined with language barriers. MNVT leaders should seek to gain a deeper understanding of how to effectively communicate expectations, coach, and provide feedback to culturally diverse teams, while also recognizing the impact of physical and psychological distance on the development of trust among team members. Leaders should also demonstrate interpersonal trust by sharing both their professional knowledge and some personal information. For example, MNVT leaders could utilize collaborative tools by sharing pictures and information about their background, accomplishments, or favorite pastimes with their team members. By creating an environment conducive to knowledge-sharing and trust through engagement in activities that model these traits, MNVT leaders will positively impact their team's performance.

Finally, MNVT members should look for opportunities to engage with other team members, share knowledge and information, and take steps to make new members feel welcome. MNVT members should also embrace D & I training, as cultural intelligence has a positive impact on MNVT performance (Mangla, 2021). As this study suggests, by focusing on perpetuating knowledge sharing and trust among MNVTs, global organizations can positively contribute to the success of their MNVTs, thereby leveraging the advantages that MNVTs offer.

Limitations and Recommendations for Further Research

Although 70% of organizations are believed to contain MNVTs (RW-3, 2018), the exact population parameter of people working in MNVTs worldwide remains unknown. It is, therefore, not possible to accurately identify a representative sample from an unknown population (Zikmund et al., 2013, p. 392).

Due to the researcher's accessibility to multinational virtual team members, participation in this study was delimited to U.S.-based MNVT members in a single Fortune 500 multinational technology company headquartered in the United States. Generalization to other industries or organizational entities was not warranted.

Another potential limitation was represented by the number of survey responses required. A total sample size of 68 study participants was required to not violate type I or type II errors in a regression with a medium effect size. As average survey response rates range from 30% to 40% (Blom et al., 2020; Wiersma, 2013), the instrument was sent to the entire U.S.-based MNVT employee population of the company. This sample size could have contributed to no relationship between trust and knowledge sharing within our group.

The Pew Research Center (2020) indicated that virtual teams in both domestic and international work environments were here to stay. The global workplace will continue to evolve due to the influx of new ideas from its diverse workforce, and the phenomenon of multinational virtual teams will continue to grow (Morgan et al., 2014). As a result, the need for further research into the success factors of MNVT will increase, as global organizations seek to understand how to utilize MNVTs to their greatest competitive advantage.

A thorough understanding of the dynamic nature of how trust develops in MNVTs is lacking in current literature, representing a gap in research. Variance research models, such as multilinear regression, have predominantly viewed trust as a variable that predicts or is predicted by other variables. In this study, trust was examined as a predictor of team performance. Future research should shift the study of trust to a process model, examining its influence on team performance over time (Marks et al., 2001). For example, Homan's social exchange theory suggested that the positive and negative weight assigned by the individual to interactions with other team members could evolve as more interactions informed decision-making (Blau, 2017). This study should be conducted again with the same targeted group of respondents in six months to a year, with a view to obtaining a higher response rate. A follow up study would be useful to see if a larger sample size and/or evolved interteam relationships would result in a statistical relationship emerging between trust and knowledge-sharing.

Finally, this study involved U.S.-based members of MNVTs, in one U.S.-based company whose focus was on the technology sector. The impact of knowledge-sharing and trust on MNVT performance should be expanded to include international members of MNVTs, as their perceptions of the predictor variables could differ significantly from the U.S.-based colleagues. MNVT members from other companies and sectors should also be examined. As the proliferation of MNVTs continues, it will be essential to study U.S.-based MNVT members of companies headquartered outside the United States, as well as MNVT members from sectors such as finance and manufacturing. These differing perspectives would contribute further insights for global organizations and MNVT leaders toward understanding the predictors of success in MNVTs.

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