Pandemic Mode
A New Virtual Team Leadership Skillset

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The purpose of this article is to extend research conducted by Hertel, Konradt et.al (2006) as it relates to virtual team members, knowledge, skills, and abilities (KSAs), and job performance. A five-round Delphi study was conducted, utilizing a panel consisting of 43 experts residing across the United States with combined expertise in the area of leadership and virtual teams. A list of 80 competencies and attributes perceived to be essential to the 21st-century virtual team leader was developed and rated as to whether competencies and attributes were perceived to be innate to the individual or transferable to the Virtual Team Leader (VTL). A Cronbach’s coefficient alpha of .89 was produced indicating good internal consistency among the 80-item scale. While nine of 11 subscales of the Virtual Team Competency Inventory (VTCI) appeared relevant to the VTL, four new possible subscales were identified in this study. Research findings suggest the efficacy of the VTL’s success may be associated with higher levels of cognitive ability and should be evaluated in future research to delineate natural intelligence or inherent intelligence from one’s ability to learn. Only 50.1% of the panel agreed that 62.2% of the competencies and attributes perceived to be essential to the 21st century VTL could be taught. Additional research is needed to identify which of the competencies and attributes can be acquired and an instrument developed to measure KSAs specific to Virtual Team Leaders and Leadership.

Keywords: Attributes, Competencies, KSAs, Remote Work, Leadership, Traits, Virtual Team Leadership

Not since the days of September 11, 2001 have leaders in the United States (U.S.) been more cognizant of the need to understand exactly what it means to have a plan for the “Continuity of Operations” (Koontz, 2006). Not long ago, Friedman (2005) suggested the “World is Flat” and amidst a 21st-century global pandemic, that argument appears to have never been more true. Throughout the 20th-century, the world watched the rise and fall of nations – Hitler’s Nazi Germany in 1945, the collapse of the U.S.S.R. in 1991, and Iran under Hussein in 2003. Domestically, the emotional remnants of the terrorist attacks in New York City on September 11, 2001, have for many, necessitated a workplace strategy to ensure the continuity of operations should another catastrophic event occur. While many individuals living in the U.S. were impacted on some level, the leaders navigating ground zero experienced a level of crisis management and leadership that few leaders encounter. Often discussed in research, but rarely tested in reality, most leaders seldom have to make decisions at such a critical level. Decisions which truly impact lives, especially when the cost of doing business could potentially result in a loss of lives - that was, until recently.

The disruption of the coronavirus pandemic that began in 2019 and continues as of this writing, in terms of remote work and leadership, can be viewed from the same lens as the introduction of the personal computer to the general public in the 1990s. The introduction of the personal computer essentially provided a mechanism and much discussion about where and when “some” work could be accomplished. Although ecological discussions, outlining the merits of telecommunicating, had begun much sooner (Nilles, 1998), conventional thought around organizational leadership began to evolve in terms of how organizations could “flatten hierarchies and embrace cost saving measures.” These ideas in turn, sparked an “evolution in human resource strategies impacting how and when work is completed, as well as talent acquisition” (Benko & Anderson, 2010; Figaro, 2015; Meister & Willyerd, 2010; Nilles, 1998; Steinhardt, 2007). Largely inhibited by conventional management hierarchies concerned about how to lead a workforce when employees cannot be seen, few organizations beyond the high tech sector and the U.S. Government had developed and implemented plans for employees to consistently work away from the office for undetermined periods of time (Archuleta, 2013a; Fogarty, 2012; Noonan & Glass, 2012). Unfortunately, the events of 9/11 forced many organizations including the U.S. Government to draft measures to address an organizational “Continuity of Operations” as a result of a loss of lives both at the Pentagon and on Wall Street (Steinhardt, 2007).

At present, due to the coronavirus pandemic, many organizations are challenged with the decisions regarding their workforce. Rather than asking their workforce to return, many are opting to remain virtual while others are opting instead, to rebrand themselves through the reallocation of work or roles. In a sense, this reallocation of labor has become a makeshift continuity of operations for organizations seeking to operate in this new
environment. Bringing employees back in for the same or similar roles in this new environment may no longer make the most sense when the coronavirus pandemic has created a mass reallocation of labor “with companies and governments mobilizing an army of idled workers into new activities that are urgently needed (Bender & Dalton, 2020). Opting instead for online, organizations both domestically and abroad, are rebranding themselves from brick and mortar establishments such as “former hotels, restaurants and airline staff” to “grocers, online retailers and hospitals” (Bender & Dalton, 2020).

The Virtual Workforce

Lipnack and Stamps (2000) suggested “Virtual Teaming is a twenty-first century survival skill” (p. 28). Technological innovations have provided a mechanism through which the richness of global expertise and diversity can easily be leveraged. No longer bound by geography, many organizations have acquired increased competitive advantages by embracing new Human Resource strategies which have resulted in “the formation of geographically dispersed teams otherwise defined as virtual teams” (Figaro, 2015; Krumm & Hertel, 2013). As industry and trade have expanded globally so has the technological infrastructure, previously bounded by geography and a static workforce. Ushered in by an era of technology, the virtual workforce can be loosely defined as a “geographically dispersed workforce relying solely on technology as means of communication with little to no face-to-face communication” (Figaro, 2015; Hertel, Konradt et al., 2006). Innovation fueled by the disruption of competing cultures and the diversity of ideas has created a need for unconventional leadership in a virtual environment (Figaro, 2015; Krumm & Hertel, 2013). “Additionally, the ambiguity in how leadership is defined and measured can create inconsistencies when attempting to build teams within a more fluid and virtual context” (Figaro, 2015; Hertel, Geister et al., 2005; Hertel, Konradt et al., 2006).

Conventional Leadership and the Remote Worker Model

A decisive leadership definition and what is needed to lead well has been widely debated since the 1840s. Owing to the fluidity and nature of leadership, few definitions seem “to capture the essence of leadership in its totality” (Figaro, 2015). Circa 1821, leadership referred to positional power or a title (Figaro, 2015; “Leadership,” n.d.). Suggesting leadership was comparable to heroism, Carlyle (1840) first proposed certain traits were inherent to certain individuals and naturally conferred leadership status (Figaro, 2015). Largely explored until the early 1970s as attributes or characteristics, such as stature and personality, leadership was not considered beyond who the individual was at birth until the early 1970s (Cattell, 1945, 1947, 1948; Fisk, 1934; McDougall, 1932; Stogdill, 1948; Thurstone, 1934; Tuples & Christal, 1961). A dichotomy of other leadership factors began to emerge in the 1960s incorporating not only traits such as personality, but also competencies or behaviors.

Katz (1955) emphasized technical, human, and conceptual skills positing all three were critical to success - advancing “a skill implies an ability which can be developed, not necessarily inborn and which is manifested in performance, not merely in potential” (pp. 33-34). Other theorists embraced only personality (Mann, 1959) as a successful determinant, whereas others (Kirkpatrick & Locke, 1991; Lord et al., 1986) emphasized personality in the context of situation. Most critical to this argument was Kirkpatrick and Locke’s (1991) research suggesting while leaders were noticeably different from other individuals, some traits were inherent, while others could be learned. “Advancing the notion cognitive ability, unlike knowledge, was the least trainable, Kirkpatrick and Locke (1991) mentioned knowledge of one’s industry and technical knowledge were learned and were better informed through formal training” (Figaro, 2015).

Later marrying both traits, in the form of personality with competencies, that is, who one is and what one does, Stogdill’s (1974) research bridged Boyatzis’ (1982) research which suggested “competencies were driven by personality traits, motives, skills, knowledge, self-image and other factors, and largely determined a manager’s effectiveness” (Figaro, 2015).

Method

The Delphi Method. The current study was conducted using the Delphi Method, developed by Dalkey and Helmer (1963) for the Rand Corporation. The Delphi method is a mixed-method approach, and provides a balanced method of incorporating both quantitative and qualitative analysis (Delbecq et al., 1975). Linstone and Turoff (1975), posited the “Delphi may be characterized as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem” (p. 3). Skulmoski et al. (2007) mentioned “The Delphi method is an iterative process used to collect and distill the judgments of experts using a series of questionnaires interspersed with feedback” (p. 2) and “is well suited when the goal is to improve our understanding of problems, opportunities, solutions, or to develop forecasts” (p. 1).

One of the goals of the current study was to explore if certain competencies and attributes varied from virtual team membership to virtual team leadership and to explore leadership nuances that existed between conventional leadership and virtual team leadership. The primary purpose of this Delphi study was to identify specific competencies and attributes deemed essential for the 21st-century virtual team leader (VTL) for the purposes of creating an instrument to measure virtual team leadership in the future.

Participants. The Virtual Team Competency Inventory (VTCI) (Hertel, Konradt et al., 2006) was analyzed by a panel of 43 experts to gage the relevance of the 11 subscale, 39-item instrument to the “Modern Day Virtual Team Leader” (Figaro, 2015, Hertel, Konradt et al., 2006). The population was a purposive sample of business leaders identified using specific criteria for participation which included, years of experience, specific C-suite roles or those considered to be SMEs in their respective fields and relative to Virtual Team Leadership.
While no specific number of panel experts is provided in research (Keeney et al., 2006), Ludwig (1997) advised the majority of Delphi studies reviewed typically utilized 15 to 20 panel members. Fusfeld and Foster (1971) mentioned, “average group error drops rapidly” when the number of the Delphi participants lays within the 8 to 12 range with very little decrease in error as the number increases beyond that number (p. 70). Winzenried (1997) posited “meaningful conclusions” can be derived by a small panel of “as few as 15” participants (p. 337). To ensure the credibility and accuracy of the results, a minimum of 43 initial panel members were selected for participation in partnership with the World Alliance for Retail Excellence and Standards (WARES) as well through snowball sampling via LinkedIn. WARES initially sent out 100 invitations to their member organizations and the researcher emailed 169 invitations from LinkedIn. Nine member companies from WARES and 34 experts from LinkedIn agreed to participate.

**Design.** The design included a multi-scale questionnaire, the Virtual Team Competency Inventory (VTCI) designed by Hertel, Konradt et al. (2006). The VTCI is comprised of 39 items with 11 subscales and includes “three groups of competencies derived from research on conventional teams: job expertise and professional training, task work KSAs predominantly tied to reliability and teamwork KSAs related predominantly to social aspects...” (Hertel, Konradt et al., 2006, pp. 480–481). “A fourth dimension of predictors and cognitive abilities included resulted from past theoretical and empirical evidence” (Figaro, 2015; Hertel, Konradt et al., 2006).

The current Delphi study consisted of four rounds with a clarification round. Questions that guided this study were:

**Research Question (RQ1)** What competencies and attributes for virtual team members as delineated by the 11 subscales in the Virtual Team Competency Inventory (VTCI) (Hertel, Konradt et al., 2006) are essential for virtual team leaders?

**Research Question 2 (RQ2)** What additional attributes and competencies are essential for the 21st century virtual team leader?

**Research Question 3 (RQ3)** Of the developed list of competencies and attributes essential for the virtual team leader, which ones can be taught and which ones are innate to the virtual team leader?

Central to the current study was the development of a comprehensive list of competencies and attributes essential for the 21st century VTL. Since the VTCI was created previously and it related to virtual team members and not virtual team leaders, the study sought to explore which of the competencies and attributes were relevant or apropos for the modern day VTL. The competencies and attributes or KSAs outlined by Hertel, Konradt et al. (2006) for virtual team members were rated for relevance in the first round of the Delphi.

The first round provided a benchmark for any competencies and attributes considered to be critical for the 21st century VTL. Participants were encouraged to provide recommendations for additional KSAs considered essential so both open and close-ended questions were included to facilitate capturing and measuring competencies and attributes of VTLs (Custer et al., 1999; Mertens, 2005). Open-ended questions were used in the Delphi study to allow panelists to leverage their expertise as SMEs, “which potentially increased expert engagement by incorporating their answers into the survey, and therefore, allowed responses to be incorporated into the methodology” (Figaro, 2015; Mitchell, 1991).

The VTCI, open-ended questions, criteria for participation, and informed consent were captured using SurveyMonkey. A link to the questionnaire was provided in email communication to all panelists. For the purposes of ranking, questions from the VTCI were captured using a five-point Likert scale and consisted of the following rankings: 1 = definitely not relevant, 2 = not relevant, 3 = slightly relevant, 4 = relevant, 5 = definitely relevant (Figaro, 2015; Linstone & Turoff, 1975).

In the first round panel experts were asked to rate their level of agreement on each of the 39 items of the VTCI and to add any additional competencies or attributes deemed relevant to the 21st century VTL. Consensus was said to have been achieved when items ranked a mean score of ≥ 4.0 and ≥ 70% consensus, or a Standard Deviation of ≤ 1.0. Only items achieving consensus were advanced to the next round.

**Results**

The purpose of the research was three-fold. Firstly assembling a Delphi panel of leadership and virtual team experts to identify which of the competencies and attributes of the Virtual Team Competency Inventory (VTCI) developed by Hertel, Konradt et al. (2006) for virtual team members, were also relevant to the modern day virtual team leader was a critical aspect of the study. A second goal to the study was to utilize the VTCI as a springboard towards the development of a comprehensive list of competencies and attributes essential to the 21st century VTL. Lastly, rating the identified competencies and attributes of the developed list in terms of whether the panel believed they could be taught or which of them were perceived to be innate to the VTL was paramount to this study. As an extension of Hertel, Konradt et al.’s (2006) study: research question one (RQ1) was evaluated in the first round. Consensus on any necessary adaptations was established in the subsequent four rounds. Research question two (RQ2) was analyzed in rounds 2, 3, and 3b by compiling and advancing a list of competencies and attributes provided in round 1. Only competencies and attributes where consensus was attained in round 2 were advanced to round 3. Research question three (RQ3) was evaluated in rounds 3 and 4. An optional 4th round or round 3b was implemented since the panel provided additional revisions in round 3 which were rated by the expert panel in round 3b with the final analysis of research question three (RQ3) provided in round 4 or the fifth round. (Figaro, 2015, p. 53).
Technology, Mind & Society 2021
K. Figaro

The means for the five-point Likert scale were utilized in the statistical analysis of the data collected in the current study. Variability in responses was measured via standard deviation as a secondary tool, which measured “stability of the respondent’s vote distribution curve on successive rounds of the Delphi” (Scheibe et al., 1975, p. 177). The initial questionnaire was comprised of the current questions included on the VTCL and allowed for feedback with the inclusion of open-ended questions, which provided a mechanism for capturing adaptations, both additions and deletions, to the current question-set.

In each round, only those items ranked a mean score of \( \geq 4.0 \) and \( \geq 70\% \) consensus, or a Standard Deviation of \( \geq 1.0 \) were advanced to the next round. All other responses not meeting these criteria were permanently removed from the questionnaire (Shelton, 2010). In all but round 4, the expert panel was asked to provide any new competencies and attributes not already on the list for ranking in rounds 2, 3, and 3b. Any suggested revisions to existing questions were added to the end of the survey in Round 2 for ranking by the panel experts.

For Research Question 1 Consensus was achieved on 24 items and they were advanced to Round 2. Thirteen items fell below the threshold with six being revised and advanced and seven permanently removed. Fifty-one competencies and attributes were advanced to Round 2 for ranking by the panel.

In Round 2, 26 of the original VTCL competencies and attributes that gained consensus in Round 1 were re-rated. Six were kept in their original format and revisions for the remaining 20 were advanced. Six were advanced to Round 3 in support of Research Question 3 which asked panel experts to rate whether the six competencies and attributes could be taught or whether they were innate to the VTL. Fifty-two newly added competencies and attributes were then permanently removed from the list since they had reached consensus and were advanced to Round 3 for re-rating and possible revision. Six competencies and attributes were permanently removed to a lack of consensus.

In Round 3, the remaining 20 items of the VTCL from Round 1 and the 52 competencies and attributes advanced in Round 2 were re-rated. In the third round, experts 1) re-rated the relevancy of the 20 items of the VTCL, 2) provided revisions as needed, 3) provided any competencies and attributes not listed previously, 4) to rate the relevancy of the 52 competencies and attributes suggested as being essential for the modern day VTL and to rate the 6 from round 2 that reached consensus as to whether they were innate to the individual or could be taught.

In Round 3b, the clarification round, panel experts re-rated nine of the 58 competencies and attributes suggested in Round 1, and re-rated the eight suggested in Round 2, which had gained consensus in round 4. At the beginning of Round 3 and continuing in Round 4, the list of retained competencies and attributes were rated on whether they were perceived to be innate to the individual or whether they could be taught. A five-point Likert scale was again used to measure responses and consensus was said to have been reached when mean ratings were \( \geq 4.0 \) and consensus was \( \geq 70\% \) and standard deviation was \(< 1.0\).

In Round 4, 74 competencies and attributes were rated by the remaining 20 panel experts. Table 1 provides the summary of responses for each round. Panel members were advised in the instructions that “because each of the competency and attribute statements said the competency was either taught or innate, but not both, if they agreed a competency could be taught, they were also suggesting it was not innate to the individual. The opposite was also true. If they disagreed with the statement that the competency and attribute was innate, then they were suggesting the competency and attribute could be taught. Verbiage for 31 of the 74 statements suggested the competency and attribute could be taught. The remaining 43 statements provided the competency and attribute was innate to the individual.

<table>
<thead>
<tr>
<th>Delphi Round</th>
<th>Opened</th>
<th>Closed</th>
<th># of Experts</th>
<th># of Surveys Submitted</th>
<th>Overall Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5/18/15</td>
<td>5/27/15</td>
<td>43</td>
<td>35</td>
<td>81.3%</td>
</tr>
<tr>
<td>2</td>
<td>5/28/15</td>
<td>6/3/15</td>
<td>35</td>
<td>32</td>
<td>74.4%</td>
</tr>
<tr>
<td>3</td>
<td>6/5/15</td>
<td>6/15/15</td>
<td>32</td>
<td>26</td>
<td>60.5%</td>
</tr>
<tr>
<td>3b</td>
<td>6/15/15</td>
<td>6/22/15</td>
<td>26</td>
<td>22</td>
<td>51.2%</td>
</tr>
<tr>
<td>4</td>
<td>6/22/15</td>
<td>6/30/15</td>
<td>22</td>
<td>20</td>
<td>46.5%</td>
</tr>
</tbody>
</table>

Note. Adapted from Figaro, 2015

The accuracy of the data was achieved by reverse coding responses to all statements mentioning the competencies and attributes were innate to the individual prior to conducting any analysis; that is, in all instances where the statement mentioned the competency and attribute was innate to the individual, the statement was re-worded and mentioned the competency and attribute could be taught. The panel’s level of agreement for these changed statements were also reverse coded to match the panel member’s level of agreement with the changed verbiage.

Consensus was reached by the panel experts on 16 of the 74 statements and they also agreed that at least 22% of the rated competencies and attributes in Round 4 could be taught. Mean scores for the 16 competencies and attributes ranged from 3.55 to 4.30. Consensus scores ranged from 71% - 86% with standard deviation scores in the .562 to .945 range. None of the 16 statements were changed or reverse coded. Figure 1 provides each round and the items retained, removed and advanced for each round of the Delphi study.

Reliability analysis was conducted to determine the internal consistency of the newly developed 74-item competency and attribute scale rated by the panel experts in round 4. While the Cronbach’s alpha coefficient reported in round 3 was .06, indicating a poor degree of internal consistency among the six items on the scale, a Cronbach’s alpha coefficient of .891 was reported for the 74 competencies and attributes rated in round 4, indicating an excellent degree of internal consistency among the 74 competencies and attributes rated (Yockey, 2011). Additionally,
when combined, the Cronbach’s alpha coefficient reported for the six-item scale in round 3 and the 74-item scale in round 4 was .887, indicating a good degree of internal consistency among the 80 competencies and attributes rated (Yockey, 2011).

Discussion

Because the VTCI was developed for leadership emergence in teams as opposed to virtual team leadership, additional research is warranted to understand if the subscales identified by Hertel, Konradt et al. (2006) are also applicable to VTLs. It is possible that many of the competency and attribute statements were too broad and created confusion during the expert panels’ rating. Although definitions for both competencies and attributes were provided, it is possible that evaluating the statements separately might have yielded better results. Sixty-six additional competencies and attributes were advanced. A decision to retain all but 10 or 15% of the recommended competencies and attributes can be viewed as the panel’s agreement regarding their relevance to the VTL.

Three key areas for possible additional subscales emerged from the study – communication, cognitive ability, and integrity suggesting communication skills are important and may be even more critical for the VTL. Cognitive ability appears to be one of the most important attributes and should be evaluated further to determine whether this is relative to the VTL’s ability to learn or in reference to natural intelligence.

A newly developed list of competencies and attributes as well as subscales are listed in Table 2.

Table 2. Comparison of VTCI and Developed list of VTL Subscales

<table>
<thead>
<tr>
<th>VTCI (Virtual Team Members) (Hertel, Konradt, et al., 2006)</th>
<th>Virtual Team Leader (VTL) Competencies and Attributes (Figaro, 2015)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conscientiousness</td>
<td>4</td>
</tr>
<tr>
<td>Integrity</td>
<td>4</td>
</tr>
<tr>
<td>Loyalty</td>
<td>3</td>
</tr>
<tr>
<td>Cooperativeness</td>
<td>4</td>
</tr>
<tr>
<td>Communication Skills</td>
<td>4</td>
</tr>
<tr>
<td>Persistence</td>
<td>3</td>
</tr>
<tr>
<td>Willingness to Learn*</td>
<td>3</td>
</tr>
<tr>
<td>Creativity</td>
<td>4</td>
</tr>
<tr>
<td>Independence</td>
<td>3</td>
</tr>
<tr>
<td>Interpersonal Trust</td>
<td>3</td>
</tr>
<tr>
<td>Intercultural Skills*</td>
<td>4</td>
</tr>
<tr>
<td>Interdependent Communication**</td>
<td>4</td>
</tr>
<tr>
<td>Analytical Ability**</td>
<td>5</td>
</tr>
<tr>
<td>Total KSA Items</td>
<td>39</td>
</tr>
</tbody>
</table>

Note. *Omitted Subscales due to dropped VTCI items. **Possible New VTL subscales (Figaro, 2015)

As organizations continue to weigh in on whether their workforce should return to work, additional research is needed to understand the nuances that exist between conventional leadership, which is, leading when those that are led can be seen versus “working from home” or the most recent remote work model where team leaders and members are truly virtual. Future research should seek to differentiate if this newly developed list is truly reflective of the attributes or those things considered to be inherent to the leader and competencies, which encompasses specific behaviors, which are essential to the VTL. Understanding which of the listed competencies and attributes can be learned is critical in understanding how to tailor training and development programs for VTLs and virtual team members. Developing an instrument that could help measure the identified competencies and attributes would allow organizations to recruit and retain individuals who have the skillsets to work in this type of environment and would also help organizations to understand where additional training could be bolstered to support the VTL’s success.
References


