

Impact of Technology Infrastructure, Virtual Team Efficacy on Group Outcomes: A moderation analysis of Group Potency



DOI: 10.26573/2022.16.1.1

Volume 16, Number 1

January 2022, pp. 1-16

Sumi Jha

Nikhil K. Mehta

NITIE, Mumbai, India

(sumi@nitie.ac.in)

(nkm@nitie.ac.in)

Som Sekhar Bhattacharyya

IIM Nagpur, India

(somdata@gmail.com)

Work from home has become a new reality in the present-day context, because of the COVID-19 crisis. The objective of the research was to develop a model with the construct technology infrastructure and support for work from home (TIS) as the antecedent variable, virtual team efficacy (VTE) as the mediating variable, and group outcome perceptions (GOP) as the dependent variable. Group potency (GP) moderated the relation between TIS and VTE. Moderated mediation relation was studied to understand the effect of high and low group potency. In this study, the authors surveyed 326 techno-managerial employees. The data were analyzed using Hayes Process Macro for conditional moderated mediation analysis. The study found a significant positive relationship between technology infrastructure and support, virtual team efficacy, and group outcome perceptions (GOP). The moderated mediation analysis found a counter-intuitive finding; group potency's moderated mediation effect was inversely related to the TIS-VTE-GOP relationship.

Keywords: Group Outcome Perception, Group Potency, Technology Infrastructure and Support, Virtual Team Efficacy, Work from Home

1. Introduction

The COVID-19 pandemic and its associated lockdown ushered in a new reality (Purcell and Charles, 2020) and organizations had to quickly redefine their work practices (Donthu and Gustafsson, 2020). HR professionals relooked the office-based staffing and work from home solutions for organizations that never practiced it (Stephen *et al.*, 2020). In India, given the full-scale intensity of the COVID-19 lockdown, most organizations had to shift from office-based working to working from home (WFH) in a matter of days (Shankar, 2020). Employees thus had to work as individuals but remotely in teams. Thus, in a virtual context, employees had to deliver performance at the team level. WFH was lonely for an individual employee physically, but it was expected by the management that the team performance was maintained at the highest level (Caroll and Coboy, 2020). Given this challenging context, group potency belief mattered most to the organizational team members. Further, when employees were involved in WFH, they required a new set of information technology and networking technologies infrastructure support (Olson

and Primps, 1984; Berry, 2011; Stone *et al.*, 2015). Thus, a study involving group potency to work remotely, and technology infrastructure support was essential given the shift in the organization's workplace landscape. Theoretical exploration was required to comprehend how technology in WFH context affected team efficacy in a virtual setting and how this would lead to team-level outcomes (Fuller *et al.*, 2006). The paper further examined the moderating role of group potency as this may be a catalyst to group performance outcomes. The article has been anchored on social exchange theory to explain the relationship among variables. According to Eisenberger *et al.* (2001), individuals as employees entered the relation of social exchange (Blau, 1964) with their respective organizations. When employees perceived that their respective organizations supported them, they tended to reciprocate back by doing good (Kurtessis, 2017). Employees begin to feel committed to their organizations. Eisenberg *et al.* (1986) called it a social exchange toward organizational commitment. The positive commitment yielded encouraging social reciprocation, enabling an increase in their satisfaction, performance, and efforts (Eisenberger *et al.*, 2001). Hence, employees aligned themselves to the requirements of their organizations.

The article has been arranged in the following manner; the literature review and theoretical aspects of the study being discussed in the next section, followed by the research methodology and results. The penultimate section was discussed, followed finally by the conclusion section.

2. Literature Review

Virtual Team Efficacy

In any remote working group, if most or all team members used and applied technologies to communicate and network while collaborating with co-workers well, the team's operational coordination got enhanced (Fuller *et al.*, 2006; O'Neill *et al.*, 2014). It would be essential to note that to undertake teamwork in a distributed environment, all team members must have access to good quality and appropriate technology (Morley *et al.*, 2015; Watson-Manheim *et al.*, 2012). Also, for remotely working for virtual teams, the member must share information with other group members adequately so that better work performance levels were achieved (Rosen *et al.*, 2007). If any group had been using a telecommunication network to do teamwork in the past, then the remotely working virtual team's efficacy improved because of gained competencies (Townsend *et al.*, 1998; Fuller *et al.*, 2006). This gained competency has been termed *Virtual Team Efficacy* (Fuller *et al.*, 2006).

Group Potency

Individuals do matter in overall work performance, especially when individuals are working in teams (Judge *et al.*, 2007). It would be important for high-performance organizations to create workgroups and expect high effectiveness and efficiency from these groups (Guzzo *et al.*, 1993). The group's confidence that it would achieve success by performing tasks effectively and efficiently has been termed group potency (Guzzo *et al.*, 1993; Shelton *et al.*, 2010). In other words, one can argue because of high internal motivation, such groups would have a high level of *Group Potency* (GP) (Guzzo *et al.*, 1993; Shelton *et al.*, 2010)

Group Outcome Perception

When team members developed positive perceptions regarding the nature of a group outcome achieved, this can be termed as *Group Outcome Perception* (GOP) (Fuller *et al.*, 2006). Often members in group work, engaged in projects in some instances, are happy regarding the project's outcome while in some cases they are not (Gibson *et al.*, 2000; Zellars *et al.*, 2001; Fuller *et al.* 2007). In some cases, the quality of work done by team members has been viewed as satisfactory. The shared perception of group members regarding their quality of delivery and performance might affect the group outcome (Cannon, and Edmondson, 2001). Often group members are pleased with the group's overall performance and how the team members have worked coherently (Matt Graham, and Jones, 2019). Harmony among members and their work style encourages individuals toward the collective endeavor (Salas *et al.*, 2015). This encouragement helped team members work in a concerted manner to achieve excellence in the project's outcomes (Matt Graham, and Jones, 2019). Excellence in group work and achieving outstanding deliverables are the relevant and desirable expectations of good group-level performance (Salas *et al.*, 2015).

Technology Infrastructure and Support for Work

When an employee worked from home, then the individual would require adequate hardware and other physical infrastructure to work (Aboelmaged and Subbaugh, 2012; Bentley *et al.*, 2016). This requirement would consist of laptops, smartphones, internet connection, Wi-Fi, routers, printers, scanners, and others (Byrd and Turner, 2000; Bentley *et al.*, 2016; Park *et al.*, 2020). The organization for which the employee was working should also provide adequate service support for solving technical issues that occurred while working (Bentley *et al.*, 2016). The technical support system should provide real-time solutions with the latest updates so that technical problems were best-taken care. Individual employees should also specifically get support to resolve their queries in a customized manner (Gelbard and Carmeli, 2009). There should be scope for providing an adequate training facility for remote working (Bentley *et al.*, 2016). This set of aspects have been termed as *Technology Infrastructure and Support for Work from Home* (TIS). Figure 1 presents the relationship among variables.

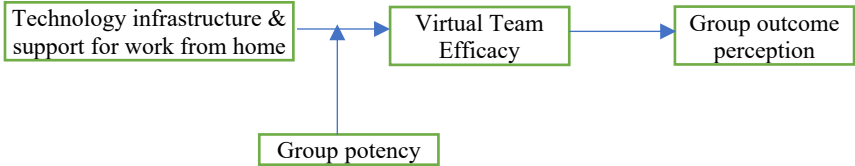


Figure 1 *Proposed Model for the Study*

Technology Infrastructure and Support for WFH and Virtual Team Efficacy (VTE).

When employees work from home (WFH), they would require adequate information technology and networking technologies, hardware, and software support (Fuller *et al.*, 2007). Employees needed organisational support when they faced challenges

with the implemented technologies (Fuller *et al.*, 2007). Employees required solutions to their problems quickly and needed to be trained adequately (Fuller *et al.*, 2007). Suppose this technology-based support was provided to employees, in that case, each employee acting as an individual unit (akin to a workstation) would better communicate with each other for job-related interactions (Marinova *et al.*, 2017). Tasks could be completed in a synchronized manner, even given a remote work environment (Oprean *et al.*, 2018). As per SET, in exchange for the support of technology and other resources provided by the organization, employees respond positively by becoming cohesive and competent teams that performed as per the expectations (Matt Graham, and Jones, 2019). Even though employees were located remotely, with technology support, coherent collaboration could be entailed (Larivière *et al.*, 2017). Therefore, hypothesis states that

H1: Technology infrastructure and Support for WFH is Positively Related to Virtual Team Efficacy

Efficacy and outcome relationships have been studied extensively (Bandura, 1986; Latikka *et al.*, 2019). Team efficacy works similarly to individual or self-efficacy (Gully *et al.*, 2002). In today's scenario, team efficacy in a virtual setting had its challenges. Researchers (Bandura 1986; Gully *et al.*, 2002; Mesmer-Magnus *et al.* 2017) have pointed out that the shared perception about the team's ability resulted in having high-performance expectations. Such positive expectations developed a common perception of group outcomes (Bandura, 1986; Pescosolido, 2001). In accordance with SET, the exchange of technological know-how may take place among members of virtual team which can result in higher virtual efficacy. Cordery, & Soo, (2008) discussed about virtual team effectiveness and found that trans active memory systems, work engagement, and collective efficacy can significantly influence team effectiveness in a virtual setting. Hence,

H2: Virtual Team Efficacy is Positively Related to Group Outcome Perception

When employees could communicate seamlessly given adequate information technology and network infrastructure, their work collaboration would be more adapted (Aboelmaged and Subbaugh, 2012; Bentley *et al.*, 2016; Oprean *et al.*, 2018; Marinova *et al.*, 2017; Byrd and Turner, 2000). This provision would, in turn, not only help the employees in working remotely (practicing WFH) but would enable them to achieve the superior quality of task performance and do tasks on time (Aboelmaged and Subbaugh, 2012; Bentley *et al.*, 2016; Oprean *et al.*, 2018; Marinova *et al.*, 2017; Byrd and Turner, 2000). The team members would individually be satisfied with their efforts and collectively as a team be more appreciative of the excellence achieved in team delivery at an aggregate level (Gibson *et al.*, 2000; Zellars *et al.*, 2001; Mauerhoefer *et al.*, 2017). Thus, both project delivery (tasks are done) and the way the team completed the project, would be appreciated (Mauerhoefer *et al.*, 2017). After recognizing their efforts in the group, individual employees would be satisfied with the task performance (destination) as much as the journey that is the process and manner of doing the work assigned (Zellars *et al.*, 2001; Mauerhoefer *et al.*, 2017). Gibson *et al.* (2000) also

discussed that every time there was an interaction between two entities, there was the exchange of values. According to SET, this exchange was evident during the interaction between the organization and employees and during the exchange between employees and its teams (Mauerhoefer *et al.*, 2017). The satisfied and confident team would perceive that the group they were working with would deliver the expected project outcome (Marinova *et al.*, 2017). Thus, hypothesis 3

H3: VTE Mediates the Positive Relationship between TIS and GOP

One must also note that when individuals were practicing WFH, then they were working remotely and were working in a distributed fashion (Mattarelli and Tagliaventi, 2010; O'Leary and Mortensen, 2010). In such a case, each individual became akin to a remote workstation (O'Leary and Mortensen, 2010). It was essential that as an individual, and employees had confidence in themselves and were committed to higher performance (Guzzo *et al.*, 1993). If self-belief and commitment were present, employees would be better able to use the organization's technology infrastructure and support (Guzzo *et al.*, 1993). The differentiating factor of group performance is the ability to utilise the technology. As soon as the pandemic started all the organisation adapted themselves and provided the required infrastructure to employees. This enabled the employees to perform group tasks with effective collaboration and communication (Guzzo *et al.*, 1993). Studies on team effectiveness have highlighted the importance of group potency, a belief that the team has the potential to perform well (Woodley *et al.*, 2019; Capiola *et al.*, 2019). Researchers have argued that organizational support resulted in superior performance only if group believed in themselves (Gibson *et al.*, 2000; Zellars *et al.*, 2001). Hence, technology infrastructure support may improve the virtual efficacy of group members which may result in enhanced group outcome potential in virtual context (Mattarelli, and Tagliaventi, 2010). Further, we propose that the relationship may not be significant if group potency is low. According to SET, when team members believed that they were receiving technological support from the organization, then in exchange for the same, they cohesively work together in a virtual setting (Eisenberger *et al.*, 2001; Blau, 1964). Thus, the authors propose:

H4: The mediation effect of VTE between TIS-GOP Relationship is Stronger for Higher Group Potency Employees and is Weaker for lower group Potency Employees

3. Research Methodology

Study Procedure

The study undertook a quantitative survey research design. During April- June 2020, employees were working from home due to the spread of Covid-19. Hence, data were collected by virtual modes like email. We emailed the questionnaire to respondents. Respondents filled the questionnaire through a google document link.

Data Collection and Sampling

The data were collected using a survey method from techno-managers working in various Indian organizations. The techno-managers had completed their engineering and business management courses and worked in the organizations for at least one year. The respondents were working from home, and they were in constant touch with their team members. We approached recruiters of techno-managers. The human resource department of these organizations helped us in reaching to the techno-managers. These techno-managers were randomly chosen for the study and around five hundred of them agreed to take part in the study. Hence, around 500 questionnaires were emailed for the collection of data. We received 326 valid responses, and the response rate was 65%. The sample constituted 87 (27%) female and 239 (73%) male respondents. The average age of respondents was 27.7 years. The average age of male respondents was 28.6 years, and the average age of female respondents was 26.8 years. Respondents reported 3.6 years of average experience. These respondents belong to sectors like information technology, consultancy, financial services, and e-commerce. We contacted respondents if they faced any difficulty while filling out the questionnaire. The study used individual-level analysis. The data on virtual team efficacy, group potency and group outcome perception were collected using individual perceptions about the team (Lie et al., 2017; Edmondson, 1999). Therefore, the aggregation of data was not required.

Measures

The authors used standard questionnaires to measure the variables that helped understand various aspects of work from home. The questionnaires' items were measured on a five-point Likert scale, i.e., 5- strongly agree to 1-strongly disagree (Gliem and Gliem, 2003). We also measured the Average Variance Extracted (AVE) and Composite Reliability (CR) to examine the goodness of the measurement scale. The values of AVE and CR were above the acceptable range of greater than 0.5 (Hair et. al., 2010).

Technology Infrastructure and Support for work from Home: The Technology infrastructure and support for work from home scale was adapted and modified from the work of Aboelmaged, and El Subbaugh, (2012) and Byrd and Turner (2000). The scale had seven items. The sample items of the scale were "Real-time solution updates in the work network." The Cronbach's alpha value of the scale was 0.88. The fit indices of the scale indicated a good fit; $c^2=92$; $p=.17$; $GFI=.92$; $CFI=.92$; $TLI=.94$; $RMSEA=.08$. The factor TIS had AVE value of 0.72 and CR value of 0.81.

Group Potency: The scale of group potency was developed by Guzzo *et al.* (1993). The scale had three items. The sample item of the scale was "expects to be known as a high performing." The Cronbach alpha value of the scale was 0.73. The fit indices of the scale indicated a good fit; $c^2=287$; $p=.03$; $GFI=.91$; $CFI=.90$; $TLI=.91$; $RMSEA=.10$. The factor GP had AVE value of 0.79 and CR value of 0.87.

Virtual Team Efficacy: The scale for virtual team efficacy was developed by Fuller *et al.* (2007). The scale had four items. The sample item was- "do teamwork in a distributed environment as we had access to appropriate technology." Cronbach's alpha reliability value of the scale was 0.81. The fit indices of the scale indicated a good fit; $c^2= 189$; $p=.06$; GFI=.94; CFI=.94; TLI=.95; RMSEA=.06. The factor VTE had AVE value of 0.76 and CR value of 0.79.

Group Outcome Perception: The scale of group outcome perception was developed by Fuller *et al.* (2007). The scale had nine items. The sample item was – "satisfied with my group member's performance." The Cronbach alpha reliability of the scale was 0.87. The fit indices of the scale indicated a good fit; $c^2= 23$; $p=.15$; GFI=.97; CFI=.96; TLI=.98; RMSEA=.06. The factor GOP had AVE value of 0.81 and CR value of 0.83.

Harman's single factor test was conducted to test the presence of common method variance (CMV) (Podsakoff, MacKenzie, & Podsakoff, 2012). The general first factor accounted for only 26 % of the variance when we conducted the unrotated factor analysis. If the first factor accounts for maximum variance in comparison to the other factors together, it may indicate CMV. In the present study, we did not find the presence of CMV.

4. Results and Analysis

Variables were tested for normality distribution and the values of skewness and kurtosis were in range (+2 to – 2). The variable TIS had a skewness value of +1.23 and a Kurtosis value of +1.37. The variable GP had a skewness value of +.017 and a Kurtosis value of +1.09. The variable VTE had a skewness value of +.86 and a Kurtosis value of +.97. The variable GOP had a skewness value of +1.82 and a Kurtosis value of +1.44. The data were subjected to preliminary descriptive and correlation analysis (Table I). The results helped the authors in deriving insights and gave a direction for hypothesis testing. The variables TIS ($r = .35$, $p = 0.01$), GP ($r = .41$, $p = 0.01$), and VTE ($r = .50$, $p = 0.01$) were significantly correlated to the dependent variable GOP.

Table I Descriptive Statistics and Intercorrelations

Variables	Mean	SD	1	2	3
1.TIS	4.12	1.21			
2.GP	3.59	0.89	.23*		
3.VTE	3.91	0.91	.29*	.37**	
4.GOP	4.07	1.10	.35**	.41**	.50**

The study's analysis had three different but related steps; direct, mediation, and moderation relationships. The SPSS PROCESS macro, a regression-based statistical moderation and mediation analysis, was used for estimating the direct and indirect effect relationships (Hayes & Rockwood, 2017).

Direct Relationship

The first step involved direct association between independent and mediation variables and between mediation and dependent variable. Acceptance of hypothesis 1 suggested a direct effect relationship, where technology infrastructure and support for work from home and virtual team efficacy had a significant positive relationship ($\beta=0.35$, $p=0.01$). Similarly, in hypothesis 2, virtual team efficacy and group outcome perception had a significant positive relationship ($\beta=0.54$, $p=0.01$) (Table II).

Mediation Relationship

The second step was a simple mediation analysis. To test hypothesis 3, the mediation relationship was examined by introducing virtual team efficacy in technology infrastructure and support for work from home and group outcome relationship. The relationship was found to be positive and significant ($\beta=.17$, $p=0.01$) (Table II). Though, the analysis met the conditions proposed by Baron and Kenny (1986), the authors also analyzed the significance test of the indirect effect, as recommended by Sobel (1982). Researchers like Preacher and Hayes (2004) recommended Sobel's test, as the test reports mediation effect more accurately. Further, the bootstrapping of data was suggested by Edwards and Lambert (2007) to address assumptions. Sobel's test confirmed the indirect relationship ($b=0.31$, Sobel $z=2.09$, $p\leq 0.05$) and the bootstrap result of 5000 samples also indicated the significance of mediation relation (to understand the indirect effect, 99% CI, values shall not contain zero (.108; .248)). Thus, the findings supported hypothesis 3.

Moderated Mediation Relationship

In the third step, the moderator variable was introduced, and the moderation effect and mediated-moderation effects were analysed. The continuous data of the variables under study were mean-centered before analysis.

Table II *Direct, Mediation, and Moderation Effects*

	Virtual Team Efficacy	Group outcome perception
	β	β
<i>Direct effect</i>		
TIS- VTE	0.35**	
VTE-GOP		0.548**
<i>Mediation effect</i>		
TIS-VTE-GOP		0.173*
<i>Moderation effect</i>		
TIS x GP -- VTE	-0.15*	
R ² = 0.32; ** p = 0.01, * p= 0.05; TIS- Technology infrastructure & support for work from home, GP- Group potency, VTE- Virtual Team Efficacy, GOP- Group outcome perception		

Hayes's model 7 of PROCESS macro presented the output incorporating Sobel's test, bootstrap approach, and four steps as per Baron and Kenny's (1986) recommendations. The authors examined the moderation effect of group potency

between technology infrastructure and support for work from home and virtual team efficacy relationship. Further, the authors hypothesized the conditional moderation effect that is the goodness of mediation effect between independent and dependent variable being conditional on the moderator variable (Preacher, Rucker, and Hayes, 2007) or, in other words, there was a moderated mediation relationship present. Table III presented the results to support hypothesis 4. The mediation effect of VTE between TIS-GOP relationship was stronger for lower group potency employees ($-1SD - 8.5$; $\beta = .108$, LLCI-.022; ULCI-.197), and the mediation effect of VTE between TIS-GOP relationship was weaker for stronger group potency employees ($+1SD - 13.2$; $\beta = .067$, LLCI-.011; ULCI-.131). Therefore, the findings did not support hypothesis 4. The results revealed that the effect of group potency was inversely related to mediation relation. The results might be because of the dynamic nature of group potency. During COVID- 19 crisis, the virtual team did not get time to understand and know about the team members more deeply.

Table III Conditional Indirect Effect (Moderated Mediation) of TIS on GOP via VTE on Selected Values of GP

GP	Mean	Effect (β)	SE	Boot LLCI	Boot ULCI
SD -1	8.504	.108	.045	.022	.197
Mean	10.883	.087	.027	.033	.140
SD +1	13.263	.067	.034	.011	.131

Notes: 5000 bootstrapping resamples; LLCT= Lower level confidence interval, ULCI- Upper-level confidence interval; TIS- Technology infrastructure & support for work from home, GP- Group potency, VTE- Virtual Team Efficacy, GOP- Group outcome perception

5. Discussion

This study indicated that when employees were working from home, they required adequate technology hardware and software support. This requirement was indicated by Fuller *et al.* (2006) and Byrd and Turner (2000). Marinova *et al.* (2017), they suggested that employees confronted technology-related problems while working from home and sought support to secure the solutions. They pointed out that employees were required to be trained regarding WFH-related technologies so that the employees, while working remotely, could most effectively use the provided technology (Marinova *et al.*, 2017). Oprean *et al.* (2018) mentioned that if co-workers could technically help each other, that would also support achieving coherence regarding the job at hand. Supporting social exchange theory, employees responded positively in exchange for the technological support extended by their co-workers or organization. Employees ascribed value to the efforts put in by some employees and office staff in training and providing technical support, which was in congruence with the social exchange theory as espoused by Eisenberger (2001) and Blau (1964). Towards the attainment of team efficacy in a virtual environment appropriate set of technologies and their usage would facilitate better collaboration between the team members. Suitable application of technology with the requisite intensity of technology support would improve the team members' effectiveness.

Hence hypothesis 1 regarding technology infrastructure and support for work from home and virtual team efficacy was supported.

Further, team members would become more productive if the communication between team members would be healthier. This further emphasises the presence of elements of social exchange theory in organisations. The exchange of information and communication builds the environment of complementation. In line with Iacono and Weisband (1997), the findings suggested that one also needed to note that team members' perception of outcome would be more when employees had confidence among themselves and were committed to their work as individuals. Technology infrastructure and support also manifested well in team members collaborating and communicating in a virtual remote working context when the employees were expected to be high performers. In an adverse situation like COVID-19, group outcome perception contributed considerably when employees were expected to perform exceedingly well. The significant direct relationships between different study variables suggested the plausibility of reciprocation (Kurtessis, 2017) and social exchange for team commitment (Eisenberg *et al.*, 1986). Employees' enhanced abilities to manage their work-life provided them with the scope to have trust in their respective teams and organizations (Iacono and Weisband, 1997). The creation of amicable and reciprocal relations through technical support in the difficult times between organizations and their employees enhanced the relationships discussed in the study. Hence, Hypothesis 2 regarding VTE-GOP relationship was supported.

When an organization provided adequate technologies, infrastructure, and support coupled with the increased belief among team members that they were contributing well and had confidence regarding their job, then the project team's outcome was significant as well as the quality of the work output was good. This finding was pointed out in the earlier works of Chaudhry (2018). Fuller *et al.* (2006) and Iacono and Weisband (1997), in line with this study findings, suggested that overall, the team members would be satisfied with the group members' performance and be satisfied with each other's' deliverables and collective excellence achieved in the deliverables. Hence, hypothesis 3 about mediation relationship of virtual team efficacy was accepted.

Hypothesis 4, which suggested a significant moderated mediation relationship, was not supported. This finding was counter intuitive; the moderation effect of less group potency was found to impact the mediation relationship (TIS-VTE-GOP) better than the moderation effect of high group potency. This may be because of the dynamic nature of the variable group potency (Guzzo *et al.*, 1993), which measured the group's confidence in itself. Teams with low group potency might perform better during COVID-19 time because of the fear of losing a job or a high-risk task and conflict avoidance (Ayoko, 2016). Such units would have a shared mental model about the situation (Cassidy, and Stanley, 2019). The mental model worked differently during challenging time; situation of COVID-19 and remote working practice. Teams with high group potency might continue to work as they were working before COVID-19 time. The exchange of ideas, opinions, information, support that employees require from each other may differ in the virtual team. Degbey and Einola (2020) found that teams with increased confidence and capability might not perform under the condition of uncertainty. In comparison, resilient and adjusting teams will serve better.

6. Conclusion, Managerial Implications, and Future Scope of the Study

Given the COVID-19 pandemic and its associated lockdown, organizations were directed to close offices or manage their offices with the bare minimum number of employees. Work from home became a necessity within a matter of a few days. To facilitate work from home, organizations had to provide internet, communications, and network infrastructure to their employees. Further, support for technology-based facilities had to be provided when employees confronted challenges. Technology support in terms of its appropriateness and intensity would enable the remotely working employees to communicate well as teams, thus enhancing the virtual team efficacy. The team efficacy in a virtual context would be better if the employees as team members were not overconfident about themselves, expected high performance from each other, and were committed to getting the job done as a team (Oprean *et al.*, 2018). Overall, this would ensure that the team as the collective of individual employees working remotely achieved excellence and were satisfied and took pride in each other's contribution. In a nutshell, the team would be able to deliver good quality work in time and enrich job engagement. This research theoretically contributed to both WFH and VTE literature (Fuller *et al.*, 2006; Byrd and Turner, 2000). This research study contributed theoretically by integrating the constructs of technology infrastructure and support, group potency, virtual team efficacy with the group-level outcome. This moderated mediation model, with TIS as an antecedent variable, VTE as a mediation variable, GP as a moderating variable, and GOP as a dependent variable, extended the understanding about GP as a moderating variable. The study integrated variables which were collaboratively not studied for team or group studies. The role of technology infrastructure in enhancing team efficacy and in turn group outcomes reveals the underlying mechanism between technology-outcome relationship. Further, the study expanded the knowledge regarding GP, where the effect may not always be favourable under crisis situation.

Managers based upon this study could comprehend the role of provision of requisite and appropriate information and network technologies infrastructure for achieving team efficacy at the group level. In a WFH work context, managers must stress communication amongst team members for harmonious collaboration when employees were engaged remotely and were working in a virtual context. Organizational development practitioners would heed to the fact that virtual team efficacy needed to be increased. Organizations must develop conditions wherein the belief among the team members was enhanced, and expectancy towards useful group contribution was higher. Managers should establish these conditions in work from home contexts so that the team members could achieve a better outcome with quality support. This would also ensure that team members were satisfied with each other and took pride in collective excellence. The intervention of technology may minimise the social loafing by employees, which may enhance the team efficacy.

As with any research, this study has certain limitations, which require deliberation. The study pointed out the importance of technology for virtual team efficacy and group outcome. It fell short on discussing work contexts, which is not possible to complete remotely and required continuous presence in the physical setup. Gully *et*

al. (2002) mentioned differences in a work context and their impact on team efficacy. A future study can conduct a sectoral comparison and address issues faced by organizations that required human presence at the site to get the work done. Future studies can also address the change in job characteristics because of the sudden shift to the virtual team and its effect on team efficacy (Chen, and Klimoski, 2003). On the similar lines, a study performing gender comparison may provide insights on the comfort with virtual team in WFH setting. This study was conducted in India. In future, such studies could be conducted for countries with the difference in Hofstede's cultural dimensions (Vollero *et al.*, 2020). Further, future researchers could conduct in-depth research on ethnographic studies or case studies. A comparative study on engagement of employees having difficulty adapting to technology during COVID -19 time with employees who were technology-friendly would help explain the variables under study. Similarly, a study with age and gender comparison will also help in extending the present study further.

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