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Factors affecting Virtual Team Performance: A Theoretical Integration

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Abstract

Organizations require E-leadership and virtual team performance to face the challenges within the dynamic environment. Though E-leadership is a concept that has previously been discussed, academic literature on this concept is scarce. The authors drew on the leader-member exchange theory and social cognitive theory to address these problems by proposing the mediation effect of technology self-efficacy and moderating effect of corporate culture on the relationship between E-leadership and virtual team performance. This conceptualization contributes to the expansion of understanding on virtual team performance through E-leadership. It provides practitioners and managers with insights into strategies they can utilize to enhance the virtual team performance of the organizations.

Keywords: virtual team performance, e-leadership, corporate culture and technology self-efficacy

Introduction

With the rise of globalization virtual workspaces have been created for the employees, and it has led to the establishment of virtual teams to attain the goals and objectives of the organizations successfully (Elyousfi et al., 2020; Priem et al., 2012). Virtual teams can be defined as "individuals who are engaged in independent tasks, are responsible for the results rely on technology in their most frequent communication processes" (Elyousfi et al., 2020). Improvement of work-life balance, reduction in travel time and stress of the employees, and increased employee satisfaction are some of the benefits associated with virtual teams. However, several scholars have highlighted that managing virtual teams is challenging and emphasized the need to manage appropriately (Elyousfi et al., 2020; Gera et al., 2013). The leaders are the individuals who take up this challenge.

In managing the virtual teams through technology, the traditional leadership practices might not be effective as the leadership should be done with the intermediation of new technology. Thus, in responding to these changes, the concept of E-leadership has emerged. E-leadership can be defined as the "social

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influence process embedded in both proximal and distal contexts mediated by advanced information technology that can produce a change in attitudes, feelings, thinking, behavior and performance" (Avolio et al., 2014, p.107). Though these concepts were in practice, there is limited evidence in the recognition of the factors that affect the effectiveness of these practices within the academic literature. With the emergence of virtual workspaces and virtual teams in Sri Lanka, it is essential to identify the factors that influence the E-leadership.

In 2020, with the emergence of the pandemic within the world, organizations tend to create virtual teams and virtual workspaces. These circumstances made the organizational leaders to formally accept these virtual teams and workspaces. However, the Labor department of Sri Lanka (2021) reported with this situation that nearly 8.7% of the employees have not even worked less than an hour during the above reference period. These statistics reflect that employees have exploited the current situation. Moreover, Shwartz-Asher et al. (2019) highlighted that the performance of the virtual team members is inefficient in comparison to the physical face-to-face workers. Thus, based on these findings it could be surmised that it is important to pay attention to identify the factors which could be used to enhance the performance of the virtual teams.

Virtual teams are being introduced as an alternative to the issues identified within the face-to-face teams. However, it was identified that it is not easy to achieve its best in reality (Morrison-Smith & Ruiz, 2020). Further, it has been reported from the internal records of the software development companies in Sri Lanka that project success rates were in the range of 36% to 42%. Thus, it signifies the requirement of exploring the factors that will influence the effectiveness and performance of virtual teams. Moreover, Contreras et al. (2020) emphasize that even within developed countries, there is a vacuum in identifying the skills and factors which influence E-leadership to address successful virtual team performance. Thus, when analyzing these local and international contexts it could be surmised that the factors and behavior of the association of the E-leadership and virtual team performance needs to be further explored.

In laying a theoretical foundation, the leader-member exchange theory could explain the relationships that are established between the leader and the followers. This notably explains using a relationship-based approach emphasizing that leaders will develop varying relationships based on how they interact and exchange information (Aggarwal et al., 2020). Moreover, the theory emphasized that the extent to which the leader builds relational resources between the team members would influence the association that is between the leaders and the team members (Alfehaid & Mohamed, 2019). However, from a theoretical perspective, there is a lacuna of knowledge in theorizing the behavior of leadership-leadership in promoting effective virtual team behavior (Contreras et al., 2020). In addition, the

current literature highlights the requirement of further assessing the individual and external factors which will affect this relationship (Elyousfi et al., 2020; Jackson et al., 2019). Thus, in order to shed light on these factors, the social cognitive theory is utilized in the current paper.

Empirically, with the availability of limited studies, it has been identified that the results on the relationship between E-leadership and team performance are inconclusive (Contreras et al., 2020). Moreover, in order to mitigate the gap between the theoretical and empirical explanations that are given in relation to the manner in which a leader needs to guide the virtual teams successfully and practices which are being experienced by the organization, further studies are required to be performed (Contreras et al., 2020; Elyousfi et al., 2020; Torre & Sarti, 2020). Further, Contreras et al. (2020) highlight that the effect of individual factors and organizational culture on the relationship between E-leadership and virtual team performance requires identification. In addition, assessing the relationship between E-leadership and virtual team performance within different cultural contexts is required to improve the generalizability of the study (Elyousfi et al., 2020). Consequently, based on the above gaps, the current paper pays attention to the discussion of the effect of E-leadership on virtual team performance by exploring the mediating impact of technology self-efficacy and the moderating effect of corporate work culture.

Practically identifying these factors, it was revealed that having a strong leadership is important during the post-pandemic period in order to solve the complex challenges that are present within the organizations. Therefore, it could be stated that effective E-leadership is necessary for managing the virtual team performance and driving the organization to success. Thus, through this paper, the managers who are working in corporates can identify the importance of E-leadership and other factors like technology, self-efficacy and corporate culture on the performance of virtual teams. The current paper will enable them to align their work practices accordingly to improve the performance of virtual teams.

This paper is structured as follows: In the upcoming section, the literature on the present topic is reviewed followed by relevant theoretical explanations. The next section outlines the proposed relationships and present propositions. Thereafter, the conceptual framework is laid out. The paper concludes with the theoretical, managerial, and research implications of the conceptual framework

Literature Review

Virtual Team Performance

Virtual teams are geographically and organizationally dispersed teams where physical contact is limited. Collaboration within the virtual team is allowed by the IT solutions such as; technology-based communication. Moreover, this has been

considered a central requirement in maintaining the globalized social and economic infrastructure (Zeuge et al., 2020). Further, looking at more definitions, virtual teams could be categorized by the temporal and spatial distribution of their members and through the usage of technology as the mode of communication (Jaavenpaa & Leidner, 1999; as cited in Elyousfi et al., 2020). However, Bell and Kozlowski (2002; as cited in Zeuge et al., 2020) state that there is no one definition for virtual teams there is a continuum between the design of presence and virtual work.

In identifying the characteristics and benefits of virtual teams, most individuals view virtual teams as an organizational form that encompasses with a high level of flexibility (Elyousfi et al., 2020). Green and Roberts (2010; as cited in Elyousfi et al., 2020) recognize several potential advantages of virtual teams such as improving work-life balance, reduction in the travel time and stress levels at work and improving employee satisfaction. Further, he has recognized that implementing virtual teams could be used as a strategy that could maximize the recruitment and retention of the employees. However, it was identified that because of the lack of face-to-face communication it is a must that the organizations need to implement methods in which they could motivate and guide the members effectively. Thus, it is required to identify the factors that will enhance the virtual teams' performance. In the identification of these factors, Zeuge et al. (2020) emphasize that E-leadership plays a special role.

E-Leadership

E-leadership is a phenomenon where the leader and the follower interact within an electronic environment. In looking at the definitions of E-leadership, different scholars present various perceptions. Torre and Sarti (2020) define E-leadership as the situation where the leadership procedures and processes are conducted by the leaders through the usage of electronic channels. Further, Avolio et al. (2014, p.619) conceptualize E-leadership as “a social influence process mediated by the information technology to change attitudes, feelings, thinking, behavior, and performance with individuals, groups/or organizations”. Based on the nature of the E-leadership, Contreras et al. (2020) state that this could be a challenge to most organizations.

In identifying the skills required for the E-leaders, Contreras et al. (2020) state that effective face-to-face communication characteristics will not be adequate to lead in the virtual environment. Wart et al. (2019; as cited in Elyousfi et al., 2020) state that e-leadership would effectively use and blend the electronic and traditional methods of communication. Thus, Wart et al. consider communication and collaboration necessary for an E-leader. Further, based on the study conducted by Elyousfi et al. (2020), trust, communication, collaboration, and leader behaviour are considered the main facets of an E-leader. Thus, similar to the study

by Elyousfi et al. (2020), the current study considers these three main dimensions as the dimensions of E-leadership within the current paper. However, the previous literature on how E-leadership affects virtual team behaviour is unclear (Contreras et al., 2020; Elyousfi et al., 2020; Torre & Sarti, 2020). Thus, the current paper attempts to recognize the factors which could influence the relationship between E-leadership and virtual team performance through the below theoretical underpinnings.

Theoretical Underpinnings

The current paper drew on the perceptions of leader-member exchange theory to explain the relationship between E-leadership and virtual team performance (Alfehaid & Mohamed, 2019). Leader-member exchange theory pointed out to researchers how E-leadership influences virtual team performance. This theory is considered as the most prominent theory that explains the nature of the relationships that is shared between the leaders and the subordinates (Aggarwal et al., 2020). This theory identifies that leaders tend to develop a range of diverse relationships amongst their subordinates ranging from low to high quality (Green et al., 1996; as cited in Aggarwal et al., 2020). The study conducted by Alfehaid and Mohamed (2019) states that this relationship would depend on various factors such as; trust and norms etc. However, in relation to the factors which would influence the effectiveness between the E-leadership and virtual team performance required to be explained by the theory. Hence, the current paper draws from the social cognitive theory to conceptualize the problem.

Bandura's cognitive theory defines self-efficacy as an individual's belief in their ability to organize and implement the sequence of action that is needed to deal with the work. The technology self-efficacy concept emerged through the technology acceptance model (TAM) drawing Bandura's social cognitive theory (Laver et al., 2011). Technology self-efficacy is the individual's belief on how capable they are of using new technology. In relation to technology self-efficacy, the theory postulates that the individuals who attain higher self-efficacy would involve more frequently in technology-related activities whereas lower self-efficacy individuals would tend to give up easily. Moreover, study by Laver et al. (2011) highlights that influence of higher levels of technology use and technology self-efficacy has been studied by various scholars. Further, the social cognitive theory (Bandura, 2013) emphasizes that corporate work culture could influence the strength of the relationship between self-efficacy and employee performance (Sudarmo et al., 2020). Thus, drawing on these, the current paper attempts to introduce technology self-efficacy as a mediator in the relationship between E-leadership and virtual team performance and introduce corporate work culture as a potential moderator in the relationship between technology self-efficacy and virtual team performance.

Propositions and Conceptual Framework

E-Leadership and Virtual Team Performance

Few studies have contributed by analyzing the relationship between E-leadership and virtual team performance (Contreras et al., 2020; Elyousfi et al., 2020). E-leadership can be defined as "social influence process embedded in both proximal and distal contexts mediated by advanced information technology that can produce a change in attitudes, feelings, thinking, behavior and performance" (Avolio et al., 2014, p.107). In identifying the concept of E-leadership within the virtual teams, Elyousfi et al. (2020) considered an aggregate construct consisting of three main factors: leaders' trust, leaders' collaboration, and leaders' behaviors. Similarly, the current study would consider the same. Virtual teams include members who are "geographically dispersed, but working together in an interdependent task through electronic means with low face-to-face interaction" (Malhothra et al., 2017).

The study conducted by Elyousfi et al. (2020) identified that E-leadership has an influence on virtual team performance. Further, Contreras et al. (2020) suggest that E-leadership has a distinct ability to enhance the organization's effectiveness within virtual environments. The leaders will be able to share new policies and procedures through electronic means to drive the virtual performance of the team members. Further, it was identified that trust which is present among the team members is critical for the virtual teams as it will enable proper coordination and communication amongst the team members. However, the studies contributing to the relationship as mentioned above are limited.

Thus, based on the empirical and theoretical explanations, the below proposition is advanced:

Proposition 1: There is an impact of E-leadership on virtual team performance.

According to Contreras et al. (2020) the theoretical lenses to explain the relationship between E-leadership and virtual performance is scant. Thus, the current paper attempts to theorize the concept of E-leadership through this conceptualization. Moreover, in a practical stance, the managers would also recognize the importance of E-leadership and how it will be affecting the virtual team performance through this conceptualization. Further, they could gain insights on the different strategies which they could adopt to improve the virtual team performance through understanding the nature of the relationships based on the theoretical and empirical evidence presented.

E-leadership and Technology Self-efficacy

Self-efficacy is defined as an individual's belief in their capacity to organize and execute a task activity (Bandura, 2013). When applying technological use,

Bandura's social cognitive theory introduced a concept called technology self-efficacy, technology self-efficacy is defined as "the belief in one's ability to perform a technologically sophisticated new task successfully" (McDonald & Siegall, 1992, p.467).

Several studies have identified the influence of leadership styles on different types of self-efficacy (Laver et al., 2011; Sudarmo et al., 2021). The studies of Sudarmo et al. (2021) and Bande et al. (2016) state that leadership influences innovation self-efficacy. These studies emphasize that when the leadership is effective and powerful, it will enable individuals to believe that they can perform particular tasks and activities.

In relation to the E-leadership, scholars have identified that it is a challenge for leaders to lead an organization successfully within an environment bounded by technology (Contreras et al., 2020). This implies that the leaders should be competent in the technological competencies to enable and support their team members. Further van Wart et al. (2019) emphasized that it is the responsibility of the E-leader to create consciousness regarding these technologies and make the team members comfortable with these technologies within the virtual environments. Thus, based on these theoretical evidence, it could be asserted that the E-leaders could develop the technology self-efficacy of their followers. Therefore, the below proposition is advanced:

Proposition 2: There is an impact of E-leadership on Technology self-efficacy

Technology Self-Efficacy and Virtual Team Performance

Few studies have been conducted to identify the relationship between self-efficacy and employee performance. The study done by Wilhuda et al. (2017; as cited in Laver et al., 2011) states that self-efficacy acts in a critical role in improving employee performance and productivity. Laver et al. (2011) state that self-efficacy is a key factor which determines the task performance of the team members. Further, Mumtaz and Parahoo (2019; as cited in Sudarmo et al., 2021) identify that self-efficacy influences intrinsic motivation within individuals, enabling individuals to carry out tasks.

When relating this to technology self-efficacy, the social cognitive theory suggests that people who have higher efficacy within them would tend to work more on technology-related activities and have extended coping efforts whereas the individuals with lower self-efficacy would give up more easily on the activities (Laver et al., 2011). Further, the study by Panteli et al. (2018) states that E-leaders would boost the employees' work engagement in a virtual environment by improving their attitude toward achievement. Hence, it could be suggested that technology self-efficacy could influence the team performance within the virtual environment. Thus, the below proposition is advanced:

Proposition 3: There is an impact of technology self-efficacy on virtual team performance

The Mediating Role of Technology Self-Efficacy

The relationship between the E-leadership and virtual team performance is established based on previous studies (Elyousfi et al., 2020). The previous scholars identified that there could be individual and cognitive factors within the individuals which could enhance the effectiveness of the relationship (Elyousfi et al., 2020). Further, Vankatesh and Davis (1996; as cited in Pan, 2020) stated that technology self-efficacy could be considered as a proxy of an individual's control beliefs in the use of technology. Though, the impact of technology self-efficacy is not clear, based on the following evidence, it could be stated that technology self-efficacy could be considered paramount in the discussion of E-leadership and virtual team performance.

Looking at similar studies, the study conducted by Sudarmo et al. (2020) identifies that innovation self-efficacy mediates the relationship between servant leadership and employee performance. The study emphasizes that through the service and mutual respect that arise from servant leadership would help to raise innovative self-efficacy, enhancing the performance and productivity of the employees. Further, Contreras et al. (2020) state that though traditional leadership influences employee performance within the virtual environment, the technology mediates the changes in employees' behaviors, thoughts, and performance. Consequently, considering this evidence, it could be stated that the higher the technology self-efficacy is, the higher the virtual team performance. Thus, the below proposition could be advanced:

Proposition 4: Technology self-efficacy mediates the relationship between E-leadership and virtual team performance

From a managerial perspective, through these conceptualizations presented in the current paper, the practitioners can identify the importance of technology self-efficacy. The paper suggests that when there is technology self-efficacy, the team performance will enhance. Consequently, following these explanations, the practitioners could conduct training programs to uplift the technological knowledge of the leaders and team members if they are operating within a virtual platform.

The Moderating Role of Corporate Work Culture

Corporate work culture could be defined as a "view of life as values that become traits, habits and driving force, entrenched in the life of a community group or company, then reflected in attitudes into behavior, beliefs, ideas, opinions and actions which manifest as work" (Sudarmo et al., 2021, p. 1745). It has been

identified when the employees accept a culture that is deeply embedded with cultural values, they will mirror it out in a manner in which that they carry out and complete their duties. Further, Ojo (2009) identifies that work culture is a factor that greatly affects the team's success in carrying out the assigned duties and responsibilities. This is mainly through the motivation that is attained through the culture.

In identifying the relationship of work culture with self-efficacy, there is limited evidence within the available literature. Wihuda et al. (2017; as cited in Laver et al., 2011) identify that employees who have high self-efficacy can enhance their performance, if the work culture of the organization is high. In addition, the study conducted by Sudarmo et al. (2021) states that the corporate work culture moderates the relationship between the innovation self-efficacy and employee performance. This indicates that, when corporate work culture is weak, the effect of innovation self-efficacy on employee performance is weak. When the corporate work culture is high, the effect of innovation self-efficacy on employee performance is high. Although these causal relationships are not clear within the virtual environment, based on the evidence presented, it could be argued that corporate culture moderates the relationship between E-leadership and virtual team performance. Therefore, the below proposition is advanced:

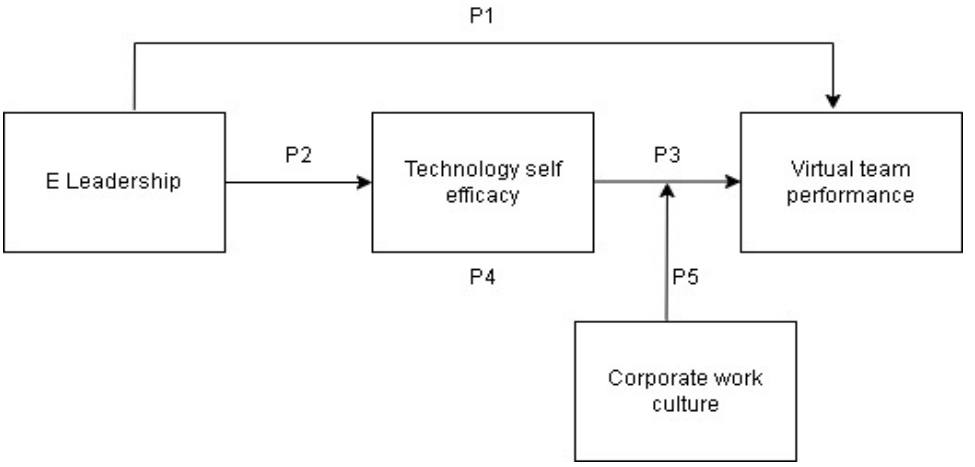
Proposition 5: Corporate work culture moderates the relationship between technology self-efficacy and virtual team performance

Based on these theoretical explanations, the organizations could focus more on creating a corporate culture which could enable effective virtual team performance. The corporates could embed some diversified values and norms into the organization's culture. Moreover, the organizations could encourage communication amongst the organizational members by providing the opportunity to socialize using virtual communication tools such as; Slack, WhatsApp etc., by hosting virtual team building events and encouraging video communication as well. Following this could improve the organization's overall organizational performance and profitability as well.

Consequently, through the above theoretical explanations and the empirical evidences the current paper suggests technology self-efficacy as a possible mediator and corporate culture as a moderator. The literature has been unsuccessful to introduce these factors within the relationship between E-leadership and virtual team performance. Thus, based on these explanations the current paper attempts to create an original contribution to the literature by providing theoretical explanations on the factors which could enhance the effectiveness of the relationship between the E-leadership and virtual team performance.

Figure 1

Conceptual Framework



Limitations and Reflections on Further Research

The current paper only focuses on technology self-efficacy and corporate culture as possible factors that affect the influence of E-leadership on virtual team performance. The current paper shows some possibilities of other factors which are not studied and could be used in future studies. Further, the current paper conceptualizes the effect of E-leadership and virtual team performance, where it extends the scope of leader-member exchange theory which will open up the avenues for future empirical studies. Therefore, future research can contribute empirical knowledge on this relationship by studying it within different countries and contexts.

Finally, the strength of the conceptualization will depend on the extent to which it could be empirically validated. The constructs that have been proposed in the current paper are well established and have proper pre-tested measurement scales. Thus, the conceptualization of the current paper could be empirically validated in order to enhance the strength of the conceptualization.

Conclusion

The current paper attempts to conceptualize the effect of E-leadership on virtual team performance by suggesting the effects of technology self-efficacy and corporate culture. The authors argue with the theoretical support of the leader-member exchange theory and social cognitive theory. The current paper builds an explanation for the relationship between E-leadership and virtual team performance by exploring the effects of technology self-efficacy and corporate

culture. Thereby, it develops the conceptual framework based on these theoretical explanations. Understanding this influence of the variables will enable the leaders and practitioners to uplift the leadership practices that suit the virtual environment. Finally, the current paper opens up for future research such as empirically validating the suggested model within different contexts.

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