Leading Virtual Teams – A Literature Review

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Abstract

With the outbreak of COVID-19, many organizations are facing the challenge of switching to virtual work. A large number of teams suddenly need to work no longer physically but digitally together. However, switching to virtual teamwork is not only a special requirement for the team, but also for the leadership of virtual teams. Despite great efforts to explore virtual leadership, research still lacks an overview of the leadership of virtual teams. We address this gap by presenting the results of a narrative literature review conducted by five independent scientists to map the broadest possible spectrum of results with special attention to a heterogeneity of the results. Thereby, our work provides a point of departure for a structured exploration of virtual team leadership.

1. Introduction

Almost nothing is as it was before COVID-19. All over the world people are getting sick, schools and companies are closing, and the health system is overloaded in many places. The worldwide pandemic forces us to rethink many areas of life. At the same time, the crisis offers great opportunities. In the work context, for example, digital communication channels are increasingly used and the remote or mobile working is becoming a matter of course (Gaudecker et al., 2020).

Even before COVID-19, many digitization projects were initiated, started and implemented, too (Oztemel & Gursev, 2020). With the advent of the virus, however, digitization had to be carried out much faster. In various organizations, it became necessary at short notice that both the actual work and the cooperation with colleagues had to be carried out digitally. In the past, multinational companies and organizations have faced this challenge with a slower pace. Due to COVID-19, all organizations have to face this challenge and replace the established meeting room with virtual solutions. That is why virtual team meetings are now as much a part of working life for many people as real meetings were before the crisis.

Digital collaboration is not only a requirement for team collaboration, but also for team leadership (Gibson & Cohen, 2003). The implementation of virtual teams had to be done quickly and consistently after the discovery of the virus. Where these processes had often been characterized by long consultations and inhibitions before the crisis, solutions now had to be implemented quite fast. The preparation time for employees and managers was correspondingly short. Best practices and examples of how this could be solved as effectively as possible were of little or no use, as the framework conditions of these examples were completely different from those of the current situation.

Virtual teams have already been considered in research, but a comprehensive overview of the current situation is missing. Further research is needed because the future will continue to be shaped by virtual teams during and sometime after the rapid change. The aim of the paper is to give an overview of the current state of research on virtual leadership and its implementation. It provides a starting point for further research and suggests future studies to investigate virtual leadership in more detail.

To meet the objective, the following sections are structured as follows: First, we give an overview of the virtual teams. Then, we describe our methodological

approach and discuss our findings. We conclude with providing potential contributions for theory and practice and highlight the limitations of our work.

2. Related Work

What are virtual teams and how are they defined? Existing literature provides different definitions, for example: "Virtual teams are geographically and organizationally dispersed teams […]. Due to such dispersion, physical contact in virtual teams is reduced or lacking altogether which means that collaboration is enabled by IT-solutions such as computer-based communication" (Lilian, 2014, p. 1251). Under the conditions of COVID-19, many people were enabled to work in such a virtual team, even if they were not actually geographically dispersed. Consequently, this definition does not give a comprehensive answer in the current pandemic. This shows that it is necessary and possible to use hybrid approaches. There is not only one definition of a virtual team but rather a continuum between the design of presence and virtual work (Bell & Kozlowski, 2002). Another study offers a literature review with definitions of virtual teams. It identifies and extends 12 key factors that need to be considered and describes a methodology that focuses on supporting work in virtual teams. (Ebrahim et al., 2009).

The change from presence to virtual work is foremost a process change that must be established itself, like the introduction of software in companies, which is often understood as a process change. Effectiveness increases with the experience of working in virtual teams. Employees need time to get used to the new situation. In addition, communication in virtual teams must be more precise, concise and unambiguous (Bakshi & Krishna S., 2008). This explicit communication is essential to avoid misunderstandings, which can arise practically faster than in personal communication. It is therefore necessary to clearly define areas of responsibility and to set standards and fixed deadlines. The establishment of structures and fixed virtual meetings are important to enable regular 'personal' exchanges, e.g. through video conferences. This increases trust in the team, strengthens cooperation despite distance and reduces the feeling of 'being alone'. Teams generally benefit from communication and from the exchange of personal information between team members. Consequently, this must be possible or made possible in the virtual space (Pierce & Hansen, 2008). Virtual leadership plays a special role in discovering common ground. This strengthens the bond within the team and creates trust among team members and in the leader herself or himself. To achieve this, it is even more important that the team members have the feeling that they are working towards the same mission and master the same challenges. The leadership of virtual teams is a decisive factor. In the literature it is assumed that the establishment of availability times is important, because working hours can vary, and constant availability can lead to an increased stress level (Naik & Kim, 2010).

3. Methodological Approach

To answer our research question, we took a close look at existing research (Rowe, 2014; Schryen, 2015). We proceeded our literature review in a narrative manner and carried out the search with five independent scientists in order to map the broadest possible spectrum of results. We searched in common search engines such as Google Scholar, Web of Science, Scopus and PUBMED. We did not make any restrictions according to the year of publication or subject area, because we wanted to cover the widest possible range of sources. In addition, each scientist chose her or his own keywords to ensure the greatest possible variance. Even if some terms were similar (e.g. "virtual teams", "virtual leadership", "remote work"), a great heterogeneity was achieved.

After searching, the five researchers gathered the results in a joint workshop, discussed the manuscripts, prioritized them and – if necessary – excluded them. After a comprehensive literature database with all articles was created, every scientist read the texts and was able to gain a broad impression into the state of research on virtual teams. The first insights and intermediate results were then discussed and reflected in workshops with practitioners. Against this background, the current work is composed of theoretical and practical insights.

4. Findings

4.1. Changing from Presence to Virtual Work

Digital technologies are a prerequisite for digital teamwork. However, the introduction of digital technologies is not adequate to make a virtual team effective (Ebrahim et al., 2009). Internal group dynamics and external support mechanisms should also be considered (Lurey & Raisinghani, 2001). One key task of leaders in the initial phase, is to ensure role clarity, i.e. all team members are aware of the different roles and responsibilities, as a lack of visibility can make the team members feel less able to achieve results (Ebrahim et al., 2009).

In addition, research suggests that virtual team leaders should complement virtual teamwork with structural support (Bell & Kozlowski, 2002; Hoch & Kozlowski,

2014; Kiesler & Hinds, op. 2002). Virtual teamwork is characterized by turbulence and unpredictability, which can be compensated by stability and the reduction of ambiguities provided by structural support (Zaccaro et al., 2001; Zigrus, 2003). Structural support indirectly influences the motivation and behavior of team members via structural attributes (Bell & Kozlowski, 2002). Hoch and Kozlowski (2014) highlight that structural support in virtual teams has a strong positive effect on team performance. Structural support can be provided by a fair, motivating and reliable reward system (Hertel et al., 2005; Hoch & Kozlowski, 2014; Nunamaker et al., 2009), and by a transparent communication and information management (Hoch & Kozlowski, 2014).

Furthermore, literature suggest that virtual team leaders should create a flexible environment by incorporating principles of agile development. This helps to reduce risks related to communication, coordination, and control inherent in virtual teams, and helps teams to improve their communication (Paul et al., 2016; Yadav et al., 2009). To ensure a flexible environment, Paul et al. (2016) emphasize that it is crucial (1) to provide an opportunity to meet together face-to-face at least once initially or, if that is not feasible, to provide an intentional socialization phase, (2) to encourage the teams to discuss and establish project coordination protocols, and (3) to provide adequate technical support, with recommendations of appropriate technology use and support for the technology itself.

However, in addition to the support provided through the leader in switching from physical to digital work, the most important thing is that the leadership acts as a role model (Kayworth & Leidner, 2002; Roy, 2012). Since the team members look to the leader for guidance, it is their responsibility to set a good example (Roy, 2012).

4.2. Computer-meditated Communication

Communication in virtual teams includes the use of computer-mediated communication and thus differs from face-to-face communication (Haines et al., 2018; S. K. Johnson et al., 2009). First and foremost, virtual team communication is usually based on computer-mediated asynchronous information and knowledge dissemination, i.e. different conversations on different topics can be conducted simultaneously by several team members (Lilian, 2014).

Furthermore, research has shown that individuals on virtual teams communicate and participate more evenly (Dennis & Garfield, 2003; Fuller et al., 2016, 2016), but the communication is also more impersonal (Lepsinger & DeRosa, 2015; Schlenkrich & Upfold, 2009). Encounters in the coffee kitchen and office grapevines are missing. One of the most important challenges for managers is therefore to motivate their team to engage in continuous communication, which increases cohesion and motivation, and to build trust, which together leads to successful team performance. (Lilian, 2014; Purvanova & Bono, 2009).

Since virtual teams lack informal spontaneous opportunities to connect, Lepsinger and DeRosa (2015) highlight strengthening the team members' relationships as another important task of the leadership. They suggest different ways to strengthen team cohesion: (1) If celebrations (e.g. birthday parties or debuts) cannot take place physically or some team members cannot be physically present the celebrations should be hosted online. (2) Virtual coffee breaks should be introduced, to give room for informal spontaneous conversations. (3) The virtual team leaders should make "care calls" to get to know the team members on a personal level.

4.3. Leadership Style

The leadership style of the team leader is the key to minimize motivation and coordination losses and sustain the effectiveness of virtual teams (Hoch & Kozlowski, 2014).

Existing literature suggests that the transformative leadership style is particularly suitable for virtual teams using computer-mediated communication (Purvanova & Bono, 2009; Ruggieri, 2009). Researchers proposed that transformational leadership is based on four principal factors: Inspirational motivation, idealized influence, individualized consideration, and intellectual stimulation (Kark et al., 2003). To this end, transformation leaders put the interests of their team first, respect the commitments and mission, show qualities that inspire respect and pride, become role models and explore new perspectives for solving problems and achieving goals (Ruggieri, 2009). Purvanova and Bono (2009) suggest that transformational leadership in virtual teams has a stronger impact and that leaders who increase their transformational leadership behavior in such teams achieve a higher level of team performance. Ruggieri (2009) also revealed that a transformational style is more suitable for virtual teamwork than a transactional style, and that a transformational leader is better judged by the team than a transactional leader. The author found that a leader with a transformational style of leadership is associated with more positive adjectives and is perceived as more intelligent, creative and original.

Another research stream shows that in virtual teams the leadership is shared between several team members, i.e. virtual teams usually have not only one but several leaders. (Hoegl & Muethel, 2016; Robert & You, 2018; Ziek & Smulowitz, 2014). The shared leadership style is defined as “a collective leadership process, whereby multiple team members step up to take the lead or to participate in team leadership functions” (Hoch & Dulebohn, 2017). Shared leadership includes every team member in team decisions, promising more inclusion and better team experiences (Marissa L. et al., 2010). Hoch and Dulebohn (2017) have identified from existing literature that shared leadership is advocated as beneficial for virtual teams because it is associated with (1) collaborative decision making (e.g. Conger & Pearce, 2010), (2) collaborative behavior that increases trust and knowledge sharing among other team members (e.g. Hill, 2005), and (3) positive team and organizational outcomes such as performance (e.g. Hoch & Dulebohn, 2013).

4.4. Leadership Behavior

4.4.1. Presence in Virtual Worlds

The physical, operational as well as the cultural distance inherent in virtual teams confronts leaders of such teams with unique challenges such as successfully influencing team members despite computer-mediated communication (Purvanova & Bono, 2009).

To ensure that virtual team leaders are perceived as such by their team, they need to create a sense of "presence" among their team members (Hoegl & Muethel, 2016). However, the focus should not just be on creating presence in the sense of "being there" but rather "being there together" (Altschuller & Benbunan-Fich, 2010). This creates for one thing a feeling of connection and at the same time strengthens the ties and interpersonal relationships in the team. (Altschuller & Benbunan-Fich, 2010).

Literature reveals various ways in which leaders of virtual teams can create a sense of presence among their team members. First and foremost, it is crucial that the leader also in a virtual environment is always available to the team, i.e. he or she should try to communicate regularly and promptly. (Kayworth & Leidner, 2002; Morgan et al., 2014; Roy, 2012). This is especially important for global teams, since the leadership must be available for all team members regardless of time zones (Lilian, 2014). Thereby, the virtual team leaders should be sensitive to the schedules of the different team members (Kayworth & Leidner, 2002). In addition, the virtual team leader can create presence by providing continuous and timely feedback as well as suggestions for improving team activities. (Kayworth & Leidner, 2002; Mukherjee et al., 2012; Petrucci & Rivera, 2018). Furthermore, the leader should be empathetic, e.g. by being understanding and sensitive to the problems of the team members and expressing personal interest in the individual team members (Kayworth & Leidner, 2002; Roy, 2012).

4.4.2. Establishing a Culture of Trust

Sarker et al. (2003) describe trust as the “glue” that propels a team to the successful completion of the project. Trust within a team has a positive effect on the efficiency, effectiveness, and satisfaction levels of global virtual teams (Edwards & Sridhar, 2005). Wilson et al. (2006) defined trust as “confident positive expectations about the conduct of another”. In addition, trust also includes the freedom to test assumptions, to experiment, to make and talk about mistakes (Dixon, 2017).

Since virtual teams are often composed of individuals who have never worked together before, a trusting environment within the team is required (Altschuller & Benbunan-Fich, 2010). Trust is seen more critical in virtual environments than in traditional team settings (Cascio & Shurygailo, 2003) being the necessary condition for cohesiveness and successful work in virtual teams (Child, 2001; Sarker et al., 2003). Trust is based on the belief that team members are dependable meeting the team expectations by delivering what they promise (Cascio & Shurygailo, 2003; Malhotra et al., 2007).

Drawing on literature, Sarker et al. (2003) identified three different bases of trust applicable to virtual teams. Since, trust is significantly evoked, enhanced, developed, and influenced by one’s personality, one basis of trust in virtual teams is the innate personality of their members. The second basis of trust in a virtual team is the institutionally based trust. The institutional trust approach, which is grounded in institutional theory, assumes that norms and rules of institutions surrounding individuals guide their behavior. A third base of trust that occur during interactions between remote members of virtual teams is associated with three cognitive processes (unit grouping, reputation categorization, and stereotyping).

Leaders can foster trust by setting clear and mutual expectations, improving coherence, and inspiring and motivating team members to improve the team’s performance and the organization’s value creation (Cascio & Shurygailo, 2003; Jarvenpaa et al., 1998). Germain (2011) emphasizes that the leadership of virtual teams should encourage continuous

communication to increase trust in the team. Encouraging continuous communication provides the reassurance that others are involved in the task, thereby increasing a member's early confidence in the team. If there is a low level of trust, continuous communication helps to constantly confirm that other team members are present and also working on the project.

4.4.3. Embracing Diversity

A natural consequence of global virtual teams is that individuals increasingly interact with others who are different from themselves (Martins & Shalley, 2011). Virtual teams are composed of individuals with a diverse range of stakeholders, experiences, functions, organizations, decision-making styles and interests (Malhotra et al., 2007). The leaders of virtual teams face the challenge of acknowledging this diversity (Cordery & Soo, 2008). All team members should be aware of the diversity within the team and be encouraged to engage with the diversity of the different team members (Barnwell et al., 2014).

The team's ability to succeed depends strongly on how well diversity is being understood, appreciated and leveraged (Malhotra et al., 2007). A pivotal task of team leadership is to transform existing challenges into opportunities in order to improve team success and organizational value creation (Mukherjee et al., 2012; Nunamaker et al., 2009). Literature highlights the need to promote specific team-building activities addressing the individual needs of different team members and promote a sense of belonging (Nunamaker et al., 2009). Moreover, communication within virtual teams can be complicated by dimensions such as different time zones, nationalities and cultures, working styles, and languages. It is up to the virtual leader to address these difficulties. Ford et al. (2017) propose the following approaches to address these difficulties: (1) Provide and organize language lessons for those not speaking the predominant language and, if necessary, provide translation assistance for team meetings. (2) Team members should be reminded of possible communication problems when using slang or regionalized terms. (3) Meeting times should be varied and deadlines as well as turnaround times should be adjusted to take into account the different time zones and working hours of the different team members.

4.5. Competencies of a Virtual Leader

Literature highlights that leaders should be competitive, self-confident, visionary and supportive at first (Raisiene et al., 2018). However, leaders of virtual teams are confronted with complex and unique environments where change is constant and group challenges, process complications, and project setbacks might be more commonplace than for traditional co-located teams. Therefore, they often need different or additional skills to effectively lead and guide virtual teams. (K. Johnson, 2010; Ziek & Smulowitz, 2014)

First and foremost, existing literature emphasizes the ability to communicate (Berry, 2011; Kayworth & Leidner, 2002; Roy, 2012; Ziek & Smulowitz, 2014). Through communication, virtual leaders take their position and status within the team (Ziek & Smulowitz, 2014). They must ensure that all communication is clear, concise, and is understandable by members of different cultures (Roy, 2012).

Furthermore, virtual team leaders should be able to defuse frustrations and be involved in conflict management (Brake, 2006; Roy, 2012). Since there are many sources of frustration in virtual teams due to national, cultural and linguistic heterogeneity, defusing frustration and conflict management skills are essential for the success of the head of a virtual team leader (Roy, 2012). Examples of sources of frustration are: Lack of non-verbal communication, technological breakdowns and cultural differences (Brake, 2006; Cleary & Marcus-Quinn, 2008; Roy, 2012).

In addition, virtual team leaders need emotional intelligent skills. Emotional intelligence, includes (1) self-awareness, i.e. the ability to understand the effects of the leader's behavior on team members, (2) self-regulation, i.e. the ability to think prior to action, and (3) the ability to motivate team members, empathize with them and communicate with them in a skillful way and build relationships (Roy, 2012). Emotional intelligent skills promote the exchange of knowledge and information, create an environment where honest communication can thrive, and can even support problem solving.

5. Conclusion

Our literature review on leading virtual teams has shown the significant importance of leadership in the virtual world. It underlines how important it is, especially, but not exclusively, in times of the corona pandemic. It is the strong leader who show their employees how to switch from working on site to a digital workplace. The changeover is more likely to succeed if they act as role models and always try to support the team members as good as possible, e.g. by communicating transparently and by caring for constant involvement.

Our overview shows which behavior and which traits a good virtual guide should have. Among other things, she or he should build trust, be empathetic and be open to diverse groups (starting with the tolerance for several time zones). At the same time, it is her or his responsibility to create a culture of "belonging" and "being there for one another", "caring", "listening" and empathy. What is required here is the ability to communicate and to have emotional intelligence. A virtual leader is always available, approachable, addressable, and open. She or he demands by promoting an open mindset, because she or he is a good example herself or himself.

Finally, social factors are also of central importance. If team socialization does not work, there is no trust and no culture of cooperation and support. In this case, one will miss motivation, because the employees will not feel addressed, included, and thus, responsible. If leaders lead in a transformational manner instead, possibly even together with other leaders at the same time, the leadership of virtual teams can be successful. This also includes managing conflicts and recognizing frustration in a team at an early stage. Common successes can be celebrated together and there are regular appointments, professional or casual, where team members can meet and get to know each other as a person.

6. Discussion

6.1. Implications for Theory

Our work has opened the door for a structured inventory of knowledge about leading virtual teams. It is a first step to get a theoretical overview and an impression about the state of research, but it became obvious that a structured review is needed to continue.

An initial idea for further theoretical work is a detailed examination of the characteristics and personality traits of the leaders. For instance, our work indicated how important emotional intelligence is. This can be further explored to determine the context in which this skill is particularly relevant and how it may be better learned and used.

Another direction can be to look closer at the networks within the team and at the role of trust, commitment, and 'presence'. How to recognize and address conflicts and how to prevent frustration of individual team members would be another question.

An additional route is to consider literature from the communication sciences to get to the bottom of how to communicate effectively in virtual teams and in a way that is pleasant for everyone. In the digital world, new rules of conversation and innovative communication channels are applied. We see potential in answering how one can use this to strengthen team satisfaction and closeness, or how to prevent misunderstandings. It might be worth to take a closer look on this topic, especially when communicating in different languages and mostly asynchronously.

6.2. Implications for Practice

Our research is also beneficial from a practical perspective. From the perspective of effective leaders of virtual teams, our review reveals that an extensive application of management-related social skills (e.g. being empathetic and open towards employees) can be advantageous. By creating a team atmosphere that is characterized by trust, leaders of virtual teams may increase the projects' successful completion rates (Edwards & Sridhar, 2005; Sarker et al., 2003). This can especially be achieved by performing classic team building measures, such as celebrations, virtual coffee breaks, or 'care calls'. These measures could also lead to stress mitigation as well as an increased communication between team members. With the help of our research, practitioners might be able to increase their knowledge about the effects of information and communication technology on teamwork.

Where possible, virtual and physical collaboration should ideally be alternated and combined. Lots of measures described by literature to increase the success of virtual teams essentially comprise a return to a face-to-face work environment. Virtual team leaders are thus compelled to introduce opportunities that enable most of the team members to be physically present. A measure to compensate the missing aspects of a face-to-face work environment might be a team meeting on a non-regular basis.

As a member of a virtual team, one might benefit from this research by realizing that work unrelated communication is not considered as a bad habit. Due to missing encounters in the coffee kitchen as well as office grapevines, teambuilding is usually only supported within measures arranged by the team leader. Thus, employees should schedule regular virtual lunches or coffee breaks to keep in touch with their co-workers and exchange work unrelated information.

7. Limitations and Future Work

As with all research, our study has several limitations that provide promising avenues for future research. Our chosen literature review method does not offer a comprehensive overview across the virtual teams' research, as the considered literature expands across multiple lines of research including thousands of articles. Future studies could therefore use a different

procedure (e.g. structured literature review) to examine a more specialized part of literature.

Although we presented an extensive range of measures that can be applied by virtual team leaders to improve their virtual team's success, we did not present a specific way to achieve the given mindset. This is a vital issue for further studies, as characteristics like empathy or trustworthiness are usually considered as traits and thus cannot easily be adopted by leaders that are not acquainted with the necessary skills.

This research focuses on leadership of virtual teams, however we did not concentrate on the main medium used by virtual teams: Communication. As communication technology usually defines an enabler of geographically divided workforces, it is important for researchers to investigate new methods of communication aside from video-telephony, online chat or teleconferencing. To address this issue, our future work will concentrate on collaboration using Virtual Reality (VR). Compared to current ways of internet-communication, VR can provide a diverging interaction where the software might be able to transfer more or different information, depending on the use case. We plan on using innovative VR hardware and software solutions to examine constructs such as social presence or trust.

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