



Management Decision

Leading virtual teams: how do social, cognitive, and behavioral capabilities matter?
Debmalya Mukherjee Somnath Lahiri Deepraj Mukherjee Tejinder K. Billing

Article information:

To cite this document:

Debmalya Mukherjee Somnath Lahiri Deepraj Mukherjee Tejinder K. Billing, (2012), "Leading virtual teams: how do social, cognitive, and behavioral capabilities matter?", *Management Decision*, Vol. 50 Iss 2 pp. 273 - 290

Permanent link to this document:

<http://dx.doi.org/10.1108/00251741211203560>

Downloaded on: 23 May 2016, At: 08:51 (PT)

References: this document contains references to 69 other documents.

To copy this document: permissions@emeraldinsight.com

The fulltext of this document has been downloaded 3403 times since 2012*

Users who downloaded this article also downloaded:

(2014), "E-leadership effectiveness in virtual teams: motivating language perspective", *Industrial Management & Data Systems*, Vol. 114 Iss 3 pp. 421-437 <http://dx.doi.org/10.1108/IMDS-07-2013-0294>

(2012), "The role of trust climate in virtual teams", *Journal of Managerial Psychology*, Vol. 27 Iss 6 pp. 595-614 <http://dx.doi.org/10.1108/02683941211252446>

(2008), "Virtual teams: a leader's guide", *Team Performance Management: An International Journal*, Vol. 14 Iss 1/2 pp. 86-101 <http://dx.doi.org/10.1108/13527590810860221>



Access to this document was granted through an Emerald subscription provided by emerald-srm:123756 []

For Authors

If you would like to write for this, or any other Emerald publication, then please use our Emerald for Authors service information about how to choose which publication to write for and submission guidelines are available for all. Please visit www.emeraldinsight.com/authors for more information.

About Emerald www.emeraldinsight.com

Emerald is a global publisher linking research and practice to the benefit of society. The company manages a portfolio of more than 290 journals and over 2,350 books and book series volumes, as well as providing an extensive range of online products and additional customer resources and services.

Emerald is both COUNTER 4 and TRANSFER compliant. The organization is a partner of the Committee on Publication Ethics (COPE) and also works with Portico and the LOCKSS initiative for digital archive preservation.

*Related content and download information correct at time of download.



Leading virtual teams: how do social, cognitive, and behavioral capabilities matter?

Leading virtual teams

273

Debmalya Mukherjee

Department of Management, The University of Akron, Akron, Ohio, USA

Somnath Lahiri

*Department of Management and Quantitative Methods,
Illinois State University, Normal, Illinois, USA*

Deepraj Mukherjee

Department of Business, Waldorf College, Forest City, Iowa, USA, and

Tejinder K. Billing

*Department of Management and Entrepreneurship, Rowan University,
Glassboro, New Jersey, USA*

Abstract

Purpose – The purpose of this paper is to propose a research framework that identifies crucial leadership capabilities pertaining to the different lifecycle stages of a virtual team (VT). More specifically, the framework seeks to identify and explain the role of social, cognitive, and behavioral capabilities as important determinants of effective VT leadership and success.

Design/methodology/approach – This article provides an overview of literature on VT leadership, categorizes leadership capabilities, and relates the capabilities to various stages of VT life-cycle. A research analysis is undertaken to depict the proposed relationships.

Findings – The propositions demonstrate that for effective VT leadership to happen it is important to understand the specific set of capabilities that contributes to successful management of a particular VT stage.

Social implications – VT leaders' application of appropriate capabilities may result in the development of greater levels of tolerance toward cultural, temporal and geographic diversity that exists among VT members and leaders. Such tolerance may actually help improve worker satisfaction, cohesiveness among team members, and promote better work-life balance – outcomes that are beneficial to society. In addition, more effective and successful VT leadership will lead to better VT performance and organizational success – suggesting positive social impact.

Originality/value – Research relating to VT leadership has been limited. With the usage of VTs predicted to gain more importance in the future there is a greater need to understand how specific leadership capabilities contribute to the successful management and development of VTs. This study fills the void in the extant literature by exploring the specific leadership capabilities and by analyzing their relative influence and relationships with VT lifecycle stages.

Keywords Virtual teams, Leadership capabilities, Globalization, Virtual organizations

Paper type Conceptual paper



An earlier version of this paper won the Outstanding Doctoral Paper Award at the Southern Management Association (SMA), 2006 annual meeting, Clearwater Beach, Florida, USA. The authors thank (former) Editor Dr John Peters, the anonymous reviewers, and Dr Steve Ash for their insightful comments and guidance. The first author acknowledges the partial research funding support of "The Mark R. and Beverly E. Belgya Endowed Fund for Faculty Research".

Introduction

In today's knowledge-based networked economy the flattening of organizational structures has accelerated the need for firms to coordinate activities that span geographic, cultural, temporal, as well as organizational boundaries (Kedia and Mukherjee, 2009; Purvanova and Bono, 2009). The general shift from production to service-related businesses and the advancements in communication technologies have given rise to knowledge-workers who are not bound to physical work locations (Cascio, 2000; Gressgard, 2011; Malhotra *et al.*, 2007). Although the underlying concepts of team-based work groups remain relatively stable, certain business drivers have started to alter the nature of teams, as well as the ways they accomplish organizationally valued outcomes (Morgeson *et al.*, 2010; Rapp *et al.*, 2010). Consequently, virtual teams (VT) have begun to emerge as a new form of organizational structure, supported by enabling information and communication technologies, that are able to meet the challenges of this new work context (Wakefield *et al.*, 2008; Wiesenfeld *et al.*, 2001). A VT, as defined by Jarvenpaa and Leidner (1999, p. 792), is a "temporary, culturally diverse, geographically dispersed, electronically communicating work-group of members who think and act in concert within the diversity of the global environment."

The capability of an organization to effectively and efficiently use global knowledge resources is critical in determining competitive advantage (Billing *et al.*, 2010; Kedia and Mukherjee, 2009). Multinational companies (MNCs) often employ VTs to take advantage of globally dispersed knowledge and innovation resources, and successfully enable, coordinate, and facilitate strategic activities, that, in turn, improve flexibility and market responsiveness (Lagerstrom and Andersson, 2003; Lunnan and Barth, 2003). In addition, organizations often find VTs are relatively efficient to implement as such teams can be formed without limitations of time, distance, and significant costs and discontinuities associated with relocation (Schweitzer and Duxbury, 2010).

As companies worldwide attempt to devise new strategies to remain competitive and to ensure growth, researchers and practitioners are challenged to rethink on the nature of leadership requirements pertaining to organizations in general (e.g. Robinson and Harvey, 2008) and VTs in particular (Leonard, 2011; Pearce, 2004; Purvanova and Bono, 2009). For decades, the study of leadership has been an important constituent in the literature on management and organizational behavior (Bass, 1981; Svensson and Wood, 2005; Yukl, 1994). The rise of VTs has encouraged virtual work, whereby individuals "work from home", "on the road," outside of traditional centralized offices (Wiesenfeld *et al.*, 2001). For instance, Wiesenfeld *et al.* (2001) observed that 51 percent of North American companies are engaged in virtual work programs, and many *Fortune* 1000 companies allow their workforce to work virtually.

However, the use of VTs poses significant leadership and management challenges for organizations wishing to deploy them. Although many of these challenges are present in traditional teams, the leadership challenges may become even more pronounced in virtual settings (Malhotra *et al.*, 2007; Morgeson *et al.*, 2010) due to the presence of physical, cultural, and temporal dispersions (Martins *et al.*, 2004). While technological advancements have created new limits for communication and interaction beyond time, physical distance, and organizational boundaries, VTs demand leadership capabilities that are unique to organizational management in the virtual context (Hambley *et al.*, 2007; Leonard, 2011). Thus, the central focus of this paper is to understand how leadership capabilities, present within the dominant leadership styles, relate to VT management.

Why plan an endeavor to focus on VT leadership capabilities? Existing research work (e.g. Derosa *et al.*, 2004; Kahai *et al.*, 1997, 2003) has stressed the importance of leadership in VTs. While researchers have dealt with the leadership challenges associated with VTs (Kerber and Buono, 2004; Zaccaro and Bader, 2003; Ziguers, 2003) and have explored the roles of different kinds of leadership such as emergent leadership (Yoo and Alavi, 2004) and shared leadership (Pearce, 2004), the notion of leadership capabilities to propel such teams has remained implicit. Given the importance accorded to leadership competencies in the maintenance of VTs (Purvanova and Bono, 2009; Yeung and Ready, 2006), and noting the predicted increase of virtual work/teams in the near future, it is natural to conjecture that a substantial number of organizations across industries and over the globe will consider the theoretical foundations of leadership capabilities in the effective formulation and execution of virtual move. In fact, a recent estimate as evidenced by the results of Aon Consulting's "Benefits and Talent" survey suggests that 44 percent of the organizations anticipate significant rise in virtual work and increased usage of VTs (Leonard, 2011).

However, research investigating different aspects of leadership in the virtual context seems to be limited (Wakefield *et al.*, 2008). Indeed, recently Malhotra *et al.* (2007) bemoaned the fact that research throwing light on the issue of VT leadership in general and studies exploring special skills and competencies required for effective leadership of such teams in particular has received very little attention. More recently, Schweitzer and Duxbury (2010) observed that the field of VT research is still maturing and struggling with empirical and conceptual issues (p. 269). In this paper we attempt to address this void. We stress that organizations deploying VTs need to reconsider their extant leadership attributes, knowledge, and skills, and decide to develop and utilize the capabilities that are embedded in the existing leadership theories. Hence, the main objective of this paper is to examine these leadership capabilities in the context of different stages of VT development and management.

The rest of the paper is organized along the following lines. First, a very brief overview of VT literature is offered. Next, leadership literature in the virtual context is presented. Then, leadership capabilities that are embedded in the theory of transactional and transformational leaderships are identified and categorized as cognitive, social and behavioral capabilities. Thereafter, based on Hertel *et al.* (2005), various stages of VT life cycle are explained and research propositions are offered showing how different types of leadership capabilities relate to each of these VT life-cycle stages. The paper concludes by summarizing the proposed framework.

Overview of VTs

VTs are an important constituent of today's organizations (Zimmermann, 2011). In their extensive review of the VT literature, Martins *et al.* (2004) defined these organizational designs as "teams whose members use technology to varying degrees in working across locational, temporal and relational boundaries to accomplish an interdependent task" Martins and his colleagues further noted that researchers are shifting away from defining VTs as a type of team that contrasts with a "traditional" face-to-face team and putting more emphasis on degree of virtuality or "virtualness" as a latent feature of all teams (e.g. Schweitzer and Duxbury, 2010). In a global VT, workers are geographically and/or temporally dispersed and interconnected together via information and telecommunication technologies (Brandl and Neyer, 2009;

Jarvenpaa and Leidner, 1999; Lipnack and Stamps, 2000). In such a team, members might:

- physically remain on different continents/in different countries;
- interact primarily through the use of computer-mediated communication technologies (electronic mail, videoconferencing, etc.); and
- rarely or never see each other in person.

VTs enable firms to become more agile and flexible to react to market demands (Algesheimer *et al.*, 2011; Derosa *et al.*, 2004), allow them to expand potential labor markets (Duarte and Snyder, 1999; Rosen *et al.*, 2006) and provide them with access to a wide array of intellectual resources (Altschuller and Benbunan-Fich, 2010; Maznevski and Chudoba, 2000) that are available in the global resource marketplace. VTs are also used for new product development, strategic planning reviews, and customer support purposes (Rosen *et al.*, 2006). Scholars have also pointed out that virtual work provides employees with greater flexibility as VT members have greater freedom to perform tasks on their own work schedule (Derosa *et al.*, 2004), which, in turn, enhances organizational flexibility and makes them more market responsive (Gressgard, 2011).

However, unlike traditional face-to-face teams, members of VTs may be scattered across the globe (e.g. Montoya-Weiss *et al.*, 2001; Schweitzer and Duxbury, 2010), located in different time zones and may belong to totally different cultures (Martins *et al.*, 2004). Such characteristics pose serious challenges to manage VTs effectively. The heavy reliance on asynchronous communication media (e.g. e-mail) constrains the ability of VT members to interact effectively in “real-time” (Bell and Kozlowski, 2002), which is important for building trust and shared identity in VTs (Peters and Karren, 2009). Furthermore, due to the existence of cultural diversity and tacitness of knowledge/information, effective flow of knowledge/information among the VT members may become extremely difficult and complicated (Kerber and Buono, 2004; Konradt and Hoch, 2007). Thus, VTs present real challenges toward effective team development and performance management. Under these circumstances leadership becomes an even more crucial topic of attention in VTs (Zigurs, 2003; Zimmermann, 2011).

Scholarly endeavors dealing with the models of group and team effectiveness recognizes the important role of team leaders. However, even with the current proliferation of research acknowledging VTs as integral part of today’s organizations (Montoya *et al.*, 2011; Zimmermann, 2011), there have been relatively few theoretical efforts to specify the functional requirements of VT leaders. Mostly, existing literature has focused on the planning, action and interpersonal processes while dealing with VT leadership issues (Martins *et al.*, 2004; Morgeson *et al.*, 2010). The current analysis builds on and goes beyond the previous literature by linking various phases of VTs with leadership capabilities by delineating key functional roles of VT leaders at various stages of VT lifecycle.

What are various leader roles and capabilities that can help organize VTs when they are geographically and culturally dispersed and spread across time? To answer this question it is important to go through the extant leadership literature in the context of VTs.

Leadership in the virtual context

The topic of VT leadership has started getting attention of the researchers and practitioners alike (Leonard, 2011; Zigurs, 2003). However, the issue of leadership in VTs remains a practical as well as a theoretical challenge (Kayworth and Leidner, 2001; Morgeson *et al.*, 2010; Zigurs, 2003). In an early attempt, Sosik and colleagues (Sosik *et al.*, 1998) conducted the first empirical investigations of leadership style in virtual groups. They examined the effects of transformational leadership on the potency and effectiveness of work groups performing a creativity task using a group decision support system. These researchers observed that groups working under high, compared to low, transformational leaders generated more original solutions, solution clarifications, supportive remarks, and questions about solutions. In addition, such groups also reported higher levels of perceived performance, extra effort, and leadership satisfaction than those working under low transformational leadership. Sosik *et al.* (1998) also found that higher levels of transactional leadership promoted increased levels of effectiveness and group potency which refers to a group's collective belief that it can be effective. Thus, for the purpose of this paper we focus our discussion on the leadership capabilities that are associated within the theoretical underpinnings of transactional and transformational leadership. Specifically, these two dominant leadership styles have drawn considerable research attention over the years and are quite developed in terms of research explorations.

Leadership capabilities

Leadership capabilities have been viewed as one of the central components of organizational competencies. These capabilities may be crucial to business success owing to their effect on the organizational interpretation of the business environment (Amagoh, 2009; Robinson and Harvey, 2008). Such capabilities also affect the articulation of business vision and strategy (Bennis and Nanus, 1985), and the alignment and mobilization of individuals toward common goals (Kotter, 1995). Existing research (e.g. Pawar and Eastman, 1997; Vera and Crossan, 2004) have considered the concepts of transactional and transformational leadership as dominant components of leadership style. Likewise, we consider literature on these two forms of leadership in order to understand the leadership capabilities. Thus, the study of transactional and transformational leadership in the context of VT not only appears to be relevant but is also expected to foster a better understanding of the virtual process itself.

Burns (1978) highlighted the distinctions between transactional and transformational leaders. While he viewed these two leadership styles as two ends of a continuum, Bass (1985, 1998) considered them as distinct dimensions that may allow leaders to be either transactional or transformational, both, or neither. Transactional leadership behaviors are aimed at monitoring and controlling individuals through rational or economic means. To do so, these leaders focus on prior logic, stress incremental change, efficiency, safety and continuity (Bass, 1985). While they tend to strengthen the mastery of existing learning skills among other members and ensure the development of required competencies needed to execute one's jobs, they closely monitor deviations from set goals and devise corrective steps to rectify and learn from the mistakes (Vera and Crossan, 2004). According to the observations of Avolio *et al.* (1999), transactional leadership motivates organizational members through contingent-reward exchanges and active management-by-exception.

Bass and Avolio (1990) and Howell and Hall-Merenda (1999) argued that transactional leaders tend to set definite organizational goals, spell out explicit agreements about what they expect from other members and delineate how the latter will be rewarded for their efforts and commitment. Further, such leaders tend to actively provide constructive feedback on the tasks of members. Overall, transactional leadership tend to operate within the strategy and structure of the existing setup.

Transformational leadership, on the other hand, is charismatic, inspirational, intellectually stimulating, and individually considerate (Avolio *et al.*, 1999). Such leaders seek to help organizational members to rise above their self-interests for the sake of organization's larger mission. Tending to challenge the existing system and norms of their organizational set-up, transformational leaders seek to inspire others with their vision and creative thinking. They also tend to promote individual and group learning by being intellectually stimulating, providing necessary support and coaching and developing inspiration through extending greater meaning and challenge at work (Vera and Crossan, 2004). The hallmarks of transformational leaders are experimentation, risk-taking, punctuated change and consideration of multiple alternatives (Bono and Judge, 2004). In the organizational behavior literature, four dimensions of transformational leadership have been identified. These are charisma or idealized influence (the extent to which leader behavior is admiring that cause his/her followers to identify with him/her); inspirational motivation (the degree to which the leader explains a vision that his/her followers find appealing and inspiring); intellectual stimulation (the extent to which the leader challenges assumptions and take risks); and individualized consideration (the extent to which the leader acts as a mentor to followers (Bono and Judge, 2004; Judge and Piccolo, 2004). In sum, transformational leaders tend to appeal to their followers at an emotional level, stress optimism about their future goal attainment, encourage creativity and attend to their needs and concerns.

To have an effect on successful practice of leadership in the VT context, leaders need to develop and utilize the capabilities that give rise to transactional and transformational styles. From our previous discussion, three types of leadership capabilities can be thought of – cognitive, social, and behavioral. In line with research on various leadership capabilities (Kahai *et al.*, 1997, 2003), we mean by cognitive those capabilities that enable leaders to contemplate, think, and judge in a multidimensional manner and synthesize information with an aim to influence others to make voluntarily decisions. Social capabilities refer to specific competencies that enable leaders to apply interpersonal skills in a socially appropriate manner aimed at influencing various constituents of their organizations. Finally, by behavioral we mean those capabilities that provide leaders to display their personal behavior in ways that influence members of diverse constituents to think and function in the best interests of the organization. While these capabilities are different in terms of conceptualization, yet there may exist some overlap that can only be measured through in-depth empirical treatment. The underlying characteristics of these three aforesaid leadership capabilities have been shown in Table I.

Phases of VTs

Hertel *et al.* (2005) reviewed the current empirical research on VTs and argued that there are five lifecycle phases in VTs. We briefly discuss the five stages in accordance with the work of Hertel *et al.* (2005). They noted that the first phase, "preparations" involves doing various tasks and taking decisions that are pertinent when an organization is planning to implement VTs (mission statement, personnel selection,

Leadership form	Cognitive capabilities	Social capabilities	Behavioral capabilities
Transactional	Setting goals Setting standard Focusing on prior logic, incremental change, efficiency, and continuity Reflecting roles of relational goals Monitoring deviations Being challenge-oriented	Strengthening strategy, culture Providing tangible support and resources to organizational members Transaction of services and rewards	Articulating explicit arguments Providing valuable feedback Reinforcing the mastery of current learning Reflecting roles of internal processes Being challenge-seeking Taking corrective actions based on deviations Being inspiring and intellectually stimulating Encouraging learning and innovation Emphasizing experimentation, risk-taking and challenging norms Coaching followers and providing feedback
Transformational	Recognizing unique growth and developmental needs of followers Devising means to inspire, stimulate, engender loyalty, and build confidence Being able to reflect the role of open systems Divergent thinking resulting in innovative strategies	Being considerate to individual/group needs Being able to create interest in individuals and groups Being able to reflect the role of human relations Consulting with individuals or groups	

Table I.
Leadership capabilities required for effective management of VTs

task design, etc.). The second phase, “launch” deals with activities those are carried out in developing a team. The third phase, “performance management” deals with leadership issues and the maintenance of motivation and communication within VTs. The fourth phase, “team development” entails mainly evaluation activities of team processes, team training and incorporation of new VT members. The fifth phase, “disbanding” is also very crucial in this particular context. As VTs are formed for short time periods, disbanding is inevitable but future re-integration is also quite common. Thus, at this phase, the leader has the responsibilities to recognize the team achievements and ensure that the process ends smoothly.

Leadership capabilities – VT stages linkage

Preparations

The first stage of VT lifecycle involves careful planning. The planning process typically finds leaders asking the why, what, and how questions that enables them to contemplate, think and judge the appropriateness of their move toward virtuality. The initial task during the implementation of a team is to define and pinpoint the general purpose of the team together with the determination of the level of “virtuality” that might be appropriate to achieve various goals. These decisions are usually determined by strategic factors such as mergers, increase of the market span, cost reductions, flexibility and reactivity to the market, etc. (Hertel *et al.*, 2005). Thus, VT leaders, at the preparations stage, need to put forth their best judgmental skills to effectively balance the challenges associated with a virtual move while maintaining the overall interests of their respective organizations and employees.

Selection of key personnel, designing tasks, setting up an appropriate reward system and selection of pertinent technology are the other important leadership responsibilities at this stage (Hertel *et al.*, 2005). One of the strategic reasons for VTs is to combine core competencies of specialists and knowledge resources from different locations (Algesheimer *et al.*, 2011). In these cases, the main selection criteria for VT members are their professional/technical KSAs (knowledge, skills, abilities) and expertise, for instance, specific sales or procurement skills. VTs often include members with different cultural backgrounds (due to different nations, organizations, professions, etc.), thus, diversity is another important issue (Hertel *et al.*, 2005; Jarvenpaa and Leidner, 1999). The development of a fair and motivating reward system is another important issue at the beginning of virtual teamwork. As with conventional teams, team-based incentives can be suitable to stress the importance of cooperation within VTs.

It is clear from the previous discussion that cognitive leadership capabilities play a key role during the preparations stage of VT. However, this is not to say that other capabilities will not be required at this stage. It is difficult to conceive any leadership activity that does not call for all the three categories of capabilities. Indeed, we argue that all the categories of capabilities will be related to all the stages of VT, albeit in different measures. We contend that among all three leadership capabilities, cognitive capabilities of the VT leader will be most strongly related to preparation stage. The suggested prominence of cognitive capabilities at the preparations stage of a VT leads to the following proposition:

- P1.* VT leader's cognitive leadership capabilities will be more strongly related to the preparations stage, than social or behavioral capabilities will be.

Launch

The second stage, "launch", involves more of relationship building capabilities (Hertel *et al.*, 2005). To this end, the existing conceptual literature on VT management recommends face-to-face interaction of all the VT members (Haywood, 1998, Lipnack and Stamps, 2000; Hertel *et al.*, 2005) at this stage. Increasingly, the VTs are being used in the execution of important and complex organizational tasks such as strategic alliance management, negotiation process, sales management, and new product launch (Pauleen, 2003; Rapp *et al.*, 2010). Such tasks, that often transcend geographic and organizational boundaries, demand enriched member interactions and greater group cohesiveness. Additionally, in this era of cutthroat competition, the VTs have to deliver in a timely fashion. Thus, developing good relationships among the VT members and promoting a sense of cohesiveness and shared identity, are main concerns at this stage. However, as the degree of "virtuality" increases in the later stages it is often more difficult for VT members to establish and maintain a unified and common sense of purpose due to reduced member of interactions (Rapp *et al.*, 2010). Understandably, at this stage the social capabilities of the VT leader play an important part in building trust, and establishing cohesiveness among team members (Peters and Karren, 2009; Peters and Manz, 2007).

Other central issues involved with the "launch" stage include, clarifying the team goals, explicating the roles and functions of the team members, training them about information and associated technology usage, and developing ground rules for effective teamwork (Duarte and Snyder, 1999; Konradt and Hoch, 2007; Montoya-Weiss *et al.*, 2001). In other words, the VT leaders at this stage are expected to elucidate team related

processes, build a shared context among VT members for effective and efficient functioning in the future, and promote a sense of “oneness” among the team members (Hertel *et al.*, 2005; Wiesenfeld *et al.*, 2001). As the VT members are geographically, culturally and may be chronologically dispersed, the leadership efforts required at this stage calls for active relation building, relation maintaining, through social capabilities. For example, being considerate to individual and group needs could result in building initial trust and cohesiveness among members. Greater interactions with the team members and being able to clarify the common goals and the nuances of human relations can promote a sense of “oneness”, which is required for VT team performance. Indeed, research has found that such collaborative behaviors and clear communication of objectives may positively impact VT performance (Altschuller and Benbunan-Fich, 2010; Montoya *et al.*, 2011). When stated formally:

- P2. VT leader’s social leadership capabilities will be more strongly related to the launch stage of VTs than cognitive or behavioral capabilities will be.

Performance management

In the performance management stage of a VT, the key issues and major concerns are more pronounced than the earlier stages and require leadership capabilities that are both social and behavioral in nature. This stage mainly necessitates leadership communication within the VT, promoting team members’ motivation, and in-group knowledge management. Thus, managing virtuality-related uncertainties remain a crucial issue in VTs (Derosa *et al.*, 2004; Leonard, 2011) and all kinds of direct control or monitoring are difficult when leaders or managers of the team are geographically, chronologically and culturally dispersed. The teams at this stage are managed by three kinds of leadership; directive leadership, where the leader directly controls the team through electronic performance monitoring, delegative leadership, in which the leaders empower the team members by conferring some of the leader functions to them, and shared leadership in case of the self-managing teams (Hertel *et al.*, 2005).

The “delegative leadership” approach is characterized by assigning leader functions to the VT members (Duarte and Snyder, 1999) which changes the role of a team leader from a traditional controller to a coach and moderator (Kayworth and Leidner, 2001; Hertel *et al.*, 2005). In case of self-managing teams, shared leadership becomes important. Regulating the communication among all the team members and resolution of conflict may be a central challenge in such cases. Furthermore, the maintenance of motivation, trust, team identification and satisfaction indicate, social and behavioral capabilities of the leaders might play an important role at this stage. The leadership efforts required includes active relation-building, relationship maintaining, behavior monitoring, and performance evaluating mainly through use of capabilities that are social and behavioral. Another important issue for the regulation of virtual teamwork at this stage is the management of knowledge and the development of shared understanding within the teams (Gressgard, 2011; Peters and Manz, 2007). Indeed, in a case study involving VT leaders, Sivunen (2006) found that leaders who establish common goals and standards for performance in the team also aid in the development of shared team identity. Such a shared team identity enables VT members to facilitate better understanding, increased team effectiveness and superior performance.

As we have discussed from the outset, the development of such a common platform might be particularly difficult due to the dispersed nature of the VTs. Development and maintenance of interpersonal trust within the members and delineating clear and

transparent performance evaluation criteria are also vital for the existence of VTs (Jarvenpaa *et al.*, 2004). For example, Sivunen (2006) also observed that providing evaluative and systematic feedback to VT members promoted a greater degree of identification and commitment among members. In fact, a recent review of team leadership literature supports these observations (Morgeson *et al.*, 2010). Clearly, in this stage social and behavioral capabilities of the leader are constantly challenged. Our proposition in this regard is:

- P3. VT leader's social and behavioral leadership capabilities will be more strongly related to the performance management stage than cognitive capabilities will be.

Training and team development

The next phase for the VTs involves training and development of team members (Hertel *et al.*, 2005). Providing training to the VT members is considered to be a difficult task as computer mediated/supported interactions often lack specific and unique socio-emotional information and cues that are needed to develop building trust, warmth and other inter-personal affections (Wiesenfeld *et al.*, 2001). In addition, VT members are often culturally very diverse and sometimes are distributed across the globe, which makes the process even more difficult. However, a VT leader has to overcome these challenges and develop training programs that are based on the assessment of needs or deficits of the team and its members (Hertel *et al.*, 2005; Rosen *et al.*, 2006), and subsequently decide on the contents of training. Moreover, the leader should also appraise the effectiveness of the trainings, and understand the efficiency of such trainings programs. Previous research suggests that organizations are yet to fully understand the training needs of VT leaders and VT members. In fact, Rosen *et al.* (2006) while surveying the human resource managers found that over 60 percent organizations in their sample did not provide specific training for the VT members. It was also noted that top management support for such training and development programs are also non-existent in most cases (Rosen *et al.*, 2006). Such a scenario makes the job of the VT leader at this particular stage more complicated. On one hand, the VT leader has to comprehend the specific needs and requirements of VT members with regard to virtual training programs; on the other hand, he/she also has to gain top management support for such programs. Most of these tasks call for one or more of the cognitive and behavioral capabilities delineated in Table I. More specifically, while understanding the "training and team development needs" demand specific skills such as being able to monitor deviations, recognize growth opportunities (cognitive capabilities), it is also important for the VT leader to encourage learning, coach the members, emphasize experimentation, provide valuable feedback, and convince the top management about VT member training and development needs (see Table I). In sum, the fourth phase of VT lifecycle underscores the importance of cognitive and behavioral capabilities on the part of the VT leaders. Our fourth proposition is:

- P4. VT leader's cognitive and behavioral capabilities will be more strongly related with the training and development stage than social capabilities will be.

Disbanding

Hertel *et al.* (2005) argued that the disbanding of VTs and the re-integration of the team members is a key issue that has been neglected in both, empirical and theoretical

research. However, as VTs are formed for a short span of time and re-integration of the team members often takes place based on market demands, careful disbanding becomes important. A careful and constructive disbanding helps to keep the morale of the team high and the members' feel motivated enough for further re-integration in the near future. Leaders' cognitive and social skills and capabilities play an important role at this stage. The leader has to recognize the achievements of the individual members without undermining the group as a whole. Specific social capabilities like being considerate to individual/group needs, being able to create interest in individuals and groups, being able to reflect the role of human relations might make the disbanding smoother, which can be otherwise a period of emotional fluctuations (Bouas and Arrow, 1996). The process of disbanding needs to be implemented carefully so that in the future VT members can re-integrate if needed. In addition, VT leader's cognitive capabilities with regard to future VT member selection may also be important.

In sum, we propose:

- P5. VT leader's cognitive and social capabilities will be more strongly related with the disbanding stage than behavioral capabilities will be.

Discussion and implications

Research implications

The theoretical analysis presented in our paper is an initial attempt at examining the skills and capabilities of VT leaders in a model of VT development cycle. Specifically, we analyze these capabilities from the perspective of transactional and transformational theories of leadership. Future research can extend our model using other theories of leadership i.e. contingent reward, initiating structure or consideration, goal setting theory and leader-member exchange perspective.

Further, future research could also examine the relative efficacies of the three skills (i.e. cognitive, social and behavioral) emanating from transactional and transformation theories of leadership on the different stages of team development. It is plausible that cognitive capabilities like setting standards, setting goals (emanating from transactional leadership context) are important only during the preparation stages and skills focused on inspiring and motivating followers (emanating from transformation leadership context) are more relevant during performance and training stages of VT development. The insights gained from such a comparative study will help strengthen our understanding about effectiveness different leadership styles in the context of VTs.

Finally, our paper emphasizes the need to test the models of VT leadership effectiveness by employing a longitudinal research design. The theoretical underpinnings of our analysis shed light on the importance of examining leadership from a holistic perspective. As suggested in our paper, different skills and capabilities of leaders are vital during different stages of team development phases. We sincerely hope that this fine grained approach will help promote systematic research endeavors in this particular field.

Managerial implications

Given that VTs are relatively new phenomenon, organizations and team leaders have relatively limited experience in this area. Improving our understanding of specific leadership capabilities in the context of VT stages has the potential to benefit both organizations and VT leaders. Thus, at this juncture, it is important to highlight the

implications of our analysis for managers. First, we offer important insights to managers about what skills they should use and emphasize during different stages of development of VTs. We argue that identifying these unique capabilities would help VT managers/leaders to be more cognizant of how and when they should apply their capabilities during the development of VTs.

More specifically, to effectively manage VTs, it is essential for VT leaders to use skills that go beyond the project related tasks and occasional interpersonal conflicts associated with traditional teams. These skills are needed to create a common cause among VT members who are geographically, temporally dispersed and who are often from different backgrounds and cultures (Pauleen, 2003). It must also be noted that these leaders have either managed traditional teams in the past or might be leading them along with VTs. For example, a project leader could have a team of five employees in the same location who continuously deal with a support team of a few other individuals scattered in different physical locations. Therefore, an important question for these managers is how to best use the skills gained from managing traditional teams in leading VTs. Our paper provides important insights to managers in this regard. As suggested earlier, cognitive skills are most important during the preparation, training and development and disbanding stages of the team development. Organizations can focus on developing the cognitive skills of managers during development programs and can use this as an important criterion during the selection process of leaders.

As mentioned earlier, our model posits that leaders of VTs should use their social skills more during the launch stage. This would enhance development of relationships between the leader and the team members. The relationships built during this stage can benefit the organizations beyond the initial objectives (Pauleen, 2003). Given the lack of face-time for VTs, it might be challenging for leaders to apply their social skills. However, organizations can overcome this challenge by using social media. Many organizations have started using internal media (e.g. intranets) or external social media (e.g. Facebook, twitter) to facilitate social interactions among employees who are geographically and temporally dispersed (Burrus, 2010). Organizations use these social media platforms to facilitate interactions among VT employees beyond the context of corporate emails and memos. In addition, it also allows the leaders to know their VT members beyond their roles in organization and facilitate information exchange between leader and team members. Leaders can then use the social capital thus created to better manage their team members and motivate them to share innovative ideas and collaborate on work. This has direct implications for training VT leaders and members to effectively use these technologies to maintain a strong team culture and provide support to the team.

A better understanding of what skills should be utilized by VT leaders at different stages during a VT life cycle, and why, can provide critical insights into how organizational training programs for leaders and members might best be tailored. The VT leaders must aware of the fact that social and behavioral skills may become increasingly valuable during the maturity phases of VTs. More specifically, during the next two stages of VT development (i.e. performance and training and development) the behavioral skills of the leader are most important. The ability of the leader to effectively communicate, inspire, motivate, and provide feedback is crucial to a team's success during this stage. Furthermore, the theoretical literature and the empirical findings on VTs suggest that such teams are deployed for organizational benefits. Thus, the successful implementation and maintenance of management concepts

(e.g. team member empowerment or trust) that can help create positive outcomes should be ensured through demonstration of VT leader's cognitive, social, and behavioral skills. Nonetheless, organizations need to have appropriate HR strategies in place to make certain that a VT leader and team members can participate in developmental courses on cross-cultural management, empowerment, trust-building, project management, technology management, etc.

In short organizations should develop appropriate training programs and provide structured support for these functional roles of leadership in the context of VTs. In addition, leaders of VTs must be culturally sensitive to values and needs of their diverse team when applying their social and behavioral skills. Thus, providing cross-cultural training programs becomes essential to increase manager's understanding about complexities of leading members from different cultural contexts (Brandl and Neyer, 2009). To this end we echo Amagoh's (2009) suggestion that such training and development programs should be systematically integrated into the organizational culture in order to nurture future leaders who will be able to deal appropriately with such challenges.

Finally, it is also important for organizations to develop suitable technology infrastructure that will facilitate information processing and dissemination, planning and allocating goals, decision-making, and conflict resolution processes (Bell and Kozlowski, 2002). It is to be noted that managers often utilize electronic communication purely as a task-achieving, rather than relation-building, instrument. It has been suggested that under such circumstances leaders may engage in fewer individualized consideration behaviors, for instance, forging close relationships with VT members or understanding their developments needs (Hambley *et al.*, 2007; Purvanova and Bono, 2009). In addition, Duarte and Snyder (2006) empirically studied a project in which a groupware implementation failed as investment was made on technology, and not on training. As a conclusion it was posited that all VT members should have immediate access to not only the technology, but also training and technical support for its utilization. It clearly is not enough that the used technologies are capable and reliable, but the team members will also need to be able to efficiently utilize them. If the required technical knowledge is not there from the beginning, special attention needs to be put on training the team members to use the technologies. Accordingly, organizations should ensure that VT leaders and employees are properly trained to make the best use of available communication technologies in achieving better VT performance.

Interestingly, this analysis may also have crucial social implications. VT leaders' application of appropriate capabilities (as explained in our developed framework) may result in the development of greater levels of tolerance toward cultural, temporal and geographic diversity that exists among VT members/employees. Moreover, greater tolerance of ambiguity will also result among the VT leaders. This will help the leaders to relate well to VT members and appreciate their cultural as well as functional diversity. Consequently, greater cohesion may develop in the VTs that will lead to the enhancement of workers' satisfaction and their improved/better work-life balance, which is beneficial for the society.

Additionally, more effective and successful VT leadership (based on the paper's propositions) will lead to better VT management success, which, in turn will lead to higher VT performance. Such success will ultimately result in greater corporate/organizational success and more satisfied stakeholders – suggesting positive social impact.

Conclusion

The theoretical analysis presented in our study contemplates that more businesses will attempt to embark on or enhance the use of VTs. Noting that the widespread practice of VTs has brought a paradigm shift in business thinking and also that such practices are predicted to grow in the future, it is reasonable to foresee managers attempting to apply the notions of leadership capabilities in managing VTs. This paper contributes to a growing body of literature in three broad ways. First, the paper explicates the leadership capabilities by examining available literature on transactional and transformational leadership. The capabilities are categorized into cognitive, social, and behavioral types. Second, these capabilities are related to the various phases of VT stages. We expect this linking will help the academic community of organizational behavior and strategy theorists, as well as practitioners of business. Researchers will find the analysis helpful in understanding and theorizing on VTs and other firm level strategic moves that involve leadership. Business leaders will find the depicted relations helpful in determining leadership capability requirements for recruiting virtual leaders and training future leaders to develop these capabilities. Finally, the paper extends current knowledge in organizational leadership and strategizing for competitive advantage through the practice of virtual work.

Being one of the early attempts in linking VTs with leadership, we are aware that our conceptualization of the proposed relations is not without limitations. For example, it needs to be clarified what other leadership theories, other than transactional and transformational, can enrich our understanding of VT leadership. In this paper, we have used transactional and transformational leadership theories only to recognize specific leadership capabilities. A second limitation is the conceptualization of three capability categories. To what extent are these distinct and how much do they overlap, needs to be clarified. A third area of limitation relates to the capability-virtual stage linkage as enshrined in the five propositions. Exactly how strong are these relations? It is obvious that these and other related queries can be addressed not only through better theorizing but also by empirical testing of the propositions presented in the paper. We reiterate our hopes of witnessing more in-depth examination of these theoretical relationships that will provide us with a deeper understanding of VT leadership capabilities.

References

- Algesheimer, R., Dholakia, U.M. and Gurau, C. (2011), "Virtual team performance in a highly competitive environment", *Group & Organization Management*, Vol. 36 No. 2, pp. 161-90.
- Altschuller, S. and Benbunan-Fich, R. (2010), "Trust, performance and the communication process in ad-hoc decision making virtual teams", *Journal of Computer-mediated Communication*, Vol. 16 No. 1, pp. 17-47.
- Amagoh, F. (2009), "Leadership development and leadership effectiveness", *Management Decision*, Vol. 47 No. 6, pp. 989-99.
- Avolio, B.J., Bass, B.M. and Jung, D.I. (1999), "Re-examining the components of transformational and transactional leadership: using the multifactor leadership questionnaire", *Journal of Occupational and Organizational Psychology*, Vol. 72, pp. 441-62.
- Bass, R.M. (1981), *Stogdill's Handbook of Leadership*, The Free Press, New York, NY.
- Bass, R.M. (1985), *Leadership and Performance beyond Expectations*, The Free Press, New York, NY.

- Bass, R.M. (1998), *Transformational Leadership: Industry, Military, and Educational Impact*, Lawrence Erlbaum Associates, Hillsdale, NJ.
- Bass, B.M. and Avolio, B.J. (1990), "The implications of transactional and transformational leadership for individual, team, and organizational development", in Staw, B.M. and Cummings, L.L. (Eds), *Research in Organizational Change and Development*, JAI Press, Greenwich, CT, pp. 231-72.
- Bell, B.S. and Kozlowski, S.W.J. (2002), "A typology of virtual teams: implications for effective leadership", *Group and Organization Management*, Vol. 27, pp. 14-49.
- Bennis, W. and Nanus, B. (1985), *Leaders: The Strategies for Taking Charge*, Harper and Row, New York, NY.
- Billing, T., Mukherjee, D., Kedia, B.L. and Lahiri, S. (2010), "Top executives' international expertise commitment: exploring potential antecedents", *Leadership & Organization Development Journal*, Vol. 31, pp. 687-704.
- Bono, J.E. and Judge, T.A. (2004), "Personality and transformational and transactional leadership: a meta-analysis", *Journal of Applied Psychology*, Vol. 89 No. 5, pp. 901-10.
- Bouas, K.S. and Arrow, H. (1996), "The development of group identity in computer and face-to-face groups with membership change", *Computer Supported Cooperative Work*, Vol. 4, pp. 153-78.
- Brandl, J. and Neyer, A.K. (2009), "Applying cognitive adjustment theory to cross cultural training for global virtual teams", *Human Resource Management*, Vol. 48, pp. 341-53.
- Burns, J.M. (1978), *Leadership*, Harper and Row, New York, NY.
- Burrus, D. (2010), "Social networks in the workplace: the risk and opportunity of Business 2.0", *Strategy & Leadership*, Vol. 38, pp. 50-3.
- Cascio, W.F. (2000), "Managing a virtual workplace", *Academy of Management Executive*, Vol. 14, pp. 81-90.
- Derosa, D.M., Hantula, D.A., Kock, N. and D'Arcy, ?. (2004), "Trust and leadership in virtual teamwork: a media naturalness perspective", *Human Resource Management*, Vol. 43 Nos 2/3, pp. 219-32.
- Duarte, D.L. and Snyder, N.T. (1999), *Mastering Virtual Teams*, Jossey-Bass, San Francisco, CA.
- Duarte, D.L. and Snyder, N.T. (2006), *Mastering Virtual Teams: Strategies, Tools, and Techniques that Succeed*, Jossey-Bass, San Francisco, CA, Business & Management Series.
- Gressgard, J.L. (2011), "Virtual team collaboration and innovation in organizations", *Team Performance Management*, Vol. 17 Nos 1-2, pp. 102-19.
- Hambley, L.A., O'Neill, T.A. and Kline, T.J.B. (2007), "Virtual team leadership: perspectives from the field", *International Journal of E-collaboration*, Vol. 3 No. 1, pp. 40-64.
- Haywood, M. (1998), *Managing Virtual Teams: Practical Techniques for High-technology Project Managers*, Boston & Artech House, Boston, MA.
- Hertel, G., Geister, S. and Konradt, U. (2005), "Managing virtual teams: a review of current empirical research", *Human Resource Management Review*, Vol. 15, pp. 69-95.
- Howell, J. and Hall-Merenda, K. (1999), "The ties that bind: the impact of leader-member exchange, transformational and transactional leadership, and distance on predicting follower performance", *Journal of Applied Psychology*, Vol. 84, pp. 680-94.
- Jarvenpaa, S.L. and Leidner, D.E. (1999), "Communication and trust in global virtual teams", *Organization Science*, Vol. 1, pp. 791-815.
- Jarvenpaa, S.L., Shaw, T.R. and Staples, D.S. (2004), "Toward contextualized theories of trust: the role of trust in global virtual teams", *Information Systems Research*, Vol. 15, pp. 250-64.

- Judge, T.A. and Piccolo, R.F. (2004), "Transformational and transactional leadership: a meta-analytic test of their relative validity", *Journal of Applied Psychology*, Vol. 89 No. 5, pp. 755-68.
- Kahai, S.S., Sosik, J.J. and Avolio, B.J. (1997), "Effects of leadership style and problem structure on work group process and outcomes in an electronic meeting system environment", *Personnel Psychology*, Vol. 50, pp. 121-46.
- Kahai, S.S., Sosik, J.J. and Avolio, B.J. (2003), "Effects of leadership style, anonymity, and rewards in an electronic meeting system environment", *The Leadership Quarterly*, Vol. 14, pp. 499-524.
- Kayworth, T.R. and Leidner, D.E. (2001), "Leadership effectiveness in global virtual teams", *Journal of Management Information Systems*, Vol. 18, pp. 7-40.
- Kedia, B.L. and Mukherjee, D. (2009), "Understanding offshoring: an analysis based on disintegration, location, and externalization advantages", *Journal of World Business*, Vol. 44 No. 3, pp. 250-61.
- Kerber, K.W. and Buono, A.F. (2004), "Leadership challenges in global virtual teams: lessons from the field", *SAM Advanced Management Journal*, Vol. 69 No. 4, pp. 4-10.
- Konradt, U. and Hoch, J. (2007), "A work roles and leadership functions of managers in virtual teams", *International Journal of E-Collaboration*, Vol. 3 No. 2, pp. 16-35.
- Kotter, J.P. (1995), "Leading change: why transformation efforts fail", *Harvard Business Review*, Vol. 73 No. 2, pp. 59-67.
- Lagerstrom, K. and Andersson, M. (2003), "Creating and sharing knowledge within a transnational team: the development of a global business system", *Journal of World Business*, Vol. 38, pp. 84-95.
- Leonard, B. (2011), "Managing virtual teams", *HR Magazine*, June, pp. 39-42.
- Lipnack, J. and Stamps, J. (2000), *Virtual Teams: People Working across Boundaries with Technology*, John Wiley & Sons, New York, NY.
- Lunnan, R. and Barth, T. (2003), "Managing the exploration vs exploitation dilemma in transnational bridging teams", *Journal of World Business*, Vol. 38 No. 2, pp. 110-26.
- Malhotra, A., Majchrzak, A. and Rosen, B. (2007), "Leading virtual teams", *Academy of Management Perspectives*, Vol. 21, pp. 60-70.
- Martins, L.L., Gilson, L.L. and Maynard, M.T. (2004), "Virtual teams: what do we know and where do we go from here?", *Journal of Management*, Vol. 30 No. 6, pp. 805-35.
- Maznevski, M.L. and Chudoba, K.M. (2000), "Bridging space over time: global virtual team dynamics and effectiveness", *Organization Science*, Vol. 11, pp. 473-92.
- Montoya, M.M., Massey, A.P. and Lockwood, S.N. (2011), "3D collaborative virtual environments: exploring the link between collaborative behaviors and team performance", *Decision Sciences*, Vol. 42 No. 2, pp. 451-76.
- Montoya-Weiss, M.M., Massey, A.P. and Song, M. (2001), "Getting it together: temporal coordination and conflict management in global virtual teams", *Academy of Management Journal*, Vol. 44, pp. 1251-62.
- Morgeson, F.P., Scott DeRue, D. and Karam, P.E. (2010), "Leadership in teams: a functional approach to understanding leadership structures and processes", *Journal of Management*, Vol. 36 No. 1, pp. 5-39.
- Pauleen, D.J. (2003), "Leadership in a global virtual team: an action learning approach", *Leadership & Organization Development Journal*, Vol. 24 No. 3, pp. 153-62.

- Pawar, B.S. and Eastman, K.K. (1997), "The nature and implications of contextual influences on transformational leadership: a conceptual examination", *Academy of Management Review*, Vol. 22, pp. 80-109.
- Pearce, C.L. (2004), "The future of leadership: combining vertical and shared leadership to transform knowledge work", *Academy of Management Executive*, Vol. 18 No. 1, pp. 47-57.
- Peters, L. and Karren, R.J. (2009), "An examination of the roles of trust and functional diversity on virtual team performance ratings", *Group and Organization Management*, Vol. 34, pp. 479-504.
- Peters, L.M. and Manz, C.C. (2007), "Identifying antecedents of virtual team collaboration", *Team Performance Management*, Vol. 13 Nos 3/4, pp. 117-29.
- Purvanova, K.R. and Bono, E.J. (2009), "Transformational leadership in context: face-to-face and virtual teams", *The Leadership Quarterly*, Vol. 20, pp. 343-57.
- Rapp, A., Ahearne, M., Mathieu, J. and Rapp, T. (2010), "Managing sales teams in a virtual environment", *International Journal of Research in Marketing*, Vol. 27, pp. 213-24.
- Robinson, A.D. and Harvey, M. (2008), "Global leadership in a culturally diverse world", *Management Decision*, Vol. 46 No. 3, pp. 466-80.
- Rosen, B., Furst, S. and Blackburn, R. (2006), "Training for virtual teams: an investigation of current practices and future needs", *Human Resources Management*, Vol. 45 No. 2, pp. 229-47.
- Schweitzer, L. and Duxbury, L. (2010), "Conceptualizing and measuring the virtuality of teams", *Information Systems Journal*, Vol. 20 No. 3, pp. 267-95.
- Sivunen, A. (2006), "Strengthening identification with the team in virtual teams: the leaders' perspective", *Group Decision and Negotiation*, Vol. 15, pp. 345-66.
- Sosik, J.J., Avolio, B.J. and Kahai, S.S. (1998), "Inspiring group creativity: comparing anonymous and identified electronic brainstorming", *Small Group Research*, Vol. 29, pp. 3-31.
- Svensson, G. and Wood, G. (2005), "The serendipity of leadership effectiveness in management and business practices", *Management Decision*, Vol. 43, pp. 1001-9.
- Vera, D. and Crossan, M. (2004), "Strategic leadership and organizational learning", *Academy of Management Review*, Vol. 29 No. 2, pp. 222-40.
- Wakefield, R., Leidner, D. and Garrison, G. (2008), "A model of conflict, leadership and performance in virtual teams", *Information Systems Research*, Vol. 19 No. 4, pp. 434-55.
- Wiesenfeld, B., Raghuram, S. and Garud, R. (2001), "Organizational identification among virtual workers: the role of need for affiliation and perceived work-based social support", *Journal of Management*, Vol. 27 No. 2, pp. 213-30.
- Yeung, A.K. and Ready, D.A. (2006), "Developing leadership capabilities of global corporations: a comparative study in eight nations", *Human Resource Management*, Vol. 34 No. 4, pp. 529-47.
- Yoo, Y. and Alavi, M. (2004), "Emergent leadership in virtual teams: what do emergent leaders do?", *Information and Organization*, Vol. 14 No. 1, pp. 27-58.
- Yukl, G. (1994), *Leadership in Organizations*, Prentice Hall, Englewood Cliffs, NJ.
- Zaccaro, S. and Bader, P. (2003), "E-Leadership and the challenges of leading e-teams: minimizing the bad and maximizing the good", *Organizational Dynamics*, Vol. 31 No. 4, pp. 377-87.
- Zigurs, I. (2003), "Leadership in virtual teams: oxymoron or opportunity?", *Organizational Dynamics*, Vol. 31, pp. 339-51.
- Zimmermann, A. (2011), "Interpersonal relationships in transnational, virtual teams: towards a configurational perspective", *International Journal of Management Reviews*, Vol. 13, pp. 59-78.

Further reading

- Harvey, M.G. (1996), "Developing leaders rather than managers for the global marketplace", *Human Resource Management Review*, Vol. 6 No. 4, pp. 279-304.
- Harvey, M., Novicevic, M. and Garrison, G. (2005), "Global virtual teams: a human resource capital architecture", *International Journal of Human Resource Management*, Vol. 16 No. 9, pp. 1583-99.

About the authors

Dr Debmalya Mukherjee is an Assistant Professor at the University of Akron, USA. He received his PhD in Business Administration from the University of Memphis. His research interests concern offshoring, organizational forms, and international strategic alliances. Dr Mukherjee's works have appeared or have been accepted in *Journal of Management Studies*, *European Management Journal*, *Asia Pacific Journal of Management*, *Journal of World Business*, and *Leadership & Organization Development Journal* among others. Dr Mukherjee also serves on the editorial review board of the *Leadership & Organization Development Journal*. Debmalya Mukherjee is the corresponding author and can be contacted at: dmukher@uakron.edu

Dr Somnath Lahiri is an Assistant Professor at the Illinois State University, USA. He received PhD in Business Administration from the University of Memphis. His research interests include international business and management with particular focus on firm dynamics in emerging economies. Dr Lahiri has published in *Asia-Pacific Journal of Management*, *Journal of World Business*, *Management International Review*, *European Management Journal*, *International Business Review*, *Business Horizons*, *European Business Forum*, *European Business Review*, *International Journal of Management*, and *Journal of International Management* among others.

Dr Deepraj Mukherjee is an Assistant Professor at the Waldorf College, USA. He received his PhD in Business Administration from the University of Memphis. His research focuses on the issues related to emerging market firms, international trade, and globalization. His work has appeared in *Applied Economics Letters*.

Dr Tejinder K. Billing is an Assistant Professor at the Rowan University, USA. She received her PhD in Organizational Behavior from the University of Memphis. Her research interests are in cross-cultural and cross-national differences in organizational behavior processes, with a focus on temporal orientation, organizational, coping, and work-family conflict. Her research papers have appeared in *Advances in International Management*, *Cross-cultural Management* and the *Leadership & Organization Development Journal* among others.

This article has been cited by:

1. Xusen Cheng, Shixuan Fu, Jianshan Sun, Yajing Han, Jia Shen, Alex Zarifis. 2016. Investigating individual trust in semi-virtual collaboration of multicultural and unicultural teams. *Computers in Human Behavior* 62, 267-276. [[CrossRef](#)]
2. Virpi Turkulainen, Kirsi Aaltonen, Päivi Lohikoski. 2015. Managing Project Stakeholder Communication: The Qstock Festival Case. *Project Management Journal* 46:6, 74-91. [[CrossRef](#)]
3. Ward van Zoonen, Toni G.L.A. van der Meer, Joost W.M. Verhoeven. 2014. Employees work-related social-media use: His master's voice. *Public Relations Review* 40:5, 850-852. [[CrossRef](#)]
4. Kai-Tang Fan Department of Business Administration, Lunghwa University of Science and Technology, Taoyuan, Taiwan Yuan-Ho Chen College of Management – Graduate School of Business and Management, Lunghwa University of Science and Technology, Taoyuan, Taiwan Ching-Wen Wang Department of Business Administration, National Chung Shin University, Taichung, Taiwan Minder Chen Martin V. Smith School of Business and Economics, California State University Channel Islands, Camarillo, California, USA . 2014. E-leadership effectiveness in virtual teams: motivating language perspective. *Industrial Management & Data Systems* 114:3, 421-437. [[Abstract](#)] [[Full Text](#)] [[PDF](#)]
5. M. Reza Hosseini, Nicholas Chileshe. 2013. Global virtual engineering teams (GVEs): A fertile ground for research in Australian construction projects context. *International Journal of Project Management* 31:8, 1101-1117. [[CrossRef](#)]
6. In Hyeock Lee, Eunsuk Hong, Laixiang Sun. 2013. Regional knowledge production and entrepreneurial firm creation: Spatial Dynamic Analyses. *Journal of Business Research* 66:10, 2106-2115. [[CrossRef](#)]
7. James C. Ryan, Syed A.A. Tipu. 2013. Leadership effects on innovation propensity: A two-factor full range leadership model. *Journal of Business Research* 66:10, 2116-2129. [[CrossRef](#)]
8. Tiffany Hui-Kuang Yu, Kun-Huang Huarng. 2013. Entrepreneurial firms' wealth creation via forecasting. *The Service Industries Journal* 33:9-10, 833-845. [[CrossRef](#)]
9. Ramón Rufin, Cayetano Medina, Manuel Rey. 2013. Building trust and commitment to blogs. *The Service Industries Journal* 33:9-10, 876-891. [[CrossRef](#)]
10. Irene Sanz-Mendiola, Angel Garcia-Beltran, Rosa María González Tirados. 2013. Evaluation and implementation of social responsibility. *The Service Industries Journal* 33:9-10, 846-858. [[CrossRef](#)]
11. Reyes Gonzalez, Juan Llopis, Jose Gasco. 2013. Information technology outsourcing in financial services. *The Service Industries Journal* 33:9-10, 909-924. [[CrossRef](#)]
12. Jaume Argerich, Esther Hormiga, Jaume Valls-Pasola. 2013. Financial services support for entrepreneurial projects: key issues in the business angels investment decision process. *The Service Industries Journal* 33:9-10, 806-819. [[CrossRef](#)]
13. Debmalya Mukherjee Department of Management, The University of Akron, Akron, Ohio, USA Susan C. Hanlon Department of Management, The University of Akron, Akron, Ohio, USA Ben L. Kedia Robert Wang Center for International Business Education and Research, The University of Memphis, Memphis, Tennessee, USA Prashant Srivastava Department of Marketing, The University of Akron, Akron, Ohio, USA. 2012. Organizational identification among global virtual team members. *Cross Cultural Management: An International Journal* 19:4, 526-545. [[Abstract](#)] [[Full Text](#)] [[PDF](#)]
14. Debmalya Mukherjee College of Business Administration, The University of Akron, Akron, Ohio, USA Robert W. Renn Fogelman College of Business and Economics, The University of Memphis, Memphis, Tennessee, USA Ben L. Kedia Robert Wang Center for International Business Education and Research,

The University of Memphis, Memphis, Tennessee, USA Deepraj Mukherjee Department of Business, Waldorf College, Forest City, Iowa, USA. 2012. Development of interorganizational trust in virtual organizations. *European Business Review* 24:3, 255-271. [[Abstract](#)] [[Full Text](#)] [[PDF](#)]