Chapter 17
The Mutual Influence of Technology and Leadership Behaviors

Tobias Heilmann
University of Zurich, Switzerland

Ulf-Dietrich Reips
Universidad de Deusto, & IKERBASQUE, Basque Foundation for Science, Spain

ABSTRACT
The present book chapter focuses on e-leadership, reviewing and discussing the latest developments in new (e-)leadership conceptions, such as transformational leadership and others. The authors propose alternative, albeit well-proven measures (e.g., MLQ 5X Short, Bass & Avolio, 1990) and an e-leadership tool called Virtual Team Trainer (VTT; Reips & Ito, 2007). The VTT uses the Online Leader Behavior Description Questionnaire (OLBDQ; Reips & Heilmann, 2009), assessing the Ohio State Leadership styles consideration and initiating structure. Alongside personality tests and group process development units that were built from the Existential Mapping Process (EMP; Horowitz, 1985), the tool contains modules that help leaders and team members to identify their Ohio State leadership styles. The VTT relates the results of the self- and other-questionnaires regarding team structure, development, and modifications and improvement of leadership skills. The VTT is available free for use via the iScience Server portal at http://iscience.eu.

DOI: 10.4018/978-1-4666-2172-5.ch017
E-LEADERSHIP: WHEN INFORMATION TECHNOLOGY SYSTEMS INFLUENCE AND ARE INFLUENCED BY LEADERSHIP BEHAVIORS, PROCESSES, AND OUTCOMES

Over the last decade, a new branch of leadership research, e-leadership, has significantly gained in importance (e.g., Avolio, Walumbwa, & Weber, 2009). The fundamental issue for leadership researchers and practitioners around the world regarding this subject is: how do information technology systems transform leadership styles, the processes of leadership, and the outcomes, at an individual and collective level – and vice versa – how are information technology systems influenced by leadership processes? Unfortunately, e-leaders often make extensive use of information technology systems without fully realizing their impact on organizational dynamics. The changes in information technology systems happen too fast for leadership research to keep up with, thus causing the understanding of e-leadership styles and their processes to lag behind new technological advancements. Furthermore, within leadership research and application, a number of new leadership theories have recently emerged: the so-called new leadership paradigms (Bryman, 1993). The current chapter defines this two-fold gap between theoretical and technological advancements and proposes solutions to close it.

According to Bass (1990), leadership is about the development and maintenance of relationships, the structuring or restructuring of situations and the perceptions and expectations of the members. Leadership is about affecting others and modifying the motivation or competence of team members. Indeed, information technology systems enable leaders to interact with individuals or teams from different departments or even from remote continents (e.g., Avolio & Kahai, 2003). However, in order to be a successful e-leader, it is important to understand that certain leadership behaviors may need to be modified to fit the mode of communication, as a virtual team member’s perception of the leadership may be different, as compared to the traditional face-to-face setting. E-leaders may need to use procedures that differ from traditional leadership processes.

The first section of this chapter reviews and discusses the most recent leadership conceptions. We will provide a review of so-called new leadership theories (Bryman, 1993), such as transformational leadership (Bass, 1985), authentic leadership (Avolio, Gardner, Walumbwa, Luthans, & May, 2004), charismatic leadership (e.g., Conger & Kanungo, 1998), and ethical leadership (Brown, Treviño, & Harrison, 2005).

In the second section we will then apply the new leadership conceptions – in particular transformational leadership – to virtual environments. The section refers to common questions in transformational e-leadership, while reporting the latest research studies on specificities of transformational e-leadership and differences between face-to-face- and transformational e-leadership-interaction. Particular attention is paid to possible pitfalls – for example, how do information technology systems impact individual outcomes, such as objective performance, in a transformational e-leadership process? Is trust of special relevance in the e-leadership process? Does anonymity influence the e-leadership process? Further, we will report on remaining methodological issues in the measurement of transformational e-leadership.

The third section of this chapter deals with technological developments that can be used to build and maintain virtual teams and to measure virtual team processes and outcomes. As a specific example of an applied e-leadership tool, we will present the Virtual Team Trainer (Reips et al., 2007), which is available via the iScience Server portal at http://iscience.eu. We will show that the assessment of transformational leadership produces a number of methodological restrictions. We decided that our e-leadership tool should assess the Ohio State Leadership (OSL) conceptions.