Cultural diversity and information and communication technology impacts on global virtual teams: An exploratory study

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Abstract

Modern organizations face many significant challenges because of turbulent environments and a competitive global economy. Among these challenges are the use of information and communication technology (ICT), a multicultural workforce, and organizational designs that involve global virtual teams. *Ad hoc* teams create both opportunities and challenges for organizations and many organizations are trying to understand how the virtual environment affects team effectiveness. Our exploratory study focused on the effects of cultural diversity and ICT on team effectiveness. Interviews with 41 team members from nine countries employed by a Fortune 500 corporation were analyzed. Results suggested that cultural diversity had a positive influence on decision-making and a negative influence on communication. ICT mitigated the negative impact on intercultural communication and supported the positive impact on decision-making. Effective technologies for intercultural communication included e-mail, teleconferencing combined with e-Meetings, and team rooms. Cultural diversity influenced selection of the communication media.
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1. Introduction

The use of information and communication technology (ICT), a multicultural workforce, and changing organizational models that increase worker participation have altered the nature of multinational corporations. One of the significant developments in organizational design is the introduction of team-based structures. An example is the virtual organization [14], of which virtual teams are the building blocks [69]. Members of these global virtual teams (GVTs) are often dispersed world-wide [41]. Advances in technology facilitate communication and the sharing of information among team members. By employing GVTs, organizations can combine the best expertise available for task performance regardless of geographic location, etc [37]. As a result, use of GVTs gives organizations access to a larger pool of skills, which can reduce development time.

Teams can increase organizational performance, lateral communication, and employee participation.

But in spite of their advantages, GVTs face greater communication challenges than face-to-face teams; traditional communication mechanisms are lost or distorted, and vocal and nonverbal communication cues are often missed [28]. In addition, with members in multiple time zones, logistics are more complex. As a result, building trust among team members and overcoming feelings of isolation and detachment becomes a challenge. Thus ICT use in global organizations increases teamwork complexity and may impact its effectiveness. Finally, the culturally heterogeneous composition of many teams adds to their complexity as cultural biases may distort communication.

Researchers are trying to determine how virtuality impacts team effectiveness [16,57], focusing on a variety of success predictors [18,22], such as conflict management [51], leadership [35], trust [32,33,34,58], communication [48], norm development [42,43], boundary crossing [20], creativity [53,54], team size [5], control [60], and technology

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appropriation [44]. The effect of virtual team composition on performance seems very important; e.g., cultural diversity influences virtual team effectiveness [9]. Although the literature suggests that cultural diversity is a critical predictor of effectiveness, empirical findings that support this claim are rare [46,66]. Therefore, it is important to gain a better understanding of the effect of cultural diversity on team effectiveness and to understand how ICT mitigates or amplifies this influence [6,31].

2. Literature review

Culture is a complex, multidimensional construct that can be studied on several levels: international, national, regional, business, and organizational. Each individual is influenced by a wide range of cultural factors: ethnic, organizational, and national [17,60]. Commonly used definitions of cultural diversity include racial, sexual, organizational, professional, and national heterogeneity. Cultural diversity is here defined as heterogeneity of national cultures of team members; an individual's national culture is considered to be that of his or her country of residence.

Culture has been defined as ''the collective programming of the mind which distinguishes the members of one group or category of people from another'' [29]. Two important frameworks of cultural dimensions are those of Hall [26] and Hofstede [29]. These define culture according to a small number of dimensions in which each culture varies, but neither of these frameworks seems sufficient to capture the complexity of culture. One of the weaknesses of a dimensional approach is the underlying assumption that few dimensions can explain beliefs and values. Studies in IS have focused on three or four dimensions and have rarely used qualitative ethnographic methods to discover the significant components of culture. However, individuals from different cultural backgrounds communicate and make decisions differently [1] and their verbal and nonverbal communication styles differ [24]. But there is a paucity of articles in this area. In 2002, Myers and Tan wrote a paper [52] that focused on national culture in IS research and initiated a call for IS researchers to conduct more in-depth case studies and ethnographies of the relationship between ICT and culture. They noted that only two studies out of 36 they had found used ethnographic methods. Our study attempted to add to this body of knowledge and we focused on the link between culture and ICT.

Very little previous empirical research on (dispersed) virtual teams has addressed cultural diversity [32]. Researchers have identified differences in *technology use* and *perception of task technology fit* between eastern and western cultures. Lee [39] found that patterns of e-mail use vary (probably due to power distance). Massey et al. [47] found significant differences in the perception of task technology fit between virtual team members from the United States, Asia, and Europe. On the other hand, no significant influence of

cultural diversity on trust was found in virtual teams [32]. Since cultural diversity has been assumed to critically impact team effectiveness [21], and aspects of diversity are likely to be amplified in the virtual setting [30], these findings call for explanation. One hypothesis is that cultural diversity in decreased in the virtual setting.

It is evident that input variables such as group composition have both direct and mediated impacts on group outcomes [19,55]. Previous studies of global face-to-face teams have suggested that cultural diversity has both a positive and negative influence on team effectiveness. Likewise, research into the influence of heterogeneous composition on team effectiveness in face-to-face teams produced mixed results [25]. Earley and Mosakowski, for instance, found that highly heterogeneous teams and highly homogeneous teams exhibited high levels of productivity, while moderately heterogeneous teams had lower levels. Other studies that compared heterogeneous and homogeneous teams concluded that diversity increased effectiveness [12,13]. The results of these studies indicated that cultural diversity increased creativity due to a wider range of perspectives, more and better ideas, and less ''groupthink,'' and that cultural diversity therefore could increase performance [49]. In the long run, heterogeneous teams outperformed homogeneous teams in identifying perspectives on a problem and generating alternatives [68].

On the other hand, heterogeneous face-to-face teams experience higher process losses than homogenous teams because of communication barriers. Since cultural diversity increases the complexity, conflict, confusion, and ambiguity of communication, it sets higher challenges for leaders and members. Previous studies have found that culturally diverse groups exhibit lower levels of integration and cohesion [67]; the lack of shared mental models inhibits understanding among team members. Furthermore, the most evident aspects of miscommunication are less accuracy in communication, slower speech, and translation problems. Barna [3] suggested that there are six reasons why intercultural communication fails to create mutual understanding: false assumptions of similarity, language, nonverbal misunderstanding, the presence of misconceptions and stereotypes, the tendency to evaluate, and the high anxiety that exists.

Research on co-located heterogeneous groups that use ICT revealed that heterogeneity and the use of technology had both advantages and disadvantages [2,7]. Chidambaram and Kautz focused on the extent to which electronic meeting systems help define common ground; they found that some electronic meeting system structures affected diversity—reducing or increasing its impact. For example, the anonymity feature strongly reduced negative aspects of diversity, such as stereotyping, while strongly increasing participation and the meeting quality. The simultaneity feature decreased distortion in communication and collusion; it strongly increased the number of alternatives, the quality of the process and the decision. The electronic recording and display feature strongly decreased distorted