Intelligent Virtual Assistant’s Impact on Technical Proficiency within Virtual Teams

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ABSTRACT

Information-systems development continues to be a difficult process, particularly for virtual teams that do not have the luxury of meeting face-to-face. The research literature on this topic reinforces this point: the greater part of database systems development projects ends in failure. The use of virtual teams to complete projects further compounds these failures. However, recent developments in intelligent virtual assistants (IVAs), such as Siri, Cortana, or Watson, have created opportunities to automate the systems-development process and improve success rates. Specifically, the use of a virtual assistant possessing key knowledge about database systems development can increase virtual team member technical proficiency in project-based skills. In addition, a virtual assistant can contribute to the development of higher-quality virtual team projects—in this case, database management systems. This observational study found that while the result of statistical analysis was not quite significant, teams that used the IVA did develop higher-quality team projects.

KEYWORDS

Information Systems Development, Intelligent Virtual Assistant, Technical Proficiency, Virtual Environments, Virtual Team Effectiveness, Virtual Teams

INTRODUCTION

Research has shown that many information systems development projects end in failure. Warkentin, Moore, Bekkering, and Johnston (2009) state that up to 80% of all systems-development projects fail for a variety of reasons, including that the system was not developed on time, system development went over budget, and the system developed did not meet the planned project’s criteria. Similarly, Ditmore (2013) reports found that more than 40% of large IT development projects fail; and a Standish group study that found only 6.4% of these large IT projects succeeded. There are many reasons for these dramatic failure rates, but team collaboration was found to be common to several of the studies. This factor in common suggests that virtual teams make this process even more difficult due to time, culture, and communication barriers.

Members of a virtual team interact primarily through electronic communications. They can be within the same building or across the world. In theory, virtual teams can greatly improve innovation, through collaboration and communication among people with varying expertise and perspectives. However, huge potential barriers to achieving these synergies include differences in culture and norms that prevent shared meaning, information overload, leadership and language issues, differences in technologies that prevent effective communication, and issues of trust and relationships. These challenges also suggest that using a virtual digital assistant may enhance the development process.

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by providing expertise in development knowledge areas, without the barriers of culture, language, and communication differences inhibiting the development process.

An interesting study by Gladden (2014) suggests that artificial-intelligence agents (e.g., a digital assistant) can manage virtual teams effectively by mediating the teams in several important dimensions. A digital assistant can communicate with members of virtual teams across the globe, regardless of time zone; relay messages; and update schedules. In addition, a digital assistant can learn about the cultures within virtual teams, and can adapt to each unique culture to improve communications and shared meaning among the team’s members. For example, if one team member is German, the digital assistant can learn a culture dimension such as high individualism, and communicate with that person in appropriate language that reflects relevant cultural norms. If another team member is Japanese, the digital assistant can translate collectivist cultural norms into the appropriate language and message (e.g., possibly emphasizing the welfare of the team in achieving the goals and mission of the project). According to Gladden (2014), researchers have been able to “perceive, understand and display diverse cultural behaviors through a choice of actions, language, vocal intonation, gaze, posture, gestures, emotions, personality, the expectations for the kinds of social interactions that occur between individual in a particular social relation and other unwritten rules of human cultures” (p. 530).

Therefore, intelligent virtual assistants (digital assistants) are potentially capable of learning the behaviors and communication patterns of team members. They can also act as a repository of enormous amounts of information on prior studies or, in the case of software development, applications, database programs, and other knowledge important to the project. In theory, they should be able to manage the teams effectively and provide vast amounts of relevant information to the teams when needed, in a much more efficient manner, thus greatly improving the success of the team project.

LITERATURE REVIEW

Impact of Culture on Virtual Teams

Cultural differences within virtual teams can stem from differences in national cultures, as well as regional, work, or socioeconomic cultures. According to Chang, Hung, and Hsieh (2014), people from various countries come to a virtual team with different languages, communication skills, work ethics, and approaches to problem solving. These authors confirm that cultural adaptation has a positive impact on virtual team performance, as people from differing cultures learn about each other and develop effective ways to communicate and collaborate. They also suggest that effective leadership in virtual teams is necessary to keep the teams on task, and to monitor and enhance team behaviors, communications, and processes. El-Sofany, Hassan Alwadani, and Alwadani (2014) similarly suggest that success factors in virtual intercultural teams include good communication, cultural adaptation, technical competence, and good leadership and task focus delivered face-to-face early on.

Impact of Communication on Virtual Teams

Morgan, Paucar-Caceres, and Wright (2014) looked at the impact of various forms of communication on virtual team performance. They discuss issues of context in the ability of team members to understand the true intent of communications, as well as to build trust and relationships within communications over time. The ability to create shared meaning in a virtual environment is challenging, given varying assumptions, cultural backgrounds, and personal experiences. However, the researchers also found that in a prior study of eighty software development teams, successful team outcomes occurred with adherence to the task and mission, establishing processes at the beginning of the project, and (surprisingly) communicating less. This implies that success factors include clear roles and tasks, efficient communication, and development of common norms, values, and standards. The authors also reiterated findings in other studies that the development of trust and relationships, as well as some degree of face-to-face interactions to develop those relationships, contribute to more
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