Chapter 6.13
Meta–Analysis Research on Virtual Team Performance

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ABSTRACT

The results from prior studies on the effectiveness of virtual teams (VTs) are ambiguous and show that few studies have built upon previous findings to build a substantiated body of work. In this article, the authors attempt to remedy this by performing a meta-analysis on VT research. Powell et al.'s (2004) framework of VTs is used as a prototype and twelve variables and their relationships identified as the basis for this study. Twenty empirical studies are identified and used to validate the variables statistically. From this, seven variables are preserved and form the final framework. Future research directions and managerial implications are explained.

INTRODUCTION

Computer networks are changing the way that people and organizations work and communicate (Anderson & Shane, 2002). This has led to a trend where increasingly teams do not work face-to-face but interact via a computer-mediated communication system (Driskell & Radtke, 2003). The trend is towards virtual teams (VTs)—a different way of working.

A VT is a temporary gathering of individuals who are connected through information technologies working across time and space to finish a goal (Geyskens et al., 1996). VT members are typically "geographically dispersed," "lack shared social context" and "lack face-to-face encounters" (Sarker et al., 2003). Morris et al. (2002) defined "VTs" as "the creation of a team to meet a spe-

cific objective or complete a specific task. They are goal-oriented, temporary and disbanded once the goal has been achieved" (p. 23). Lipnack and Stamps (2000) defined VTs as "a group of people who work interdependently with a shared purpose across space, time, and organization boundaries using technology" (p. 18). For the purpose of this research, "VTs" are defined as "teams with a small group of people who work through computer communication technology for a specific purpose without face-to-face meetings."

VTs can improve business performance by reducing cost, shortening cycle time, increasing innovation, and facilitating leveraged learning (Lipnack & Stamps, 2000). With the growing complexity of global business activities, VTs are an obvious solution, but, when comparing the effectiveness of VTs and traditional face-to-face teams, the effectiveness (i.e., performance and satisfaction) of VTs have been found to be comparatively lower (Warkentin et al., 1997; Valacich & Sarker, 2002). Therefore, improving the effectiveness of VTs is a crucial issue for global managers.

However, past literature shows "poor cumulation" (Rosenthal, 1991) of effectiveness of studying VTs. For example, Ancona and Caldwell (1992) explored the relationships between diversity and performance in VTs. Anderson et al. (2002) found that net-centricity contributes to the performance of VTs. Driskell and Radtke (2003) studied the relationships between constructs, such as cohesiveness, status processes, counter-normative behaviour and communication against the performance of VTs. Balthazard et al. (2004) examined the relationships between performance of VTs and expertise, extraversion and group interaction styles. Rarely has newer work built upon older and hence, there is a real need to aggregate previous results and show a holistic view of variables which impact on the effectiveness of VTs.

Accordingly, the main aim of this study is to integrate the results from past studies about VTs and propose a framework for evaluating the effec-tiveness of VTs through the use of meta-analysis. In response to the constant pressures of change in the business environment, this framework is able to provide the potential means for organizations to evaluate the effectiveness of VTs. In addition, the framework will assist organizations in considering the issues surrounding the design, implementation, and management of VTs.

RESEARCH METHODOLOGY

Meta-analysis is a research method that combines many results of individual studies and applies statistical analysis to retrieve the quantitative and general conclusions (Hunter & Schmidt, 1990). It is suitable for examining causal relationships and theories, and can be used to build theoretical frameworks.

Meta-analysis has several potential strengths. Firstly, meta-analysis is able to represent a "big picture" by increasing the sample size to strengthen statistical power. Thus, the results of analysis could yield more generalizable conclusions than individual studies. Secondly, meta-analysis enables the researchers to become familiar with a specific topic quickly and efficiently. Finally, meta-analysis can identify the inconsistencies between different studies and test hypotheses about factors that may be moderators or mediators.

THE BASIC PRINCIPLE OF META-ANALYSIS

The basic principle of meta-analysis is to calculate the effect size for each study, transform these to a common metric and integrate them to obtain an average effect size. Once the mean effect size is calculated, it can be expressed in terms of a standard normal distribution by dividing by the standard error of the mean. A significance value (P-Value) can also be retrieved. Alternatively, the significance of the mean effect size can be judged

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