



A dimensional model for describing and differentiating project teams

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Received 26 August 2016; received in revised form 15 February 2017; accepted 2 April 2017

Available online xxxx

Abstract

Most of the existing studies focus on using taxonomic structures to define different project team types; however, little consensus has been reached on the classification. This paper holds that greater consensus could be achieved by using a dimensional scaling approach to describe project teams. Based on the last 35 years of project team research, a conceptual model is presented for describing and differentiating project teams according to seven dimensions: skill differentiation, interdependence, authority differentiation, team size, team longevity, virtuality, and sharedness. In addition, we illustrate the interrelationships among the dimensions. By using this model, we further explain how the 18 types of project teams discussed in the literature could be more effectively presented. Implications of the model as well as its limitations and possible future research directions are also explored.

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Keywords: Dimensional model; Project teams; Interdependence; Differentiation

1. Introduction

In the increasingly fast-changing 21st century, project teams represent a primary vehicle for conducting work in contemporary organizations (Furst et al., 2004; Gardner et al., 2012; Haas, 2006) because they serve as flexible structures that promote expertise sharing and knowledge building (Chiocchio and Essiembre, 2009). Well-known examples of successful project teams include the team that developed Macintosh and the teams that undertook the 2010 Shanghai World Expo construction project. Research on project teams has in parallel increased and grown in diversified directions (Hollenbeck et al., 2012). Although the diversity of research provides a rich ground for theory building, it also creates certain challenges. Perhaps one of the biggest challenges is how to

integrate and aggregate findings across studies when each study defines project teams differently.

Given this context, it would be advantageous to develop a system that helps researchers describe more precisely what kind of project team is the target of study. Traditionally, taxonomic structures were employed to classify project teams. This classification method has the great limitation of being dichotomous. If a project team is not one type, then it must be another type. This approach produces difficulties for researchers trying to define project teams in their studies. Therefore, little consensus has been reached through using taxonomic structures.

This paper aims to develop a dimensional scaling approach for describing and differentiating project teams. Dimensional scaling allows us to quantify teams along continuous dimensions and avoid either/or categorizations (Nunnally, 1967). Specifically, in this paper, we first review the project team literature to show the seven dimensions used in our conceptual model. Second, we illustrate the relationships between dimensions. Third, we demonstrate how the 18 project team types used in previous

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studies can fit into our model. Finally, we discuss our model's applications in knowledge accumulation, theory building, and managerial practices.

2. Literature review

2.1. Literature search and inclusion rule

A search of the existing literature was conducted using the search terms “project teams” more broadly and in the “construction industry” more specifically. Peer-reviewed journal publications between 1981 and 2016 were identified by searching the five most prominent management journals (the *Academy of Management Journal*, *Academy of Management Review*, *Administrative Science Quarterly*, *Management Science*, and *Organization Science*), and the four prominent journals in the construction industry (*International Journal of Project Management*, *Journal of Construction Engineering and Management*, *Journal of Management in Engineering*, and *Project Management Journal*).

The search generated 77 journal articles that met one or more of the following search criteria:

- (1) The articles were related to team dimensions;
- (2) The articles were related to project team literature.

To ensure we included all important and relevant journal articles in the study, we expanded the search by using the reference section of the above articles to further identify a total of 32 papers published in, to name a few, the *British Journal of Management*, *Harvard Business Review*, *Journal of Management*, *Journal of Organizational Behavior*, *MIS Quarterly*, *Small Group Research*, and *The Academy of Management Perspectives*.

A total of 109 publications were analyzed to determine the dimensions of our model, the interrelationships among the dimensions, and how to explain different project teams using our model.

2.2. Taxonomic approach

Over the past 35 years, the literature has presented a variety of taxonomic structures for describing and differentiating project teams. Here we first review research that describes project teams and some of their instrumental performance traits more broadly. Then we review taxonomic research that seeks to further differentiate different types of project teams.

For description, Sundstrom et al. (1990) defined teams into four types: advice/involvement teams, production/service teams, action/negotiation teams, and project/development teams. They used specialization, external integration, and work cycles to compare the four types of teams: specialization and external integration of advice/involvement teams were minimal, and work cycles could be brief or long, while specialization and external integration of action/negotiation teams were high and work cycles were usually brief; the contexts of production/service teams demanded low specialization and high external integration,

and work cycles were typically repeated or continuous; project/development teams were described as groups with high specialization and low external integration, and one work cycle was often the team life span.

Cohen and Bailey's (1997) reviewed about four types of teams (work, parallel, project, and management teams) and identified team composition (diversity) and group processes (internal and external communication) as well as autonomy and group psychosocial traits (shared group understanding) as critical team-level factors affecting team performances. They argued that external communication was a characteristic that distinguished project teams from work, parallel, and management teams. The authors also pointed out that while autonomy was a positive predictor of work team performance, under some circumstances, it was “neither a desired or beneficial characteristic of project teams” (p. 261). Another of their key conclusions was that functional diversity in some cases negatively affected project team performance. In their sample of project team research, internal communication was found to be positively associated with team performance. What's more, they suggested considering the impacts of shared team understanding on project team performance.

Similarly, Brown and Eisenhardt (1995) focused on team composition (functional diversity, gatekeeper, team tenure), and group processes (internal and external team communication) as they related to project teams in product development settings. Effective product development teams were characterized by cross-functional team composition, the presence of “gatekeepers”, moderate team tenure, high internal and high external communication. Edmondson and Nembhard (2009) also reviewed project teams in new product development (NPD). In addition to cross-functionality, internal and external interdependence as attributes of NPD teams, Edmondson and Nembhard (2009) identified virtuality as having become an important attribute of project teams due to advances in communication technology.

For differentiation, Katz (1982) broke down R&D project teams into three types: research, development, and technical service project teams. While the above review highlighted internal and external communication as distinct attributes of project teams, Katz found that levels of internal and external team communication were contingent on project characteristics. For example, research project teams reported high levels of external communication, while development and technical service project teams maintained high levels of internal communication (ibid.).

According to the forms of external activity that a team engaged in, Ancona and Caldwell (1992a) categorized project teams for product development as ambassadorial, technical-scouting, isolationist, or comprehensive teams. Ambassadorial teams carried out external communication with managers in the organizational hierarchy to seek protection, support, and resources. Comprehensive teams not only focused on ambassadorial activities but also coordinated and negotiated with outsiders. However, this type of teams had less internal cohesiveness than pure ambassadorial teams. Technical-scouting teams coordinated and negotiated with outsiders as well as gathered information about the outside market, technology, and competition. But this type of teams paid the price for the large amounts of outside information, which complicated internal interaction and could induce internal conflicts. In contrast,

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