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Exploring team performance in high-tech industries: Future trends of building up teamwork

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ABSTRACT

This study proposes a model based on coopetition theory drawn from economics literature to explain the formation of team agility and performance. In the proposed model, team performance and team agility are affected by collectivism, team politics, transformational leadership, and transactional leadership via the mediation of coopetition and team empowerment. Team performance is also impacted by team agility. Empirical testing of this model, by investigating team personnel in information technology (IT) organizations, confirms the applicability of coopetition among IT working teams. Based on this study's empirical findings, managerial implications for building up teamwork and research limitations are provided.

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1. Introduction

Business organizations to date face dramatically turbulent and volatile competitive threats in the global market [1]. Effectively coping with such unexpected threats and taking advantage of the threats as opportunities lay heavily upon team agility and its effect on performance [1–3]. Team agility is defined as the aptitude of a team to quickly respond to changes in a market environment [4,5] and achieve successful exploration of competitive bases (e.g., speed, flexibility) through team integration, which facilitates the team to effectively change in response to customers' varying demands or market crisis [1,6]. The agility concept was popularized in manufacturing in the early 1990s and was soon extended into the broader business context, evolving notions of the agile competitor [7], agile business relationships [8], agile supply chains [4], agile enterprises [9], agile decision support systems [10], and most recently the team agile workforce (e.g., Van Oyen, Gel, & Hopp [11]).

Team agility is important, because it helps achieve a number of business benefits such as supporting the strategic objectives of cost, speed, time, quality, responsiveness, and variety (e.g., Hopp & Van Oyen [12]; Swafford et al. [5]). Unfortunately, when it comes to management actions that facilitate team agility in order to improve team performance, the literature is highly limited to untested prescriptions [3]. To complement the shortage in the previous literature, this study applies the coopetition theory to explore team agility formation and its effect on team performance. The inclusion of both elements in coopetition (i.e., cooperation and competition) as key mediators in this study can avoid a partial emphasis on one mediator at the expense of another, thus facilitating a full range of understanding about the formation of team agility and team performance. This study complements previous studies that have discussed group performance and different mediators such as group potency (e.g., Jung & Sosik [13]; Stajkovic, Lee, & Nyberg [14]) and goal alignment (e.g., Doolen, Hacker, & Van Aken [15]).

The interpersonal relationships among team members are comprised of two elements: cooperation and competition. If both elements exist, then the relationship between the members is considered coopetition [16]. Rooted from game

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theory (e.g., Lado, Boyd, & Hanlon [17]), cooptation explains behavior, that is, how individuals perform behavior that enables them to reduce costs and optimize benefits associated with interpersonal relationships. Specifically, competition is transformed to so-called 'cooptation' only when competitive individuals try to cooperate with their collective interests at the same time (e.g., Baruch & Lin [18]; Gnyawali & Park [19]; Lin, Wang, Tsai, & Hsu [20]; Luo, Slotegraaf, & Pan [21]; Luo [22]; Rusko [23]; Tsai [16]). For instance, if competitive individuals (e.g., golf players, frontline staff from different banks) do not perceive and recognize any collective interests among themselves, then cooptation does not exist among them. Similarly, strong cooperation may appear *without significant competition* (e.g., charity volunteers striving to relieve people in stricken areas, team members of a relay race). In these examples, cooperation does not show up with competition simultaneously, thus leading to different results from those caused by cooptation. It would be incomplete, according to cooptation theory, if either cooperation or competition was missing in research. It implies that team members can cooperate for common interests and interact in rivalry due to conflicting interests. It is very common in IT industries that team members work together for a team's success, and at the same time, they also compete with each other for individual resources, budgets, and rewards.

Previous literature has applied cooptation to the issues of individuals or groups (e.g., Bagshaw & Bagshaw [24]; Bengtsson & Kock [25]; Bengtsson, Eriksson, & Wincent [26]; Rusko [23]; Luo, Slotegraaf, & Pan [21]; Luo [22,27]; Samaddar & Kadiyala [28]; Samieh & Wahba [29]; Shih, Tsai, & Wu [30]; Shih, Hu, & Chen [31]). An example found in previous research is that people assigned to compete with each other continued to compete even after the task conditions were changed in such a way that cooperation was in their best interest [32,33]. Another example seen often in high-tech industries is that, even though team members work as part of an interdependent team to promote discussion, collaboration, and information sharing, they may still be exposed to a competitive reward structure and thus reveal certain competition within the team (e.g., Kilduff et al. [33]). According to an industry survey, competition between individuals on the same team can temporarily increase motivation [34], despite its negative influence on team performance in the long run. Nevertheless, many high-tech firms apply competitive systems to reward individuals with high performance and/or impose sanctions on those with low performance (e.g., Kilduff et al. [33]), while simultaneously encouraging people to work together on the same team. That may be a reason why, under some circumstances in business practice, people enjoy both cooperation and competition even in the same workplace or group [35].

This study provides critical contributions that substantially differ from previous research in three important ways. First, a majority of previous research related to interactions among team members focuses on either competition or cooperation, which often results in a one-sided understanding of team members and their team outcomes (e.g., Passos & Caetano [36]; Richter, Scully, & West [37]). Cooptation in a team is worth studying to avoid managerial misunderstanding, since simultaneous cooperation and competition among members often complicate teaming and its outcomes. By assessing the team outcomes (i.e., performance) based on

cooptation, this study generates an in-depth understanding concerning the key determinants of team agility and performance.

Second, this study extends cooptation as a mediator to team empowerment as another mediator, which jointly helps explain the formation of team agility and performance. Indeed, most previous research related to cooptation considers cooperation and competition as major mediators, but often neglects other mediators. This study demonstrates how team empowerment and cooptation jointly influence team performance.

Third and lastly, while some prior empirical studies have examined cooptation at the firm level (e.g., Tiessen & Linton [38]), this study is one of the few to use primary survey data collected from employees to test the determinants and outcomes of cooptation and team empowerment based on team-level analyses. Research supports and extends the notion that cooptation is important not only among intra-organizational partners, but also among inter-team parties (or inter-organizational parties), and these interactions are key for teams' or firms' long-term viability [21].

2. Research model and hypotheses

This study proposes a research model (see Fig. 1) based on the cooptation theory to explain the formation of team agility and team performance. The model hypothesizes that cooptation and empowerment mediate the relationship between team agility, team performance, and their antecedents. Although few previous studies have attempted to discuss empowerment by including either cooperation or competition (e.g., Desivilya-Syna [39]; Kirkman & Shapiro [40]), it is important for this study to complement previous studies by simultaneously examining both cooptation and empowerment as mediators in a single model setting. Indeed, while cooptation represents the frequent interaction among team members (i.e., member–member relationship), team empowerment reveals how team members are more decisive on their own and less dependent on formal team leaders (i.e., member–leader relationship) [41], suggesting their unique roles to jointly explain the formation of team performance. For example, previous literature has illustrated that, without a thorough examination of both cooperation and empowerment and their impact on team productivity (or performance) (e.g., Kirkman & Shapiro [40]), our understanding of these factors remains limited, and group initiatives directed at strengthening team performance and agility will remain unjustifiable and based on blind faith.

Following the above rationale about empowerment, this study uses the cooptation theory as a foundation to expand the scope of our research model. In addition to firm level, the cooptation theory has been also widely used at the individual level [26,42,43] or group level (e.g., Lu, Tjosvold, & Shi [44]). In terms of a work team, the cooptation theory is a way of defining a strategic game of interpersonal interaction that models the whole 'interplay range' in detecting interpersonal interdependence in the team [45]. It also refers to a theoretical structure of interpersonal interdependence where cooperation and competition are simultaneously present and intertwined.

Based on the concept of interpersonal interdependence where cooperation and competition are intertwined, we then introduce collectivism and team politics as a team climate

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