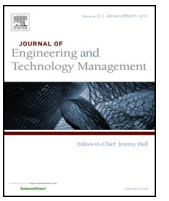
J. Eng. Technol. Manage. xxx (2016) xxx–xxx

Contents lists available at ScienceDirect

Journal of Engineering and Technology Management



Evaluating team performance and the mediating role of customer knowledge development: An absorptiv1e capacity framework

Chieh-Peng Lin*, Zi-Ting Yang, Her-Ting Huang

Institute of Business & Management, National Chiao Tung University, Taiwan

ARTICLE INFO

Article history:
Received 10 March 2016
Received in revised form 30 September 2016
Accepted 10 October 2016

Keywords:
Customer knowledge development
Empathy
Shared cognitive map
Survey research

ABSTRACT

Drawing upon an absorptive capacity framework, this study explains team performance from a mediating perspective of customer knowledge development (CKD), which represents a learning process based on customer interaction. The model is tested using the data of innovation or R&D teams from large high-tech firms in Taiwan. The test results show that competence development (i.e., activities that enhance the diversified skills of team members) and pro-customer empathy (i.e., a transference of customers' problems and emotions) positively relate to team performance via the full mediation of CKD. The positive relationship between shared cognitive map and CKD is negatively moderated by collectivism.

Innovation is regarded as the first and foremost collective endeavor for making new things that are useful (Cooke and Morgan, 1994; Tsai et al., 2013). Due to the high cost and high failure rates of innovation (Joshi and Sharma, 2004), a team responsible for innovation should maintain a high performance for which the team must construct its customer knowledge development (CKD) in the innovation. CKD is defined as a team's iterative learning process of innovation by absorbing and experimenting the knowledge and ideas about customer anticipations, perceptions, preferences, and needs, which entail relatively low costs and reduce the strategic risks within the innovation process (Cooper, 1998; Tsai et al., 2013). The greater the customer knowledge is developed by a team for detecting what customers think and how they feel (i.e., stronger CKD), the greater the likelihood that there will be quality decision-making and high team performance (Gordon et al., 1993).

Team performance is defined as the extent to which a team accomplishes its mission or achieves its goal. The technology management literature has verified that CKD is critical for team performance and decision quality in innovation settings (de Araújo Burcharth et al., 2015), because customer knowledge is a key source of continuous improvement and innovation (Lesser et al., 2000; Lin and Germain, 2003; Paquette, 2005; Tsai et al., 2013). Despite its importance, CKD does not just appear out of thin air. It needs to be managed together with a team's ability to identify, assimilate, and exploit information from a business environment (Nzitunga, 2015). Unfortunately, little research has explored how CKD can be constructed based on such ability even though the positive effects of CKD on various innovation outcomes have been widely discussed, thus leading to an important research gap regarding what ability facilitates CKD. To fill this research gap, this study applied one of the most important and relevant theories – absorptive capacity theory – to explore how a team's CKD is constructed to eventually influence its decision-making and performance. The absorptive capacity theory is appropriate and effective for

* Correspondence to: 118, Sec. 1, Jhongsiao W. Rd. Taipei, Taiwan.
E-mail address: jacques@mail.nctu.edu.tw (C.-P. Lin).

http://dx.doi.org/10.1016/j.jengtecman.2016.10.001
0923-4748/

visualizing CKD in depth, because the theory elaborates how teams identify outside opportunities, absorb external knowledge from customer-centric views, manage it internally, and obtain new knowledge for innovation (Cohen and Levinthal, 1990a,b).

Absorptive capacity theory elaborates a team's various abilities to obtain external knowledge and to use that knowledge effectively. The aspect of absorptive capacity provides a useful overarching framework for examining CKD and its relevant variables across innovation teams, because absorptive capacity properly reflects a team's innovative capabilities at understanding, assimilating, and experimenting external knowledge (Cohen and Levinthal, 1990a,b) in order to realize what customers truly want. Unlike "learning-by-doing," which allows innovation teams to get better at what they have already done, absorptive capacity enables them to try something more innovative than what they used to do (Lane et al., 2006).

The literature on innovation has found that a team's absorptive capacity has a significant effect on its decision-making (Busse and Marcus Wallenburg, 2011) and performance (Akgun, Lynn, & Reilly, 2002; Lane et al., 2006). For instance, Quinn et al. (1996) suggested that the foundation of a group's competitive advantage for achieving high performance is to make good use of its absorptive capacity. Similarly, it has been found that absorptive capacity significantly contributes to decision quality (e.g., Lopez-Garcia and Montero, 2012; Seo et al., 2013) and innovation performance at the team level (Curado et al., 2015). Unfortunately, these studies and much other similar research (e.g., Liao et al., 2007) did not explore how to open the black box of a team's absorptive capacity for managing innovation teams more effectively. Without thorough research on absorptive capability, our understanding about the innovation teams' performance will remain highly limited, and management initiatives directed at achieving high team performance will remain unjustifiable based on blind faith (e.g., overconfidence on technical solutions and a lack of analyses of customers as exemplified by Dougherty) (Dougherty, 1992). Hence, the purpose of this work is to clarify the relationship between decision quality, team performance, and their determinants based on multiple dimensions of absorptive capacity (i.e., opening the black box), which has been relatively sparse in literature.

This work differs from previous literature in several important ways. First, while many studies have discussed about CKD based on theories of social capital or social interaction purely from a marketing angle (e.g., Gebert et al., 2003; Huang and Chen, 2009), this study is one of the few to examine CKD based on an absorptive capacity framework. Previous literature has suggested that the development of customer social capital in traditional marketing is enacted at the individual level for understanding customers (Griffith and Harvey, 2004), and thus it may not be appropriately applied to team-level CKD for organizational management. Instead, absorptive capacity brings collective efforts into full play for seeking to empathize with customers' latent needs, creating superior solutions to those needs through the iterative experimentations on the solutions. As a result, a team's CKD based on absorptive capacity can precisely align with target customers in its markets and consequently explain team performance well.

Second, this work contributes to the literature by including a fresh moderator—collectivism—to explain the relational strengths between CKD and its predictors in a more accurate fashion. Collectivism implies that carrying out social roles and obligations and avoiding failures (or gaffs) are important sources of career success, making psychological and emotional restraints important as ways to accomplish one's social obligations (Oyserman and Lee, 2008). As a result, collectivism draws a line between different teams in terms of the perception of self (Oyserman and Lee, 2008), leading the collectivism itself to be a boundary condition for a team's knowledge development. Previous literature pointed out that people are inclined towards a team's work and development at different degrees, depending heavily on their collectivism (Hauschildt and Konradt, 2012). For that reason, critical and interesting results may accrue from our examining the moderating effect of collectivism, which refers to the different degrees to which team members are motivated or constrained by the norms of a team and orient themselves towards the team's development (Hauschildt and Konradt, 2012; Jackson et al., 2006). Collectivism is also important in innovation contexts, because previous literature has suggested a key moderating role of collectivism in the innovation process (e.g., Rauch et al., 2010).

Third, although the existing literature has examined team innovation using an absorptive capacity framework or other theoretical perspectives, this study complements the literature (e.g., Lee et al., 2014) by deriving CKD and its three key antecedents (e.g., competence development) grounded in the absorptive capacity theory to explain team performance. For example, examining the interaction between absorptive capacity and network position based on the theories of absorptive capacity and social networking, Tsai (2001) did not cover how such absorptive capacity can be applied to derive detailed antecedents so as to reveal the respective effects of the antecedents on team performance. As another example, despite the empirical evidence that teamwork quality is an important success factor of innovative projects based on the team dynamics theory, Hoegl and Gemuenden (2001) called for the necessity of exploring the major antecedents of teamwork quality and performance. Similarly, whereas Kirkman et al. (2004) explained team performance based on the empowerment theory from a leader's perspective, they suggested the inclusion of potential antecedents related to customers, a team's communication, and decision making for better explaining team performance in innovation contexts.

Fourth, this study is a pioneer that simultaneously examines both decision quality and team performance using absorptive capacity in innovation contexts. Meissner and Wulf (2014) highlighted the equally important role of decision quality as a part of team performance in a team's strategic process (Meissner and Wulf, 2014), because decision quality can streamline the key flow of new ideas and application within innovation teams (Sarin and McDermott, 2003). Previous research on innovation has called for a close examination of the antecedents affecting decision quality and performance (Gajendran and Joshi, 2012; Meissner and Wulf, 2014; Swatdikun, 2013). Organizational scholars have concurred with the conclusion that closed and biased decision-making inhibits the performance of innovation teams (Kratzer et al., 2004) – that

Please cite this article in press as: C.-P. Lin, et al., Evaluating team performance and the mediating role of customer knowledge development: An absorptive capacity framework, J. Eng. Technol. Manage. (2016), http://dx.doi.org/10.1016/j.jengtecman.2016.10.001