DOES SELF-EFFICACY CONTRIBUTE TO KNOWLEDGE SHARING AND INNOVATION EFFECTIVENESS?
A MULTI-LEVEL PERSPECTIVE

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Abstract

The process of generating innovative ideas includes a number of complex tasks. Firms are increasingly turning to group project and teamwork structures to perform these tasks. Simply focusing on group members’ engagement is insufficient to account for the ability of the firm to face challenges and the need to coordinate the efforts of hundreds of workers. Thus, group efficacy is used to represent a group’s collective estimate of its own ability to perform a task objective. Based on multilevel theory, groups are inherently multilevel phenomena. Although the theoretical development of group efficacy has been discussed, few studies have used multilevel analyses to empirically test efficacy beliefs. This study integrates efficacy beliefs at the individual and group levels into a more comprehensive research framework. The findings show that, at the individual level, both learning orientation and affective commitment influence self-efficacy, and further impact knowledge sharing behavior. At the group level, this study confirms the mediation effects of entrepreneurial orientation on the relationship between group efficacy and innovativeness effectiveness. Training not only affects self-efficacy, but also moderates the relationship between learning orientation and self-efficacy. The findings also show that group knowledge sharing moderates the relationship between entrepreneurial orientation and innovation behavior.

Keywords: Self-efficacy, Group efficacy, Knowledge sharing behaviour, Entrepreneurial orientation, Innovation effectiveness
1. INTRODUCTION

Group efficacy represents a group’s collective estimate of its own ability to perform a task objective (Bandura, 1986). Efficacy belief may be defined as future-oriented judgments about an individual’s capabilities to meet given situational demands (Pan & Zhao, 2007). When group members have more confidence in their team level abilities, they are more willing to devote extra cognitive and behavioral effort to collaborative activities (Rico, Sanchez-Manzanares, Gil, & Gibson, 2008). In particular, Chen et al. (1998) argue that efficacy beliefs are quite appropriate for the study of innovation management, since the relationship between efficacy beliefs and behavior may be influenced by the challenging situations of risk and uncertainty. In spite of theoretical and applied importance of innovation, understanding of the antecedents and processes of group innovation effectiveness remains limited (Nsendauluka & Shee, 2009).

Unlike measuring an individual’s perceptions of the entire group or organization, self-efficacy evaluates one’s perceptions of the work situation. Studies pertaining to self-efficacy have focused on the degree of certainty that individuals have regarding their ability to achieve performance targets and whether the targets are achieved (Lee & Farh, 2004). They have explored the contributions of self-efficacy to individual problem solving capability (Rico, et al., 2008). However, there are few studies of how to stimulate self-efficacy through individual motivation or management policy (Baron & Morin, 2010). The role of self-efficacy may result from the interaction of personal and group factors, such as leadership style, culture difference, organizational climate and the diversity of team members (Bandura, 1986; Barbosa, Gerhardt, & Kickul, 2007; Choi, Price, & Vinokur, 2003; Katz-Navon & Erez, 2005). Accordingly, this study treats training and goal clarity as variables that contextualize internal motivation (learning orientation and affective commitment) for efficacy beliefs.

Groups are inherently multilevel phenomena (Klein & Kozlowski, 2000). A multilevel view of groups recognizes that group members can impact team-level process in a “bottom-up” manner, while organization and situational factors can have a “top-down” influence on individual-level processes and behavior within groups. Bandura (1997, 2000) further suggests that self-efficacy might not be solely a phenomenon at the individual level of analysis, but may also be applicable to several levels within an organization. Although the integration of theoretical development of self-efficacy and group efficacy has been discussed, empirical testing of these two constructs has generally been limited (Ilgen, Hollenbeck, Johnson, & Jundt, 2005). For example, previous research regards efficacy belief as a driver of performance either at the individual or group level, but they have not been addressed empirically using multilevel analysis (Chen & Bliese, 2002; Dolen, Ruyter, & Carman, 2006; Katz-Navon & Erez, 2005; Wang & Lin, 2007). In addition, the relation between group efficacy and group outcomes is not as robust as the association between self-efficacy and individual performance when using employees as samples (Kumar & Uzokurt, 2011). Moreover, the operationalization of group efficacy is not well established, due to the neglect of consensus (Jung & Sosik, 2003).

The main purpose of this paper is to investigate efficacy beliefs at both the group level (group efficacy) and individual level (self-efficacy). At the individual level, this study employs learning orientation and affective commitment as internal motivations that directly affect a group member’s self-efficacy. At the group level, this study investigates the mediating effects of entrepreneurial orientation on the relationship between group efficacy and innovation effectiveness. In exploring the interaction of individual and group level from the “top down”, this study explores the influences of management support, including training and goal clarity, on self-efficacy and their influences on the relationship between internal motivation and self-efficacy. Further, this study also investigates the influence of group efficacy on knowledge sharing behavior. Finally, this study examines the moderating effects of team knowledge sharing on entrepreneurial orientation, and the innovation effectiveness relationship, and the influence of group self-efficacy on group efficacy, in a “bottom-up” manner.
2. HYPOTHESES DEVELOPMENT

Self-efficacy reflects an individual’s self-perceptions of whether he/she has the necessary skills or ability to convert those skills to achieve a desired outcome (Brazeal, Schenkel, & Azriel, 2008). Self-efficacy stems in part from a paucity of personal or related experiences which are associated with the tasks and that affect individual feelings of competency and expectations (Kickul, Wilson, Marlino, & Barbosa, 2008). Self-efficacy is likely to be developed from past performance, vicarious experience, verbal persuasion, and emotional arousal (Bandura, 1997). Cox et al. (2002) further argue that self-efficacy is influenced by a number of external and internal factors. Accordingly, this study explores the antecedents of self-efficacy using internal motivation, including learning orientation and affective commitment, and external management support, including training and goal clarity.

A learning orientation is an internal mind-set that motivates an individual to develop his/her competence (Dweck, 2000). An individual with learning orientation believes that ability is malleable, and thus prefers to acquire new knowledge continuously (Dweck, 2000). As suggested by Nonaka and Takeuchi (1995), learning orientation represents an important internal drive for enactive mastery. Employees with a learning orientation are likely to accumulate experience of successful mastery (van Beuningen, de Ruyter, & Wetzels, 2011). Based on social cognition theory, enactive mastery experiences have been identified as the most influential source of self-efficacy (Bandura, 1986). Thus,

\[ H_1: \text{Group members with higher levels of learning orientation have higher levels of self-efficacy.} \]

Affective commitment is defined as the relative strength of an individual’s identification with involvement in a particular organization (Mowday, Porter, & Steers, 1982). Affective commitment is positively correlated with a number of beneficial work behavior and intentions, such as work performance (Riketta & Landerer, 2002). The level of affective attachment influences an individual’s willingness to invest more time and effort in the task, and thus strengthens more personal and experiential processes (Baron & Morin, 2010). The personal process plays an important role in an individual’s development of self-efficacy in given task domains (Kickul, et al., 2008). As such, efficacy beliefs can be outcomes through the accumulations of problem solving capabilities (Rico, et al., 2008).

\[ H_2: \text{Group members with higher levels of affective commitment toward the group are inclined to have higher levels of self-efficacy.} \]

According to organizational support theory (Eisenberger, Huntington, Hutchison, & Sowa, 1986), when the firm cares about employees’ well-being and values their contributions, employees may perceive high levels of firm support. Employees can be externally motivated by a firm’s support and strategies (Zampetakis, Beldekos, & Moustakis, 2009). Training can be regarded as management support from firms to enhance employee capabilities (Brazeal, et al., 2008). Earley (1994) and Gibson (2001) posit that self-focused and group-focused training affects self-efficacy and performance. Besides, training programs increase confidences in terms of perceived behavioral control. An individual’s perception of the existence of means to control threats influences efficacy beliefs (Rhee, Kim, & Ryu, 2009).

\[ H_3: \text{Employees receiving sufficient training in the task have higher levels of self-efficacy than those receiving insufficient training.} \]

Zhao et al. (2005) find that training provides examples of the working styles of successful entrepreneurs and thus helps students develop their own psychological coping strategies. In a similar vein, training in the workplace can provide a platform for group members to anticipate possible problems and figure out solutions. Baron and Morin (2010) further suggest that individuals who perceive that training has great utility relative to their work are more likely to control work. When the firm provides sufficient training to the group members, if they are highly learning oriented, they may acquire greater capability and knowledge to solve problems and maintain task motivation, leading to greater strength of self-efficacy.
H1: Training moderates the relationship between learning orientation and self-efficacy.

Goal clarity is defined as the extent to which objectives are explicit and known (Sawyer, 1992). Clear goal defines the target of the firm, and thus provides guidance to the employees related to their obligations and responsibilities. The more employees understand the goals and expectations of their firms, the more they feel a sense of obligation and are inclined to devote more effort to their tasks (Zampetakis, et al., 2009). van Beuningen et al. (2011) finds that self-efficacy and role clarity are significantly correlated.

H2: Employees who clearly understand the goals of the task have higher levels of self-efficacy.

Goal clarity results in positive outcomes which facilitates involvement of employees (Gibson & Earley, 2007). Affective commitment results in making sustained efforts when faced with difficulties, and integrating errors and feedback (van Beuningen, et al., 2011). When the group members have affective commitment toward the task, they tend increase their participation and put extra effort into the task. If group members voluntarily expend more effort on a task, and clearly understand that its goal is attainable, their confidence in being able to finish the task will be increased.

H3: Goal clarity moderates the relationship between affective commitment and self-efficacy.

Group efficacy evolves from information and experiences combined through patterns of communication and a behavioral repertoire (Gibson & Earley, 2007). Group efficacy is found to be influenced by both individual-level variables such as optimism and group-level variables of group attributes and past team performance (Watson, Chemers, & Preiser, 2001). Lee and Farh (2004) suggest that self-efficacy and group efficacy are positively related but independent constructs. Individual members who believe that they personally could achieve task objectives are likely to share that confidence as their group develops group efficacy (Gibson & Earley, 2007).

H4: Group members with higher levels of self-efficacy perceive higher levels of group efficacy.

The need for studying the group’s role in the sharing of knowledge becomes apparent, in view of the reality that firms are increasingly moving toward a group-based structure in response to growing competition (Suh, Bae, Zhao, Kim, & Arnold, 2009). Knowledge sharing behavior is defined as sharing of task-relevant information and suggestions among group members (Bartol, Liu, Zeng, & Wu, 2009). Self-efficacy could be treated as a self-motivational source, when an individual judges whether his/her contribution is positively related to firm performance (Kumar & Uzkurt, 2011). Self-efficacy can also predict knowledge sharing activities, such as exchanging team-related information and interpreting performance feedback (Rico, et al., 2008). Ye et al. (2006) and Tohidinia and Mosakhani (2010) further proposed that perceived self-efficacy positively influences knowledge sharing attitude.

H5: Group members with higher levels of self-efficacy are more likely to engage in knowledge sharing behavior.

This study proposes that the group level group efficacy may have effects on individual level knowledge sharing behavior. The logic of this hypothesis follows the theoretical arguments of Lindsley et al. (1995). They suggest that team-level activities create a context in which constructive individual behaviors are expected, thus leading to the cross-level effects. Tasa et al.(2011) apply this argument and indicate that elevated group confidence could also be expected to increase an individual’s likelihood of engaging in interpersonal behaviors. Marks (1999) further argues that groups with high levels of group efficacy are able to use their shared knowledge in order to adapt their behavior patterns to novel task settings.

H6: Groups with higher levels of group efficacy tend to have higher levels of knowledge sharing behavior.

Entrepreneurial orientation represents a series of processes, methods, styles, practices and decision making activities that support entrepreneurial opportunities (Kropp & Zolin, 2005). The role of entrepreneurial orientation as a mediator of the relationship between group efficacy and innovation
effectiveness is supported, in part, by links between (1) group efficacy and entrepreneurial orientation, (2) group efficacy and innovation effectiveness, and (3) entrepreneurial orientation and innovation effectiveness.

Regarding the first link, groups with high efficacy tend to be more entrepreneurially oriented. High group efficacy leads to quicker counter-responses to competitor actions, more aggressive strategies, and persistence in achieving high targets (Ilia, Bonaiuto, Pugliese, & Rekom, 2011). Since a group’s entrepreneurial behavior is strongly related to the exploitation of entrepreneurial opportunities, it might encounter difficulties in ambiguous situations. Groups high in group efficacy may be more willing to explore and experiment with new perspectives, because they are able to take actions needed to gain control over critical strategic events (Gibson & Earley, 2007).

Innovation effectiveness represents to the extent to which the unit accrues benefits from the innovation (Choi & Yoon, 2009). With regard to the second link, according to Gibson (2001), group efficacy is related to group level performance. The positive influence of group efficacy on innovation has been confirmed by previous studies. Kumar and Uz Kurt (2011) contend that an individual high in high self efficacy is more likely to see the positive potential outcomes that might accrue from a new venture, and thus pursue the goals vigorously. Kahai et al. (2003) also argue that group efficacy is associated with the motivation of group members, especially for innovative tasks.

For the third link, a firm with an entrepreneurial orientation makes efforts to be innovative in product markets and proactively innovate (Miller, 1983; Zhou, Yim, & Tse, 2005). Proactive toward new opportunities cultivates capacities that enable the firm to create products ahead of the recognition of existing customers (Frishammar & Hörte, 2007). Entrepreneurial orientation provides support for the development and exploitation of innovation activities (Brazeal, et al., 2008).

\[ H_{10}: \text{Entrepreneurial orientation mediates the relationship between group efficacy and innovation effectiveness.} \]

Knowledge sharing processes help group members to broaden knowledge resources and to reduce redundant learning (Zhang, Tsui, & Wang, 2011). Firms may thus distribute existing knowledge or create new knowledge at a lower cost and more speedily than competitors (Nonaka & Takeuchi, 1995). When the groups have decision making capability and coordination mechanisms, if they are entrepreneurially oriented, they can adapt their behavior patterns to novel task settings and thus enhance their innovation effectiveness.

\[ H_{11}: \text{Group knowledge sharing behavior moderates the relationship between entrepreneurial orientation and innovation effectiveness.} \]

3. RESEARCH DESIGN AND METHODOLOGY

3.1 Survey administration

Figure 1 shows research model of this study. Data collection is carried out using a cross-sectional mail survey. Survey data for New Product Development (NPD) projects conducted by the Technology and Service Centre of the Industrial Technology Research Institute (ITRI), the Small and Medium Enterprise Incubation Centre and 12 additional university Incubation Centres is used. Such NPD project groups are entrepreneurially oriented (Frishammar & Hörte, 2007) and can produce innovation (Durmuşoğlu & Barczak, 2011). Project managers are both the leaders and immediate supervisors of the NPD project team members. 25 NPD project managers participate in the study. After two rounds of telephone follow up, a total of 145 NPD project group members complete the surveys. Of the 145 employees identified, four do not fill out the questionnaire completely.

The sample is a highly homogeneous one in terms of size of firms and type of task performed. All companies are small with 3 to 12 employees and all are engaged in the NPD process (Keller, 1992). The average number of group members evaluated by each leader is 5. In total, the sample consists of 120 men (85%) and 21 women (15%). Approximately 45% are between 36 and 45 years of age, and
more than 50% have more than 10 years of working experience. Approximately 85% of the respondents work in high-technology firms, 63% worked in firms that have been in business for less than five years. More than 65% of the firms operate on a comparatively small scale, with revenues of less than 6 million USD.

![Figure 1](image-url)  
*The Research Framework of this study*

### 3.2 Measures

The scale purification process is conducted following Churchill (1979; 2002). Except for innovation effectiveness, all the items used a seven-point Likert scale with anchors from strongly disagree (1) to strongly agree (7). To assess group members’ learning orientation, this study uses three items adapted from Kohli et al. (1998) (Cronbach’s α =0.88). Affective commitment is measured with five items adapted from affective commitment questionnaire (Allen & Meyer, 1990) (Cronbach’s α =0.82). Self-efficacy is measured by four items adapted from Webster and Martocchio (1992) to measure (Cronbach’s α=0.86). Knowledge sharing behavior is measured by five items adapted from Davenport and Prusak (1998).

For team-level measures, training is measured by three items adapted from Schmidt (2007) (rwg = 0.94; ICC [1] =0.59; ICC[2] =0.75). Goal clarity is measured by five items adapted from Sawyer (1992) (rwg =0.83, an ICC [1]= 0.11, and an ICC[2]= 0.41). Group efficacy is measured by six items adapted from Bandura (1997) (rwg =0.93, an ICC [1]= 0.43, ICC[2]= 0.76). Three subscales are used to measure entrepreneurial orientation: innovativeness (rwg =0.86, an ICC [1]= 0.59, ICC[2]= 0.75), risk-taking (rwg =0.88, an ICC [1]= 0.46, ICC[2]= 0.70), and proactiveness (rwg =0.90, an ICC [1]= 0.59, ICC[2]= 0.78). Innovation effectiveness is the ratio of sales generated by NPD to the expenditures in producing those new products. This study asks each group leader to provide the information of sales generated by NPD and the expenditures in producing those new products.

For aggregation of team-level variables, following Chan (1998), this study calculates self-efficacy at team level as the aggregated mean score for all group members on each of the self-efficacy items at the individual level. This study also calculates team knowledge sharing behavior as the aggregated mean score for all team members on each of the five knowledge sharing behavior items. In team-level
analyses, this study controls for group size, and average group tenure, following previous research (Jehn, Rispens, & Thatcher, 2010; Shin, Kim, Lee, & Bian, 2012). At the individual level, this study controls for gender and participant’s tenure with the team.

4. RESEARCH RESULTS

This study uses hierarchical linear model (HLM; Bryk and Raudenbush, 1992). Table 2 summarizes the results from HLM analyses. Two control variable (tenure with the team and gender) and two main effect variables (learning orientation and affective commitment) are entered as the level 1 predictor. Results support both hypotheses: group members with positive learning orientation are significantly more likely to have higher levels of self efficacy ($\gamma=0.32$, $p<0.001$), and group members high in affective commitment toward the group are significantly more likely to have higher levels of self efficacy than those low in affective commitment ($\gamma=0.12$, $p<0.01$). Learning orientation and affective commitment account for 38 percent of the within-group variance (70%) in self-efficacy ($R^2=0.39$). Thus, hypothesis 1 and hypothesis 2 are supported.

To test hypothesis 3 and hypothesis 4, this study entered the group-level predictor, training toward the task, in the equations for the intercept ($\beta_0$) and the slope of learning orientation ($\beta_1$) on self-efficacy. This study uses grand mean centers for level 2 predictors, and also uses group mean centers for level 1 predictors to avoid potential confounding factors when testing for cross-level moderation (Hoffmann & Gavin, 1998). The results support hypothesis 3 ($\gamma=0.22$, $p<0.01$), indicating that group members receiving sufficient training toward the task are inclined to have higher levels of self efficacy. The results for the moderation effect (hypothesis 4) are also significant ($\gamma=0.19$, $p<0.05$). Variance components analysis indicates that the addition of direct and interaction effects of training toward the task account for 37% ($R^2=0.21$) of the between-groups variance (30%) in self-efficacy. These results support hypothesis 3 and hypothesis 4. Figure 2 depicts the interaction.

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<thead>
<tr>
<th>Variables</th>
<th>Self-efficacy</th>
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<td>$\gamma$</td>
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<td><strong>Level 1 predictors</strong></td>
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<td>Fixed effects</td>
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<td>Intercept</td>
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<td>Tenure with the team</td>
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<td>Internal drive</td>
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<td>Learning orientation</td>
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<td>Affective commitment</td>
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<td>$R^2$ within-group</td>
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<td><strong>Level 2 predictors</strong></td>
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<td>Team tenure</td>
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<td>Training</td>
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<td>Goal clarity</td>
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<td>$R^2$ between-group</td>
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<td><strong>Cross-level integrations</strong></td>
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<td>Training* Learning orientation</td>
<td>0.19*</td>
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<td>Goal clarity*Affective commitment</td>
<td>0.25**</td>
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Table 2 Results of HLM Analyses Predicting Self Efficacy
To test hypotheses 5 and 6, this study adds the variance variable as a level predictor and as a predictor of the individual level slope for affective commitment and self-efficacy, respectively. The results show that goal clarity does not have a direct influence on self-efficacy ($\gamma=0.11$, $p>0.05$). The results also show that goal clarity moderates the relationship between affective commitment and self-efficacy ($\gamma=0.25$, $p<0.01$). Figure 3 illustrates the interaction.

As shown in Table 3, employees with higher levels of self-efficacy are more likely to engage in knowledge sharing behavior ($\gamma=0.21$, $p<0.01$). Self-efficacy accounts for 46% of the within-group (25%) variance in knowledge sharing behavior ($R^2=0.46$). In addition, group efficacy significantly predicts knowledge sharing behavior ($\gamma=0.73$, $p<0.001$). The between-groups model indicates that group efficacy accounts for 10% of the between groups variance (75%) in knowledge sharing behavior ($R^2=0.10$). Hypotheses 8 and 9 are supported.
Hypotheses 7, 10, and 11 focus on group level outcome. This study computes the average self-efficacy and knowledge sharing behavior within each team. This study uses ordinary least square (OLS) regression to address these four hypotheses. This multiple methods approach, where HLM is used for the nested models and OLS is used for the pure team-level model, is similar to the approach used by Marrone et al. (2007). Control variables (team size and team tenure) are entered and followed by the predictor (self-efficacy). As shown in M1 of Table 4, self-efficacy has a positive impact on group efficacy ($\beta=0.45$, $p<0.001$). The results provide support for hypothesis 7, that group members with higher levels of self efficacy tend to have higher levels of group efficacy.

As shown in Table 4, group efficacy has a positive impact on entrepreneurial orientation (see M2, $\beta=0.52$, $p<0.001$). Group efficacy also has a positive influence on innovation effectiveness (see M3, $\beta=0.48$, $p<0.001$). Entrepreneurial orientation positively affects innovation effectiveness (see M4, $\beta=0.62$, $p<0.001$). The effects of group efficacy on innovation effectiveness become non-significant (see M5, $\beta=0.15$, $p>0.05$), when entrepreneurial orientation is included in the equation ($\beta=0.54$, $p<0.001$). In sum, entrepreneurial orientation fully mediates the effect of group efficacy on innovation effectiveness, providing support for hypothesis 9.

Hypothesis 11 focuses on how the effect of entrepreneurial orientation on innovation effectiveness is moderated by knowledge sharing behavior. This study uses a two stage analysis in which the main effects are entered and the interactions entered in the second stage. The main effects result in a
significant adjusted $R^2$ of 0.40 (M5 of Table 4). In addition, as shown in M6 of Table 4, the interaction term (entrepreneurial orientation * team knowledge sharing) is significant ($\beta=0.65$, $p<0.05$) and the $\Delta R^2$ is statistically significant ($\Delta R^2=0.05$, $p<0.01$). The moderating role of knowledge sharing behavior on the relationship between entrepreneurial orientation and innovation effectiveness is confirmed, providing support for hypothesis 10. Figure 4 illustrates the interaction.

![Figure 4](image-url)

**Figure 4** Cross-Level Moderating Effect of Team Knowledge Sharing on the Relationship between Entrepreneurial Orientation and Innovation Effectiveness

5. CONCLUSIONS AND SUGGESTIONS

The specific contributions of this study could be described as follows. First, the findings of prior studies that explain the antecedents of self-efficacy in general may fail to explain the external source of self-efficacy. More specifically, the antecedents of self-efficacy from management efforts to facilitate group members’ efficacy belief (individual level) are ignored. This study addresses the observation of Choi et al. (2003, p. 369) that “potential impacts of social contexts (group factors) have not yet been systematically investigated (p.369).” The integration of internal and external factors for self-efficacy provides a more comprehensive framework. Second, this study contributes to the study of efficacy beliefs by using multilevel analyses. As suggested by Hasan and Ali (2007), examining cross-level effects is a promising way to advance efficacy belief research. By using cross-level analyses within a work group context, we are able to discover a series of group process that may be missed, by examining individual and group levels efficacy beliefs.

Third, the findings have particularly significant theoretical implications, because this study extends research on efficacy belief by examining it in a teamwork environment. This study suggests that entrepreneurial orientation mediates the group efficacy-innovation effectiveness relationship. This result addresses Choi et al. (2011)’s statement that “organizational practices and systems cannot substitute for employees’ committed effort and participation in….” (p.118). In addition, the confirmed interaction effects indicate that the effects of entrepreneurial orientation on innovation effectiveness are contingent on the level of team knowledge sharing. This result is consistent with Lumpkin and Dess’ (1996) suggestion that “we encourage research efforts directed at understanding the dimensionality of the entrepreneurial orientation and the role of contingency and configurationally approaches in explaining its relationship to performance (p.165).” By exploring the moderating effect of team knowledge sharing, this study provides a more thorough understanding with regard to the relationship between entrepreneurial orientation and innovation effectiveness.

Fourth, the majority of these results sheds light on group characteristics and management process, ignoring the influence of self-efficacy on group efficacy (Cho & Chang, 2008). This study confirms that an individual’s self-efficacy affects group efficacy. Group efficacy may be not simply the
summation of self-efficacy. These findings also complement previous studies who assume that self-efficacy and group efficacy are homologous, such as Chen & Bliese (2002). In conclusion, this study applies cross-level analysis to investigate the cross level interaction between individual and group levels. Our theoretical model sets the stage for further research in understanding how self-efficacy at the individual level increases group efficacy and enhances innovation effectiveness at the group level.

This study likewise provides important insights and practical strategies for practitioners who manage groups. First, when forming a group, a group member’s learning orientation and affective commitment should be two important criteria for group leaders in recruiting members. Group members with a learning orientation and affective commitment tend to develop a correspondingly higher degree of belief in their own ability to achieve a task objective, thus determining his/her task performance. Accordingly, training includes providing relevant courses or knowledge to enhance group members’ capability, while goal clarity represents conveying expectations and other feedback, and stressing connections between group members’ efforts and achievement. As Tierney and Farmer (2011) suggest, group leaders are instrumental for employee efficacy development. Thus, efficacy building may be warranted by providing relevant resources from management or group leaders.

Second, from a multilevel perspective, this study provides evidence for the influence of both individual and group level factors, and their interactions on innovation effectiveness. Group leaders have to know that group efficacy is distinct from self-efficacy, even though they are highly correlated. Though group characteristics and group processes may also impact group efficacy, self-efficacy cannot be ignored when forming groups. Further, if group members have enough time and leeway to experiment with problem solutions without penalty, they can have greater authority to implement innovative and creative work and thus have better innovative effectiveness. Thus, group leaders should not only provide resources for groups to be innovative, but also provide encouragement conducive to efficacy beliefs.

Knowledge sharing does not happen automatically in a group, and the group’s leader plays an important role in making it happen (Srivastava, Bartol, & Locke, 2006; Zhang, et al., 2011). Group leader should shape group members’ efficacy beliefs which facilitate group members collectively acquiring, and exchanging information with each other. More importantly, group members may perceive that knowledge sharing would hurt their individual interests. Group leaders should encourage group members to transcend their self-interests for group benefit. For example, group leaders could use transformational leadership. Since transformational leader offers group members something more than working for self gain, group members may exert extra effort in fulfilling the strategic objectives of the group (Pillai & Williams, 2004).

REFERENCES


