

Investigating indirect influences of team composition on team innovation: Qualitative evidence from parallel teams in Malaysian organizations.

By:

Maznah Abdullah

Graduate School of Business, Curtin University, Western Australia.

maznah.abdullah@postgrad.curtin.edu.au

maznah761013@yahoo.com

Professor Mohammed Quaddus

Graduate School of Business, Curtin University, Western Australia.

mohammed.quaddus@gsb.curtin.edu.au

Exploring indirect influences of team composition on team innovation: qualitative evidence from parallel teams in Malaysian organizations.

ABSTRACT: This article reports qualitative findings on how team composition influences team innovation through 'team interaction processes' and 'emergent states', which can be described by the 'team reflexivity' and 'team innovation climate' variables. Given that team composition generally related to 'bio-demographic' and 'task-related' diversities, this study explores which diversity is related to team reflexivity and innovation climate. Data were collected through semi-structured interviews with members of parallel teams in Malaysian organizations. Content analysis of the interview transcripts revealed that bio-demographic diversity affects only one of the four dimensions of the innovation climate, which then influences team reflexivity. Task-related diversity was found to have a direct influence on team reflexivity, but was not related to any dimension of the innovation climate.

Keywords: Team processes, group processes, group dynamics, team innovation.

INTRODUCTION

An innovation idea at a departmental or an organizational level was definitely generated, proposed and put into implementation by a team (Hulsheger, Anderson & Salgado 2009). Hence, as more and more organizations are turning to team-based approaches to develop innovation, the attention given to identifying antecedents merely at an organizational level has been argued as putting the important roles of teams behind the scenes. This has led many researchers to redirect their focus to an identification of innovation antecedents at a team level (Anderson, de Drew & Nijstad 2004). One of the significant and most commonly studied team-level antecedents is team composition (Guzzo & Dickson 1996; Hollenbeck, DeRue & Guzzo 2004), which has been postulated to influence team innovation (see Cohen & Bailey 1997; Hulsheger et al. 2009; Stewart 2006) and team effectiveness (Gladstein 1984; Hackman 1987; Tannenbaum, Beard & Salas 1992; West, Borrill & Unsworth 1998).

Much of the research has focused on a direct relationship between team composition and team performance (Bunderson & Sutcliffe 2002; Pelled, Eisenhardt & Xin 1999). For example, member heterogeneity has been found to be influential on creativity and innovation (Albrecht & Hall 1991; Payne 1990; Triandis, Hall & Ewen 1965). Nevertheless, until now, this direct relationship is still being argued as inconclusive (Horwitz & Horwitz 2007; Jehn & Katerina 2004; Van Knippenberg & Schippers 2007; Webber & Donahue 2001). Recently, Antoni and Hertel (2009) have highlighted that researchers should not be too preoccupied with detecting direct relationships between antecedent factors and team

innovation. Instead, they advocate researchers demonstrate how and why those factors affect team innovation. In reality, team innovation does not result linearly from the antecedent factors (Bain, Mann & Pirola-Merlo 2001). Rather, literature suggests that team composition, that is, bio-demographic and task-related diversities have influencing effects on team innovation through 'interaction processes' and 'emergent states', which can be described by the variables of 'team reflexivity' for the first and 'team innovation climate' for the latter. However, there are two issues that need to be explored: 1) Are both diversities related to team reflexivity and team innovation climate? 2) Given that team innovation climate is comprised of four dimensions, are all of them related to the team diversities? This study provides an understanding of how team composition influences team innovation through team reflexivity and team innovation climate.

The research contexts for this study are parallel teams in Malaysian organizations. A parallel team is a team that 'exist in parallel with the formal organizational structure' and is 'used for problem-solving and improvement-oriented activities' (Cohen & Bailey 1997: 242), for example, Quality Circle (QC). This research context is briefed further under the Method section and the theories underpinning this study are explained in more depth under the Theoretical Background section, which follows.

THEORETICAL BACKGROUND

Innovation is the discovery of an idea, technology, or work process that is new to an organizational setting, and is followed by the implementation (Amabile 1988; Dougherty & Hardy 1996; Kanter 1988; Klein & Sorra 1996). As long as the idea is new to a department (Zaltman, Duncan & Holbek 1973) or adopted from outside a unit and organization (Kanter 1988; van de Ven 1986), both are considered as innovation. The latitude of innovation also covers the development and implementation of simple ideas that are related to improvements in daily work processes and work designs (Axtell, Holman, Unsworth, Wall, Waterson & Harrington 2000). Generally, there are two key elements of innovation: (a) creativity or the generation of a new idea, and (b) implementation of the new idea (Amabile 1988; Unsworth & West 1998; Unsworth 1999; West & Farr 1990; Wolfe 1994; Woodman, Sawyer & Griffin 1993). Team composition is the most commonly studied team variable (Guzzo & Dickson 1996; Hollenbeck et al.

2004) to influence team innovation (see Cohen & Bailey 1997; Hulsheger et al. 2009; Stewart 2006). The main concern of team composition is a diversity, which is looking at the extent to which the team members are similar or different due to demographic aspects such as gender, ethnicity, age, education, and experience (Jackson, May & Whitney 1995). Diversity has been categorized into two main categories. The first category is based on visible differences, for example, age and gender (Hicks-Clarke & Iles 2000). The second category is based on less visible characteristics such as the level of education or organizational tenure (Thatcher & Jehn 1998; Tsui, Egan & O'Reilly 1992; Williams & O'Reilly 1998). Recently, Horwitz and Horwitz (2007) named these two categories as bio-demographic and task-related.

Figure 1 below depicts a part of a heuristic framework by Cohen and Bailey (1997), which emphasizes that team composition influences team outcomes directly and indirectly through team interaction processes and psychosocial traits. Marks, Mathieu and Zaccaro (2001: 357) define team processes as 'members' interdependent acts that convert team inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing task work to achieve collective goals'. Team processes describe team interactions which are necessary for team innovation (Marks et al. 2001; Nijstad & de Dreu 2002; West 2002). They further explain that in an input-process-outcome (I-P-O) framework, team processes are viewed as a mediating mechanism linking team composition with team outcomes. Psychosocial traits were later redefined by Marks et al. (2001) as 'emergent states', (2001:357) defined as a 'construct that characterizes properties of the team that are typically dynamic in nature and vary as a function of team context, inputs, processes, and outcomes'. Emergent states concern the condition of a team which is likely to change according to the team's context. Both team processes and emergent states are not impervious to team input (Marks et al. 2001). This concept has been supported and proposed by many scholars—for example, Nijstad and de Dreu (2002), West, Hirst, Richter and Shipton (2004), and Antoni and Hertel (2009)—to be applied in team innovation research. Furthermore, the theories of team effectiveness are applicable in team innovation research, as Cohen and Bailey (1997) highlighted that team innovation is one of the dimensions for team effectiveness.

[Insert Figure 1 here]

Reflecting on the above theories in the team innovation research domain, team reflexivity has been suggested by West et al. (2004) as a variable to represent team interaction process. Team reflexivity is defined as 'the extent to which group members overtly reflect upon, and communicate about the group's objectives, strategies (e.g. decision-making) and processes (e.g. communication), and adapt them to current or anticipated circumstances' (West 2000: 3). Basically, it refers to the extent to which team members discuss task-related issues as well as their working effectiveness. As an interaction process variable, it is expected to mediate the relationship between diversity and team outcomes (Antoni & Hertel 2009; Marks et al. 2001; Williams & O'Reilly 1998).

Team climate for innovation is a social psychosocial variable that explains the conditions in teams (West 1990) that is related to innovation, which is operationalized as an emergent state in this study. The concept of team climate for innovation has been generally defined as shared perceptions at a team level of the extent to which the conditions in the team support and facilitate innovation (Anderson & West 1994). West (1990) proposed four dimensions of innovation climate at the team level: vision, participation safety, climate for excellence and support for innovation. 'Vision climate' is an 'idea of a valued outcome which represents a higher order goal and a motivating force at work' (West 1990: 310). Teams with clear objectives have more likelihood to develop new goals and appropriate methods of working because their efforts have focus and direction. 'Participation safety' is the climate which is characterized by a safe and comfortable feeling to participate and hence relates to active involvement in group interactions due to non-threatening trust and support (West 1990). 'Climate for excellence' is a 'shared concern with excellence of quality of task performance in relation to shared vision or outcomes, evidenced by evaluations, modifications, control systems and critical appraisals' (West 1990: 313). 'Support for innovation' is 'the expectation, approval and practical support of attempts to introduce new and improved ways of doing things in the work environment' (West 1990: 38). Although there could be many other

variables to measure team interaction processes and emergent states, team reflexivity and innovation climate have been frequently concluded to be directly related to team innovation.

METHOD

Research design

This study is exploratory in nature, and utilizes a qualitative approach. A qualitative approach was chosen due to the uncertain findings that seemed to arise from quantitative-oriented research into the relationship between team composition and team innovation (Cady & Valentine 1999). Furthermore, a qualitative approach is suitable for 'research areas for which existing theory seem inadequate' (Eisenhardt 1989: 548). A qualitative approach is expected to provide this research with more information on the examined topic which, so far, has been largely dominated by quantitative methods that use close-ended questionnaires which increase the likelihood of researcher bias (Randall & Gibson 1990). The extant literatures were reviewed with a view to comparing theories and findings from other researchers to support all the qualitative findings.

Sample for qualitative study

The samples for this study are the team members of the Innovative Creative Circle (ICC) in Malaysian organizations. ICC was introduced based on the concept of a Quality Circle (QC). Quality Circle in an organization is known as a parallel team type which consists of people from the same or different units who gather together to make improvements or solve problems in a unit or organization (Cohen & Bailey 1997). While the parallel team type is equally important as other team types in producing organizational benefits (see Glassop 2002), there has not been much research done in the context—for a review, see Cohen and Bailey (1997), Stewart (2006), Mathieu, et al. (2008). Thus, the parallel team type is chosen as a context for this study. The Malaysia Productivity Corporation (MPC), the organizer of an annual conference for the ICC was contacted, and eight parallel teams from three companies were suggested by the MPC to become respondents in this study. All the teams have been in operation more than one year; hence, team members have enough experience to provide information about their teams (Pereira & Osburn 2007). With a reference to the MPC, key persons who coordinate the activities of ICCs in the three

suggested organizations were approached in a formal e-mail and this was followed by telephone discussions. Objectives of the study were made clear and interview dates were fixed. All companies and team members took part in the study voluntarily.

Qualitative data collection and analysis

Each team's leader was approached and a number of team members that were willing to participate in the interviews were obtained. A semi-structured, face-to-face and in-person interview technique was conducted with 21 team members from 8 ICCs. The interviews were conducted at a time convenient to participants to minimize any disruption to their working agenda. Prior to the interview, it was made clear to the participants about the research objectives and permission for the session to be recorded by a digital recorder was sought. The interview questions were structured to gauge information of how bio-demographic and task-related diversities play a role in the team's ability to innovate—with specific attention towards team reflexivity and innovation climate. Each interview took almost one hour. All the 21 interviews were transcribed in their original language (Malaysian language), and translated by a certified translator into English and imported into QSR NVivo 8.0 (NVivo 2008) software for data analysis.

Since this research is more exploratory than confirmatory in nature, content analysis (Berg 2001) was used to analyse the transcripts. Firstly, each transcript was read sentence by sentence to uncover key themes and produce key words for each theme (inductive process). Then, each transcript was reviewed again to identify statements that could suggest the relationships among the considered variables in this study. Table 2 was developed to summarize a frequency of the relationships implied. By using a concept of 'union', all relationships identified from each transcript were integrated and illustrated in one model. Finally, literature was reviewed to support those relationships (deductive process).

FINDINGS

Background of interviewed teams

Table 1 below presents the background information of the eight parallel teams (ICCs) that were involved in the interviews. It is noted that there are three teams from one government organization (public

education service) and five teams from two private companies (oil & gas and automobile manufacturing industries). Three team members from each team were interviewed except for teams A, D, and G, from which only two team members were each interviewed. Altogether, twenty-one members of parallel teams were interviewed.

[Insert Table 1 here]

Expected relationships

Table 2 below summarizes the relationship between factors that were extracted from the interview transcripts via content analysis. The symbols of people in the table reflect the number of respondents from each team who had implied the relationships.

[Insert Table 2 here]

Column 1 of Table 2 highlights the pairs of factors and their corresponding links. For example, BIOage→PSAFE shows that age factor under bio-demographic diversity (BIOage) impacts participation safety (PSAFE). This link has been mentioned by 43% of respondents and identified in team A, B, C, E and G. All the links in Table 2 are then illustrated in Figure 2. Interestingly, Figure 2 depicts that only one from four dimensions of team innovation climate, that is, participation safety climate, is included and only related to bio-demographic diversity. In turn, participation safety climate will consequently influence team reflexivity and innovation, whereas task-related diversity shows a direct influence on team reflexivity and does not relate to any dimension of team innovation climate. The following paragraph will explain these illustrations further in conjunction with several quotations from the interview transcripts, and then were supported with relevant extant literature. The explanations are broken into two main subheadings that relate to: 1) bio-demographic diversity, and 2) task-related diversity.

[Insert Figure 2 here]

Related to bio-demographic diversity

Bio-demographic diversity was illustrated in Figure 2 to influence team innovation indirectly through a sequence relationship with participation safety climate and team reflexivity. Some 43% of respondents provide clues on the relationship between age homogeneity and participation safety climate

which has been gauged in statements by the respondents from teams A, B, C, E and G. For example, a respondent from team A explained that age homogeneity gives him a friendly environment to participate: ‘... It is good to have team members who are about the same age when it comes to giving out good ideas, because sometimes it makes me feel easy to befriend them..’(TM1, A). However, the relationship between age heterogeneity could not be related to any climate and reflexivity, as respondents said that ‘whether we are youngsters or elderly, it’s not important...’ (TM2, D), ‘age is nothing, but your interest is important’ (TM2, F) and ‘age gap does not make any different’ (TM3, H).

With regard to gender diversity, 57% of respondents from teams A, B, D, F, G and H give ideas of its relationship with participation safety climate. For instance, a member from team F perceives that gender homogeneity is a comfortable environment to generate ideas: ‘I don’t mind having female team members, but I feel more comfortable when having discussion with my male team members. It’s easy to talk to the same sex category. Ladies sometimes are too fussy.. .’ (TM2, F). In contrast, no relationship could be supposed for gender heterogeneity with any dimension of team innovation climate and team reflexivity as team members did not show strong clues for it. For example, respondents from team C and E said that ‘working with the opposite gender does not affect anything in this group’ (TM2, C) and ‘it’s nothing’ (TM1, E).

Thus, only homogeneous bio-demographic diversity could be related to participation safety climate, whereas the heterogeneous bio-demographic diversity does not show any impact on any climate dimensions and interaction. A direct relationship between homogeneous bio-demographic diversity and team participation safety climate could be supported by the literature that emphasizes the role of bio-demographic diversity on social relationships among team members. Tsui et al. (1992) highlight that bio-demographic variables are only related to social behaviours among team members, but not to tasks that teams are performing. Homogeneous bio-demographic diversity has been observed to positively generate similar work attitudes, but does not stimulate work-related communication among team members (Pelled 1996; Zenger & Lawrence 1989). In turn, a similar attitude about work is more advantageous for general

social relationships but weakly associated with team objectives. Social relations, trust, communications, and cohesiveness within the group have been reported as the concomitants of bio-demographic similarities (Berscheid 1985; Tsui, Xin & Egan 1995). This relationship is also in line with theories in the social categorization (Turner 1985) and the similarity-attraction paradigm (Pfeffer 1983) which emphasize that individuals prefer to work with others who are similar to them, so that the sense of belongingness increases, which strengthens their group identity. Likewise, Tajfel (1982) highlights that employees are usually comfortable when working with people who are similar to themselves. This is believed to influence their communication effectiveness, because they communicate with people of similar characteristics to them to form shared thoughts (Perretti & Negro 2007), thereby increasing team cohesion (Horwitz & Horwitz 2007). Thus, this research suggest that similar characteristics, thoughts and the high cohesion that resulted from the homogeneous bio-demographic diversity will evolve to form participation safety climate which makes team members feel comfortable and secure so as to participate in the discussion, even voicing dissenting ideas.

As a consequence of the participation safety climate, Figure 2 depicts that the climate in turn will influence team reflexivity. This relationship has been implied by 90% of respondents. A non-threatening environment helps participants to discuss task-related matters: ‘...So far, we are free to give out ideas...with this team we say what we want to say without feeling uncomfortable. We do give ideas and sometimes we waffle but we do not trifle, just expressing what we feel and maybe it can be of some use and lead to any better ideas...’ (TM1, A). This relationship is important as literature highlights that innovation increases when members perceive the work environment is safe for them to participate in decision making and voice their ideas openly (Anderson & West 1998). This is based on the fact that, in the participation safety climate, team members will feel free and open to discuss and share views, hence making team members more committed to the final decision (Erez, Earley & Hulin 1985). Although open discussions may generate disagreements which can lead to conflicts, team members will feel more committed to the team project because of the opportunities they have to argue the issues (Amason 1996).

The outcomes from the participation safety climate such as active participation, view sharing, arguments about ideas, and open discussions are the components of a team's interaction which can be described as reflexivity. Team reflexivity is more likely to happen in a team with an environment which is safe for team members to participate actively in the discussions (West 1990). West highlights that participation safety encourages employees to be more participative in decision-making, which in turn stimulates interaction and communication among team members.

Related to task-related diversity

All dimensions of task-related diversity have been shown in Figure 2 as directly related to team reflexivity, and there is no relationship identified to any climate dimensions. The percentage of respondents that imply these relationships is over than 95%. With regard to the functional background, a member from team C, for example, has a positive opinion that having cross-functional members in their team will provide various skills and knowledge, thus enhancing task-related interaction: '... In the future we would like to have team members from various departments so that we have various skills and knowledge. It will facilitate this team to be more capable in identifying and solving work-related problems ...' (TM3). In contrast, team F brought a perspective that cross-functional team members limit the team's reflexivity because of poor communication in making decisions: '... the drawback is to get approval from the department head to attend discussions. We used to have a cross-functional team but the attendance was poor. Therefore, it makes difficult to decide ...' (TM2).

For education, team members from teams A and H, for example, imply that education plays a role for team reflexivity, as they can combine all the structured knowledge during the discussion: 'We come from different educational backgrounds. We have certificate and diploma holders. There are those who come from training institutions that are exposed to the practical side, whereas some are from institutions that focus on the theory side. Therefore, we combine both the theory and practical knowledge to get ideas to solve problems...' (TM2, A). A member from team H said: 'We were thinking on the ideas and coincidentally one of our team members was an IT graduate. I might not have good computer skills but I

have some ideas and that's what counts. We put our heads together and we think on how to approach it...' (TM2, H).

The relationships of functional and educational diversity with reflexivity is supported, as the information-processing theory asserts that both are beneficial to teams by providing substantial related information for problem solving (Ancona & Caldwell 1992; Winqvist & Larson 1998; Wittenbaum & Stasser 1996). Damon (1991), Hoffman (1959), and Hoffman and Maier (1961) suggest that task-related diversity provides teams with a wide range of knowledge, expertise, and perspectives that facilitate complex cognitive tasks which require multiple perspectives. For example, functional background diversity has been treated as a proxy for diversity in skills, information and expertise, and has been debated as to its impact on team innovation (see Bunderson & Sutcliffe 2002; Carpenter 2002; Pitcher 2000). Moreover, functional diversity triggers external networks (Joshi & Jackson 2003) which will be a source of diverse perspectives, knowledge, and information (Ancona & Caldwell 1998; Reagans & Zuckerman 2001) that contributes to the team's social and knowledge-based capital (Tsai & Ghoshal 1998). Teams with members of different functional backgrounds are expected to have a variety of divergent perspectives and approaches, which stimulates cognitive processes (Perry-Smith 2006). Consequently, task-related diversity has always been predicated to provide teams with a source of cognitive diversity, task-related knowledge, skills, and abilities, as well as values, beliefs, and attitudes (McGrath, Berdahl & Arrow 1995; Bantel & Jackson 1989; Jackson & Ruderman 1995; Watson, Kumar & Michaelsen 1993). Cognitive diversity is believed to influence team innovation because it determines the quality of discussions and debates which facilitate the cognitive-complex tasks (Amason 1996; Amason & Schweiger 1994; Fiol 1994; Jehn 1995).

In relation to organizational tenure, a respondent from team G for example, implies that it directly contributes to their team reflexivity, because organizational tenure triggers working experience which is useful during the discussion: '... a clerk that has been with the company for 15 years gives more creative ideas. He has a lot of improvement ideas and he is good with the organizational system. It is good when

we do analyses to solve work-related problems...’ (TM1). Likewise, a respondent from team A highlights that organizational tenure triggers different working experiences that lead to various ideas which will encourage task related communication: ‘... Our seniors have much experience and many ideas. When it comes to decision making, we need to have discussion due to the various opinions...’ (TM1). This relationship is justified, as Zenger and Lawrence (1989) assert that organizational tenure is a factor that increases the likelihood of work-related communication among team members and was empirically proven to influence task process and communication (Ancona & Caldwell 1992).

CONCLUSIONS AND RECOMMENDATIONS

This study provides findings on how team composition, that is, bio-demographic and task-related diversities are related to team innovation through team reflexivity and innovation climate. With regard to bio-demography, the findings suggest that respondents feel comfortable and safe to participate if their teams consist of members who come from the same age categories and gender. Therefore, age and gender homogeneity was identified to influence only one of four dimensions of team innovation climate, that is, participation safety climate, which then motivates team members to be more reflexive. However, age and gender heterogeneity could not be identified to influence any dimension of innovation climate or reflexivity, as respondents did not demonstrate strong responses towards it. Future research is recommended to explore to what team processes or emergent states, age and gender heterogeneity could be related. Findings concerning to the task-related factors suggest that functional, educational and organizational tenure heterogeneity provides teams with a substantial amount of information in finding the best work-related solutions and vice versa; thus, was identified to influence team reflexivity which then influences team innovation. They however were not identified to influence any dimension of innovation climate. This study is an exploratory one. Further research is needed where a quantitative approach could be undertaken to test and confirm the demonstrated relationships. Therefore, the findings of this study could be treated as an initial platform towards further research to develop and test the hypotheses with a structural equation modelling which uses an extensive quantitative approach.

REFERENCES

- Albrecht, TL, & Hall, E. (1991). Facilitating talk about new ideas: The role of personal relationships in organizational innovation. *Communication Monographs*, 58, 273-288.
- Amabile, TM. (1988). A model of creativity and innovation in organizations. *Research in Organizational Behavior*, 10, 123.
- Amason, A. (1996). Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams. *Academy of Management Journal*, 39, 123-148.
- Amason, AC, & Schweiger, DM. (1994). Resolving the paradox of conflict, strategic decision making and organizational performance. *International Journal of Conflict Management*, 5, 239-253.
- Ancona, DG, & Caldwell, DF. (1992). Demography and design: Predictors of new product team performance. *Organization Science*, 3(3), 321-341.
- Ancona, DG, & Caldwell, DF. (1998). Rethinking team composition from the outside in. In M. A. Neale. & E. A. Mannix. (Eds.), *Research on managing groups and teams* (Vol. 1, pp. 21–37). Stamford, CT: JAI Press.
- Anderson, N, de Drew, CKW, & Nijstad, BA. (2004). The routinization of innovation research: A constructively critical review of the state-of-the-science. *Journal of Organizational Behavior*, 25(2), 147-173.
- Anderson, NR, & West, MA. (1994). *The Team Climate Inventory: Manual and user's guide*. Windsor, UK: ASE/NFER-Nelson Press.
- Anderson, NR, & West, MA. (1998). Measuring climate for work group innovation: Development and validation of the team climate inventory. *Journal of Organizational Behavior*, 19(3), 235.
- Antoni, C, & Hertel, G. (2009). Team processes, their antecedents and consequences: Implications for different types of teamwork. *European Journal of Work & Organizational Psychology*, 18(3), 253-266.
- Axtell, CM, Holman, DJ, Unsworth, KL, Wall, TD, Waterson, PE & Harrington, E (2000). Shopfloor innovation: Facilitating the suggestion and implementation of ideas. *Journal of Occupational and Organizational Psychology*, 73, 265.
- Bain, P, Mann, L, & Pirola-Merlo, A. (2001). The innovation imperative: The relationship between team climate, innovation, and performance in research and development teams. *Small Group Research*, 32(1), 55.
- Bantel, KA, & Jackson, SE. (1989). Top management and innovations in banking: Does the composition of the top team make a difference? *Strategic Management Journal*, 10, 107–124.
- Berg, BL. (2001). *Qualitative research methods for the social sciences*. Boston: Allyn and Bacon.
- Berscheid, E. (1985). Interpersonal attraction. In G. Lindzey & E. Aronson. (Eds.), *Handbook of social psychology* (Vol. 2, pp. 413–484). New York: Random House.
- Bunderson, J, & Sutcliffe, K. (2002). Comparing alternative conceptualizations of functional diversity in management teams: Process and performance effects. *Academy of Management Journal*, 45(5), 875–893.
- Cady, SH, & Valentine, J. (1999). Team innovation and perceptions of consideration: What difference does diversity make? *Small Group Research*, 30(6), 730.
- Carpenter, M. (2002). The implications of strategy and social context for the relationship between top management team heterogeneity and firm performance. *Strategic Management Journal*, 23, 275–284.
- Cohen, SG, & Bailey, DE. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management*, 23, 239-290.

- Damon, W. (1991). Problems of direction in socially shared cognition. In L.B. Resnick, J.M. Levine & S. D. Teasley. (Eds.), *Perspectives on socially shared cognition*. Washington, DC: APA Books.
- Dougherty, D, & Hardy, C. (1996). Sustained product innovation in large, mature organizations: Overcoming innovation-to-organization problems. *Academy of Management Journal*, 39(5), 1120-1153.
- Eisenhardt, KM. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532-550.
- Erez, M, Earley, P, & Hulin, C. (1985). The impact of participation on goal acceptance and performance: A two-step model. *Academy of Management Journal*, 28, 50-66.
- Fiol, CM. (1994). Consensus, diversity, and learning in organizations. *Organization Science*, 5, 403-420.
- Gladstein, DL. (1984). Groups in context: A model of task group effectiveness. *Administrative Science Quarterly*, 29(4),449-517.
- Glassop, LI. (2002). The organizational benefits of teams. *Human Relations*,55(2),225-249.
- Guzzo, RA, & Dickson, MW. (1996). Teams in organizations: Recent research on performance and effectiveness. *Annual Review of Psychology*, 47, 307-308.
- Hackman, JR. (1987). The design of work teams. In J. W. Lorsch (Ed.), *Handbook of organizational behavior* (pp. 315-342). Englewood Cliffs, NJ: Prentice-Hall.
- Hicks-Clarke, D, & Iles, P. (2000). Climate for diversity and its effects on career and organizational attitudes and perceptions. *Personnel Review*, 29, 324-345.
- Hoffman, L. (1959). Homogeneity and member personality and its effect on group problem-solving. *Journal of Abnormal and Social Psychology*, 58, 27-32.
- Hoffman, L, & Maier, N. (1961). Quality and acceptance of problem solutions by members of homogeneous and heterogeneous groups. *Journal of Abnormal and Social Psychology*, 62, 401-407.
- Hollenbeck, JR, DeRue, DS, & Guzzo, R. (2004). Bridging the gap between I/O research and HR practice: Improving team composition, team training, and team task design. *Human Resource Management*, 43, 353-366.
- Horwitz, SK, & Horwitz, IB. (2007). The effects of team diversity on team outcomes: A meta-analytic review of team demography. *Journal of Management*, 33(6), 987-1015.
- Hülsheger, UR, Anderson, N, & Salgado, JF. (2009). Team-level predictors of innovation at work: A comprehensive meta-analysis spanning three decades of research. *Journal of Applied Psychology*, 94(5), 1128-1145.
- Jackson, SE, May, KE, & Whitney, K. (1995). Understanding the dynamics of diversity in decision-making teams. In R. A. Guzzo, E. Salas & Associates (Eds.), *Team effectiveness and decision making in organizations* (pp. 204-261). San Francisco: Jossey-Bass.
- Jackson, SE, & Ruderman, MN. (1995). *Diversity in work teams: Research paradigms for a changing workplace*. Washington, DC: American Psychological Association.
- Jehn, KA. (1995). A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly*, 40, 256-282.
- Jehn, KA, & Katerina, B. (2004). A field study of group diversity, workgroup context, and performance. *Journal of Organizational Behavior*, 25(6), 755-780. doi: 10.1002/job.257
- Joshi, A, & Jackson, SE. (2003). Understanding work team diversity: Challenges and opportunities. In M. West, D. Tjosvold & K. Smith. (Eds.), *The international handbook of organizational teamwork and cooperative working* (pp. 277-296). West Sussex, UK: Wiley.
- Kanter, RM. (1988). When a thousand flowers bloom: Structural, collective and social conditions for innovation in organization. *Research in Organizational Behavior* 10, 169).
- Klein, KJ, & Sorra, JS. (1996). The challenge of innovation implementation. *Academy of Management Review*, 21(4), 1055-1080.

- Marks, MA, Mathieu, JE, & Zaccaro, SJ. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review*, 26(3), 356-376.
- Mathieu, J, Maynard, MT, Rapp, T, & Gilson, L. (2008). Team effectiveness 1997-2007: A review of recent advancements and a glimpse into the future. *Journal of Management*, 34(3), 410-476.
- McGrath, JE, Berdahl, JL, & Arrow, H. (1995). Traits, expectations, culture, and clout: The dynamics of diversity in work groups. In S. E. Jackson. & M. N. Ruderman. (Eds.), *Diversity in work teams: Research paradigms for a changing workplace* (pp. 17-46). Washington, DC: American Psychological Association.
- Nijstad, BA, & de Dreu, CKW. (2002). Creativity and group innovation. *Applied Psychology: An International Review*, 51(3), 400-406.
- NVivo, Q. (2008). Non-numerical unstructured data indexing, searching, and theory building. Melbourne: Qualitative Solutions and Research (QSR) International Pty Ltd.
- Payne, R. (1990). The effectiveness of research teams: A review. In West MA & Farr JL (Eds.), *Innovation and creativity at work: Psychological and organizational strategies* (pp. 101-122). Chichester, England: Wiley.
- Pelled, LH. (1996). Demographic diversity, conflict and work group outcomes: An intervening process theory. *Organization Science*, 7, 615-631.
- Pelled, LH, Eisenhardt, KM, & Xin, KR. (1999). Exploring the black box: An analysis of work group diversity, conflict, and performance. *Administrative Science Quarterly*, 44, 1-28.
- Pereira, G, & Osburn, H. (2007). Effects of participation in decision making on performance and employee attitudes: A quality circles meta-analysis. *Journal of Business & Psychology*, 22(2), 145-153.
- Perretti, F, & Negro, G. (2007). Mixing genres and matching people: A study in innovation and team composition in Hollywood. *Journal of Organizational Behavior*, 28(5), 563-586.
- Perry-Smith, JE. (2006). Social yet creative: The role of social relationships in facilitating individual creativity. *Academy of Management Journal*, 49, 85-101.
- Pfeffer, J. (1983). Organizational demography. In B. Staw. & L. Cummings. (Eds.), *Research in organizational behavior* (Vol. 5, pp. 299-357). Greenwich, CT: JAI Press.
- Pitcher, P, & Smith, A. (2000). Top management team heterogeneity: Personality, power and proxies. *Organization Science*, 12, 1-18.
- Randall, DM, & Gibson, AM. (1990). Methodology in Business Ethics Research: A Review and Critical Assessment. *Journal of Business Ethics*, 9(6), 457-472.
- Reagans, R, & Zuckerman, EW. (2001). Networks, diversity and productivity: The social capital of corporate R&D teams. *Organization Science*, 12, 502-517.
- Stewart, GL. (2006). A meta-analytic review of relationships between team design features and team performance. *Journal of Management*, 32(1), 29-55.
- Tajfel, H. (1982). Instrumentality, identity, and social comparisons. In H. Tajfel (Ed.), *Social identity and intergroup relations* (pp. 483-507). Cambridge, UK: Cambridge University Press.
- Tannenbaum, SI, Beard, RL, & Salas, E. (1992). Team building and its influence on team effectiveness: An examination of conceptual and empirical developments. In K. Kelley (Ed.), *Issues, theory and research in industrial/organizational psychology* (pp. 117-153). North-Holland: Elsevier.
- Thatcher, SMB, & Jehn, KA. (1998). A model of group diversity profiles and categorization processes in bicultural organizational teams. In M. A. Neale, E. A. Mannix & D. H. Gruenfeld. (Eds.), *Research on managing groups and teams* (Vol. 1, pp. 1-20). Stamford, CT: JAI Press.
- Triandis, HC, Hall, TE, & Ewen, RB. (1965). Member homogeneity and dyadic creativity. *Human Relations*, 18, 33-54.
- Tsai, W, & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal*, 41, 464-476.

- Tsui, AS, Xin, KR, & Egan, TD. (1995). Relational demography: The missing link in vertical dyad linkage. In Jackson SE & Ruderman MN (Eds.), *Diversity in work teams: Research paradigms for a changing workplace* (pp. 97–129). Washington, DC: American Psychological Association.
- Tsui, AS, Egan, TD, & O'Reilly, CA (1992). Being different: Relational demography and organizational attachment. *Administrative Science Quarterly*, 37, 549-577.
- Tsui, AS, & O'Reilly, CA. (1989). Beyond simple demographic effects: The importance of relational demography in superior-subordinate dyads. *Academy of Management Journal*, 32, 402-442.
- Turner, J. (1985). Social categorization and the self concept: A social cognitive theory of group behavior. In Lawler J (Ed.) *Advances in group processes* (Vol. 2). Greenwich, CT: JAI Press.
- Unsworth, K, & West, MA. (1998). *Employee innovation: Generation, implementation or both?* Paper presented at the International Work Psychology Conference, University of Sheffield, Institute of Work Psychology.
- Unsworth, KL. (1999). *Employee innovation: An exploratory test of a two factor mediated model. IWP Memo number 201*. Sheffield: Institute of Work Psychology.
- van de Ven, AH. (1986). Central problems in the management of innovation. *Management Science*, 32(5), 590-607.
- Van Knippenberg, D, & Schippers, MC. (2007). Work group diversity. *Annual Review of Psychology*, 58, 515-541.
- Watson, WE, Kumar, K, & Michaelsen, LK. (1993). Cultural diversity's impact on interaction process and performance: Comparing homogeneous and diverse task groups. *Academy of Management Journal*, 36, 590–602.
- Webber, SS, & Donahue, LM. (2001). Impact of highly and less job-related diversity on work group cohesion and performance: A meta-analysis. *Journal of Management*, 27, 141-162.
- West, MA. (1990). The social psychology of innovation in groups. In M. A. West & J. L. Farr (Eds.), *Innovation and creativity at work: Psychological and organizational strategies* (pp. 81–100). Chichester: John Wiley.
- West, MA. (2000). Reflexivity, revolution, and innovation in work teams. In M. M. Beyerlein, D. A. Johnson & S. T. Beyerlein (Eds.), *Product development teams* (pp. 1-29). Stanford, CT: JAI Press.
- West, MA. (2002). Sparkling fountains or stagnant ponds: An integrative model of creativity and innovation implementation in work groups. *Applied Psychology: An International Review*, 51(3), 355-387.
- West, MA, Borrill, C, & Unsworth, KL. (1998). Team effectiveness in organizations. In C. L. Cooper & I. T. Robertson. (Eds.), *International review of industrial and organizational psychology* (Vol. 13, pp. 1-48). Chichester, UK: Wiley.
- West, MA, Hirst, G, Richter, A, & Shipton, H. (2004). Twelve steps to heaven: Successfully managing change through developing innovative teams. *European Journal of Work & Organizational Psychology*, 13(2), 269-299.
- West, MA, & Farr, JL. (1990). *Innovation and creativity at work: Psychological and organizational strategies*. Chichester, England: Wiley.
- Williams, K, & O'Reilly, CA. (1998). Demography and diversity in organizations: A review of 40 years of research. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 20, pp. 77–140). Greenwich, CT: JAI Press.
- Winquist, J, & Larson, J. (1998). Information pooling: When it impacts group decision making. *Journal of Personality and Social Psychology*, 74, 371–377.
- Wittenbaum, G, & Stasser, G. (1996). Management of information in small groups. In J. Nye. & A. Brower. (Eds.), *What's social about social cognition: Research on socially shared cognition in small groups* (pp. 3–28). Thousand Oaks, CA: Sage.

- Wolfe, RA. (1994). Organizational innovation: Review, critique and suggested research. *Journal of Management Studies*, 31(3), 405-431.
- Woodman, RW, Sawyer, JE, & Griffin, RW. (1993). Toward a theory of organizational creativity. *Academy of Management Review*, 18(2), 293-321.
- Zaltman, G, Duncan, R, & Holbeck, J. (1973). *Innovations and organizations*. New York: Wiley.
- Zenger, TR, & Lawrence, BS. (1989). Organizational demography: The differential effects of age and tenure distributions on technical communication. *Academy of Management Journal*, 32, 353-376.

Figure 1: A Part of a Heuristic Model of Team Effectiveness (adapted from Cohen & Bailey 1997)

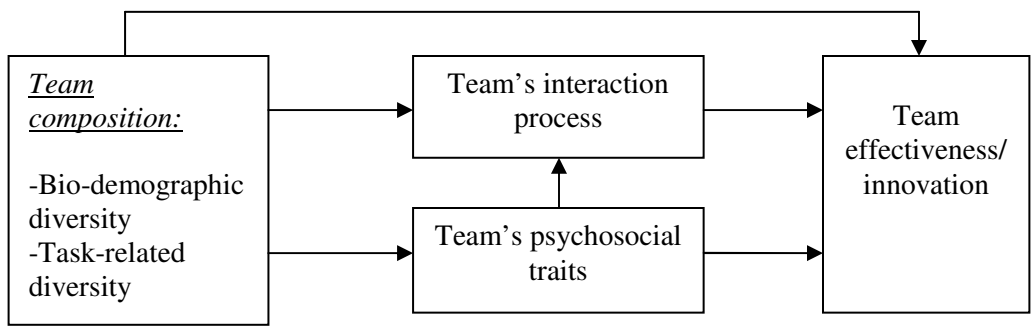


Figure 2: Relationships Illustration from the Interviews

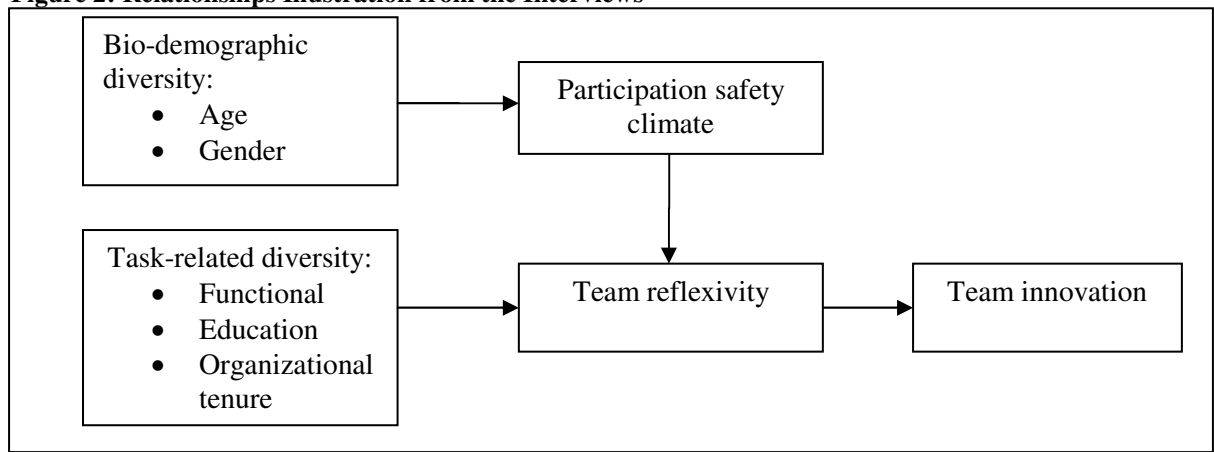


Table 1: Background of Interviewed Teams

Company	1		2			3		
Team	A	B	C	D	E	F	G	H
Nature of business	Oil & Gas		Automobile manufacturing			Public education service		
Team size	8 TM	7 TM	8 TM	8 TM	8 TM	4 TM	6 TM	9 TM
Years of team in operation	<2 years	3 years	2 years	4 years	4 years	6 years	4 years	6 years
Number of team members interviewed	2 TM	3 TM	3 TM	2 TM	3 TM	3 TM	2 TM	3 TM

TM: team member.

Table 2: Relationships among the Factors

RELATIONSHIPS	TEAM A	TEAM B	TEAM C	TEAM D	TEAM E	TEAM F	TEAM G	TEAM H	%
<i>Bio-demographic diversity</i>									
BIOage→PSAFE	♂♂	♂	♂♂	-	♂♂	-	♂♂	-	43%
BIOgend→PSAFE	♂	♂♂	-	♂♂	-	♂♂	♂♂	♂♂♂	57%
PSAFE→REFLX	♂	♂♂	♂♂♂	♂♂	♂♂♂	♂♂♂	♂♂	♂♂♂	90%
<i>Task-related diversity</i>									
TRLTEDfunc→REFLX	♂♂	♂♂♂	♂♂♂	♂♂	♂♂♂	♂♂	♂♂	♂♂♂	95%
TRLTEDedu→REFLX	♂♂	♂♂	♂♂♂	♂♂	♂♂♂	♂♂♂	♂♂	♂♂♂	95%
TRLTEDten→REFLX	♂♂	♂♂♂	♂♂♂	♂♂	♂♂♂	♂♂♂	♂♂	♂♂♂	100%

Note: BIOage=age, BIOgend=gender, PSAFE=participation safety climate, TRLTEDfunc=functional, TRLTEDedu=education, TRLTEDten=organizational tenure, REFLX= team reflexivity.

