THE IMPACT OF TEAM LEVEL STRATEGIC CONTEXT ON TEAM PROCESS INNOVATION

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ABSTRACT

In this study, we apply the concept of strategic context (Prahalad & Doz, 1987; Schulz & Jobe, 1997) to the team level and examine how team strategic context relates to team process innovativeness. A survey instrument to measure team-level perceptions of local responsiveness pressure, integration pressure, and team-level process innovativeness was developed based on interview data collected in an earlier stage of this research. Relationships were tested with data from fifty teams in five organizations across four countries. Strategic context variables were collected from team members and team process innovativeness was rated by team leaders. As predicted, local responsiveness predicted team-level process innovation. However, results concerning the effects of integration on team-level process innovation were contrary to our predictions. Implications for theory and practice are discussed.

THE IMPACT OF TEAM LEVEL STRATEGIC CONTEXT ON TEAM PROCESS INNOVATION

Knowledge management and knowledge transfer have received increasing attention among organizational researchers. Knowledge management is considered to be particularly important for multinational organizations, in part because they operate in dispersed environments where knowledge created in one location may benefit units in other regions. Innovation, or knowledge creation, is an important part of knowledge management (Nonaka, 1994), however, Damapour (1991) and Ford (1996: 1113) note that empirical studies of innovation tend to focus on the adoption and diffusion phases of the innovation process. Less emphasis is given to the creation or emergence of new processes, products and services. Furthermore, contextual influences on innovation have often been overlooked (Amabile, 1983, 1988, 1996; Staw, 1990; Oldham & Cummings, 1996; Shalley, 1991).

Teams have also been an understudied element in the knowledge management literature (Zellmer-Bruhn & Gibson, 1998), but are an increasingly important means utilized by organizations to accomplish disparate tasks (Cohen, Mohrman & Cohen, 1995). In their increasingly central role, teams may be an important source of new routines and practices. Understanding the influence of contextual factors on team generation of new processes is an important element of knowledge generation, which in turn informs issues of knowledge transfer. A particularly important aspect of organizational context in sub-units of multinationals is the degree of local responsiveness and global integration (Prahalad & Doz, 1987). Our research adapts these concepts to the team level and examines how perceptions of team strategic context relate to team-level process innovation.

Before turning to our propositions, we first present a brief review of the constructs local responsiveness and global integration as conceptualized at the organizational level of analysis.

We then describe our conceptualization of team-level local responsiveness pressure and team-level integration pressure.

Strategic Context

Organizations have been distinguished from other social contexts by the common frames of thought and action held within them (Weick, 1979). However, within very large organizations with geographically dispersed operations, frames of thought and action often vary widely. Within multinational organizations, Prahalad and Doz (1987) suggest two contextual factors affecting frames of thought and action that may vary across organizations and their sub-units. They call these factors local responsiveness and global integration. Global integration is "the centralized management of geographically dispersed activities on an ongoing basis" (Prahalad & Doz, 1987: 14). Local responsiveness refers to "decisions taken autonomously by a subsidiary in response to primarily local competitive or customer demands" (Prahalad & Doz, 1987: 15). Pressure for global integration is increased by the importance of universal needs across sub-units, technological intensity and pressures for cost reduction. Indicators of high pressure for global integration include a efforts to coordinate activities across geographic regions and homogeneous processes across units. Alternatively, pressure for local responsiveness is increased by the presence of differences in customer needs, distributions channels, availability of local substitutes and local competitors, and unique host government demands. High pressure for local responsiveness is indicated by the need to adapt products and processes to meet local demands. Prahalad and Doz conceptualize the two dimensions as separate but correlated, and requiring simultaneous attention.

Recently, Murtha, Lenway, and Bagozzi (1998) found supporting empirical evidence that local responsiveness and global integration are indeed separate dimensions. They also provide further explanation of the mechanisms by which these dimensions influence organizational action. They conceptualized the two dimensions of strategic context to be dimensions of individual managers' mind-sets. Thus, they argue that the impact of strategic context occurs through managerial perceptions of the environment when managers at both the regional level and at headquarters make decisions based upon these perceptions. Cumulatively across decisions, strategic action is derived from managers' cognitive processes and perceptions of their environments (Prahalad & Doz, 1987; Kogut, 1985; Hedlund, 1993).

While varying perceptions of strategic context are thought to lead to differences in action, little large scale, quantitative work has been done to examine the impact of variance in perceptions of local responsiveness and global integration across organizational sub-units. To date, the research concerning strategic context has largely consisted of case-based analyses. In a recent exception, Murtha et al. (1998) developed quantitative measures of local responsiveness and global integration. They conducted a study of 370 managers in multiple geographic locations of a single multinational and found significant differences in mean scores across three regions: North America, Asia Pacific and Europe. Thus, both case evidence and survey evidence has demonstrated variance in managers' perceptions of pressures for local responsiveness and global integration. However, researchers have yet to empirically investigate the link between perceptions of these pressures and important organizational outcomes such as innovation or knowledge transfer.

We believe that teams face similar pressures from their operating environments. Their contexts may demand higher or lower levels of responsiveness or integration, and perceptions of

these pressures may lead to differences in team actions. We explore these possibilities in the following sections.

Team Strategic Context

The groups literature has been criticized for its lack of attention to the importance of team context (Ancona, 1990; Ancona & Caldwell, 1992). The majority of studies conducted on groups have examined internal processes and have typically ignored the effects of context on team processes and performance. This is problematic because teams in organizations do not act devoid of context. Teams are influenced by organizational and national subsystems affecting their structure, rules, rewards, norms, and culture (Mohrman, Cohen & Mohrman, 1995). Teams are often dependent on other teams or others parts of the organization. Teams also face differing pressure to meet unique demands. Therefore, we argue that teams are influenced by what we call team-level strategic context.

Our conceptualization of team-level strategic context is related to Prahalad and Doz's (1987) dimensions of local responsiveness and global integration. Strategic context, as conceptualized at the organizational level of analysis, is influenced by a variety of national issues including economic policy, legislation, and competitive factors, as well as organizational issues such as technological intensity, need for cost reduction, and need to adapt to varying customer demands. Therefore, as noted earlier, strategic context varies across organizations and across organizational sub-units in different countries (Prahalad & Doz, 1987; Murtha, Lenway, & Bagozzi, 1998).

Team members' perceptions of their strategic context are also likely to vary, and may also vary across organization or organizational sub-unit. However, variance might also be expected across teams *within* a given sub-unit if there are disparate team-level operating

environments. Indeed, Schulz and Jobe (1996) suggest that perceptions of strategic context will vary due to differences in learning processes of individuals and groups within sub-units. One driver of such variation may be functional area. For example, sales teams in a given country may perceive greater pressure for local responsiveness because of the presence of other competitors in their local environment. In contrast, manufacturing teams in that same country may report low perceived pressure for local responsiveness, but high pressure for integration because their processes are interdependent with other units and as a result may require integration. Thus, team members may develop perceptions of their strategic context that are driven both by differences in task demands and by the sub-unit and organization within which their team is embedded.

For our purposes, we are concerned with team members' general perceptions of their context. We conceptualize the distinction between local responsiveness and integration as general pressures to adapt and customize, versus to integrate and standardize. Our conceptualization of local responsiveness pressure concerns the extent to which teams face unique customer needs, challenges, or demands for adaptation which are different from other teams within their organization. We call our second construct "integration pressure" as opposed to global integration. We are not asking teams to identify the extent to which *sub-units* are required to integrate across the globe, but rather the pressure their organization places on teams to integrate across teams by using common practices and procedures, and the extent to which teams are connected and interdependent with the entire organization. These may be pressures to integrate across teams in the same sub-unit or across different sub-units. In the same way that managers perceptions of strategic context dimensions are thought to affect their actions, team members' perceptions of pressures for local responsiveness and integration may affect their

behavior. We now turn to an exploration of how variances in team perceptions of strategic context may influence team innovation.

Team Strategic Context and Process Innovativeness

In the last decade, restructuring has become common place in multinational organizations and, as a result, teams must constantly renegotiate their internal and external organizational landscape (Mohrman, Galbraith & Lawler, 1998). As they face the challenges associated with transformation, teams must balance between concerns of their regional organizational operations, and concerns of their immediate context (Lawler, Mohrman, & Ledford, 1998). Innovation in processes, procedures and products is critical to both ongoing team performance and organizational effectiveness, and as we will describe in this section, team context may have an important effect on innovation. We first present a general discussion of research concerning context and innovation, followed by a specific discussion of the role of team strategic context in team process innovation.

Little research on creativity and innovation has directly addressed the influence organizational context on these outcomes (Amabile, 1983, 1988, 1996; Staw, 1990; Oldham & Cummings, 1996; Shalley, 1991). Yet the research which has been done suggests that context may be an important factor in creativity and innovation. For example, an early study conducted by Andrews (1975) examined the influence of social-psychological factors on the innovativeness and fulfillment of creative potential of 115 research scientists. He found that four factors were most important: (1) high responsibility for initiating new activities, (2) high degree of power to hire research assistants, (3) no interference from administrative superiors, (4) high stability of employment. More recently, Amabile and Gryskiewicz (1987) and Amabile (1988) used content analysis to examine interview data from 129 R&D scientists. They found that their interviewees

emphasized the importance of work environments over personal characteristics to creativity and innovation. Amabile (1996) offers theoretical reasoning to argue for the positive influence of contexts with little extrinsic constraints and little interference with work on innovativeness.

Research on organizational innovation also suggests the importance of context. Based on a review of the literature on organizational innovation, Cummings and O'Connell (1978) suggest the importance of environmental characteristics. Similarly, Ettlie (1983) found that environmental uncertainty was related to organizational innovation.

The research reviewed here suggests the important influence that context may play on individual and organizational innovativeness. As we noted earlier, little research has been conducted on the effects of team context in general, and this relative lack of attention to team context extends to research on group creativity and innovation. More emphasis has been placed on internal variables such as cohesiveness, composition, team longevity, team structure, communication patterns, problem solving process, and group size (King & Anderson, 1990; Payne, 1990). Resource availability is the only common team context variable examined, but other contextual influences are theorized to be important influences to group creativity and innovation (Woodman, Sawyer, & Griffin, 1993).

We suggest that team perceptions of their strategic context will affect innovativeness. However, team-level perceptions of local responsiveness pressures and integration pressures are likely to have different influence on team innovativeness. Teams perceiving higher pressure for local responsiveness may be more innovative because they need to adapt processes to suit their local environment. They face unique demands, which solutions developed in other teams or organizational units may not address. Finally, environments with high local responsiveness pressure may have reduced levels of knowledge transfer because both generating units and

receiving units perceive solutions developed elsewhere will not apply (Schulz and Jobe, 1996, make this argument at the organizational sub-unit level). All of these issues combine to suggest that teams facing high local responsiveness pressure are compelled to innovative to meet local needs. The following proposition summarizes this idea:

P1: Teams perceiving higher levels of pressure for local responsiveness demonstrate higher levels of process innovation than teams perceiving lower levels of pressure for local responsiveness.

Integration pressure is also likely to influence team-level innovation. However, teams perceiving higher pressures for integration may be less innovative because they face pressure to apply standard operating procedures endorsed by the organization, and operate in contexts requiring high degrees of interdependence with other teams and units of the organization. These pressures for standardization and integration may discourage local experimentation and therefore reduce team process innovation. The following proposition summarizes this idea:

P2: Teams perceiving higher levels of pressure for integration will demonstrate lower levels of process innovation than teams perceiving lower levels of pressure for integration.

The methods and analyses used to test these propositions are detailed in the following section.

METHODS

Sample and Procedures

This research was conducted as part of a larger, ongoing study of teams in multinational organizations. Teams from five multinational pharmaceutical and medical products organizations were included in the sample. Teams were sampled from four different geographical units of these organizations: the Philippines, Puerto Rico, France and the United

States. Team members from each of these organizations and geographic regions had participated in an earlier interview study as part of our research program. We contacted these participants to invite them to participate in the second phase of the research which involved comprehensive surveying of team members, team customers and the team's leader.

We traveled to each geographic region to administer the surveys in person. Our contacts at each organization arranged to have a conference room available for us. Team members and leaders came to the conference room and completed the survey. In cases where a respondent was not available on our administration day, we left the survey with the team leader. These surveys included a postage-paid reply envelope for the respondent to send the completed survey directly back to us.

A total of 92 teams and 1,236 individuals have been surveyed to date. Our study is still in progress and we have yet to receive many of the responses. We included teams in the current study only if we have received at least fifty percent of the team members' surveys *and* the team leader's survey. After applying this rule we obtained a total response rate of 50 teams and 388 individuals.

Measures

We developed a survey instrument to measure team-level perceptions of local responsiveness pressure, integration pressure, and team-level innovativeness. Instrument development was based on interview data collected in an earlier stage of this research, and existing survey instruments. The following variables and their measures are used in the tests of our two propositions:

Dependent Variable

Team Process Innovativeness. The dependent variable was collected from team leaders. Collecting the dependent measure information from non-members was done to avoid single-source bias in the analyses. Process innovativeness in this paper is specifically concerning innovations in team work practices. There are many ways in which teams may be innovative, including products and processes. The focus here is on processes and one team leader for each team was asked three questions designed to capture the degree to which the team is innovative in its work practices: (1) If a new way of doing work is introduced, it often comes from within the team; (2) This team comes up with many new ideas about how work should be done; (3)This team is frequently the source of ideas that are copied from other teams. Questions were asked using a seven point scale ranging from 1=very inaccurate to 7=very accurate. All items loaded on a single factor having an eigenvalue of 1.77, with factor loadings ranging from .58 to .87. The reliability of this measure (alpha) was .64.

Independent Variables

As noted earlier, research conducted by Prahalad and Doz (1987) and Schulz and Jobe (1997) guided the development of the team strategic context measures. These authors proposed two dimensions and several items designed to capture their constructs. However, as we mentioned earlier, theory concerning strategic context has been developed at the organizational and inter-organizational level of analysis. We identified issues appropriate to the team level of analysis and operationalized local responsiveness and integration in the ways described below.

Local Responsiveness. Team local responsiveness represents the degree to which teams feel pressure to respond to local demands and unique challenges that other teams in their organization do not face. Three items were developed to measure perceived pressure for local

responsiveness: (1) This team faces unique challenges that other teams of the same type do not; (2) Our customers' needs vary widely; (3) New processes typically need modification before they will work for this team. These items parallel Prahalad and Doz's (1987) ideas that local responsiveness concerns a need to address "primarily local competitive or customer demands (p. 15)." Members used a 7-point response scale with higher numbers indicate greater perceived pressure for local responsiveness. All items loaded on a single factor having an eigenvalue of 1.83, with factor loadings ranging from .60 to .86. The reliability (alpha) was .77.

Integration. Team integration represents the degree to which teams feel pressure to coordinate with other teams in their organization, operate under standard operating procedures prescribed by the organization, and connect with other areas of the organization. Three items were developed to measure perceived integration pressure: (1) This organization pressures our team to use standard procedures; (2) This team often must follow work practices developed outside the team; (3) This team feels strongly connected to the larger organization. These items parallel Prahalad and Doz's idea that global integration refers to the centralized management of activities (p. 14). Organizations are likely to vary in the extent to which they demand a uniform, coordinated product or service. Schulz and Jobe (1996) suggest that integration demands involve interdependencies between units. In our case, the units are teams. Members used a 7-point response scale with higher numbers indicating greater perceived pressure for integration. All items loaded on a single factor having an eigenvalue of 1.70, with factor loadings ranging from .89 to .91. The reliability of this measure (alpha) was .80.

Independent variables were collected from team members. Significant within team agreement and between team differences were obtained, thus all team members responses within a team were averaged to arrive at an overall mean on each scale for the team.

Controls. Given that similar strategic context variables have been demonstrated to vary across sub-units, we feel it is appropriate to control for differences in sub-units in which the teams are embedded. We used country as a proxy for sub-unit and since there are four countries in our sample, we created k-1 = 3 dummy variables. It is also quite possible that organization-specific factors (crossing country boundaries) may also be related to innovation. For example, multinational organizations may be more or less homogeneous in the way they implement policies worldwide. Given the five organizations in our sample, we created k - 1 = 4 dummy variables for company to control for these effects. We entered the dummy variables for country and company first prior to entering the main effects in the regression models. We now turn to a discussion of the analyses we conducted and the results obtained from these analyses.

ANALYSES AND RESULTS

Descriptive statistics and inter-correlations among the independent and dependent variables in the study are presented in Table One. It is noteworthy that the correlation coefficient for local responsiveness and integration variables is not statistically significant. This follows conceptualization of these variables as two distinct constructs. The correlation coefficient for local responsiveness and innovation is in the predicted direction, positive, and statistically significant (.46, p < .01). Finally, the correlation coefficient for integration and innovation is in the opposite direction predicted, and is statistically significant (.29, p < .05). The next set of analyses are multiple regressions controlling for sub-unit and organization.

Insert Table 1 Here

Propositions one and two were tested using hierarchical regression analyses in which the control variables sub-unit (country) and company were entered first and then the predictor variables were entered second. We were interested in the effects of local responsiveness and integration on team process innovation. This type of analysis was used to examine the explanatory power of the independent variable above and beyond the control variables. The added contribution of the independent variable was assessed by the Cohen's incremental F-test examining the change in R².

Regressions results appear in Table Two. The beta for perceived local responsiveness pressure was positive and statistically significant (β = .28, p < .05). Entering team perceived local responsiveness pressure in the second step resulted in a statistically significant change in R² for team process innovation (Δ R²= .06, Δ F=4.35, p<.05). Thus, we obtained support for proposition one regarding the relationship between local responsiveness and team process innovation.

We tested proposition two the same way, entering the control variables first and then adding perceived integration pressure in the second step. Beta for perceived integration pressure was positive and statistically significant (β = .35, p < .05). Entering team perceived integration pressure in the second step resulted in a statistically significant change in R² for team process innovation (Δ R²= .08, Δ F=5.94, p<.05). Thus, proposition two was not supported.

Insert Table 2 Here

DISCUSSION

The research described here was designed to open a dialogue across levels of analysis concerning the impact of strategic context variables on knowledge creation. Strategic context concepts developed at the organizational level of analysis have been theorized to affect sub-unit knowledge transfer in multinational organizations (Schulz & Jobe, 1996), but no empirical tests have been conducted to date. We developed team-level measures which capture general aspects of local responsiveness and integration as they relate to teams operating within sub-units of multinational organizations. We proposed that team-level local responsiveness and integration would have different effects on team-level process innovation.

Our results supported proposition one. Team-level perceptions of local responsiveness pressure was positively and significantly related to leader ratings of team process innovation.

Contrary to our predictions, a significant positive relationship was also obtained between perceptions of integration pressure and innovation. Thus, proposition two was not supported.

Our findings suggest that contextual factors are related to team process innovation. The positive relationship between local responsiveness and innovation follows our reasoning that teams facing high local responsiveness pressure need create local solutions and adapt processes to their local needs. As a result, they may be rated as more innovative than teams with lower local responsiveness pressure. The positive relationship found between integration and innovation bears closer analysis. At least two explanations for this finding are plausible in our view. First, this result may reflect the growing trend to view innovation as a universal performance requirement (Mohrman, Galbraith, and Lawler, 1998). In today's environment of

fast paced change, organizations may be developing global policies and practices that are actually conducive to innovation of process and product. Second, the finding may point to a need to more clearly distinguish among types of process innovation. For example, it may be that high pressure for integration leads to innovation in processes designed to facilitate cross-team coordination. This possibility suggests that more research is needed to determine the type and nature of process innovations resulting from each of these team strategic context dimensions. It may be that local responsiveness and integration predict *different* types of process innovation and that the general way in which we measure our dependent variable in this study did not distinguish between them.

Our findings have implications for managers and team developers interested identifying and transferring knowledge created in disparate geographical regions. Both of our strategic context variables may influence process innovation, but they may differentially relate to the transfer of that knowledge once it is created. In other words, the presence of new knowledge may not automatically lead to transfer of that knowledge to other teams. As Schulz and Jobe (1996) noted, high pressures for local responsiveness are less likely to lead to knowledge flows between units. Teams facing high local responsiveness pressure are less interdependent with other teams and other parts of the organization. This lack of connectedness may reduce the chances that process innovations resulting from local responsiveness pressure are transferred once developed. Alternatively, process innovations resulting from integration pressures may be more likely to flow from one team to another. Teams facing high integration pressures are interdependent with other teams and feel more connected to the organization as a whole. This suggests that certain types of process innovation may require more effort on the part of managers

and team developers to identify and transfer. Identifying levels of perceived local responsiveness and integration may aid in identifying sources of particular types of innovation.

We see at least two key contributions of this study. First, we have demonstrated that the concept of strategic context can be applied to the team level. Second, we have demonstrated that team strategic context is related to team level process innovation. However, our study has a number of limitations. First, our method is a cross-sectional design. Therefore we can only discuss relationships between strategic context and team process innovativeness, not causality. Future research should attempt to establish causal direction between these constructs. Second, as noted above, our dependent variable captures a very general notion of process innovation. Future research on specific types of innovation is warranted. One possible distinction could be between innovations involving internal team processes and innovations involving coordinative processes. Finally, our research was conducted within one general industry, pharmaceutical and medical products organizations. While we found no statistically significant evidence that company predicted team process innovation, it may be that innovation intensity may be particularly high in this industry. Future research should examine the relationships between team strategic context and innovation in other industries and types of multinational organizations.

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TABLE 1

Correlation Matrix

(n=50 teams)	Mean	S.D.	1	2	3
1. Innovation	4.81	09:	1.00		
2. Integration	4.89	96:	.26*	1.00	
3. Local Responsiveness	4.36	.81	.46**	.16	1.00

*p<.05 **p<.01