Towards a model of international research teams

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Recent articles in the academic journals in the area of management suggest that collaborative research, especially collaboration across national boundaries, is on the rise. This is partly because of increasing interest in cross-national generalizations of organizational and management theories and models. A quick look at some of the papers that report cross-national (or cross-cultural) research in the *Academy of Management Journal* (a leading academic journal for management theorists) suggests that most of them are by multiple authors from different countries. This suggests that international research teams are being used as a partial solution for dealing with the methodological challenges and theoretical complexity of international research. Unfortunately, relatively little is known about the processes involved in successful research collaborations in general (Northcraft and Neale, 1993) and even less is known about international research collaborations (Teagarden *et al.*, 1995).

The limited work that deals with collaborative research suggests that the advantages offered by research collaboration are sometimes undermined by difficulties involved in terms of the different goals of the partners, different skill levels, etc. (Northcraft and Neale, 1993). One can easily imagine that the problems faced when collaborating with others will get exacerbated when the collaboration is across different nations.

In this paper, we present a preliminary model of how international research collaboration would work. The goal is to begin development of a model, which highlights some of the more important variables that affect the functioning of international research teams. We outline both the benefits that partners can hope to achieve and the potential pitfalls that they may need to watch out for when collaborating with others from a different countries/cultures. While we focus on academic research teams, the model that we develop may be applied, with some modification, to other collaborative research teams.

To build our model of international research teams, we borrow from the large organizational behavior literature on groups and teams and especially the literatures that focuses on cross-cultural management teams, cultural differences, diversity, and collaborations (e.g. Adler, 1991; Goodman & Associates, 1986; Hackman, 1990; Tsui *et al.*, 1992).

We also draw from two additional research streams: top management teams and joint ventures. Academic research teams share many of the characteristics of top management teams in corporations (e.g. team members have a high degree of autonomy and status and often a low degree of face to face interactions). For these

reasons the top management team literature is particularly appropriate for providing insights into international research teams. Steers *et al.* (1992) argue that international research teams should function as intellectual joint ventures. All these research streams have significant contributions to make towards understanding international research teams, yet these connections remain largely unexplored. We hope to begin to fill in this gap in the literature by developing a theoretical framework informed by these research streams.

The model

Figure 1 presents a general model of elements of international research teams, the factors that affect international research teams, and the outcomes of international research team functioning[1].

The contextual factors that affect international research teams are the characteristics of the institutions (universities for the most part, but also consulting firms and other organizations) from which team members are drawn and the environment in the team operates. Institutional characteristics include the resources that they possess, their prestige, their mission and goals and the location. Environmental factors include the research infrastructure, availability of data, and the general attitude towards research. These factors affect the goals of individual team members through their effect on members' perceptions of what their incentives are. They also affect group processes through their effect on the selection of research topics, the skills that members bring to bear on the task, the likelihood of interpersonal conflict, etc.

The central pentagon portrays five core elements of international research teams: composition, structure, incentives, nature of the task and the group leader. The international research team composition refers to the demographic, cognitive, relational, and personality characteristics of the group members. Of particular importance is the heterogeneity or differences between group members on these characteristics. Group size refers to the number of people in

Figure 1.
Contextual model of
international research
teams

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the group. Incentives reflect those factors that keep the team together. Examples of incentives are possible journal publications, promotional opportunities, financial rewards, and differences in compensation between members, increased status, and the opportunity to learn. The nature of the task refers to the complexity of the research task and the type of interdependencies that exist among members. The final element, leadership, highlights the particular importance of the formal project champion.

All of these factors are hypothesized to affect key group processes and outcomes such as cohesion, intra-group conflict, and behavioral integration. Group processes determine whether the research team performs well, i.e. whether the team is effective. For the purposes of this paper team effectiveness is defined as those characteristics which are likely to be important to researchers (e.g. reliable and valid data, publications, recognition, consulting, teaching, learning, satisfaction, longevity, and financial rewards).

While space does not permit a full elaboration of all the linkages and the interactions among concepts in the model, some key propositions in each of the areas are presented below. The team diversity aspect of our model is the most developed because we feel that diversity management is the key issue that an international research team has to address.

Propositions

Contextual factors

Institutional factors. Not all universities have the same set of goals or priorities even within the USA. Some schools value and reward research and publications in leading journals, others value linkages with managers and businesses or teaching. These differences are magnified when the different universities are located in different nations. Differences in terms of what is valued and rewarded by their universities will affect members' incentives to join and ability to contribute to research teams. These differences may actually prove to be functional for a team if the members recognize that there are differences in member goals and incentives and try to integrate these differences. For example, suppose the parent institution of one of the researchers values publications in reputed academic journals, while the other values the development of linkages with organizations. Then one researcher would be interested in the project to collect data for publication and the other would be interested in developing a relationship with the organization by solving some important problem for them. One can see that this situation is much better than one where both want the same thing (i.e. first authorship in an academic paper). Negotiation researchers (Neale and Bazerman, 1991) call this expanding the pie or integrative bargaining. This leads us to our first two propositions:

- P1:* Institutional differences in priorities and focus lead to different motivations for members to continue to be part of an international research team.
- P2:* The different motivations of team members may lead to less conflict between them on account of integrative bargaining potential.

In addition, the resources available from their university, and particularly the relative prestige of the different universities, would affect the degree and quality of participation in the project. Members from less prestigious universities (or from universities in less developed countries) may have less power and may in turn resent others in the team. The tension between researchers on account of the relative prestige of their home universities may be highest when there is some uncertainty involved in evaluating the prestige of the schools. This is supported by some studies in the area of procedural justice which suggests that people are most concerned about status and respect when they are uncertain about their relative status in an organization (Tyler and Lind, 1990). Further, when the evaluation of relative prestige is clear-cut, there is a clear hierarchy and the emergence of a clear leader. This suggests the following propositions:

- P3: The larger the difference in the prestige of various organizations represented in an international research team, the more likely the emergence of a strong leader.
- P4: The larger the difference in the prestige of various organizations represented in an international research team, the lesser the likelihood of interpersonal conflict.

Environment. The reason why companies form joint ventures when they expand to international markets is that they lack the necessary skills and resources to manage conditions in the market (Li and Shenker, 1997). In those situations where the target country is similar to the host in terms of infrastructure, culture, education system, etc., countries do not need to form joint ventures. Similarly, a reason for including members from the countries and regions being studied is the lack of accessible data. This suggests that when data are easily available research teams need not add members from host countries:

- P5: When data are difficult to acquire from a given country then teams with a member from that country will be more effective than teams without a local member.

In addition, the environment differs in the degree to which research is valued. Some countries value research more than others. This difference affects research teams indirectly by shaping institutional priorities and directly through member incentives.

Elements of the international research team

Composition. The effect of international research team heterogeneity on team performance is complex. There is a long history of research on task groups which found that group heterogeneity increases decision quality (e.g. Hoffman, 1979; McGrath, 1984). Northcraft and Neale (1993) suggested that this was true for academic research collaborations too, arguing that "in terms of research teams, the more varied (diverse) the background and capabilities of the team members, the more likely that the combination of their talents and expertise will produce an insightful scientific contribution".

Hambrick *et al.* (1996) found that in changing environments top management team heterogeneity in US firms leads to increased firm performance. All these streams of research argue that research teams need a requisite variety of skills to address the complex, difficult problems faced with conducting international research. However, there are potentially even greater benefits of team heterogeneity. Approaching an issue from a different perspectives or from a different set of assumptions often results in a much more creative or paradigm breaking outcome (Amabile, 1983). Heterogeneous research teams should promote both a requisite variety of skills and different, unique perspectives that could be useful when attacking complex research issues.

However, there is an equally impressive body of literature, which has found that heterogeneity has negative affects on group performance and, paradoxically, that homogeneity, by promoting integration, trust and communication, increases group performance (Hambrick *et al.*, 1996). Adler (1991) points out that multinational groups are often faced with quite significant process losses (e.g. mistrust, lower interpersonal attractiveness, stereotyping, miscommunication, stress) due to cultural heterogeneity. These process losses are often so severe as to make a multinational group extremely ineffective.

An additional complication is that the magnitude of the heterogeneity is often much greater in international research groups than is present in most of the groups that researchers have studied. For example, the study by Hambrick *et al.* (1996) defined team heterogeneity as differences in company tenure, age, and functional specialty among US top executives. However, international research teams have far greater heterogeneity, especially when cultural, ethnic, educational, and business experience differences are taken into consideration.

Researchers who have studied multinational groups (e.g. Adler, 1991; Snow *et al.*, 1996) suggest several moderating variables that may resolve this seeming contradiction. The task that the group is expected to perform has a powerful effect on whether heterogeneity is an asset or impediment. Diverse groups perform well with complex tasks, which require members to use highly specialized skills (Adler, 1991; Laurent, 1983) and require a high degree of creativity (Snow *et al.*, 1996). This is a fair characterization of the sorts of tasks that international research teams do when conducting international research.

Snow *et al.* (1996) argue that the magnitude of cultural differences among multinational team members can negatively affect team functioning due to the resulting process losses. However, most research teams have one characteristic in common which mitigates this, common professional education with its resulting professional norms. Despite the real differences between management education in different countries, university education at the PhD level provides enough similarity in terms of professional values and norms to facilitate the interaction of international scholars in research teams.

Since most multinational research teams conducting international research must creatively engage in a variety of complex tasks, utilize specialized knowledge, and have similar professional training heterogeneity should lead to increased team performance:

P6: Heterogeneity among members in international research teams will lead to increased team performance. Towards a model of international research teams

However, two additional factors, prior international experience and behavioral integration are likely to moderate this relationship. The interaction of heterogeneity with international experience will be discussed below while the interaction with behavioral integration will be discussed with the other propositions on behavioral integration.

We use the term international experience very broadly. It can range from experience working with international teams, living abroad, cultural training, academic training in cross-cultural issues, or all of the above. If the level of prior international experience of the team members is high it should allow the researchers to interact more effectively with their “foreign” colleagues (Adler, 1991):

P7: Prior international experience of the international research team members will moderate the effects of high team heterogeneity on performance.

It is much more difficult to acquire data outside the USA and it is often necessary to have a team member with special connections, what the Chinese call *guanxi*, in each of the countries studied (Teagarden *et al.*, 1995). *Guanxi* refers to the direct particularistic ties between two or more individuals that are both personal and based on shared attributes, identity, or origins (Tsui and Farh, 1996). Xin and Pearce (1994) found that *guanxi* allowed Chinese managers to acquire the resources and information necessary for their career and job success. Tsui and Farh (1996) go on to argue that *guanxi* has a particularly strong effect on work outcomes when the job has high task uncertainty and for high level jobs, both of which are true for members of the international research team. If members of the research team have little *guanxi* it is unlikely that they will be successful in acquiring the necessary resources (e.g. access to data, research sites, or finances) from the countries in the research study:

P8: The greater the *guanxi* of team members the more favorable the international research team outcomes.

Structure. The greater the task interdependence between team members the greater the need for coordination, joint problem solving, and mutual adjustment (Pearce, 1997). Most of the literature on small groups (e.g. Gladstein, 1984; Guzo, 1986) and organizational structure (e.g. Thompson, 1967) posits a contingency relationship between task interdependence and group effectiveness. Within the international research team one important contingency factor is the degree of behavioral integration that exists. Behavioral integration consists of three elements: the quality and quantity of information exchanged, collaborative behavior, and joint decision making (Hambrick, 1994). If team members are engaged in tasks that are highly interdependent the existence of behavioral integration would promote exactly the type of coordination, information sharing, and joint decision making that is necessary for the completion of those tasks:

P9: There will be a positive interaction between behavioral integration and task interdependence on international research team effectiveness.

Research on top management teams (Hambrick, 1994) and groups (Goodman & Associates, 1996) indicate that group effectiveness rapidly declines as groups get larger. Large groups tend to have decreased information sharing, more social loafing, less cohesion, more conflict, and take longer to make decisions. Of course, there is a minimum size that is required for getting all the skills that are required for the completion of the task. But once the minimum size is met, and the size varies with the complexity of the task, then there is a rapid decline in group effectiveness with increase in group size:

P10: There will be a curvilinear relationship between international research team size and team effectiveness. Team effectiveness increases with size up to a point and declines thereafter.

P11: The point at which group size begins to have a negative relationship with effectiveness is dependent on the complexity of the issue that the team is studying and the data availability in the countries studied.

Incentives. The incentives that we refer to here are the factors that motivate team members to continue to be part of the international research team. It is almost a truism that the stronger the incentives the more likely individuals are to strive to achieve them (Kerr, 1988). Yet the situation is often much more complex than this. As Steven Kerr pointed out in his classic paper "On the folly of rewarding A, while hoping for B" (1975), there needs to be congruence between the organizational goals and what it rewards. For example, a firm that wants risk taking and innovation from their employees yet punishes failures is unlikely to achieve its aims. This line of reasoning when applied to international research teams results in the following propositions:

P12: A fit between the incentives for participating in the team and the primary team goals will lead to greater team performance.

P13: A fit between the institutional incentives and the team goals will lead to greater team performance.

Leadership. The leader of the international research team (or product champion) has a disproportionate impact on group functioning compared to other group members (Bass, 1990; Snow *et al.*, 1996). While it is important not to overstate the importance of the leader by viewing the leaders as responsible for everything it is equally important not to minimize the importance of the leader. Within the context of this model the leader or project champion has significant influence over many of the variables that are important for the international research team functioning (e.g. behavioral integration, role conflict, selecting team members, etc.):

P14: There will be a positive relationship between the attention the leader pays to the composition, incentives, process, and structure variables outlined above and the effectiveness of the international research team.

Team processes

Behavioral integration. As pointed out earlier, behavioral integration refers to the quality and quantity of information exchanged, collaborative behavior, and joint decision making. All three of these elements are particularly important for the effective functioning of international research teams. Since one of the major reasons that international research teams are set up is to synthesize the different strengths of the team members to produce a superior outcome. This requires both a high quality and quantity of information exchange and a good deal of collaborative behavior. Finally, if the team is to fully exploit the different knowledge and skills of its members the team must engage in joint decision making at least on the important issues. For all these reasons increased behavioral integration should lead to increased international research team performance:

P15: There will be a positive relationship between behavioral integration and international research team performance.

While the behavioral integration of the team has important direct effects it also has important interaction effects with many of the other aspects of the international research team. One of these interactions is with the heterogeneity of the international research team. I have already discussed the negative affects that the demographic heterogeneity can have on the international research team performance. Such extreme cultural, educational, and professional differences can easily result in heightened conflict, communication problems, and coordination difficulties. These problems can be mitigated if a high degree of behavioral integration exists:

P16: The behavioral integration of the international research team members will moderate the effects of high team heterogeneity on team performance.

Group cohesion. Though we consider international research to be a loose amalgamation of individuals and therefore not a team in the strict sense of the word, and group cohesion tends to be more important in social groups, we believe that cohesiveness plays an important role in international team working and effectiveness. This is especially true in international teams because people from some cultures do not distinguish between the purposes of different kinds of groups. For example, Americans distinguish between work groups where productivity is an important goal and meeting the relational needs of members is just a peripheral goal (in some cases, the non-productivity goals are considered detrimental to team performance). For the East Asians, on the other hand, meeting the relational needs of members is always important (Cross and Madsen, 1997). Thus a team that meets the relational needs of members will be more satisfying to members from these cultures:

P17: In teams with members from countries where people are socialized to accord to relational needs, cohesive groups will lead to better team performance and satisfaction.

Intra-group conflict. Jehn (1995; 1997) suggests that intra-group conflict is functional when the conflict reflects disagreement over tasks rather than over

relationships. Task conflict includes disagreement over the content of the tasks being performed including differences in viewpoints, ideas and opinions and relationship conflicts include interpersonal incompatibilities and animosity (Jehn, 1995). Jehn (1995) found that the nature of the task moderated the relationship between task conflict and individual and group performance. For groups that engaged in non-routine jobs, moderate to high task conflict led to the best performance. For groups engaged in non-routine jobs, low levels of conflict led to the best possible outcomes.

Since most international research teams would be engaged in non-routine jobs, Jehn's findings suggest that moderate to high levels of task conflict is required for effective performance. Thus,

P18: There will be a curvilinear relationship between task conflict and the performance of international research teams. Specifically, low and very high levels of conflict will lead to lower performance compared to moderate to high levels of task conflict.

Conclusion

The above discussion hints at the complex interactions of international research teams. We believe that our approach, which builds on existing research on groups and top management teams, provides a useful lens for both scholars interested in studying collaborative teams and participants of such teams. International research teams represent an intriguing paradox. They offer an opportunity to do meaningful, path-breaking research even though the collaboration among people from different nations is fraught with danger.

With globalization of businesses there will be an increasing need to utilize and integrate talent and skills of human resources from all parts of the world. Global companies can no longer locate research centers in one country, and hope that the knowledge generated there will diffuse to all its operations around the world. Research and development too will become international. Companies may make their research international through the use of multi-national research teams. Some parts of our model may apply to such teams too.

Note

1. While researchers generally use the term research management team, Hambrick (1994) points out that, at least in the context of top management teams, the use of "team" is not very accurate. The term team usually refers to a group that is characterized by frequent face to face interactions, shared goals, cohesion, etc. None of these factors may be present with international research teams that rarely meet, have different interests, and whose members often have strong, individualistic personalities. It would probably be more accurate to refer to such teams as research groups, but for the sake of continuity with the literature we will continue to use the term research teams.

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