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Performance in internationally dispersed research and development units ☆

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Abstract

Among internationally dispersed research and development units, quality of communication predicts performance while quantity of communication does not; higher levels of power decentralization can lead to a decrement in organizational performance; and development units are more able to meet their planned goals than research units, although insisting on tight management towards goals may hinder research performance relative to competitors. The data are consistent with models which propose that there is an optimal level of decentralization which is difficult for organizations to identify and maintain.

Keywords: Research; Development; International; Networks; Performance

Empirical data from a variety of sources indicate that multinational firms are increasing the amount of research and development (technical) work that they do outside their home countries (Chiesa, 1996; Gassmann & von Zedtwitz, 1998, 1999; Gates, 1995; Kuemmerle, 1997; National Science Board, 1996; Niosi, 1999; Penner-Hahn, 1998; Roberts, 1995; Serapio & Dalton, 1999; Zander, 1997), although not all the data is in agreement on this point (e.g., Patel, 1996; Patel & Pavitt, 1992). This technical work outside the home country (extra-national) has occurred in two major forms, external and internal networks (Archibugi & Michie, 1995; Brockhoff, 1998; Medcof, 1997a). External, extra-national technology networks involve firms collaborating with each other, and/or with such institutions as universities and government research labs, located in more than one country. An internal extra-national technology network arises when a firm establishes a number of technical units, completely under its own control, at a number of extra-national sites. Extra-national networks do not preclude the establishment of networks within the home country and a given firm may simultaneously be involved in both internal and external networks. The management of internal extra-national networks is the subject of this paper although the management of external extra-national networks is also an important subject which is receiving increasing research attention (e.g. Brockhoff, 1991; Chen, 1997; Chiesa & Manzini, 1997, 1998; Hagedoorn, 1995; Hagedoorn & Narula, 1996; Hagedoorn & Sadowski, 1999; Jassawalla & Sashittal, 1998; Majumdar & Venataraman, 1998; Medcof, 1997b).

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The management of internal extra-national networks has presented enormous challenges which were not anticipated on the basis of the experience of managing one or a few locations in the home country. In the views of both managers and academics, two of the major challenges are communications (Ciborra & Patriotti, 1998; de Meyer, 1991, 1993; Macdonald, 1996; Marschan, 1996; McDonough & Kahn, 1997; Medcof, 2003) and power decentralization (Asakawa, 1996; Bartlett & Ghoshal, 1990; Behrman & Fischer, 1980; Birkinshaw & Morrison, 1995; Brockhoff & Schmaul, 1996; Cheng & Bolon, 1993; Chiesa, 1996; De Meyer & Mizushima, 1989; Medcof, 2001; Nobel & Birkinshaw, 1998; Pearce & Singh, 1992a,b; Stock, Greis, & Dibner, 1996). These are important issues in any organization, but the difficulties surrounding them are exacerbated when long geographical distances must be bridged (Allen, 1977; De Meyer, 1993).

Communication is a central issue in extra-national networks partly because R&D is an activity which requires a great deal of collaboration amongst participants (Allen, 1977; De Meyer, 1993). The high uncertainty involved when various functional groups participate in the creation of new technologies and new products demands close consultation to work out the succession of puzzles encountered. When all of the collaborating parties are located in one or a few places in the home country, a certain magnitude of difficulty is created by these communication demands. When those collaborating parties are scattered around the globe and have different cultural backgrounds, another order of magnitude of difficulty is created. Studies soliciting managers' opinions about these communication needs indicate that, generally, they believe that the more communication the better. They also suggest that some forms of communication are better than others (De Meyer, 1991). But at least one empirical study has found surprisingly little evidence of a relationship between the amount of communication and organizational performance (McDonough, Kahn, & Griffin, 1999). Clearly, this is an important issue that is not yet resolved and more study is needed if we are to understand the role of communication in internal extra-national technology networks.

The issue of organizational power decentralization in internal extra-national technology networks has also not been resolved. For some years there seemed to have been a consensus that extra-national sites should be given considerable autonomy in the conduct of their affairs, perhaps more than headquarters in the home country was inclined to grant. Yet, studies show that firms deploy their extra-national units with various degrees of autonomy. There is even evidence that a number of respected firms initially granted considerable autonomy to their extra-national units but have recently moved to a more centralized stance by taking back some of the originally decentralized power (Gassmann & von Zedtwitz, 1998, 1999). Again, we see a lack of resolution that requires more study.

The purpose of the research reported here is to advance our understanding of these two central issues in the management of internal extra-national technology networks. We will gather data which link the amount and quality of communication directly to measures of organizational performance and which link degree of decentralization to performance. This will be done using questionnaire measures that allow explicit statistical tests of the propositions being evaluated. The quantitative approach of this study is intended to complement the more usual approach to these issues which is to interview managers and provide qualitative interpretations of the findings. This complementarity of approach should deepen our insight into the issues studied.

1. Communication

De Meyer (1991) reported a landmark study of communication among internationally dispersed technology units. He interviewed managers about their use of six different communication modes (socialization, rules and procedures, boundary-spanning roles, structural mechanisms, and electronic means) and concluded that building an effective communication network is more difficult in an international environment than when there is a single site, that most firms use a portfolio of communication modes in an attempt to draw on their various strengths, and that electronic communication can be a helpful supplement to face-to-face meetings but is not a substitute for it. The thrust of this report is that improved communication is an important goal, but no clear distinction was drawn between improved meaning "more", and improved meaning "better quality", although the distinction between "more" and "better quality" was implied in some parts of De Meyer's discussion.

McDonough and his colleagues (McDonough & Kahn, 1997; McDonough et al., 1999) have more recently studied the level of use of various communication modes and have also linked certain kinds of use to performance in global new product development teams. In the first report, McDonough and Kahn (1997) drew a distinction between soft and hard communication technologies. The former include such managerial/behavioural techniques as promoting trust among team members and encouraging collective goals. The latter include telephone, fax, e-mail and teleconferencing.