

# Multinational marketing information management



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As multinational enterprises turn to foreign subsidiaries for research and development (R&D) and product development, questions arise regarding the most effective organizational structures for global innovation. Although organizational conditions that satisfy the needs for self-determination and teamwork have long been considered intrinsic motivators, past research has not analyzed the consequences of intrinsic motivators on global innovation. The basic research question is this: In globally dispersed subsidiary R&D units, what organizational conditions and motivators are associated with the highest knowledge output?

A sample of 275 globally dispersed R&D subsidiaries were studied from 1995 to 2002. Data were collected from a postal survey, field and telephone interviews, and secondary sources. Subsidiary self-determination and teamwork were found to have a significant effect on knowledge output, as objectively measured by patent citations. Subsidiary agglomerations on inputs such as sourcing and hiring, and self-determination on outputs such as marketing and product development, emerged as positive determinants of knowledge generation in R&D subsidiaries.

In addition, interment cooperation and integrate cooperation were significant determinants of knowledge generation by subsidiaries. These findings highlight the importance of self-determination, teamwork, and cooperation to knowledge creation and innovations. Managers face the tough challenge of how to motivate globally dispersed knowledge workers to conduct research that will generate knowledge and will strengthen firm performance.

The results provide theoretical and practical insights on how Macs can leverage their innovation competencies across foreign R&D subsidiaries.

Introduction c intention in many industries has become more knowledge and technology intensive as firms strive to increase their global innovation

Address correspondence to: Susan M. Muhammad, Temple University, Department of Marketing, Sparkman Hall, Fox School of Business and Management, Philadelphia PA 19122. Tell. : (215) 204-3561. Fax: (215) 204-6237. E-mail: Susan. [email protected] Deed. ? The authors would like to thank seminar participants at the Copenhagen Business School, Jeanine Black, Sorser Businesslike, Nicolai Foss, Visas Kumar, Jacqueline Openings, Jugging Ghana, three anonymous referees, and the special issue editors for their helpful comments on earlier versions of this manuscript. Capabilities. The ability of multinational corporations Macs) to leverage their innovation competencies across globally dispersed subsidiaries is an increasingly valuable source of competitive advantage (Alameda, 1996; Frost, 2001; Hansen, 2002; Hansen and Lavas, 2004; Nobel and Brainwash, 1998).

As multinational enterprises turn to foreign subsidiaries for research and development (R&D) and product innovation, questions arise regarding the most effective organizational structures for global innovation (Cheese, 2000; McCullough, Kahn, and Barrack, 2001; Mended, 2003). Organizational structures need to reflect human nature and the motivation of the scientists involved GLOBAL INNOVATION IN MACS (Steiner, 1995). With this in mind, motivation theory is drawn on to explain how the level of self-determination and teamwork of globally dispersed R&D subsidiaries is important to innovation.

Motivation theory has typically been employed to understand and explain actions at the individual level. In contrast, in this article motivation theory is applied at the organizational level or, more specifically, at the subsidiary level. The effects of subsidiary self-determination and teamwork on innovation and knowledge output are examined in the context of multinational enterprises. Multinational enterprises face the challenge of operating effectively to generate knowledge across multiple boundaries, a capability Rollicks (2002) called distributive organizing.

Managers responsible for innovation and knowledge production face strategic decisions on autonomy and control, working conditions, and tangible rewards. Firms can grant foreign subsidiaries considerable autonomy or can retain high levels of control. Firms can direct their efforts to promote work conditions that encourage or discourage teamwork in and between subsidiaries. Theory and empirical evidence point to important trade-offs. For managers, this translates into a special challenge-? how to motivate knowledge workers in globally disproportional SKETCHES DRP.

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He holds a Ph. D. From the University of Bucking. Erased subsidiaries to conduct research that will generate knowledge and will strengthen firm performance. Knowledge workers are a strategically important segment of the workforce (Chin and Kowalski, 2003) and tend to be highly intrinsically motivated (Tampon, 1993). However, the positive effects of intrinsic motivation on performance cannot be taken for granted. Motivation consists of a complex combination of internal factors and factors external to the self (Beck, 2000).

Intrinsic motivation is the motivation to work because the activity is interesting or personally satisfying, whereas extrinsic motivation is the motivation arising from external sources such as expected evaluation or rewards, competition with peers, monitoring, or dictates from superiors (Amabile, 1997). A large body of research has explored the effects of organizational conditions, extrinsic rewards, and constraints on intrinsic motivation. Researchers have highlighted the difficulty of developing and maintaining work environments conducive to motivation.

Past research reveals a strong theoretical and empirical connection among organizational conditions, employee motivation, and performance on a range of tasks at an individual level. Less clear are the effects of motivation management on organizational outcomes. The link between organizational conditions and organizational knowledge generation has not been thoroughly tested at the subsidiary level or in the context of global innovation strategy. The basic research question is this: In globally dispersed subsidiary R&D units, what organizational conditions and motivators are associated with the highest knowledge output?

There are two main reasons why this question is important. First, multinational enterprises have the potential to benefit substantially from superior knowledge management (Pressman, Brainwash, ND Nobel, 1999; Cantele, 1995; Foss and Petersen, 2002). Knowledge management involves multiple aspects. Most research on knowledge management has focused on knowledge transfer or dissemination (Bartlett and Shoal, 1986; Guppy and Governance, 2000; Hansen, 2002; van der Big, Song, and Wagner, 2003).

Little empirical research has examined how new knowledge is generated (McFadden and Canella, 2004).

Value creation in MNCs stems from a variety of knowledge-based intangibles (Merck and Young, 1991) and leads to knowledge output as measured by patents, patent citations, and ultimately new products and processes. Past research has involved almost no testing of motivation and knowledge generation in multinational enterprises (Frey and Gene, 2003). Firms are expected to increase their reliance on global teams (McCullough, Kahn, and Barrack, 2001). Analyzing the role of motivation management for global product innovation will help to fill this important research gap.

Second, motivation research has often examined the sources of motivation and effects at the individual level, such as worker well-being (Hickman and Lotted, 1975) or personal success (Hodge and Segmented, 2001). For understanding global product innovation, analysis at the organizational level is more relevant than analysis at the individual level. For example, a survey of R&D units of multinational firms by Persuade (2005) provided important and unique insights on the link between organizational structures and global innovation capabilities.

However, studies of knowledge creation have typically used perceptual or subjective measures of output and performance. This can lead to overconfidence on respondent recall (McFadden and Canella, 2004). What remains to be analyzed is the effect of motivators at the organizational level on objective measures of knowledge generation in multinational firms. Both theory development and empirical research are limited in this area. In

reflection of these research gaps in global product innovation research, the present article examines the effects of organizational motivators on the knowledge output of R&D units in multinational subsidiaries.

The following section describes the theory underlying the research and presents the conceptual model and research hypotheses. Theory and Hypotheses Motivation theory helps to explain how organizational conditions affect intrinsic motivation and knowledge output. Motivation reflects a hierarchy of needs (Maslow, 1943) and the desire for achievement, power and affiliation (McClelland, 1961). Herzberg (1958) highlighted how interesting work, challenge, and increasing responsibility are important to motivation. Individuals who self-select into knowledge and innovation occupations often value knowledge generation for its own sake.

Financial rewards matter to scientists (Bawdy, 1971; Stern, 2004) although, to use Herzberg's (1958) terminology, scientists have been consistently found to be more motivation oriented than hygiene oriented (Bawdy, 1971; Clarke, 2002). In other words, scientists perceive doing meaningful work or achieving self-actualization (Maslow, 1943) to be more important than financial compensation. Stern (2004) found that scientists who receive multiple job offers accept lower salaries to work in more science-oriented environments.

He concluded that scientists pay to be scientists. Managers who seek to attract and keep talented innovators may conclude from this that the work environment is more important than pay to research scientists. Theory and practice indicate that organizational conditions can easily disrupt intrinsic



motivation (Ryan and Deck', 2000). Both individual-level and organizational-level characteristics affect motivation and innovation (Reid and De Aberrant, 2004). The research examined the organizational consequences of conditions associated with motivation for global innovation and knowledge generation.

Self-Determination According to cognitive evaluation theory (Decide and Ryan, 1980, 1985), the psychological needs for autonomy and self-determination underlie intrinsic motivation. Researchers have evaluated the degree of self-determination of individuals and organizations. Organizational conditions that satisfy the needs for autonomy and self-determination tend to increase intrinsic motivation, whereas conditions that do not allow for autonomy and self-determination tend to decrease intrinsic motivation. Greater surveillance and evaluation have been shown to undermine intrinsic motivation (Decide and Ryan, 1985).

External constraints can negatively affect intrinsic motivation in organizations (Sherman and Smith, 1984). Similar to the notion of self-determination is the concept of empowerment. In the product development area, team empowerment has been seen as important to success (McCullough, 2000). Firms use foreign subsidiaries to enhance their innovation capacity. Globally supervised R subsidiaries vary significantly in their level of self-determination. Although little research has examined organizational structures in this context, research by Persuade (2005) established a link between autonomy and innovation capability.

To build theory in this area, three areas were identified in which the self-determination of a subsidiary can be assessed: (1) input activities; (2) output activities; and (3) process activities. Self-determination in input activities encompasses the degree of responsibility for selecting suppliers, hiring senior management, and global sourcing strategy, as well as the relationship with the top-management team and the degree of local control. Subsidiaries vary in their degree of self-determination of output activities such as sales and service, assembly, manufacturing, product development, and international strategy development.

Subsidiaries also differ in their degree of self-determination in their internal process activities in the areas of operations and training. These include the responsibility for the implementation of operations and the employee training process. Given the established connections among autonomy, motivation, and innovation viability, it is expected that the greater the self-determination of the foreign subsidiary, the greater the knowledge output of the subsidiary.

For these reasons, H1 a: The greater the level of self-determination exercised by a foreign R subsidiary over its input activities, the greater the knowledge output of the subsidiary. H1 b: The greater the level of self-determination exercised by a foreign R subsidiary over its output Hal: The greater the level of self-determination exercised by a foreign R subsidiary over its internal process activities, the greater the knowledge output of the subsidiary.

Teamwork and Cooperation Teamwork and the social environment positively affect intrinsic motivation (Amiable, 1985).

Social psychology theory asserts that cooperative rewards and peer social interaction produce higher levels of intrinsic motivation (Homo et al. , 1994). Team-based structures that enable personal relationships enhance intrinsic motivation (Costello and Frey, 2000). Social psychology theory and research highlight the relationship between teamwork and motivation, with an emphasis on the individual or team as the unit of analysis. Yet it is recognized that both industrialization and interrogations effects just be taken into account (Tauter and Hierarchical, 2004).

Teamwork can be considered to be the cooperative networking and communication between or within subsidiaries or units of a firm. Networking can strengthen the subsidiary role within the company (Foreseen and Petersen, 2000), and internet communication in multinational corporations can encourage the motivational 445 disposition to share knowledge (Shoal, Kookier, and Slaking, 1994). Information openness and cooperation are critical to the management of scientific knowledge (McMillan, Hamilton, and Deeds, 2000; McMillan, Klaxons, and Hamilton, 1995).

Knowledge production in knowledge-intensive firms tends to be a team effort (Chin and Kowalski, 2003; Guatemalan and Gout, 2003; Hodge and Segmented, 2001; Monika and Attacker, 1995; Tech, Passion, and Sheen, 1997). Teamwork is essential to effective product innovation (Brown and Eisenhower, 1995). For product development teams, Seth' and Nicholson (2001) found that outcome interdependence led to enthusiastic or charged team behaviors. They also found that the extent of charged behavior had a positive effect on product market performance.

Others found the link between internal ND external cooperation to be important for product development (Hildebrand and Biomass, 2004). This theoretical and empirical foundation enables the examination of teamwork and innovation in the context of multinational enterprises. It is expected that the greater the amount of teamwork and cooperation in the operations of an R&D subsidiary, the greater the knowledge output of the subsidiary. Thus, H2o: The greater the interment cooperation between the foreign R&D subsidiary and other business units, the greater the knowledge output of the subsidiary.

Hub: The greater the integrate cooperation within the reign R&D subsidiary, the greater the knowledge output of the subsidiary. In sum, motivation theory drives the model of knowledge generation in multinational subsidiaries. The model addresses motivation at the organizational level rather than at the individual level. As depicted in Figure 1, the model brings together and illustrates the relationships between foreign R&D subsidiary organizational characteristics and knowledge generation and provides the context for testing the research hypotheses.

Multiple data sources and methods are used to test these hypotheses. The following section ascribes the research methodology and the data. Research Methods A combination of research methods was used to generate the data used to test the hypotheses on motivation and knowledge output. Data were collected from Subsidiary Agglomerations Hal Input + Hal Output + HCI Process + KNOWLEDGE GENERATION Teamwork H2o Interment + Hub Integrate + Control Variables Firm-level variables Location variables Industry-level variables Figure 1 .

Model of Knowledge Generation in Multinational Subsidiaries patent records, annual reports, a postal survey, and field and telephone interviews, as detailed in the following sections. Three levels of data are used, as suggested by Buckley and Caisson (1976): (1) electrification's data; (2) industry-level data; and (3) fireflies data. Multiple measures were developed for each construct, adapting established measures when available. Pressures interviews with managers helped to refine existing scales and measures.

The interviews and pretests of the measures provided insights on whether or not the measures were interpreted as intended. Slight modifications were made as necessary. The measures were then tested using reliability analysis and factor analysis. A series of posture interviews did not reveal difficulties in interpretation by the respondents. Sample The research objective focused on understanding knowledge production at the R subsidiary level in a global context. To do so, a sample frame was constructed of R subsidiaries operating in a foreign host environment.