Managing New Product Development Teams in a Globally Dispersed NPD Program

Sören Salomo, Elko J. Keinschmidt, and Ulrike de Brentani

Globalization is a major market trend today, one characterized by both increased international competition as well as extensive opportunities for firms to expand their operations beyond current boundaries. Effectively dealing with this important change, however, makes the management of global new product development (NPD) a major concern. To ensure success in this complex and competitive endeavor, companies must rely on global NPD teams that make use of the talents and knowledge available in different parts of the global organization. Thus, cohesive and well-functioning global NPD teams become a critical capability by which firms can effectively leverage this much more diverse set of perspectives, experiences, and cultural sensitivities for the global NPD effort. The present research addresses the global NPD team and its impact on performance from both an antecedent and a contingency perspective. Using the resource-based view (RBV) as a theoretical framework, the study clarifies how the internal, or behavioral, environment of the firm—specifically, resource commitment and senior management involvement—and the global NPD team are interrelated and contribute to global NPD program performance. In addition, the proposed performance relationships are viewed as being contingent on certain explicit, or strategic, factors. In particular, the degree of global dispersion of the firm’s NPD effort is seen as influencing the management approach and thus altering the relationships among company background resources, team, and performance. For the empirical analysis, data are collected through a survey of 467 corporate global new product programs (North America and Europe, business-to-business). A structural model testing for the hypothesized effects was substantially supported. The results show that creating and effectively managing global NPD teams offers opportunities for leveraging a diverse but unique combination of talents and knowledge-based resources, thereby enhancing the firm’s ability to achieve a sustained competitive advantage in international markets. To function effectively, the global NPD team must be nested in a corporate environment in which there is a commitment of sufficient resources and where senior management plays an active role in leading, championing, and coordinating the global NPD effort. This need for commitment and global team integration becomes even more important for success as the NPD effort becomes more globally dispersed.

Introduction

Today, business is largely a global business, and firms active on this scale must develop new products for global markets. As firms strive for the global marketplace they must respond to local differences in preferences (McDonough, Kahn, and Barczak, 2001), regulatory requirements, and sometimes political pressures to create “local content” (Gassmann and Keupp, 2005). But these requirements in global new product development (NPD) are more than matched by opportunities. One of these is the ability to develop new products that leverage the potential economies resulting from the much larger markets in the global arena (Levitt, 1983). Another opportunity is the ability to gain access to local resources—including people, local knowledge, and specialized skills—by operating in a wide variety of countries (Bengtsson and Sölvell, 2004; Chiesa, 2000). Globally active firms are also attractive to local scientists and experts, allowing firms to exploit the resource advantages found in highly qualified staff, who bring with them specialized expertise and knowledge of local customers and market conditions (Kumar, 2006). Thus, success in global NPD calls for resources and capabilities with which firms can meet these opportunities and challenges. In this paper, the resource-based view (RBV) of the firm is used to explain how company resources (i.e., internal behavioral environment) and capabilities (i.e., global NPD team) are linked to performance. In addition, it is shown how these relationships change, depending on the degree international dispersion of the NPD effort.
Past research in NPD identifies the new product development team, as well as cross-functionalism, as drivers of NPD success (Brown and Eisenhardt, 1995; Griffin and Hauser, 1996; Gupta and Wilemon, 1990; Moenaert and Souder, 1990). Cross-functional team composition improves NPD performance as it promotes information gathering and sharing across different areas of expertise, which helps in fulfilling specific NPD tasks and in coordinating the variety of functional activities required for a successful NPD program (Lawrence and Lorsch, 1986; Olson et al., 2001). In the context of international NPD, however, this perspective must change such that teams, in addition to cross-functionality, represent the talents and knowledge in different parts of the global organization, thereby enhancing the firm’s ability to leverage a broader set of competencies, experiences, and also cultural sensitivities for the NPD effort (Chiesa, 1996; Devinney, 1995; Smith and Blanck, 2002). As firms become more active internationally, it is the global NPD team that increasingly represents the critical capability needed for ensuring NPD success. By integrating globally dispersed members into the NPD process, companies can profit from geographically specialized skills, local market insights, and diversity of perspective that allow them to respond more effectively to the needs of the global marketplace (Chiesa; McDonough et al., 2001).

The need for a global NPD team is strongly supported by research evidence and is accepted in business practice (Snow et al., 1996; Smith and Blanck, 2002). Yet firms still struggle to establish teams that function well in line with the global nature of the NPD task (McDonough et al., 2001). The varying degree of globalization of NPD teams (i.e., the extent of integration of talents, expertise, and viewpoints from different parts of the global organization) or its impact on outcome may be explained from two key perspectives. The first view concerns certain resources or conditions internal to the firm that hitherto have been overlooked by researchers as potential elements in the team–performance equation. Specifically, the firm’s commitment to establishing and managing more globally oriented NPD teams and the functioning of these may be hampered by a lack or mismatch in antecedent conditions at the corporate level (i.e., internal resources). Recent NPD research suggests that certain, more implicit, elements describing the behavioral environment (BE) of the firm (i.e., organizational commitment and senior management involvement) may embody these significant antecedent conditions (de Brentani and Kleinschmidt, 2004; Wei and Morgan, 2004). Hence, understanding the global NPD team–performance relationship calls for controlling for these corporate background resources. In addition, the BE factors can be seen as having a direct impact on performance because they may play an antecedent role for other NPD performance-related dimensions (e.g., NPD process, NPD strategy) (Kleinschmidt, de Brentani, and Salomo, 2007).

Second, other more explicit corporate elements may also influence global NPD, potentially altering the relationships between background, team, and performance. Such an element is the degree to which the global NPD effort is dispersed on an international scale (i.e., carried on outside of the firm’s headquarters [HQ] location). This explicit, strategy-based dimension has been shown to influence the NPD management approach (Brockhoff and Schmalt, 1996; McDonough et al., 2001) and also team performance (Chiesa, 2000). For example,
firms at different stages of internationalization are likely to demonstrate higher or lower degrees of dispersion of the NPD effort. Early stage firms often subscribe to a more local approach, perceiving global involvement and knowledge input as not that important. In contrast, a more mature stage of internationalization can be associated with greater global dispersion of NPD effort (i.e., greater global involvement and knowledge integration) as these firms have learnt to appreciate the value of such input (Chiesa; Knight and Cavusgil, 2004). In other cases, firms may deliberately decide to reduce globalization of the NPD team in cases when such a scenario can negatively impact NPD performance effects. This is highlighted by case study evidence of firms limiting input from international personnel due to the danger of involuntary knowledge spillover combined with weak intellectual property rights regimes (Gassmann and Keupp, 2005). Thus, an important but often overlooked condition in this context is the degree of global dispersion of the firm’s global NPD effort. This perspective calls for a contingency approach to better appreciate the performance mechanisms of global new product development and NPD teams.

The research presented in this paper uses a conceptual framework that clarifies how the behavioral environment and the global NPD team contribute to the success of international NPD programs, controlling for the degree of global dispersion of the NPD effort. The model specifies both an antecedent and contingency perspective to better understand NPD performance and global NPD teams. To this end, the study contributes to the existing literature on management of international NPD in two ways. First, building on the RBV of the firm, both direct and indirect antecedent performance effects of NPD-related internal resources of firms (i.e., behavioral environment) are investigated. Then, the behavioral environment and the global NPD team are integrated in a model where team characteristics mediate the performance relationship of the behavioral environment. Second, the study delves into a little researched but important area: the degree to which the global dispersion of the firm’s NPD effort acts as a contingency, potentially influencing the resource–capability–performance relationships.

**Theoretical Framework**

The theoretical model underlying this research is the RBV of the firm (Pringle and Kroll, 1997; Wernerfelt, 1984). RBV, together with versions incorporating learning (Smith, Vasudevan, and Tanniru, 1996) and dynamic capabilities (Eisenhardt and Martin, 2000; Rugman and Verbeke, 2002), postulates that competitive advantage, and thus firm performance, is based primarily on the firm’s internal resources and capabilities. Firms gain a sustainable competitive advantage by employing resources that are valuable, rare, inimitable, and nonsubstitutable and where this resource base is adjusted according to changing environments over time (Smith at al.; Teece, Pisano, and Shuen, 1997). The critical resources tend to be intangible, and these are developed over time and are not readily traded in the marketplace. Prominent examples are organizational resources such as tacit knowledge, experience, leadership, or risk taking (Pringle and Kroll; Smith et al.). These can be seen as “background” resources (Teece et al.) that are key to achieving a competitive advantage as they are critical encouragements to the behavior, cooperation, and commitment of firm members. In the context of international NPD, a behavioral environment expressed in terms of, for example, an attitude encouraging sufficient resource commitment to and senior management involvement in global NPD may predispose a firm to perform a coordinated set of tasks in the form of capabilities or established routines better than other firms (Helfat and Peteraf, 2003). When background resources are relatively stable, these capabilities become viable across different NPD projects in a program spanning multiple products or markets (Pringle and Kroll). An established capability in the context of global NPD may be that firms build suitably composed NPD teams as these offer an effective and efficient way of coordinating and integrating external knowledge with internal capabilities and processes—an important task when striving for successful global NPD (Teece et al.).

In sum, RBV suggests that the right resource setting improves the firm’s ability to perform a coordinated set of tasks and routines required for achieving global NPD success (Helfat and Peteraf, 2003; Kleinschmidt et al., 2007). In line with the literature, the present research focuses on resource commitment and senior management involvement as aspects of the behavioral environment of firms representing relevant background resources (Barczak, 1995; Chryssochoidis and Wong, 1998; de Brentani and Kleinschmidt, 2004). These resources impact global NPD performance (global NPD performance construct is detailed herein) both directly and indirectly, through the
capability of the firm to build effective global NPD teams. In addition, the degree of dispersion of the global NPD effort is shown to moderate these relationships (see Exhibit 1).

Development of Hypotheses

Performance in Global NPD

NPD and RBV view performance in multidimensional terms, comprising financial and nonfinancial measures. In effect, NPD performance has both a strategic and a financial dimension (Samiee and Roth, 1992), where firms assess returns using subjective outcome perceptions (Cavusgil and Zou, 1994; Griffin and Page, 1996) or by using proxies that represent longer-term financial results but that are more easily measured in the short-term or across disparate sets of firms or projects (Crawford and Di Benedetto, 2003). Research shows that, in the global NPD context, the most important proxy for overall global NPD performance is the ability of the firm to achieve windows of opportunity (de Brentani, Kleinschmidt, and Salomo, 2010; Kleinschmidt et al., 2007; Mudambi, Mudambi, and Navarra, 2007). Given the greater competition and diversity of demand defining the global arena, companies that gain a foothold in, or “open a window” to, new products, markets, or technologies are more likely to succeed in the longer run. This supports the premise in RBV that establishing market and technological leadership positions is antecedent to achieving a competitive advantage and ultimately superior financial performance (Hunt, 1997; Peteraf and Barney, 2003). Given that opening windows of opportunity enables firms to achieve a competitive advantage, this measure represents a relevant performance objective in the context of global NPD programs. Thus, throughout the paper, the term global NPD performance refers to the assessment of windows of opportunity opened for the global NPD “program” (i.e., all global NPD projects during the previous three-year period).

Global NPD Team and Global NPD Program Performance

As firms become more global, new product development must address the challenges that go along with this kind of activity. One of these deals with the question of appropriate team composition. In general, NPD is viewed as a multidisciplinary process, where tasks, skills, resources, and knowledge from various areas of expertise are integrated. Each team member contributes to NPD with task-specific knowledge while working together in transforming an idea into a marketable product (Olson et al., 2001). In assessing NPD teams, prior literature has focused largely on the notion of cross-functionality and integration of function-specific knowledge. From the global NPD perspective, this focus needs to be broadened by incorporating the effect of international team diversification (Devinney, 1995). Globally active firms must account for the fact that potential team members, who may provide valuable contributions, are globally dispersed across the organization (Gassmann...
and von Zedtwitz, 2003). Establishing global teams can help in better meeting the challenges posed by the global marketplace. Because cultures, preferences and business practices vary across countries, local market- and technology-related knowledge becomes critical for developing a globally viable new product program. Thus, NPD teams that integrate the talents and knowledge in different parts of the organization and that reflect its international scope are likely to enhance a firm’s ability to open up new technologies and markets and to venture into completely new product arenas (Mudambi et al., 2007). This positive effect of the global NPD team on performance may be argued from at least three different perspectives.

First, global NPD teams integrate members from different countries and cultures. Because experience varies across these spheres, teams can draw on a broader knowledge base (Subramaniam and Venkatraman, 2001). Team members contribute specific tacit knowledge of differences among countries and markets (Lagerström and Andersson, 2003), and they exhibit cultural sensitivity specific to their home country (Smith and Blanck, 2002). Hence, they are better equipped to provide multiple perspectives and solutions for emergent problems during NPD. This diversity of perspective, experience, and knowledge can be expected to result in a greater variety of solutions, enhancing the diversity and innovativeness of the global NPD program.

Second, gathering NPD team members from different parts of the global organization facilitates learning (Harvey and Novicevic, 2002). Team-internal cooperation promotes information flow as the social and physical distance among persons with different international and functional backgrounds is reduced (Eisenhardt and Tabrizi, 1995). Global teams bring together knowledge from various parts of the organization, enabling transfer of technology- and/or market-related information (Bartlett and Goshal, 1989). Joint information processing includes shared interpretation of information, enabling teams to recombine individual knowledge that is used to generate and evaluate new solutions to global NPD problems (Huber, 1991; Sinkula, 1994). In this sense, global teams function as boundary spanners that support the organization’s ability to learn in and through global NPD teams (Illes and Hayers, 1997).

Third, global teams composed of members with internationally diverse backgrounds often exhibit increased levels of conflict, which can both hamper and promote creativity. On one hand, team members must cope with a variety of cross-cultural issues related, for example, to national or occupational culture (Snow et al., 1996) and must overcome potential language barriers (McDonough et al., 2001). Thus, heterogeneous teams from different parts of the world typically have less shared experience (Lewis and Weigert, 1985; Mayer, Davis, and Schoorman, 1995), resulting in difficulties to resolve conflicts constructively. This is supported in studies by Williamson and O’Reilly (1998), who concluded that team diversity tends to increase conflict (Jackson, Joshi, and Erhardt, 2003), thus hampering the ability of team members to focus on joint NPD activities and a clear task strategy (Mayer, Davis, and Schoorman, 1995; McDonough et al.). At the same time, however, cooperation between members collaborating in a global team deliberately gathered to facilitate communication across organizational and regional boundaries can work as a strong force promoting socialization (Mortensen and Hinds, 2001). Socialization is a process by which members learn norms appropriate in the team context (Van Maanen, 1977) creates common grounds for communication, and this enables individuals to work together. In other words, gathering members of the global organization in the form of a cohesive team helps to build trust and a shared understanding of accepted norms and beliefs and leads to effective interpersonal relationships (McDonough et al.). Team-inherent socialization limits the negative effects of conflict while still allowing conflicts related to knowledge diversity to ignite creativity. Thus, heterogeneous teams bring with them other ways of thinking and behavioral patterns, which lead to higher collective creativity (Maltz, Souder, and Kumar, 2001).

Thus, NPD teams that effectively integrate diverse local expertise and enable firms to draw on the best resources available, independent of location, are likely to open windows of opportunity for the global NPD program (Snow et al.).

HI: There is a positive relationship between global NPD team and global NPD performance.

Behavioral Environment as an Antecedent

The firm’s behavioral environment (BE) is seen as a multidimensional phenomenon (de Brentani and Kleinschmidt, 2004). In particular, an attitude of resource commitment to global NPD (Boghani et al., 1999; De Meyer and Mizushima, 1989) and senior management involvement (Leonard and Sensiper,
1998) are identified as relevant resources critical to managing NPD activities (Barczak, 1995; Chryssochoidis and Wong, 1998). Few researchers, however, view this phenomenon in terms of a model that develops the performance link of the BE as an indirect relationship (Wei and Morgan, 2004). Using RBV, the firm’s BE is a background resource that guides, facilitates and sustains global NPD capabilities—in this study’s context, establishing global NPD teams—and then impacts performance. Because global NPD teams serve as mechanisms for international knowledge sharing, interpretation, and use, they essentially involve a “people process” (Moorman, 1995), making the BE that shapes the framework in which these people processes operate critical (Wei and Morgan).

Resource commitment for NPD activities concerns the availability of sufficient resources for the multiple tasks performed in global NPD. Adequate resource commitment serves as a signal of legitimacy of NPD activities (Dougherty and Heller, 1994) and thus becomes an element of the entrepreneurial culture of firms that shapes the behavioral patterns of organizational members (de Brentani and Kleinschmidt, 2004). In an environment where global NPD is valued through significant resource commitment, team members more easily commit to global NPD teams (Schuster et al., 1997; Sethi, Smith, and Park, 2001). Sufficient NPD resources also allow for more slack, which may help to reduce the potential for conflict inherent in heterogeneous international teams (McDonough et al., 2001). Hence, resources may allow for liberating the creative potential of global NPD teams while reducing the negative impact of conflict. From a more practical perspective, firms with more generous resource endowments to global NPD can better overcome the multiple geographical, cultural, language, and time barriers that go along with using global teams (Gassmann and von Zedtwitz, 2003). Pulling together organizational members from diverse regions of the world clearly requires more resources. Having these available enhances the probability of establishing a corporate capability comprising highly effective global NPD teams.

Snow et al. (1996) observe that most global teams are formed from the top down. Hence, senior management involvement in global NPD becomes a relevant antecedent of establishing global NPD teams. This is mirrored in Manz et al.’s (1989) proposition that, while the role of leadership changes during the innovation process, visionary leadership is of particular importance at the beginning. Senior managers, who engage actively in and champion global NPD endeavors, signal value for these activities to the global organization and thus encourage individual commitment to teams (Pringle and Kroll, 1997). Active engagement of senior managers also helps to provide direction. These teams, which are typically characterized by multicultural dynamics (Snow et al.), often struggle to develop a shared understanding of the task strategy (McDonough et al., 2001). An actively involved senior management can play a key role in providing direction and in making active engagement in these teams attractive.

In sum, the BE of the firm (i.e., resource commitment and senior management involvement) is expected to improve the firm’s ability to build and sustain global NPD teams.

H2: There is a positive relationship between resource commitment and global NPD team.
H3: There is a positive relationship between senior management involvement and global NPD team.

Direct Relationships. In the model, the performance relationship of the BE is shown to be mediated by the global NPD team (as per H1, H2 and H3). The BE dimensions, however, may also exhibit an individual direct NPD performance effect. Previous research indicates that resource commitment has a strong positive link to NPD performance (see meta-analysis by Henard and Szymanski, 2001). Given the added complexities and dynamics of a global NPD program, in terms of coping with geographic and cultural distances and integrating diverse information and competencies, resource sufficiency is a critical asset (Boghani et al., 1999; De Meyer and Mizushima, 1989). Firms that provide the needed funding for effective knowledge creation are likely to generate a more innovative NPD program (Leifer et al., 2000). In other words, allocating sufficient resources for supporting more innovative global NPD from early idea generation to launch should enhance the firm’s ability to open essential windows of opportunity (see H4).

Senior managers playing a visible role, particularly in ventures with high levels of uncertainty and risk (Henard and Szymanski, 2001), help provide a vision that guides the NPD program. They translate company objectives and values to the different players worldwide participating in NPD and pull together the elements of a globally dispersed NPD effort (Graber, 1996; Knight and Cavusgil, 2004). Because
more innovative solutions are prone to meet increased barriers within and beyond the innovating firm, senior management support becomes a critical resource (Howell and Shea, 2001). Engaging in global NPD with enthusiasm and confidence, and showing championing behavior of great persistence together with the capability to bring the right people together, enables successful NPD programs (Howell, Shea, and Higgins, 2005).

**H4:** There is a positive direct relationship between resource commitment and global NPD performance.

**H5:** There is a positive direct relationship between senior management involvement and global NPD performance.

**Global Dispersion of NPD Effort as a Moderator**

Along with a more globalized economy, recent years have seen increasing dispersion of the NPD effort to local markets and centers of excellence (Gassmann and von Zedtwitz, 2003). This development of at least partially relocating NPD efforts to foreign locations confronts firms with the need for coordinating dispersed NPD efforts (Chiesa, 2000; McDonough et al., 2001). In other words, the degree of global dispersion of the NPD effort becomes a relevant contingency for the extent to which the NPD team—type and composition—is successful in achieving the performance objectives of the global NPD program. A scenario of high global dispersion, where extensive NPD effort is carried out in locations away from HQ, runs the risk of negative effects from too independent international activities. Such local NPD efforts need to be aligned with the overall goal of the global NPD program, and firms must find a balance between exploiting local market or technological expertise (De Meyer, 1993) and minimizing redundancy and overfitting local solutions with only limited benefits for the global NPD program (Brockhoff and Schmaul, 1996). Further, according to Chiesa, a central concern in managing global research and development (R&D) is related to people issues (i.e., teams); thus, there is a need for creating a global culture among involved NPD employees that establishes a common ground for communication and interaction (de Brentani and KleinSchmidt, 2004). In highly dispersed global NPD, emphasis on building effective global NPD teams can be expected to serve as a primary means and thus becomes even more important, for assuring success for the global NPD effort (see H6a).

Besides teams, active senior management involvement in global NPD can serve as a mechanism for creating shared norms and values, providing the needed direction and integration. Dispersed loci of the NPD effort are in particular need of direction and management support if they are to perform in a coordinated way (Chiesa, 2000; Gassmann and von Zedwitz, 1999). Senior management involvement helps to ensure that the different organizational parts interact effectively and are valued as important sources of competence. This allows international diversity to unfold its creative potential without losing out to increased levels of redundancy or to too highly local solutions because of independent activities in globally dispersed NPD entities. Thus, senior management involvement is more important to achieving superior global NPD performance in situations involving higher levels of global dispersion of the NPD effort (see H6b).

According to Henard and Szymanski (2001), a dominant factor linked to NPD performance is commitment of sufficient resources. For this study, performance is linked to a prevailing attitude in the firm to provide support for knowledge creation, knowledge sharing, and transfer and to allocate the right, often the best, people to the global NPD effort. It means supporting the NPD task in terms not only of creating and facilitating effective functioning of a highly diverse global team but also of ensuring that the needed activities are effectively and efficiently accomplished (Daellenbach, McCarthy, and Schonecker, 1999). Given the added complexities and dynamics of global NPD that is dispersed on an international scale (e.g., coping with greater geographic and cultural distances between markets, team members and affiliates, and coordinating and integrating diverse information and competencies, worldwide) an attitude that ensures resource sufficiency becomes even more important (Boghani et al., 1999; Ogbuehi and Bellas, 1992) (H6c).

**H6a:** The positive relationship between global NPD team and global NPD performance is stronger the greater the global dispersion of the NPD effort.

**H6b:** The positive relationship between senior management involvement and global NPD performance is stronger the greater the global dispersion of the NPD effort.

**H6c:** The positive relationship between resource commitment and global NPD performance is stronger the greater the global dispersion of the NPD effort.
The Research

Questionnaire Design and Data Collection

For this study, data were collected from a large sample of internationally active, business-to-business (B2B) firms located in North America and Europe. The sample was based on several listings, including lists of alumni of graduate business programs, a Dun & Bradstreet list for North America, and industry lists for European firms (ZVEI – Elektro + Elektronik Einkaufsführer 2000; Die Deutsche Industrie 2000; Hoppenstedt Firmendatenbank, Competence-Site, and Dienstleisterdatenbank Absatzwirtschaft). To ensure that only knowledgeable key informants took part, several criteria (e.g., management position, involvement in international NPD) were used to identify respondents who were extensively involved or had responsibility for their firm’s international NPD program. These managers each had job histories with diverse functional backgrounds. During pretests, they were reluctant to refer to themselves as representatives of a specific business function. Rather, they saw themselves as responsible for participating in and overseeing their firm’s global NPD program. Thus, this criterion was used for selecting a homogenous group of key informants. These were contacted by phone to verify their status as knowledgeable informants and asked to participate. These phone calls also served to clarify the appropriate organizational unit of analysis, which was either the entire firm or a small business unit (SBU) in case of highly heterogeneous and diversified firms. (Throughout the paper, the terms firm and SBU are used interchangeably). Bias was minimized for retrospective data by surveying managers who were active participants in the international NPD program, limiting the recall time frame to a three-year period and by ensuring confidentiality to all respondents. A total of 1,187 managers were identified and offered a report of the results to encourage participation.

Using a self-administered structured questionnaire, data collection (by email) took place over 18 months, with 469 firms taking part (39.5% response rate). A nonresponse bias test (Armstrong and Overton, 1977) via firm-size comparison (sales, number of employees) between nonrespondents and respondents and a time-trend bias test comparing results from early with late respondents showed no significant differences. Two cases were eliminated due to outlier values, leaving 467 international NPD programs for analysis.

Sample firms were from North America (318; 68%) and Europe (149; 32%), representing a broad range of industries (49% manufacturing, 51% services; see Table 1). Most of the European firms (102) had HQs in Germany, with others located in the United Kingdom, Austria, Switzerland, and Scandinavia. Cases were combined into one data set as analysis comparing these groups indicated no significant difference on sample characteristics on the three sets of variables (organizational resources, global NPD team, and performance) and on the modeled variable

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<tr>
<th>Table 1: Industry Classes for the “Services” and “Goods” Firms in North America and Europea</th>
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<tbody>
<tr>
<td><strong>“Services” Industries</strong></td>
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<tr>
<td>Aviation/aerospace maintenance</td>
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<tr>
<td>Finance/banking/insurance</td>
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<tr>
<td>Architects/constructions/hotel</td>
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<tr>
<td>Transportation including forwarders/distributors</td>
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<tr>
<td>Energy/environmental</td>
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<tr>
<td>Consulting (nonspecified)</td>
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<tr>
<td>Telecommunication/IT services</td>
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<tr>
<td>Engineering/technical consulting/testing etc.</td>
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<tr>
<td>Other: marketing research/head hunters/legal/R&amp;D/Entertainment/education etc.</td>
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<tr>
<td>Others: Not specified</td>
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<td><strong>TOTAL</strong></td>
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<tr>
<th><strong>“Goods” Industries</strong></th>
<th>North America (%)</th>
<th>Europeb (%)</th>
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<tbody>
<tr>
<td>Computer/IT/telecom/software</td>
<td>15.8</td>
<td>7.6</td>
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<tr>
<td>Electronics (not specified)</td>
<td>5.7</td>
<td>28.8</td>
</tr>
<tr>
<td>Advanced industrial products (power, automation, control, environmental, optical, medical, etc)</td>
<td>11.9</td>
<td>19.7</td>
</tr>
<tr>
<td>Aviation/aerospace</td>
<td>8.2</td>
<td>4.5</td>
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<tr>
<td>Pharmaceutical/cosmetics</td>
<td>9.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Chemicals/plastics</td>
<td>12.6</td>
<td>9.1</td>
</tr>
<tr>
<td>Mechanicals (pumps, valves, electrical, heating, etc)</td>
<td>11.3</td>
<td>12.1</td>
</tr>
<tr>
<td>Basic products (P&amp;P, metals, concrete, food, etc)</td>
<td>8.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Packaging, power, mining equipment</td>
<td>6.9</td>
<td>6.1</td>
</tr>
<tr>
<td>Automotive, moulds, etc.</td>
<td>9.4</td>
<td>12.1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100.0</td>
<td>100.0</td>
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a The total sample consists of 467 firms and small business units (230 service, 228 product firms); 318 data sets are from North America and 149 from Europe.
b Headquarter countries for Europe: Germany, 102. United Kingdom, 20. Switzerland, 14. Scandinavia, 10. Austria, 3.
relationships. A formal test for measurement equivalence is discussed next.

**Measures**

Respondents provided data on a broad range of issues related to international NPD, including eight organizational resource (BE) items, four global NPD team items, and three windows of opportunity items. All questions used seven-point Likert-type scales with anchor phrases. The operational definitions of the constructs in this study suggest formative measurement models, as the indicators are viewed as defining characteristics of the constructs (Diamantopoulos and Siguaw, 2006; Jarvis, MacKenzie, and Podsakoff, 2003). Thus, construct development followed the procedure suggested by Diamantopoulos and Winklhofer (2001). First, the content of the latent constructs was specified as per the conceptual handling in the literature of the specific domain. Defining the breadth of definition for each construct (Nunnally and Bernstein, 1994) was further supported by a first round of pretesting involving exploratory interviews with 12 global NPD managers. Second, indicators for each latent construct were generated, covering the content of the latent variable defined in step one. As far as possible, the indicators in this research are similar to previously used scales, although adjustments were made to respond to their international scope and formative nature. Three construct subgroups were identified: (1) organizational resources consisting of the two constructs resource commitment and senior management involvement; (2) global NPD team; and (3) global NPD performance, (i.e., windows of opportunity). In a second round of pretesting, managers from 22 firms completed the questionnaire and took part in follow-up interviews, leading to a final revision of the questionnaire.

The third step of index construction, assessing of indicator collinearity (Bollen and Lennox, 1991), uses variance inflation factor and condition index, which are based on multiple linear regression analyses conducted for each construct (Belsley, 1991; Diamantopoulos and Winklhofer, 2001; Hair et al., 1998). The results support the independence assumption between the indicators of each construct (see Appendix 1). The variance inflation factors indicate no problems of multicollinearity (Neter, Wasserman, and Kutner, 1989), and the maximum condition indices—reflecting the relative amount of variance associated with each eigenvalue—are below the critical level of 30 (Belsley, 1991). Thus, all indices for resource commitment, senior management involvement, global NPD team, and windows of opportunity are considered appropriate for scale construction. Finally, relating the constructs in a path model, as per this study’s hypotheses, can be seen as an approach to assessing nomological validity (Bagozzi, 1994; Diamantopoulos and Winklhofer) (see Appendix 2 for central descriptives and correlations between constructs).

To test for the hypothesized moderation effects, the proportion of global NPD program spending outside of the HQ country was used as a proxy for global dispersion of NPD effort. Penner-Hahn and Shaver (2005) use an equivalent measure in their rating of firms as being internationally active in R&D. As the firms in the present study have, on average, four (s.d. 6.78) NPD locations abroad, the proportion of global NPD program effort occurring outside of HQ provides a good representation of the relative resources spent in globally dispersed NPD scenarios.

**Research Results**

A path model, accounting for the multi-item measurement models, was used to assess the hypothesized main effects among the organization resource dimensions, global NPD team, and global NPD program performance. Before testing the hypotheses, measurement equivalence across subsamples was assessed. To ensure a homogenous sample of firms with respect to minimum international activity, the condition that firms be active in at least three markets over and above their home market was imposed. Still, differences between firms that develop primarily services and those focusing on manufactured goods and between North American versus European firms may also impact the results. As the European sample firms have headquarters in different countries, these firms were additionally split in two different groups: (1) firms with HQs in German-speaking countries (most of these firms use English as the official company language) versus (2) firms with HQs in the United Kingdom or Scandinavia. Additionally, the sample was split into two groups by the median value of firm size (i.e., median number of employees = 741) to control for a potential firm size effect. As a first indication of measurement equivalence, mean differences were assessed for all items and constructs between the subsamples. Analysis of variance (ANOVA) showed no significant differences between the subsamples. Further, separate path models were performed for...
service and manufacturing firms, for firms from the two main geographical regions (North America vs. Europe), and for the group of larger versus smaller firms using the latent variable scores from a path model based on all sample firms as indicators. As per Chin (2000), path differences were assessed by taking standard errors for the structural paths from bootstrapping for the various groups and treating the standard error estimates from each resampling in a parametric sense via $t$-tests. $t$-values for each of the groupings suggest no significant differences in path coefficients, lending additional support to combining all subsamples.

PLS-graph (Chin, 1998) was used to analyze the relationships between the constructs of the model. The stability of the PLS estimates was assessed through bootstrapping ($n = 100$), which permits the estimation of $t$-values for path coefficients (Efron and Tibshirani, 1993). The results of the parameter estimates largely comply with the stated hypotheses. Of the five direct relationships, four are significant and in the predicted direction. Overall, the model explains 18% of the variance in global NPD performance and 30% of the variance in global NPD team (see Table 2). Global NPD team is positively and significantly linked to global NPD performance, lending support to H1. Both organizational resource dimensions show positive and significant paths to global NPD team, while only resource commitment was found to be directly related to global NPD performance. Overall, this lends support to H2, H3, and H4 but rejects H5. Thus, together with the supported positive performance impact of global NPD team, the results support the hypothesized mediated relationship of organization resources on global NPD performance.

To test for the proposed moderation effect of the degree of global dispersion of NPD effort outside of HQ location, using the “polar extremes” approach for revealing distinct differences (Green, Tull, and Albaum, 1988; Hair et al., 1998), the sample was split between the top and bottom 40% of firms in terms of their position on the dispersion variable (i.e., “low” ≤ 11% vs. “high” ≥ 25%). Separate path models were then assessed for each subsample. Firms allocating equal to or more than 25% of their global NPD program spending to facilities outside the HQ location differ significantly from firms with limited outside NPD spending in three relationships: global NPD teams and senior management involvement have a significantly stronger impact on global NPD performance in the case of highly dispersed global NPD efforts, lending support to H6a and H6b. H6c, however, is not supported. On the contrary, the positive impact of global NPD resource commitment on performance is stronger for firms with less globally dispersed NPD efforts (see Table 2 and Appendix 3). The general tendency of these results hold true also when the cutoff values for defining the subsamples is changed to a median split.

### Discussion and Managerial Implications

The results of the analysis of the model presented in this study lead to some major conclusions, with managerial implications about NPD teams in the global setting. These are discussed herein, together with insights derived from the second key contribution of this study: the impact of global dispersion of the NPD effort.
Developing the “Right” Team for the Global NPD Effort Is Key to Success

The findings suggest that having the “right” team in place to undertake global new product development significantly enhances the firm’s ability to generate a successful international NPD program. Teams that integrate the diverse talents, knowledge, and cultures from different parts of the global organization are effective in opening new technology, market, and product opportunities. There is a growing consensus that global NPD teams have a positive performance effect (e.g., Harvey and Novicevic, 2002; Moenaert et al., 2000), and this is supported by this study’s findings. Firms that leverage the diverse expertise, tacit knowledge, and cultural sensitivities of members from different parts of the global organization and integrate these into a team that reflects the global nature of the business perform significantly better than their counterparts who rely much less on a global NPD team. The results show that global teams are better able to exploit their broader knowledge base and thereby achieve superior NPD performance. Their increased diversity allows for generating and assessing solutions from multiple perspectives, based on different experiences and backgrounds of international team members. The team context secures mutual learning and allows for the unfolding of creativity arising from global team-inherent multicultural dynamics.

Using global teams as an essential capability for undertaking global NPD proves to be of primary importance when operating in a scenario of internationally highly dispersed NPD effort. NPD teams, composed of members from many parts of the international organization, help to integrate the global NPD effort and offer the potential for achieving greater creativity and avoiding development redundancy. This enables the firm to take advantage of the knowledge diversity and specific competencies of relatively well-funded NPD facilities outside the HQ location. In addition, gathering NPD team members coming from different facilities worldwide and creating a cohesive global team committed to developing new products for the international market arena reduces the tendency of the “not invented here syndrome” (Hauser, 1998). These effects can liberate resources for developing new products that lead the globally active firm to a NPD program that is successful in opening windows of opportunity.

What does this mean for managers? For some companies, tapping into the potential offered by global markets entails an NPD effort that is more domestically concentrated. Here, the existence of a highly globalized new product development team is not appropriate, and management efforts are better concentrated on other aspects of the global marketing effort (e.g., international sales team). In companies, however, where the primary route to success in international markets is through a highly dispersed global NPD effort—where a large proportion of NPD spending is outside of the HQ location and where knowledge, talents, and cultures are effectively leveraged—managers need to place major emphasis on creating and supporting the “right” team. A first step in achieving this end is to analyze the composition of existing NPD teams and to identify the capabilities available in the organization worldwide. Then, when organizing for global NPD, it is critical to ensure that the team integrates well the talents and technologies available in different parts of the global organization, including members that have close contact with local markets and partners. Front-line involvement is of particular importance because customers and market conditions tend to vary much more in the international context than do technological regimes. Indeed, including team members with a good knowledge of markets offers the potential for generating new product offerings that provide innovative customer solutions or succeed in gaining a foothold in entirely new markets in the global arena.

Background Behavioral Resources of the Firm Facilitate the Global NPD Team Effort

The results lend strong support to the RBV-based model of a mediated performance relationship of the firm’s implicit resources. As hypothesized, the behavioral environment of the firm is shown to be a relevant “background” resource that exerts influence and generates superior performance, in accordance with RBV, by facilitating key organizational capabilities. In other words, firms that exhibit intensive top-management involvement and have a strong attitude of resource commitment to the global NPD effort are more likely to establish global teams as a primary routine for the effective management of global NPD programs.

From a managerial perspective, application of RBV helps in distinguishing NPD success factors that are more implicit, or “resource” based, describing the firm’s longer-term setting, experiences and established approaches, from the more explicit “capabilities” relevant for planning, controlling and task completion. This and the connection between these elements are important. Clearly, transforming intangible
resources such as the attitude and culture associated with senior management involvement and resource commitment calls for a longer-term approach; nevertheless, understanding and investing in the creation of these background conditions is essential not only because such resources favor global NPD program performance directly but, more importantly, because they impact the firm’s capability to establish truly global NPD teams. Drawing not the least on years of research into NPD team issues, firms typically embrace the idea that heterogeneous teams that integrate competences from diverse parts of the organization improve performance. However, they still struggle when it comes to effectively implementing such teams. It is here that the background resources included in this research come into play as key facilitators and performance enhancers, particularly in the global setting. In effect, creating a truly supportive global NPD behavioral environment must entail at least two elements. First, companies should focus on developing a group of top managers who become actively involved in the global NPD program as visionaries and champions, who enhance the international reputation of the firm in terms of its new product ventures, and who have strong relations with strategic customers worldwide. Second, firms must strengthen the signal that is sent regarding resource availability. The broad set of activities, including global NPD research, marketing, and process as well as global team coordination and integration, must be sufficiently funded—in terms of people, money and time—to support the global NPD program.

Senior Managers Play a Vital Role in the Successful Functioning of a Highly Dispersed Global NPD Program

On initial evaluation the results indicate that, contrary to expectations, the relationship between senior management involvement and global NPD performance is not supported. While this result fits the RBV framework, it is still surprising in particular from the perspective of the NPD champion literature, which provides ample evidence of positive and direct performance effects from committed senior managers (Howell et al., 2005). This is where one of the contributions of this research—the contingency approach that takes into account the dispersion of the global NPD effort when analyzing NPD practices—helps in explaining the results. Indeed, when controlling for the degree of globally dispersed NPD effort, senior management involvement becomes a relevant direct antecedent of global NPD performance. In other words, firms with a relatively high proportion of NPD spending outside of their HQ location benefit directly from senior managers playing a visible and central role. This is in contrast to the low dispersion scenario where senior management impact is indirect or fully mediated by the global NPD team. Clearly, a situation of high dispersion demands an increased integration effort, and this is contributed by senior managers. They facilitate the translation of corporate NPD objectives and strategies across diverse cultures; they pull together the knowledge and NPD activities from different locations worldwide; and they signal the value of these activities through their active and direct involvement in the global NPD program. The positive direct performance effect of this BE dimension under circumstances of high dispersion of the global NPD effort supports Bartlett and Goshal’s (1989) notion that the most successful international firms are not searching for ideal structures but are promoting managerial abilities that support global NPD in an implicit manner. The present study’s results provide explicit empirical evidence for this hypothesis: that is, senior management involvement is a significant background resource relevant for global NPD performance.

The managerial implication of this is obvious. The need for senior management involvement in integrating and coordinating the team effort in global NPD is vital. Their direct input, however, becomes truly significant only when the degree of global dispersion of the NPD effort is high. Here, top managers play a much broader role, acting as NPD champions, cross-cultural interpreters, and integrators and also as market facilitators and risk leaders, all in the effort to achieve a sustainable competitive advantage through NPD in the global market arena.

Finding the Right Balance between Over- and Under-commitment of Resources Is Key to Facilitating a Truly Integrated Global NPD Effort

Apart from the mediated performance relationship, resource commitment was also found to enhance firms’ ability to directly generate NPD programs that are successful in opening windows of opportunity in global markets. Here, this study’s results support the meta-analytic conclusion by Henard and Szymanski (2001), who identify resource commitment as a prime driver of NPD performance. As shown, providing sufficient
resources for global NPD enables firms to both establish and effectively manage global NPD teams. In addition, it reduces multiple barriers inherent in global NPD, allowing firms to venture into more innovative new product development (Leifer et al., 2000). This direct effect of resource commitment as a BE dimension may point toward alternative NPD routines supported by resource commitment. As Kleinschmidt et al. (2007) showed, resource commitment also facilitates a diverse set of NPD process capabilities, from proficiency of upfront homework to new product launch preparation. Hence, the significant positive, direct, impact on opening windows of opportunity observed in the present study can be interpreted as an indication of further RBV-based mechanisms at work, which are beyond the scope of this research.

When considering the mediating effect of global dispersion, contrary to expectations, resource commitment was found to be of lesser importance in situations where there was a high degree of dispersion in the global NPD effort. Following the previous arguments, resource commitment may enhance innovative abilities, in general, because it signals legitimacy and importance of global NPD (Henard and Szymanski, 2001). Committing more resources for performing multiple global NPD tasks, however, does not necessarily improve cooperation among different globally dispersed NPD facilities. Indeed, providing more funds to local NPD may enable foreign facilities to pursue their own individual projects, thus limiting the demand for coordination. As coordination necessity is reduced and international communication between dispersed NPD facilities is in less demand, redundancy in developed solutions may become more prone (Chiesa, 1996; Levitt, 1983). This reduction in exchange between facilities limits international information sharing and mutual learning, which in turn reduces the development of innovative products and new market solutions on a global scale (Gassmann and von Zedwitz, 1999). Hence, the positive effect of resource commitment on windows of opportunity, as shown here, can be neutralized by increased levels of dispersion in the NPD effort. In line with this argument, in global NPD scenarios where NPD is mostly carried out at the HQ location (low dispersion), a substantial level of resource commitment is essential to achieve the needed coordination and integration of the total NPD effort for developing successful windows of opportunity in global markets. Hence, signaling strong resource commitment to parts of the organization in situations where global dispersion of the NPD effort is relatively low has a positive performance effect.

These findings have important managerial implications. Companies must critically review their existing support level for global NPD and determine whether what is currently made available is sufficient for managing the this complex task of global NPD and for opening windows of opportunity in the global setting. At the same time, disproportionate resource commitment to a program that is highly dispersed in terms of NPD effort and location, worldwide, may have the unwanted effect of providing local NPD facilities with too much independence such that local programs compromise the advantages inherent in a global approach. This calls for careful control by management. Firms must find the right balance between making sufficient resources available to facilitate a truly integrated global NPD effort. This is particularly important in scenarios where the global NPD program is mostly carried out at the HQ location. In contrast, avoiding overspending in situations of high dispersion is essential for minimizing the potential for greatly independent efforts on the part of local units.

Limitations and Research Implications

Some limitations of this study are noted that suggest further research. First, the variables used to measure BE, global NPD team, and global NPD performance are of a perceptual nature. This, because it is difficult to obtain objective and comparable measures for these NPD program-related constructs across multiple firms and industries. Furthermore, perceptual performance measures, at least on the firm level, seem to be highly correlated with objective measures. Dess and Robinson (1984) report correlations in the range of 0.48 to 0.69. Also, these data were gathered from the vantage point of key informants as is usual for this kind of empirical research (Bonner, Ruckert, and Walker, 2002). Although major emphasis was put on identifying and motivating well-informed respondents, it was impossible to control for the problem of common method variance. Thus, the conclusions and implications drawn from this study must be interpreted with some caution, keeping this possible bias in mind. Future research may deal with this issue in greater detail and use multiple respondents for each of the constructs.

Second, focus is on the corporate capability–routine of the NPD team from the perspective of
integrating organizational members operating in a diverse international setting. This does not probe into the question of other team descriptors; for example, colocation (Gemünden, Salomo, and Krieger, 2005), degree of task autonomy, or team leadership (Menaert et al., 2000). Given that the results indicate that global NPD team composition is a strong predictor of global NPD performance, further research combining team composition with these alternative measures warrants attention. Third, the conceptual and empirical model in this study considers the behavioral environment of firms as an important background resource and the results strongly support the RBV-based argument that it is a critical facilitator of successful NPD capabilities/routines. This approach could be expanded by including other potentially relevant organization resources. In particular, the organizational structure of foreign NPD could be a relevant issue exerting influence on global NPD routines. As Chiesa (2000) and Gassmann and von Zedwitz (1999) show, firms choose different structural approaches for internationalizing their NPD. Because these organizational models may impact firms’ abilities to perform NPD routines, they merit further research.

Finally, the research points toward the moderating effect of situational factors. The present study focuses on degree of dispersion of the global NPD effort, but other variables (e.g., diversity of local preferences) may also be linked to performance effects of the global NPD team (Lagerström and Andersson, 2003; Subramaniam and Venkatraman, 2001) and thus merit analysis.

Conclusions
In times of globalization, characterized by increased international competition and improved possibilities to serve customers abroad, global new product development has become a major concern. To respond to this challenge, companies increasingly rely on global NPD teams, calling for a better understanding of how and under what conditions global teams impact global NPD program performance. The present study investigates a large sample of B2B firms that are active in international NPD. Cast in RBV, the global NPD team is seen as a primary capability within the firm that mediates the impact on performance of the firm’s behavioral environment—in this study, consisting of resource commitment and senior management involvement. This relationship is moderated by the degree of dispersion in the global NPD effort of the firm. The results show that developing new products for international markets by making effective use of global teams offers essential opportunities for leveraging a diverse but unique combination of talents and knowledge-based resources that enhance the firm’s understanding of global-plus-local markets, its creativity, and its potential for achieving a sustained competitive advantage. To function effectively, the global team must be nested in a corporate environment that supports the commitment of sufficient resources and where senior management plays an active role in leading, championing, and coordinating the global NPD effort. As firms move to a scenario where NPD becomes more or less globally dispersed, however, the relationships among global NPD team, background resources, and success in opening windows of opportunity become more complex. Depending on degree of dispersion, creating the right global NPD team and ensuring appropriate levels of support by senior management and resource commitment require different emphasis.

References


Appendix 1: Variables of the Research

Questionnaire Items

for **Organization Resources** (Scale: 1–7; strongly disagree/agree)

- **Resource Commitment** (4 items; max. Pearson Corr.: .68; max. Belsley’s CI: 11.98; max. VIF 2.69)
  
  On average, sufficient resources – people, time, money – are committed so that . . .
  
  - international/global NSD/NPD research activities can be undertaken effectively and on time.
  
  - international/global NSD/NPD related marketing activities can be undertaken effectively and on time.
  
  - international/global operational or process activities can be undertaken effectively and on time.
  
  - the new service/product steering/coordination committee can operate effectively and on time.

- **Senior Management Involvement** (4 items; max. Pearson Corr.: .67; max. Belsley’s CI: 16.45; max. VIF 2.29)

- by playing a central role in project review—i.e., make key Go/NoGo, spending decisions.

- as visionaries and/or “champions” of international/global new product ventures.

- to enhance reputation of our organization and new products.

- by encouraging strategic customers to adopt our new products.

for **Global NPD Team** (Scale: 1–7; strongly disagree/agree)

- **Global NPD Team** (4 items; max. Pearson Corr.: .69; max. Belsley’s CI: 11.96; max. VIF 2.17)

  When organizing our international/global NSD/NPD project teams, we ensure that . . .
  
  - teams integrate well the talents and technologies available in different parts of our global organization.
  
  - teams reflect the international/global nature of our business – i.e. members have knowledge of markets in different countries/regions.
  
  - teams are truly “global” – i.e. actually include members from different countries and regions.
  
  - teams actively involve frontline personnel form diff. locations, worldwide.

for **Global NPD Program Performance** (All scales are 1 to 7; see below)

- **Windows of Opportunity** (3 items, Pearson Corr.: .61; max. Belsley’s CI: 10.54; max. VIF 1.92)

  On average, how successful was your international/global NPD program in . . .
  
  - opening new markets to your firm?
  
  - leading your firm into new product arenas–i.e., products you did not have 3 years go?
  
  - opening new technologies for your firm?

  [scale: 1 = “not at all” to 7 = “great success, many new opportunities”]

for **Degree of Dispersion of Global NPD Effort**

- **% of Global NPD Program Effort Occurring Outside of HQ**

Appendix 2: Correlation Matrix for Model Variables

<table>
<thead>
<tr>
<th></th>
<th>Mean (s.d.)</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
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<tbody>
<tr>
<td>1. Global NPD Team</td>
<td>4.47 (1.38)</td>
<td>.49</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Resource Commitment</td>
<td>4.30 (1.31)</td>
<td>.37</td>
<td>.46</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. Senior Mgmt. Involvement</td>
<td>5.42 (1.23)</td>
<td>.32</td>
<td>.35</td>
<td>.27</td>
<td></td>
<td></td>
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<tr>
<td>4. Global NPD Performance</td>
<td>4.69 (1.27)</td>
<td>.32</td>
<td>.35</td>
<td>.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. % NPD Effort outside HQ*</td>
<td>54.06 (29.61)</td>
<td>.13</td>
<td>.18</td>
<td>.09</td>
<td>.19</td>
<td></td>
</tr>
<tr>
<td>6. Firm Size (employment)</td>
<td>7,639 (31,377)</td>
<td>.16</td>
<td>.09</td>
<td>.09</td>
<td>.01</td>
<td>.12</td>
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*Global dispersion of the NPD effort.

Appendix 3: Descriptives and Correlations of Latent Constructs for Firms with a More or Less Globally Dispersed NPD Efforta

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<td>1. Global NPD Team</td>
<td>.47</td>
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<tr>
<td>2. Resource Commitment</td>
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<tr>
<td>3. Senior Mgmt. Involvement</td>
<td>.38</td>
<td>.41</td>
<td>.34</td>
<td></td>
</tr>
<tr>
<td>4. Global NPD Performance</td>
<td>.32</td>
<td>.46b</td>
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<td>.31</td>
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</table>

aLower left triangle: correlations for firms with equal or less than 11% R&D spending outside headquarter country (= bottom 40% of total sample); upper right triangle: correlations for firms with equal or more than 25% R&D spending outside headquarter country (= top 40% of total sample).

bSignificantly different correlation (p ≤ .05).