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

Product innovation and the trend toward globalization are two important dimensions driving business today, and a firm’s global new product development (NPD) strategy is a primary determinant of performance. Succeeding in this competitive and complex market arena calls for corporate resources and strategies by which firms can effectively tackle the challenges and opportunities associated with international NPD. Based on the resource-based view (RBV) and the entrepreneurial strategic posture (ESP) literature, the present study develops and tests a model that emphasizes the resources of the firm as primary determinants of competitive advantage and, thus, of superior performance through the strategic initiatives that these enable. In the study, global NPD programs are assessed in terms of three dimensions: (1) the organizational resources or behavioral environment of the firm relevant for international NPD—specifically, the global innovation culture of the firm and senior management involvement in the global NPD effort; (2) the global NPD strategies (i.e., global presence strategy and global product harmonization strategy) chosen for expanding and exploiting opportunities in international markets; and (3) global NPD program performance in terms of shorter- and longer-term outcome measures. These are modeled in antecedent terms, where the impact of the resources on performance is mediated by the NPD strategy of the firm. Based on data from 432 corporate global new product programs (North America and Europe, business-to-business, services and goods), a structural model testing for the hypothesized mediation effects was substantially supported. Specifically, having an organizational posture that, at once, values innovation plus globalization, as well as a senior management that is active in and supports the international NPD effort leads to strategic choices that are focused on making the firm truly global in terms of both market coverage and product offering. Further, the two strategies—global presence and global product harmonization—were found to be significant mediators of the firm’s behavioral environment in terms of impact on performance of global NPD programs.

Introduction

Product innovation and the trend to globalization are two important dimensions driving business today, and a firm’s global new product development (NPD) strategy is a primary determinant of performance. The greater interdependence of world markets has changed competitive dynamics profoundly, such that the success or failure of firms is now judged on a global rather than a national basis (Porter, 1986). Significant opportunities due to reduced trade barriers, advances in technology and communication, and globalization of demand mean that firms in most industry sectors can gain an advantage by embracing international markets. But succeeding in this competitive and complex market arena with products that both profit from economies of scale/scope and respond to diverse customer, business, and cultural environments calls for resources and capabilities as well as a global NPD strategy by which firms can effectively tackle these challenges (Graber, 1996; Zou and Özsoymer, 1999). In this paper, the resource-based view (RBV) is used to explain how firms achieve success in international NPD. Companies that realize a sustainable competitive advantage are seen as having superior resources and capabilities (Adner and Helfat, 2003; Smith, Vasudevan, and Tanniru, 1996) such that they “produce more economically and/or better satisfy customer wants by creating greater value or net benefits” (Peteraf and Barney, 2003, p. 311).

Much has been written about NPD and international marketing but relatively little about the combined topic of NPD for global markets. While past NPD research deals with a broad range of issues, most of this focuses on NPD for domestic markets with only a small number of studies incorporating the foreign context (e.g., Atuahene-Gima and Li, 2000; de Brentani and Kleinschmidt, 2004). Findings indicate

Address correspondence to: Ulrike de Brentani, JMSB, Concordia University, 1455 de Maisonneuve Blvd. W, Montreal, Canada, H3G 1M8. Email: udebrentani@jmsb.concordia.ca.
that success in global NPD is linked to the firm’s international new product strategy (Calantone et al., 2004; Roberts, 2001) and that global NPD strategies are nested in a corporate environment that influences their nature and direction (Cavusgil and Zou, 1994; Knight, 2000). Thus, both the strategy factor as well as certain intangibles characterizing the firm’s behavioral environment (BE) have been found to affect global NPD program outcome (Henard and Szymanski, 2001; McDougall and Oviatt, 2000). In particular, intangible organizational dimensions such as culture, experience, tacit knowledge, traditional practices, and commitment by senior managers have been shown to play an essential role. In this paper, we propose that global NPD strategies are essential for achieving superior outcomes but that these are guided and enhanced through the effective deployment of key strategic resources.

Objectives and Contributions of Research

To an important extent, new product development has become global in scope, yet the two literatures—NPD and globalization—flow in relatively separate streams. A key goal and contribution of this research, therefore, is to integrate knowledge from the two literatures and to expand and adapt NPD parameters in terms of what is relevant for globalization. Further, the research focuses on the performance effect of strategies relevant for driving global new product programs. By viewing NPD strategy through the globalization lens, this study contributes to a better understanding of what makes for success in global NPD. A third contribution relates to the underlying RBV/strategy-based model. A review of the extant literature suggests that no past study of global NPD performance incorporates the two groups of factors—organizational resources and international diversification strategies—in a complex, interdependent model. Thus, by analyzing the effect of company resources on outcome, as mediated by the firm’s global NPD strategies, this study (1) provides an explicit model of the factors that drive global NPD performance and (2) expands on the collective knowledge on RBV by incorporating the globalization context for NPD-related resources of the firm. Fourth, the study entails a large cross-national (North America, Europe) and cross-industry (services and goods) sample of internationally active firms, allowing for generalization about the factors relevant for achieving NPD success in global markets. Finally, the results of the study provide research-related as well as managerial implications.

Theoretical Framework

The RBV of the firm provides the underlying theoretical model (Rumelt, 1984; Wernerfelt, 1984) for this study. According to RBV and the strategic management literature, the ability to sustain a competitive advantage is based on the existence in the firm of resources that are valuable, rare, inimitable, and nonsubstitutable (Barney, 1991; Smith et al., 1996). These permit the development of organizational capabilities, consisting of critical competencies and embedded routines. The “resource set” or “bundle” of capabilities and resources...
Barney and Zajac, 1994) results in superior performance, particularly in highly challenging settings (Helfat and Peteraf, 2003), which in today’s competitive environment often means the global setting.

**RBV and Strategy**

According to RBV, the resource endowment of the firm is its principal source of strategic options and ultimate performance (Connor, 2002). Of particular importance are the “strategic resources”—that is, the intangible elements of the resource set such as the firm’s organizational culture and management experience, know-how, and behavioral approach (Barney and Zajac, 1994; Herremans and Isaac, 2004). But resources and capabilities alone do not make outcome. Only once these are focused on specific strategic initiatives can they result in competitive advantage (DeSarbo et al., 2006). Thus, resources and strategy are closely linked. The firm’s resources, capabilities, and competencies are particular to a given strategic initiative, and it is the relationship among the elements of this resource set that expands or contracts strategy options (Barney and Zajac, 1994; Fahy and Smithee, 1999). In effect, strategic decisions are made in a distinctive institutional environment, and the impact on performance of these organizational resources is mediated by the strategic initiatives on which the firm is focused.

**RBV and Global NPD Strategy**

Several recent studies use RBV to investigate the role of resources in creating competitive advantage through innovation (e.g., Knight and Cavusgil, 2004; Zou and Cavusgil, 2002). Thus, a key question for which this model might provide answers is the following: what are the organizational resources and strategies, and their interrelationships, that account for success in global NPD? To respond to this question, the theoretical framework was expanded to incorporate concepts from the entrepreneurial strategic posture (ESP) model (Covin and Slevin, 1991) and the international diversification strategy literature (Hitt, Hoskisson, and Kim, 1997). In ESP, firms are viewed as having a certain “posture” with regard to innovation—one involving proactive and risk-taking behavior (McDougall and Oviatt, 2000; Morris and Jones, 1999) as well as certain managerial philosophies, styles, or cultures (Knight, 2000; Slater and Narver, 2000)—that is entrepreneurial in nature and embraces the idea of crossing national borders to create value for firms. As with RBV, this posture embodies the organizational environment for an international NPD program in which strategy plays the primary mediating role between the company’s ESP and performance (Thoumrungroje and Tansuhaj, 2005). “International diversification strategies” incorporate both product- and market-related expansion issues for the global setting, including the extent of product standardization versus adaptation and the degree of market breadth, or diversification versus concentration, worldwide (Capar and Katobe, 2003; Hitt et al., 1997).

**The Model**

Global NPD programs are assessed in terms of three broad elements: (1) the organizational resources or behavioral environment of the firm relevant for international NPD; (2) the global NPD strategies chosen for the purpose of exploiting opportunities in the international market arena; and (3) global NPD program performance in terms of shorter- and longer-term outcome measures. These are modeled in antecedent terms, where the impact of resources on performance is mediated by the NPD strategy choices (Exhibit 1).

The first part of the model depicts the behavioral environment in the form of intangible resources describing the firm’s experiences and approaches relevant for international NPD. For the purpose of this research, two key organizational resource dimensions are identified: (1) global innovation culture, consisting of both an innovation (Capon et al., 1992; Helfat and Peteraf, 2003) and a globalization component (Ogbuehi and Bellas, 1992; Roberts, 2001) that surround the global NPD program; and (2) senior management involvement, which plays a role in recognizing opportunities and integrating specialized know-how (Adner and Helfat, 2003; Connor, 2002), as well as explicit and tacit knowledge required for successfully developing new products and markets (Goll, Sambharya, and Tucci, 2001–2002; Leonard and Sensiper, 1998). The second part of the model focuses on the strategies firms choose for the global NPD effort. Based on the strategy/NPD/globalization literatures, two key strategy issues—market and product related—are relevant for international NPD programs (Capar and Katobe, 2003; Chiesa, 1996b). In the context of this study, we identify (1) global presence strategy, the extent to
which firms plan for market diversification across geographical boundaries, worldwide (Hitt et al., 1997; Thoumrungroje and Tansuhaj, 2005); and (2) global product harmonization strategy, the extent of striving for globalized versus locally adapted products in response to opportunities (e.g., market size, economies) and challenges (e.g., diverse customer needs) in international markets (Argyres and Silverman, 2004; Chetty and Campbell-Hunt, 2003). The final set of constructs defines global NPD program performance. In RBV, performance is the firm’s potential to best its rivals in rents, profitability, market share (Smith et al., 1996), and ultimately financial performance (Hunt, 1997). Thus, outcome of global NPD programs is portrayed in terms of both shorter- and longer-term dimensions: (1) establishing an advanced strategic position (i.e., opening windows of opportunity) (Grant, 1991; Hunt, 1997); (2) achieving high levels of efficiency (in this study, meeting time-to-market objectives); and (3) superior financial outcome (Fahy and Smithee, 1999).

Hypotheses

To allow for a parsimonious approach to hypothesis development for this relatively complex model, a fully mediated model is assumed; that is, a firm’s strategic resources (i.e., behavioral environment) influence the performance of its global NPD program indirectly through its global NPD strategies. NPD program outcome may of course also be impacted directly by the resources of the firm, calling for partial mediation. This could be due to a direct effect or to issues other than global NPD strategies (e.g., NPD process activities, NPD team approach) that might mediate the resource–performance relationship. The sections on research and analysis and research results deal with this in some detail.

**Behavioral Environment Dimensions**

**Global Innovation Culture**

An integral part of the firm’s behavioral environment in the RBV context is its organization culture. This is an intangible, unique, and difficult-to-imitate strategic resource, which is developed and nurtured over time and has the potential for moving the firm to a position of competitive advantage (Helfat and Peteraf, 2003). It entails the norms, attitudes, and behavior patterns that permeate the organization and form its core identity (Denison, 1984). Having a “strong” corporate culture is linked to performance through the strategic emphasis it advocates (Oliver, 1997) and the commitment and motivation it fosters in people to deal with important challenges (Lim, 1995). In the context of the present study, the firm’s global innovation culture consists of two interrelated concepts: entrepreneurialism and globalization (Alvarez and Barney, 2000; Hunt and Derozier, 2004). Entrepreneurialism is a “style of corporate behavior that is comfortable with, even aggressive about, new ideas, change, risk and failure” (O’Reilly, 1997, p. 60) where managers and employees believe in the importance of new products for the firm’s survival and success (Smith, 1998).
Such a culture encourages extensive involvement in NPD, thinking outside of the box, adaptability to change, and risk taking (Cooper and Kleinschmidt, 1995; Goll et al., 2001–2002). A strong style of entrepreneurship permits, indeed often compels, a strategic orientation toward proactive NPD, one that champions riskier ventures including highly innovative products and intensive market expansion (Grant, 1996; Lovas and Ghoshal, 2000). The second aspect of global innovation culture is the idea of internationalization. A strong globalization culture opens firms to the world about market opportunities and customer requirements and about using and benefiting from internationally diffused skills, resources, and ideas (Hitt et al., 2001; Roberts and Senturia, 1996). Thus, globalization and entrepreneurialism are closely linked; proactive creativity in NPD and market diversification on an international scale both result from an attitude within the firm that values opportunity, risk taking, and innovativeness. Studies show that a strong global innovation culture is associated with superior performance in NPD (de Brentani and Kleinschmidt, 2004; Knight and Cavusgil, 2004). Companies with this type of behavioral environment choose strategies that are aggressive in terms of global market expansion and innovative in leveraging dispersed skills and ideas for developing truly global products while also responding to diverse customer needs, worldwide (Connor, 2002; Graber, 1996; Knight and Cavusgil).

H1: Global innovation culture is positively related to the firm’s global presence strategy.

H2: Global innovation culture is positively related to the firm’s global product harmonization strategy.

A second intangible resource embedded in the behavioral environment of the firm and linked to its strategic orientation is management itself. In RBV, the importance of this factor lies in the essential, often tacit, knowledge, experience, and capability that it encompasses, which can play an overriding role in the deployment of strategic assets and in driving the firm’s approach to identifying and exploiting opportunities (Grant, 1991; Hall, 1992). Similarly, in NPD and globalization, senior management involvement (SMI), represents an important form of corporate commitment and leadership for the firm’s strategic effort and has been positively linked to performance (Calantine et al., 2004; Cooper and Kleinschmidt, 1995). In NPD, senior management input is of particular value in such roles as visioning to guide the NPD program (McDonough, Kahn, and Barczak, 2001; Reid and de Brentani, 2004), sponsoring high-risk ventures (Kuczynski, 1998), championing NPD during critical phases (Takeuchi and Nonaka, 1986), participating in project review (Cooper, Edgett, and Kleinschmidt, 2003), and interacting with strategic customers as representatives of the firm’s capabilities (de Brentani and Kleinschmidt, 2004; de Brentani and Ragot, 1996). In the global NPD setting, the experience and tacit knowledge embodied in senior management increases in importance. This is because managers play critical roles as leaders and facilitators by articulating and translating company objectives, values, and strategic focus to NPD participants, worldwide (Graber, 1996); reducing cultural distance among geographically and culturally dispersed facilities and team members (Kleinschmidt, de Brentani, and Salomo, 2007); and pulling together elements of an internationally dispersed NPD program (Knight and Cavusgil, 2004; Ogbuehi and Bellas, 1992). Thus, strong senior management involvement can be expected to positively impact global NPD program performance through the strategic initiatives chosen by the firm for diversifying internationally and for responding to environmental dynamism with the right new product offerings.

H3: Senior management involvement is positively related to the firm’s global presence strategy.

H4: Senior management involvement is positively related to the firm’s global product harmonization strategy.

**Global NPD Strategies**

**Global Presence Strategy**

One strategy identified in the model is global presence strategy. This entails an international diversification approach where firms expand “across the borders of global regions and countries into different geographic locations or markets” (Hitt et al., 1997, p. 767). Companies, depending on their management vision and experience as well as their culture of proactiveness and risk taking, achieve different degrees of global diversification. Today for many firms, the objective is to be “truly global” and to operate in all hemispheres of the world. To this end, companies establish global NPD goals, with favored international product-market arenas, planned innovation thrusts, and resource com-

SUCCESS IN GLOBAL NPD: IMPACT OF STRATEGY AND BEHAVIORAL ENVIRONMENT

J PROD INNOV MANAG

2010;27:143–160

147
commitments to the international effort (Alexander and Lockwood, 1996; Kaounides, 1999). Although there is some contradiction in past research findings, operating at the more highly diversified end of the global market strategy spectrum—that is, a high degree of global presence strategy—is linked to positive performance. This is because greater diversification across markets helps to reduce total risk, enhances NPD creativeness through the use of overseas resources, and increases sales and profits by exploiting growth opportunities in diverse international markets (Capar and Katobe, 2003; Knight, 2000). In particular, when companies develop products with global potential, a strategy of rapid market globalization offers enhanced promise of success (Chetty and Campbell-Hunt, 2003) through (1) economies of scale/scope due to sizable worldwide markets (i.e., improved financial results); (2) competitive advantages due to exploiting unique market and product opportunities existing in world markets (i.e., windows of opportunity); and (3) market-share/first-mover advantage that comes with undertaking a worldwide new product launch (i.e., effective time to market). At the same time, a high degree of global presence can increase uncertainty about markets (e.g., unfamiliar with customers, competitors) and can lead to costly coordination concerns (Argyres and Silverman, 2004; Eriksson et al., 1997). Despite these concerns, based on the previous, a strong global presence strategy is hypothesized to positively impact all aspects of global NPD performance:

H5: Global presence strategy is positively related to global NPD program performance in terms of time to market.

H6: Global presence strategy is positively related to global NPD program performance in terms of windows of opportunity.

H7: Global presence strategy is positively related to global NPD program performance in terms of financial outcome.

Global Product Harmonization Strategy

The second NPD program strategy dimension is global product harmonization strategy, which concerns the extent to which companies standardize (versus adapt) new products for worldwide markets. Linked to this is the question of centralization versus localization of the NPD effort (Chiesa 1996a, 1996b). In this article, these two ends of the global new product strategy spectrum are referred to as global harmonization versus localization. There is some debate in the literature about the extent to which firms should globalize or localize their research and development (R&D)/NPD activities. Using a highly globalized approach entails centralizing NPD decision making and developing products with one worldwide standard, image, and design, with minor adjustments for local markets (Devinney, 1995; Hsieh and Lindridge, 2005). The logic is that customer needs are becoming increasingly homogenized worldwide (Levitt, 1983; Ohmae, 1989), and this permits spreading the cost of technology, new product design, and marketing over world markets. Advantages accruing from a globalized approach include economies of scale/scope, protection of proprietary knowledge, a coordinated launch effort, faster time to market, and a more highly leveraged brand name and company reputation (Argyres and Silverman, 2004; Hsieh and Lindridge; Zou and Özsomer, 1999). At the other end of the spectrum is localization. Here, NPD decisions are decentralized, resulting in localized products for different countries and regions. Advantages include enhanced access to specialized knowledge and talent in other countries, keeping abreast of local competition, greater commitment by local personnel, and proximity to customers and thus a better understanding of their habits, preferences, and product requirements (de Meyer, 1993; Roberts, 2001).

Which approach companies use often depends on the nature of the product, the diversity of geographical markets, and the ability to control and gain advantages from what typically are complex and diverse networks of operation. Thus, while scale/scope economies are sometimes offset by complexities of managing and coordinating worldwide operations (Ohmae, 1989; Palich, Cardinal, and Miller, 2000), a localized NPD strategy may result in duplication, inefficiency, and noncompetitive products (Chiesa, 1996a; Levitt, 1983). This debate notwithstanding, the increasing opening up of and similarities among world markets, combined with significant improvements in communication technologies and reduced government barriers suggest that a flexible, but at-the-globalized-end-of-the-spectrum, approach is appropriate. That is, what we label a global product harmonization strategy is called for to exploit global economies and centralized knowledge integration while also providing for adaptation of products and marketing effort to local conditions when needed (Koudal and Coleman, 2005; Ogbuehi and Bellas, 1992). The hypotheses are as follows:
Global NPD Performance

According to RBV and NPD, performance entails a firm’s ability to achieve a competitive advantage that ultimately leads to superior financial returns but that in the shorter run is gauged in terms of improved efficiency, market share/position, or breaking into new arenas (Griffin and Page, 1996; Smith et al., 1996). 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) or 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). Studies of international corporate performance typically use measures such as financial outcome (e.g., exports, market share) and overall firm impact, while research in international NPD (or R&D) employs similar measures to those used for NPD program performance (Katsikeas, Leonidou, and Morgan, 2000; Zou and Özsomer, 1999).

Based on the previous, the model of global NPD program performance incorporates a submodel depicting an antecedent relationship between two key nonfinancial outcomes and overall financial performance. Specifically, three outcome measures are used: (1) time to market, or the degree to which projects are developed and launched efficiently and on time (Griffin and Page, 1996); (2) windows of opportunity, or the extent to which global NPD programs open new market, product, and technological arenas (Cooper and Kleinschmidt, 2000; Knight and Cavusgil, 2004); and (3) financial outcome, or global NPD program sales, profitability, and cost performance (Griffin and Page). Time to market and windows of opportunity are seen as antecedent to financial NPD program performance. Firms that can launch projects on time and open new global market or technological arenas create opportunities for generating returns from NPD and are better able to meet the demands of a diversified global market. In line with RBV and with empirical results in NPD research, the following hypotheses are proposed:

H11: The higher the performance in achieving time to market, the higher the financial outcome of the global NPD program.
H12: The higher the performance in achieving windows of opportunity, the higher the Financial Outcome of the global NPD program.

The Research

Questionnaire Design and Data Collection

Managers in a large sample of business-to-business (B2B) firms active in international markets self-administered a structured questionnaire that was developed over several stages. Based on an extensive literature review that identified relevant concepts and previously operationalized variables, questionnaire items were developed or adapted for the international context. The resulting questionnaire, which was pretested in two pilot studies of 12 and 22 firms, covered a broad range of international NPD issues, including the organizational resources and NPD strategies of interest in this paper.

To identify internationally active respondent firms involved the use of 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, Hopenstedt Firmendatenbank, Deutschland, Competence-Site, and Dienstleisterdatenbank Absatzwirtschaft). To ensure that only knowledgeable key informants took part (single respondent per company), several criteria (e.g., management position, involvement in international NPD) were used to identify respondents who had responsibility for their firm or strategic business unit’s (SBU’s) international NPD program. These were contacted by phone and asked to participate. Bias was minimized for retrospective data by surveying managers who were participating in the NPD program, by 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.

Data collection 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 non-
respondents and respondents and a time-trend bias test
(Langeral et al., 1999) comparing results from early
with late respondents showed no significant differences.
A total of 37 cases were eliminated due to outlier values
in some of the data, leaving 432 international NPD
programs for analysis. Compared to the retained sam-
ple, the eliminated cases showed no significant differ-
ences in terms of number of employees or scope of
global activities.

Respondents were from North America (291, or
67%) and Europe (141, or 33%), comprising firms
from a broad range of industries (216 manufacturing,
216 services). Most of the European firms (102) were
headquartered in Germany, with others located in
Austria, Switzerland, the United Kingdom, and Scan-
dinavia. The cases were combined into one data set
because group comparisons indicated no significant
difference on sample characteristics, on the three sets
of variables (organizational resources, global NPD
strategies, and performance), and on the modeled
relationships between the variables. A formal test
for measurement equivalence is discussed next.

Measures

Respondents provided data on a broad range of issues
related to international NPD, including 11 organiza-
tional resource items, 10 global NPD strategy items,
and nine performance variables. All questions used
seven-point Likert-type scales with anchor phrases.
The measures in this research were similar to previ-
ously used scales, although adjustments were made to
respond to its international scope and the formative
nature of the latent constructs (see Appendix 1). As
per Exhibit 1, three construct subgroups were identi-
fied: (1) organizational resources consisting of the two
constructs global innovation culture and senior man-
agement involvement; (2) global NPD strategies in-
cluding global presence strategy and global product
harmonization strategy; and (3) global NPD program
performance, which was split into three constructs—
time to market, windows of opportunity, and financial
outcome. Development of the seven constructs of this
study follows a formative measurement model; that
is, indicators are viewed as defining characteristics
of constructs (Diamantopoulos and Siguaw, 2006;
Jarvis, MacKenzie, and Podsakoff, 2003). For
instance, senior management involvement is defined
as the extent to which senior managers are involved in
project review, act as visionaries or champions, help
to enhance reputation, and establish links to strategic
customers. While the intensity with which senior man-
gagers perform these activities represents the strength
of involvement in global NPD, these activities are
not necessarily highly correlated. Thus, the causal
relationship is from the intensity of involvement in
specific activities to the latent construct rather than
the other way around.

Analysis and Research Results

Before testing the hypotheses, the measurement mod-
els were assessed to establish valid constructs. Because
the constructs are modeled as having formative indica-
tors, a check for independence between the indica-
tors of each construct was required (Diamantopoulos
and Winklhofer, 2001). Following Hair et al. (1998)
and Belsley (1991), variance inflation factor, toler-
ance, and condition index were used to assess indica-
tor collinearity. Both the variance inflation factors
and the tolerance measures support the independence
assumption (Neter, Wasserman, and Kutner, 1989); the
condition indices, reflecting the relative amount
of variance associated with each eigenvalue, were
also acceptable (<30) (Belsley). Hence, all indices
used for the seven constructs are considered appropri-
ate for scale construction. Using PLS Graph, the factor
weights of all indicators were assessed by performing a
structural equation model for the conceptual model.
Only 4 of the 30 items used to measure the latent con-
structs show relatively low factor loadings. Neverthe-
less, because these four items enrich the content of the
constructs and also to secure maximum nomological
construct validity, it was decided to maintain them
(Diamantopoulos and Winklhofer). The results for
each construct are shown in Appendix 1.

A structural model was used to assess the hypothe-
sized main effects among the organizational resources,
global NPD strategy, and global NPD program
performance. Before testing the hypotheses, different
strategies were applied to determine measurement
equivalence across subsamples. As the sample consists
of respondents from firms with headquarters in different
countries, scores may differ across cultures because of
variance in social desirability or understanding of spe-
cific firm aspects (Vijier, 1982). A similar argument can
be made with respect to differences between firms de-
veloping primarily new services and those focusing on
the development of physical new products (Erramilli,
As a first indication of measurement equivalence, mean differences were assessed for all items and constructs among the subsamples. Analyses of variance did not show significant differences among the possible four subsamples. Further, separate structural equation models were assessed for North American versus European sample of firms and for firms focusing on services versus manufactured goods. Because as already noted the European subsample is dominated by German firms, a separate analysis was performed for this subgroup. Structural paths across the different models were compared by assessing the differences in correlations between latent constructs. Fischer Z-transformed correlations show an approximate normal distribution, meeting critical z-values. Correlations between latent constructs of the model were found not to vary significantly across the subsamples. Additionally, as suggested by Chin (2000), path differences were assessed by taking standard errors for the structural paths from bootstrap resamplings for the various groups and treating the standard error estimates from each resampling in a parametric sense via t-tests. As the weights in the formation of the respective constructs for each of the subsamples are approximately equivalent, the t-test for the difference in paths between groups can be calculated. Again, t-values for each of the groupings suggest no differences in path coefficients, lending support to the combination of data samples.

The relationships between the constructs of the model were analyzed through structural equation modeling using PLS Graph (Chin, 1998). The stability of the PLS estimates was assessed through bootstrapping \((n = 100)\). Through this resampling procedure, standard deviations of model parameters were derived, permitting the estimation of \(t\)-values for path coefficients. The conceptual model suggests a fully mediated relationship between behavioral environment and global NPD program performance. To assess this assumption, the mediated model was compared to the partially mediated (full) model, the latter including additional direct paths from all latent constructs to the performance constructs. The two models show similar path coefficients, with the full model explaining only slightly more variance in financial outcome (39% vs. 38%). Senior management involvement shows no significant direct relationship with any of the outcome measures. This is also supported by the weak performance correlations of SMI, as indicated in the correlation matrix of latent variables (see Appendix 2). Global innovation culture has only one highly significant link with windows of opportunity \((p \leq .001)\), with the other two connections significant at the .05 level. All relationships with the strategy constructs remain positive and significant. Overall, these results support the mediated model to a large extent. For purposes of parsimony, therefore, only the results of the fully mediated model are presented.

The results of the parameter estimates are largely as hypothesized. Of the 12 connections, 10 are significant and in the predicted direction. The two sets of constructs—behavioral environment and global NPD strategy—explain 38% of the variation in financial outcome (including the impact of the two performance antecedents; see Table 1).

Starting with the behavioral environment of the model, company strategic resources have an impact on global NPD strategy. All four hypothesized relationships remain positive and significant. Overall, these results support the mediated model to a large extent. For purposes of parsimony, only the results of the fully mediated model are presented.

The results of the parameter estimates are largely as hypothesized. Of the 12 connections, 10 are significant and in the predicted direction. The two sets of constructs—behavioral environment and global NPD strategy—explain 38% of the variation in financial outcome (including the impact of the two performance antecedents; see Table 1).

### Table 1: Results for Hypotheses Testinga

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Independent Variable</th>
<th>Dependent Variable</th>
<th>Path Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Global Culture</td>
<td>Global Presence Strategy</td>
<td>.46***</td>
</tr>
<tr>
<td>H2</td>
<td>Global Presence Strategy</td>
<td>Global Product Harmonization</td>
<td>.29***</td>
</tr>
<tr>
<td>H3</td>
<td>Senior Management Involvement</td>
<td>Global Presence Strategy</td>
<td>.19***</td>
</tr>
<tr>
<td>H4</td>
<td>Global Presence Strategy</td>
<td>Global Product Harmonization</td>
<td>.31***</td>
</tr>
<tr>
<td>H5</td>
<td>Global Presence Strategy</td>
<td>Time to Market</td>
<td>.33***</td>
</tr>
<tr>
<td>H6</td>
<td>Global Presence Strategy</td>
<td>Windows of Opportunity</td>
<td>.34***</td>
</tr>
<tr>
<td>H7</td>
<td>Global Presence Strategy</td>
<td>Financial Outcome</td>
<td>.04 (n.s.)</td>
</tr>
<tr>
<td>H8</td>
<td>Global Product Harmonization</td>
<td>Time to Market</td>
<td>.04 (n.s.)</td>
</tr>
<tr>
<td>H9</td>
<td>Global Product Harmonization</td>
<td>Windows of Opportunity</td>
<td>.17***</td>
</tr>
<tr>
<td>H10</td>
<td>Global Product Harmonization</td>
<td>Financial Outcome</td>
<td>.22****</td>
</tr>
<tr>
<td>H11</td>
<td>Time to Market</td>
<td>Financial Outcome</td>
<td>.22****</td>
</tr>
<tr>
<td>H12</td>
<td>Windows of Opportunity</td>
<td>Financial Outcome</td>
<td>.35***</td>
</tr>
</tbody>
</table>

*\(n = 432\), n.s. = not significant.

** \(p \leq 0.01\).

*** \(p \leq 0.001\).
explain 32% and 25% of the variance in global presence strategy and global product harmonization, respectively. Having a strong global innovation culture is related to both strategies—global presence strategy \((p \leq .001)\) and global product harmonization strategy \((p \leq 0.001)\)—giving substantial support for H1 and H2. **Senior management involvement** is also shown to significantly affect the two strategy constructs: global presence strategy \((p \leq .01)\) and global product harmonization strategy \((p \leq .001)\), supporting H3 and H4.

Considering the strategy/outcome interface of the model, **global presence strategy** is highly significant with regard to both time to market \((p \leq .001)\) and windows of opportunity \((p \leq .001)\), supporting H5 and H6. There is no significant impact on financial outcome, not confirming H7. **Global product harmonization strategy** is significantly linked to financial outcome \((p \leq .001)\) and to windows of opportunity \((p \leq .01)\), giving support to H9 and H10, but the impact on time to market is not significant, not supporting H8. Together, the two strategy constructs explain 12% of the variance in time to market and 20% of windows of opportunity.

The last part of the model assesses the role of the performance antecedents to financial outcome. Both antecedents—that is, **time to market** and **windows of opportunity**—are highly significantly \((p \leq .001)\) related to financial outcome, supporting H11 and H12.

**Discussion of Results**

A comparison of the full and the mediated model indicates that the hypothesized mediated model is largely supported by this study. Senior management involvement is fully mediated, which underscores the logic that it is primarily through focus on strategic initiatives that the experience, tacit knowledge, and vision of senior managers impact performance in global NPD. On the other hand, Global innovation culture was found to have both a mediated and a direct (partial mediation) performance effect. This can be explained. As hypothesized, the choice of proactive and riskier global NPD strategies, and success in these, is significantly leveraged by a corporate culture that supports innovation and that views the world as the market. At the same time, because organization culture is an extremely potent intangible resource that permeates the firm, its impact on performance is likely to be influenced also by other mediators relevant for achieving a competitive advantage—for example, the approach used for organizing and motivating NPD teams (Gupta and Wilemon, 1990; Takeuchi and Nonaka, 1986), and the effective implementation of NPD process activities (Calantone et al., 2004; Klein-schmidt et al., 2007). Despite this direct and significant impact of global innovation culture on performance, the mediated connections via the strategy constructs remain significant, indicating validity of the underlying model.

**Organizational Resources**

The importance of the two selected BE resources as determinants for achieving superior global NPD program performance is supported by the findings. These results highlight the value of having a strong global innovation culture. Both strategies—global presence strategy and global product harmonization strategy—are significantly enhanced by a strategic resource environment that entails a globalization-plus-innovation perspective. As such, this finding calls for an organizational philosophy that encourages openness to differences in culture-, market-, and skill-based scenarios, where contributions and knowledge from members in different countries are valued and actively shared across geographic units (Chiesa, 1996a; Moenaert et al., 2000). The combination of innovativeness-plus-global outlook leads to superior performance by leveraging a broader knowledge base worldwide and by finding innovative ways for ensuring that products introduced to world markets are, at once, “globalized” and adapted or adaptable to meet local requirements. Thus, the results emphasize the importance of having an embedded entrepreneurial spirit in the firm, rewarding entrepreneurship, and encouraging unfamiliar ideas and sources of information as a route to achieving competitive advantage in global markets.

**Senior management involvement**, according to this study, is also significantly linked to global presence strategy and particularly to global product harmonization strategy. This implies a major role in the global NPD effort for senior managers through their personal experience on the international scene (e.g., representing the firm’s reputation to strategic and “lead user” customers), through involvement in project review, and particularly through the overview that often only they have of the firm’s worldwide endeavors. Senior managers play a key role in determining the global scope of the NPD program, in terms of
market expansion and diversification and particularly in terms of the degree of product globalization (Roberts, 2004). Thus, strong senior management involvement is essential for global NPD success due to the knowledge, understanding, and direction this provides for determining and carrying out global NPD strategies.

**Global NPD Strategies**

The findings show that global NPD strategies are essential for ensuring successful NPD for international markets. Taken together, the market- and product-based strategies identified in this study have a significant impact on all three dimensions of global NPD program performance.

*Global presence strategy*—a strategy that expands the firm’s marketing effort across international boundaries—was found to have a highly significant positive impact on program success: specifically, on time to market and on windows of opportunity, both antecedents of financial outcome. This result supports the literature, which links higher levels of performance to a global market strategy that emphasizes diversification across world markets (e.g., Capar and Katobe, 2003; Knight, 2000). Superior performance results when the global presence strategy is centered on defined arenas of strategic thrust and on making the firm “truly global,” with products aimed at markets in different geographical regions. Effective time to market—that is, on-time international launch and roll-out—is achieved when global presence strategy entails sufficient resource commitment to the international effort and active planning involvement by company personnel worldwide to ensure knowledge input about market choices and launch strategy. The results also highlight the importance of global presence strategy for windows of opportunity. A global NPD strategy that is focused on actively responding to world markets encourages enhanced creativity by exploiting greater numbers and more diverse opportunities for growth and profitability. As with time to market, the findings highlight the value of active involvement of NPD participants worldwide in the creation and implementation of the global presence strategy.

Global presence strategy is shown in this study not to be significantly linked to financial outcome. One may speculate that being worldwide has a positive impact due to enhanced opportunities and launch effectiveness but that it also leads to greater uncertainties and costs due to a more complex coordination effort (Argyres and Silverman, 2004; Eriksson et al., 1997). This means that the direct effect of global presence strategy on financial outcome is neutral and that its positive impact is only indirect, via the two antecedent outcomes.

*Global product harmonization strategy*—a strategy that effectively integrates the company’s worldwide product-, market-, and skill-based knowledge to focus NPD on the “globalization” end of the globalization-localization spectrum—was found to positively affect global NPD program performance, with the impact both indirect through windows of opportunity and direct in terms of financial outcome. There was no significant relationship with time to market. The direct effect on financial outcome is easily explained. By focusing on the commonalities of worldwide demand and limiting product localization to only the essentials, firms can reap the benefits of economies of scale and scope. The impact of global product harmonization on windows of opportunity is more complex. One reason this global NPD strategy can be seen as opening market/product opportunities is that what may appear to be an undifferentiated—one product for all—approach in reality is often what makes a global product distinct from local alternatives. A new product that is similar in all markets with one quality standard, a worldwide brand identity, and potentially a lower price is truly different from local products and, as suggested by this study, is positioned to achieve an advantage. Further, as markets become more internationalized they increasingly demand products that are also global in scope (Levitt, 1983). This is particularly true in services where key concerns are product reliability and quality (due to intangibility and inconsistency in service outcome and process). Indeed, in the B2B sector, opportunities to provide globally harmonized offerings result as marketers follow their customers to the global scene (i.e., global enterprises demand globalized products; Erramilli, 1991).

Global product harmonization strategy was not significantly linked to time to market. One explanation: While a standardized product can simplify and speed up worldwide new product launch (e.g., same production, one image and branding program), seamlessly implementing such an endeavor can be more complex than expected. For example, an international chemical company developed new, sophisticated software to help customers more effectively apply and reorder the firm’s products. During launch, even though the product was fully harmonized to fit customer needs worldwide, sales force competence in handling product complexities
was found to be a problem (e.g., differences in technical knowledge, sales skills, and selling culture). Instead of an on-schedule international roll-out, time-consuming training programs had to be introduced on a region-by-region basis, allowing competitors to copy the idea. This led to an estimated 50% worldwide market loss for the firm. In sum, achieving effective time to market through a global product harmonization strategy has both positive and negative elements, which may result in what the findings in this study show: a net effect that is neutral.

**Performance**

Modeling an antecedent relationship between the selected performance measures was fully supported by the study. Both time to market and windows of opportunity have a significant and positive impact on financial outcome. This shows that having a new product launch system that helps the firm meet schedules and deal with the complexities of marketing new products on a worldwide scale contributes substantially to the bottom line of the global NPD program. In effect, an effective time-to-market plan helps to achieve first-mover advantage and can minimize cost overruns due to errors and delays. Even more important for ensuring superior financial outcome is the identification and exploitation of windows of opportunity in global markets. 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). Finally, as shown already, financial outcome is also directly impacted by global product harmonization, which derives its effectiveness from both a strong global innovation culture and strong senior management involvement in the global new product program of the firm. This supports the underlying premise of the model that the behavioral environment of the firm—that is, global innovation culture and senior management involvement—represents an essential strategic resource that significantly impacts global new product program performance—largely indirectly, as mediated by the global NPD strategy.

**Conclusions and Implications**

Today’s markets are global in scope, and so must be the NPD program of firms. To succeed in global markets, companies need strategies that incorporate the right degree of globalization in terms of both market coverage and product offering. According to RBV and ESP, these strategies are nested in an organizational environment that comprises key “strategic resources”: in particular, intangible elements such as culture and senior management experience. The results lead to several contributions and managerial implications.

One objective of this study was to integrate knowledge from relatively separate research streams—NPD and globalization—to adapt constructs relevant for NPD program performance in the global setting. One of these is global innovation culture, which combines concepts from entrepreneurship and innovativeness (NPD) with the ideas of openness to the world and of making NPD a truly global undertaking by emphasizing knowledge sharing and responsiveness to markets, worldwide (globalization). The research results support the notion that successfully operating in global markets calls for an organization culture that incorporates at once a proactive NPD approach and an orientation to multifaceted global opportunities and challenges. Another dimension specifically adapted to the global NPD setting is global presence strategy. Whereas the globalization literature refers to diversification strategies in terms of multiple markets across the hemispheres of the world (globalization) (e.g., Hitt et al., 1997), the present study adds the notions of planning for specific arenas of strategic thrust worldwide as well as involving a geographically dispersed team in the NPD effort (NPD). Also, global product harmonization strategy was developed by incorporating not only the extent to which new products are globalized (versus localized) but also how this is achieved—for example, standardization of the “core” product offering, centralized control of NPD, one quality standard and brand identity, and simultaneous launch. The findings indicate that the constructs are valid and reliable and significantly linked to global NPD program performance. Thus, the importance of these constructs in a model dealing with factors that lead to global NPD success is supported.

Another contribution of this study is that it expands on the collective knowledge on RBV by incorporating the globalization context for NPD-related resources of the firm. To the best of our knowledge, no past study of global NPD performance incorporates the two groups of factors—organizational resources and international diversification strategies—in a
complex, interdependent model. Managerially, this broadened model can contribute to a better understanding of what factors are of relevance when expanding to the international market arena through NPD.

Although the constructs included in the model have been linked to company performance in past studies, applying the RBV/ESP framework helps in identifying and categorizing these dimensions in terms of distinctive groups of NPD success factors: that is, resource factors that define the organizational setting, experiences and “posture” of the firm, and explicit strategy initiatives that are relevant for achieving global NPD program objectives. Distinguishing between these two types of success factors is important from a managerial perspective. This is because specific NPD strategies are more easily adapted or changed to incorporate new learning (Smith et al., 1996), while internal resources are more or less fixed in the short term (Teece, Pisano, and Shuen, 1997). In other words, creating real change in the firm’s behavioral environment calls for a much longer-term approach with identified interim initiatives known to bring about transformations in perspective, attitude, and approach. For example, a strong global innovation culture can be achieved only over time and must be stimulated through such shorter-term initiatives as rewarding entrepreneurship, developing international NPD teams, and prioritizing truly global NPD projects. In contrast, global NPD strategies are more amenable to change and can be introduced in the shorter term through specific initiatives (e.g., investment in market information tools or product design systems that incorporate a global platform).

This study uses a mediated approach to modeling relationships among performance, organizational resources, and strategies, providing a more explicit view of how factors are interrelated and influence NPD success. For example, although past studies identify management involvement, organizational culture, and NPD strategy as success factors (Cooper and Kleinschmidt, 1995; Henard and Szymanski, 2001), they do not distinguish between different factor levels. The model shows that the positive effect of senior management involvement on global NPD program performance is not direct, but indirect, through the strategic initiatives it sets in motion. Similarly, global innovation culture has its strongest impact on performance indirectly through the proactive strategic initiatives it inspires. The upshot is that strategy alone is not enough. Global NPD strategies lead to superior performance because they are nested in the right kind of resource environment, which is the basis for their effective development and implementation.

The present study also provides insight to questions about which there has been some debate. One of these is how much senior management involvement is appropriate for effective NPD? Although many studies identify this factor as a determinant of NPD success (see meta-analysis by Henard and Szymanski, 2001), others show that too much involvement can constitute meddling and have a detrimental effect (Bonner, Ruekert, and Walker, 2002; Kleinschmidt et al., 2007). The finding that the impact on performance of senior management involvement is not direct, but only indirect—as mediated by the global NPD strategy of the firm—clearly supports the latter position. In effect, the role of senior managers is to have a guiding and bringing-together influence, acting as visionaries and champions for a proactive global NPD strategy, providing an overview of the firm’s international resource base, and enhancing the reputation of the firm and its new products to strategic markets and customers. A second debate deals with the extent to which products that target international markets should be globalized versus localized (de Meyer, 1993; Levitt, 1983). According to the findings, global product harmonization strategy positively impacts both windows of opportunity and financial outcome, supporting the globalization position. In other words, by focusing on understanding and building into the product core what is common to the international market community while also adapting where needed, companies achieve economies of scale and scope, differentiate their products from local offerings, and respond more effectively to business customers who themselves are multinational.

Limitations

This study found support for the idea that globalization in the form of broad diversification across world markets as well as global product harmonization explains superior performance for global NPD programs. It is important to note, however, that the data in this study refer only to B2B firms, which begs the question: Would the results also hold for new product development efforts aimed at consumer markets? In some cases, successful consumer products and services are more closely aligned with local conditions and cultures than are B2B products (Devinney, 1995). A future comparative study, using a consumer product company sample, might provide further insight in
this regard. Similarly, the data were collected from developed countries in North America and Europe. Companies located in countries that are less developed or that have substantially different national cultures may show different results. Further, other NPD program strategies besides the two key (market- and product-based) strategies selected for this study— for example, strategies of proactivity (leadership strategy) or partnership strategies for new product development—could influence NPD program outcome and potentially alter some of the results found here. Finally, the data were collected using a single key informant as is usual for this kind of empirical research (Bonner et al., 2002). While every effort was made to identify and motivate only managers knowledgeable about the issues of interest in this study, we could not control for the problem of common method variance. Therefore, all conclusions should be interpreted with this possible bias in mind. These limitations notwithstanding, the study responds to important questions that spring from the reality that globalization in NPD is essential for continued corporate success. It provides insight about what corporate resources are needed for undertaking strategic initiatives that lead to a successful NPD program and a sustained competitive advantage in the global market setting.

References


Appendix 1: Constructs and Measurement Items

Behavioral Environment (Scale: 1–7, strongly disagree/agree)

- **Global Innovation Culture**
  (7 items; max. Pearson Correlation: .77; max. Belsley’s CI: 7.99)
  An open, innovative corporate culture has been created for our global NPD program by...
  - recognizing and strongly rewarding entrepreneurship. .21
  - actively encouraging our employees, worldwide, to submit new product ideas. .10
  To create a “truly global” innovation culture, our firm/SBU...
  - strongly encourages contributions from team members in different countries/cultures. .29
  - strongly emphasizes knowledge-sharing across different geographical subunits. .14
  - emphasizes responsiveness to differences in local markets. .10
  - achieves a high degree of NPD interdependence among our affiliates, worldwide. .35
  - strongly endorses informal coordination of NDP activities across country units. .19

- **Senior Management Involvement**
  (5 items; max. Pearson Correlation: .68; max. Belsley’s CI: 17.71)
  Top management is personally involved in international/global NPD program...
  - by playing a central role in project review—that is, make key go/no-go, spending decisions. .38
  - as visionaries or “champions” of international/global new product ventures. .38
  - to enhance reputation of our organization and new products. .11
  - by encouraging strategic customers to adopt our new products. .40
  - top managers do not play an active role in the day-to-day activities of new global ventures. .22

Global NPD Strategies (Scale: 1–7, strongly disagree/agree)

- **Global Presence Strategy**
  (4 items; max. Pearson Correlation: .60; max. Belsley’s CI: 11.68)
  Our NPD effort is aimed at making our firm truly “global” (operating in all hemispheres).
  To ensure focus for our global NPD program, we have defined arenas of strategic thrust (e.g., product-market, technology)
  - from a strategic perspective, our international NPD program...
  - has a planning process with active involvement from all our NPD group, worldwide. .32
  - is specific with regard to levels of resource commitment for our international NPD effort .35

- **Global Product Harmonization Strategy**
  (6 items; max. Pearson Correlation: .35; max. Belsley’s CI: 14.03)
  An important underlying strategy of our global NPD program is to develop “truly global” products—same for all,
  with only minor adaptations to meet local conditions.
  For international products, we have one quality standard worldwide (e.g., reliability, speed, customer responsiveness).
  A key strategy in our global NPD program is to centralize operations to achieve greater standardization of “core”
  products across markets.
  We aim for product consistency by maintaining high levels of control over production and marketing
  (e.g., use direct investment, detailed agreements with affiliates)
  When launching new products to international markets, our strategy is to...
  - undertake a simultaneous launch in all or most international markets in which we operate. .19
  - emphasize the creation of a strong brand identity, worldwide. .38

Global NPD Program Performance (Scales: 1–7, see below)

- **Windows of Opportunity** (3 items, Pearson Correlation: .62; max. Belsley’s CI: 11.37)
  On average, the international NPD program was successful in...
  - opening new markets for our firm (division/SBU)? .62
  - leading our firm into new product arenas—that is, products we did not have three years go? .10
  - opening new technologies firm? .49
  (scale: 1 = not at all to 7 = great success, many new opportunities)

- **Time to Market** (2 items, Pearson Correlation: .61; Belsley’s CI: 8.72)
  New Product Launch performance: Over the last three years, on average...
  - new products in our international NPD program were launched on schedule. .34
  (scale: 1 = all took more time to 7 = all were on schedule)
  - planned international new product “roll outs” were on schedule .75
  (scale: 1 = not at all, major delays to 7 = head on)

- **Financial Outcome** (4 items; max. Pearson Correlation: .63; max. Belsley’s CI: 12.17)
  In terms of Sales (Revenue) Performance, over the last three years...
  - how successful was your global NPD program in meeting its objectives? .33
  (scale: 1 = far below objectives to 7 = far above objectives)
Appendix 1. (Contd.)

Global NPD Program Performance (Scales: 1–7, see below)  

<table>
<thead>
<tr>
<th>Weight</th>
</tr>
</thead>
</table>
| In terms of Profitability, over the last three years . . .  
| - how successful was your global NPD program in meeting its profit objectives? (scale: 1 = far below objectives to 7 = far above objectives) | 0.38  
| - what was the profitability of your global NPD program, relative to competitors? (scale: 1 = far worse than competitors to 7 = far better than competitors) | 0.42  
| - what was the impact on your global NPD program in terms of cost savings achieved? (scale: 1 = very poor to 7 = excellent) | 0.15  

Appendix 2: Correlation of Latent Constructs

<table>
<thead>
<tr>
<th>Latent Constructs</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Global Innovation Culture</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Senior Management Involvement</td>
<td>0.26</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Global Presence Strategy</td>
<td>0.47</td>
<td>0.37</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Global Product Harmonization Strategy</td>
<td>0.36</td>
<td>0.40</td>
<td>0.61</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Windows of Opportunity</td>
<td>0.33</td>
<td>0.27</td>
<td>0.38</td>
<td>0.36</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Time to Market</td>
<td>0.23</td>
<td>0.20</td>
<td>0.38</td>
<td>0.26</td>
<td>0.33</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>7. Financial Outcome</td>
<td>0.36</td>
<td>0.20</td>
<td>0.36</td>
<td>0.38</td>
<td>0.48</td>
<td>0.35</td>
<td>1.00</td>
</tr>
</tbody>
</table>