The R & D, Manufacturing, and Marketing Competencies and the Firm’s Global Competitive Position: An Empirical Study

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ABSTRACT. Past research suggests that, in domestic market context, a firm’s competencies in R&D, manufacturing, and marketing are key sources of competitive advantage. A separate stream of research suggests that coordination and concentration of value-chain activities on a global scale are the core competencies of those firms competing in global industries. In this article, we offer an empirical study to investigate whether in the global market coordination and concentration of firm’s value-chain activities can be grouped into R&D, manufacturing, and marketing competencies, and how firm’s global performance is influenced by such competencies. The findings suggest coordination and concentration of R&D, manufacturing, and marketing represent distinct competencies in global industries, and that the firm’s global competitive position is influenced by these competencies. The managerial implications of the study are discussed. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: getinfo@haworthpressinc.com]

KEYWORDS. Global competitive position, R&D, manufacturing and marketing competencies, global performance of companies

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INTRODUCTION

Recently, significant research has been conducted investigating the relationships between three distinct competencies of the firm and its performance in the domestic market context. These competencies, namely innovation, marketing, and manufacturing, have been argued to be sources of competitive advantage to the firm (Droge, Vickery, and Markland 1995; Krupp 1997; Wrennal 1997), as well as the determinants of the overall performance of the firm (Day and Wensley, 1988). If these competencies are indeed key sources of competitive advantage in the domestic market, investigation regarding to what extent these competencies are relevant predictors of the firm’s competitive position in the global market is worthwhile.

In yet another stream of research in global competition, studies have suggested that effective configuration and coordination of value-chain activities are the core competencies for firms competing in global industries (Porter 1986; Roth, Schweiger, and Morrison 1991). Indeed, coordination has been argued to be fundamental in capturing cross-national scale, scope, and learning economics, and these economies “...imply that resource flows must exist throughout the multinational network; it is unlikely that such flows would lead to advantage in the absence of coordination” (Roth, 1992, p. 534). Given the importance of configuration and coordination of value-chain activities in global competition, investigation of whether they can be decomposed into R&D, manufacturing, and marketing competencies as suggested by the first stream of the literature is warranted. It should also be interesting to study the extent to which these competencies will affect the firm’s global performance.

The purpose of this study is to investigate whether coordination and concentration of firm’s R&D, manufacturing, and marketing represent distinct competencies in global competition, and the extent to which the firm’s global competitive position is influenced by these competencies. Empirical exploration into these issues will assist in bridging the gap between two streams of research and offer insight into effective global management. In order to accomplish this objective the paper is organized in the following manner. First, an overview of the literature on innovation, marketing, and manufacturing capabilities as sources of competitive advantage, as well as on global competition, is presented. Concurrently, we discuss location specific advantages and competitive advantages and how they are related to concentration and coordination issues. Next, research hypotheses are introduced based on the literature. Third, the methodology of the study is described. Finally, results of the study and their implications are discussed.
FIRM COMPETENCIES IN BOTH DOMESTIC AND GLOBAL MARKETS THAT LEAD TO COMPETITIVE ADVANTAGE

In exploring the firm’s competencies in R&D, manufacturing, and marketing, it becomes evident that past research has provided a convincing platform from which to argue the relevance of these competencies and their effect on overall firm performance. In defining competitive advantage of the firm, past works (e.g., Droge, Vickery, and Markland 1995; Day and Wensley 1988) have focused on two distinct interpretations, that competitive advantage is achieved via (1) superiority in skills and/or resources, and (2) superiority in performance outcomes. These works further argue that superiority in skills/resources will lead to superiority in performance. However, identification of skills that can lead to competitive advantage, and the proper interface between these skills within the value-added chain of the firm, remains elusive. While the literature is cross-disciplinary in nature, past studies have generally focused on the effect of individual competencies on firm’s domestic market performance.

With the increasing emphasis on shorter product life cycles, increasing levels of competitive technology, and new product development, the effect of innovation strategies on firm goals has received a significant amount of attention within the literature. Several studies have approached this topic with the goal of establishing a best-practices procedure for the organization of the design function within the product development process (e.g., Braiden, Alderman, and Thwaites 1993). Two studies (Calantone and diBenedetto 1990; Urban, Carter, Gaskin, and Mucha 1986) have shown that product innovation is a key determinant of firm performance, particularly of market growth. Another study (Szakoni 1994) identified R&D effectiveness as an important predictor of performance.

Similar to innovation and R&D studies, research regarding manufacturing has also stressed the increased competitive levels in production flexibility, quality, and others areas. Anderson, Cleveland, and Schroeder (1989) stated that manufacturing competency is critical to the performance of the firm. Vickery (1991) identified production competence as having a positive relationship with performance. Swamidass and Newell (1987) uncovered that manufacturing flexibility is also positively related to firm performance, while Wood, Ritzman, and Sharma (1990) found that the performance of the firm is affected by a variety of manufacturing related tasks, including quality consistency, customization, and costs.

Within the area of marketing competency, the studies revolving around the Profit Impact of Market Strategies (PIMS) database have provided a comprehensive set of findings on the determinants of performance (Droge et al., 1995). Buzzell and Gale (1987) as well as Ramanujam and Venkatraman (1984) offer quality reviews of these studies, in which product quality was
shown to have a significant impact on firm performance. Drucker (1973) indicated that both marketing and innovation are key determinants of business performance. In turn, product and market development are indicated as key determinants of financial performance measured as profitability by Capon, Farley, and Hoenig (1990).

While there have been a considerable number of studies emphasizing the critical nature of particular functional areas on business performance, integrative empirical research on these areas has remained limited. It is not clear whether firm’s capabilities in R&D, manufacturing, and marketing reflect distinct competencies. Furthermore, in global industries, it is not clear whether concentration and coordination of firm’s R&D, manufacturing, and marketing competencies in different country locations can create competitive advantages.

**CONFIGURATION-COORDINATION AND LOCATION-SPECIFIC ADVANTAGE**

In the global competition literature, Porter (1986) and Roth et al. (1991) have contended that effective configuration and coordination of firm’s value-chain activities throughout the world are the core competencies possessed by successful firms in global industries. There are three primary sources of competitive advantage in global industries: (a) economies of scale; (b) economies of scope; and (c) learning (Ghoshal 1987; Porter 1980). According to Kogut (1985) and Roth et al. (1991), international scale economies are derived from cost reductions achieved through large volume production across country locations and aggregation of cross-country market segments, whereas international scope economies arise when existing international operations benefit from the introduction of additional activities that lead to decreasing costaddition. Cross-country and cross-function learning can facilitate intraorganizational transfer of skills and resources that lead to more efficient and effective global operations (Ghoshal 1987).

To achieve economies of scale and scope and to facilitate learning, however, a firm must effectively configure its competencies in different country locations and coordinate them across national markets (Ghoshal 1987; Roth et al. 1991). Here, concentration refers to the degree to which the value-chain activities of a firm are configured in such a manner where they are placed in a single (or a few) country location(s), as opposed to being dispersed across many country locations. Coordination refers to the extent to which value-chain activities in different country locations are performed interdependently, as opposed to being performed independently (Porter, 1986). Several different types of concentration and coordination combinations of the organization’s value activities are possible (Roth 1992). However, in global industries, the most important form of configuration of the value-chain is concentration of value-chain
activities in a single location or a few key locations (Porter 1986). Through concentration, economies of scale can be realized and learning can be made easier. When value-chain activities are concentrated in single locations and the global market is served from these locations, a high degree of coordination is needed to be effective (Kogut, 1985).

It should be noted that the current study is focused on a firm’s competencies in the primary value-adding activities. While firm’s supporting activities (using Porter’s (1985) terminology) in the areas of human resources and financial management may also contribute to its global success, investigation of the effect of such supporting activities is beyond the scope of the current study.

In summary, concentration and coordination of a firm’s value-chain activities appear to be the core determinants of the firm’s global competitive position. However, a firm’s R&D, manufacturing, and marketing competencies have been argued to be sources of competitive advantage in the domestic market. By drawing on both streams of the literature, we expect that concentration and coordination of a firm’s value-adding activities can be decomposed, respectively, into three distinct competencies: R&D, manufacturing, and marketing. Further, we expect a firm’s strategic position in the global market and its global competitiveness should be positively related to concentration and coordination of its R&D, manufacturing, and marketing competencies. These expectations can be formally summarized in the following hypotheses:

H₁. In global industries, concentration of firm’s value-chain activities can be decomposed into three distinct competencies: concentration of R&D, manufacturing, and marketing.

H₂. In global industries, coordination of firm’s value-chain activities can be decomposed into three distinct competencies: coordination of R&D, manufacturing, and marketing.

H₃. In global industries, both firm’s global strategic position and global competitiveness are positively related to the concentration of its R&D, manufacturing, and marketing competencies.

H₄. In global industries, both firm’s global strategic position and global competitiveness are positively related to the coordination of its R&D, manufacturing, and marketing competencies.

**METHODODOLOGY**

**Sample and Data**

To assess the two hypotheses empirically, a cross-industry mail survey of business units (BUs) competing in global industries was conducted to collect the primary data. BUs rather than the multinational corporations (MNCs) were selected because most modern MNCs are well diversified, and different
BUs within the same MNC may compete in different industries. Global industries were selected as the context of the study due to the nature of the hypotheses to be tested.

Global industries were identified by adapting the three-stage process suggested by Samiee and Roth (1992). First, a thorough review of the globalization literature (for example, Bartlett and Ghoshal 1987; Collis 1991; Hamel and Prahalad 1985) led to more than 40 industries that have been mentioned as global industries. Second, a decision was made to focus only on manufacturing industries. This reduced the list of global industries to 28. Third, as in Samiee and Roth (1992), the trade ratio of each industry was examined, since a high level of intra-industry trade is necessary for an industry to be global (Porter 1986). Using a trade ratio of 30:70 (that is, 30 percent intra-industry and 70 percent inter-industry) as the minimum limit to control for the global nature of industries, 23 of the 28 industries qualified as global industries.

Within these industries, BUs were identified through Dun and Bradstreet’s America’s Corporate Families and The Directory of Corporate Affiliations. These sources list key contact (including name, title, address, and phone number) in each BU, usually the CEO or president and either the vice president for international operations or the vice president for strategic planning. Annual sales and number of employees of the BUs are also available from Dun and Bradstreet’s database. Three criteria were used to identify the BUs. To facilitate data collection, only the BU (that is, division or subsidiary) based in the United States were targeted.

**Questionnaire and Measures**

A structured survey questionnaire was developed in several stages. First, the relevant literature on research and development, strategy, marketing, and manufacturing was searched for the verified scale items that measure concentration and coordination of firm’s value-chain activities, as well as firm’s global competitive position. Specific items were then assembled into a draft questionnaire. Second, personal interviews were conducted with three MNC executives responsible for international operations and with four academicians familiar with global competition. Minor changes were made to the questionnaire items, based on the interview feedback.

Third, the preliminary questionnaire was sent to the CEO/president of twelve randomly selected BUs and three academicians for further evaluation. Feedback was received from three executives and the three academicians. Finally, the questionnaire was finalized based on the received feedback.

Following Roth et al. (1991), measures for coordination of value-chain activities focus on the extent to which similar functional activities are coordinated across different country locations. Specifically, ten primary value-chain activities were selected based on Porter (1985). These include sourcing/pur-
chasing, research and development, product development, material processing, sub-assembly, final assembly, development of promotional campaigns, pricing, distribution, and after-sale services. Similar to Roth et al.'s (1991) measures, for each activity, a seven-point bi-polar scale was used to measure the extent to which the activity of the BU in different country locations are coordinated (1 = not coordinated at all, 7 = highly coordinated).

Measures for concentration of value-chain activities were adapted from Roth et al. (1991). Specifically, for each of the ten value-chain activities identified above, a seven-point bipolar scale was used to measure the degree to which the activity was concentrated in one (or a few) country location(s) (1 = dispersed to many country locations, 7 = highly concentrated to a (few) country location(s)).

Finally, two perceptual measures of firm's performance were developed and adopted. The first item was stated as “The strategic position of our business unit in the global market is very strong.” The second item was “Relative to our major competitors, our business unit is very competitive in the global market.” Both items were measured by a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). The perceptual measures of firm performance have been widely employed in prior studies (Narver and Slater 1990), and it is worth noting that prior studies have observed a strong correlation between managerial perceptions of performance and objective measures of performance (e.g., Dess and Robinson 1984). The complete scales are provided in the Appendix.

**Data Collection**

The data collection involved two phases. In the first phase, a personalized cover letter, a questionnaire, and a postage-paid business reply envelope were sent to the CEO/president or vice-president (VP) for international operations of each of 423 BUs in the sampling frame. Three weeks after the initial mailing, completed questionnaires had been returned by 72 BUs. Another 15 questionnaires were returned as undeliverable due to the wrong mailing address, because the addressee had retired, or because the addressee was no longer with the BU. A number of phone calls and letters were also received saying that participation was not possible due to company policy, time constraint, or lack of interest.

The second phase started three weeks after the initial mailing. A personalized cover letter, a replacement copy of the questionnaire, and a postage-paid business reply envelope were sent to those who had not responded. The cover letter restated importance of participation and urged the executive to take some time to complete and return the enclosed questionnaire. Four weeks later, completed questionnaires had been returned by another 40 BUs. Overall, 112 BUs returned the completed questionnaires, for a response rate of 26.5 percent.
The assessment of potential nonresponse bias was done by comparing the responding BUs with the nonresponding BUs. Based on average annual sales and average number of employees, there was no statistically significant difference between the responding BUs and the nonresponding BUs. Thus, it can be concluded that there is no evidence to suggest the existence of nonresponse bias.

**ANALYSIS AND RESULTS**

A three-step approach to data analysis is adopted in this study. First, factor analysis is conducted to examine the factor structure of concentration and coordination of value-chain activities in order to see whether these can be decomposed into concentration and coordination of R&D, manufacturing, and marketing. Second, the reliability of the emerging factors is evaluated and factor scores are computed. Third, regression analysis is performed to assess the relationships between firm’s global competitive position and the competency factors.

Two separate factor analyses are conducted, one on the ten concentration items and another on the ten coordination items. This is done in order to determine whether concentration and coordination of firm’s R&D, manufacturing, and marketing are distinct competencies in global competition. If the uncovered factor structure is inconsistent with the R&D, manufacturing, and marketing breakdown, it would mean that concentration and coordination of value-chain activities cannot be decomposed into R&D, manufacturing, and marketing areas and that the firm’s R&D, manufacturing, and marketing competencies are not distinct. However, if a three-factor structure emerges that is consistent with the R&D, manufacturing, and marketing decomposition, the results would support the hypothesis H1 and H2 that concentration and coordination of R&D, manufacturing, and marketing are distinct competencies in global competition.

In the first factor analysis, principal component analysis with varimax rotation are applied to the ten concentration items. As shown in Table 1, a clear three-factor structure emerges when Kaiser’s rule is used for factor selection, and the three factors combine to account for 83 percent of the variance in the data. Specifically, it is found that research and development and product development are loaded on one factor; sourcing/purchasing, material processing, sub-assembly, and final assembly on another factor; and promotional campaigns, pricing, distribution, and after-sale services on the third factor. When the content of the items in the same factor is examined, it is clear that the three uncovered factors can be labeled as R&D concentration, manufacturing concentration, and marketing concentration. Thus, it appears that concentration of firm’s value-chain activities can be decomposed into
TABLE 1. Factor Analysis for Concentration Scales

<table>
<thead>
<tr>
<th>Items</th>
<th>R&amp;D Concentration</th>
<th>Manufacturing Concentration</th>
<th>Marketing Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and development</td>
<td>.922</td>
<td>.231</td>
<td>.053</td>
</tr>
<tr>
<td>Product development</td>
<td>.893</td>
<td>.349</td>
<td>.158</td>
</tr>
<tr>
<td>Sourcing/purchasing</td>
<td>.160</td>
<td>.910</td>
<td>.098</td>
</tr>
<tr>
<td>Material processing</td>
<td>.289</td>
<td>.839</td>
<td>2.49</td>
</tr>
<tr>
<td>Sub-assembly</td>
<td>.243</td>
<td>.910</td>
<td>.144</td>
</tr>
<tr>
<td>Final assembly</td>
<td>.167</td>
<td>.907</td>
<td>2.32</td>
</tr>
<tr>
<td>Promotional campaigns</td>
<td>-.094</td>
<td>.227</td>
<td>.837</td>
</tr>
<tr>
<td>Pricing</td>
<td>.331</td>
<td>.092</td>
<td>.871</td>
</tr>
<tr>
<td>Distribution</td>
<td>.028</td>
<td>.341</td>
<td>.796</td>
</tr>
<tr>
<td>After-sale services</td>
<td>.119</td>
<td>.038</td>
<td>.866</td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>2.06</td>
<td>5.24</td>
<td>1.23</td>
</tr>
<tr>
<td>Percent of variance</td>
<td>20.6</td>
<td>52.4</td>
<td>12.3</td>
</tr>
</tbody>
</table>

three distinct competencies: R&D, manufacturing, and marketing. Thus, hypothesis H1 is supported.

The second factor analysis is performed with respect to the ten coordination items. The results are presented in Table 2. Similar to the case in concentration, a clear three-factor structure emerges that corresponds to coordination of firm's R&D, manufacturing, and marketing activities. The three factors, which account for about 81 percent of the variance, can be clearly labeled as R&D coordination, manufacturing coordination, and marketing coordination. Thus, firm's coordination of its value-chain activities can also be grouped into three distinct competencies: R&D, manufacturing, and marketing, and hypothesis H2 is supported.

In the second stage of the analysis, the reliability of the six uncovered factors is assessed. Specifically, the coefficient alpha is computed for each of the six factors. Table 3 shows that for all six uncovered factors, the coefficient alpha is greater than .800, well over the threshold level of .700 recommended by Nunnally (1978). Therefore, it can be concluded that concentration of R&D, manufacturing, and marketing, and coordination of R&D, manufacturing, and marketing all have acceptable reliability. For each of the concentration and coordination factors, the factor score is computed as the average of the items in the factor.

In the final stage of the analysis, regression analysis is applied to assess the
influence of firm’s concentration and coordination of R&D, manufacturing, and marketing on both its global strategic position and its global competitiveness. Specifically, firm’s strategic position in the global market and firm’s global competitiveness, two dependent variables, are regressed onto the three concentration factors and three coordination factors identified from the above analysis, using factor scores. The results of the regression analysis are presented in Table 4. As can be seen, both regression equations are statistically significant, accounting for 19 percent and 18 percent of the variance in global
TABLE 4. Results of the Regression Analysis

<table>
<thead>
<tr>
<th>Independent Factor</th>
<th>Dependent Variable</th>
<th>Global Strategic Position</th>
<th>Global Competitiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D Coordination</td>
<td>.301</td>
<td></td>
<td>.303</td>
</tr>
<tr>
<td></td>
<td>(t = 3.05, p &lt; .003)</td>
<td>(t = 3.04, p &lt; .003)</td>
<td></td>
</tr>
<tr>
<td>Manufacturing Coordination</td>
<td>−.006</td>
<td>1.83</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(t = −.005, p &gt; .956)</td>
<td>(t = 1.73, p &lt; .087)</td>
<td></td>
</tr>
<tr>
<td>Marketing Coordination</td>
<td>.236</td>
<td>−.098</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(t = 2.07, p &lt; .042)</td>
<td>(t = −.86, p &gt; .391)</td>
<td></td>
</tr>
<tr>
<td>R&amp;D Concentration</td>
<td>.068</td>
<td></td>
<td>.181</td>
</tr>
<tr>
<td></td>
<td>(t = .679, p &gt; .498)</td>
<td>(t = 1.76, p &lt; .078)</td>
<td></td>
</tr>
<tr>
<td>Manufacturing Concentration</td>
<td>.103</td>
<td>−.105</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(t = .943, p &gt; .347)</td>
<td>(t = −.96, p &gt; .339)</td>
<td></td>
</tr>
<tr>
<td>Marketing Concentration</td>
<td>−.133</td>
<td></td>
<td>.162</td>
</tr>
<tr>
<td></td>
<td>(t = −1.12, p &gt; .264)</td>
<td>(t = 1.35, p &gt; .183)</td>
<td></td>
</tr>
</tbody>
</table>

**Model Statistics:**
- R-Square: .191
- Adjusted R-Square: .145
- F-Statistic: 4.13
- Significance Level: p < .001

strategic position and global competitiveness, respectively. For firm’s global strategic position, two factors emerge as significant predictors. Specifically, it is found that firm’s global strategic position is positively and significantly influenced by coordination of its R&D activities and by coordination of its marketing activities across the globe. In addition, firm’s global competitiveness is positively and significantly influenced by coordination of its R&D activities, coordination of its manufacturing activities, and concentration of its R&D activities. These findings lend support to hypothesis H4 and partial support to H5, and reaffirm the importance of coordination and concentration of value-chain activities in global industries.

**DISCUSSION**

A major stream of the literature contends that firm’s competencies in R&D, manufacturing, and marketing are the major sources of competitive advantage
in the domestic market (Day and Wensley 1988; Droge et al. 1995). Another stream of the literature argues that in global industries, concentration and coordination of firm's value-chain activities across the globe are the major sources of competitive advantage in the global market. In this study, we bridged the two streams of the literature by empirically demonstrating that, in global industries, concentration and coordination of a firm's value-chain activities can be decomposed into three distinct competencies: R&D, manufacturing, and marketing. In addition, the findings suggest that the firm's global strategic position and competitiveness are significantly and positively influenced by several concentration and coordination factors. Thus, R&D, manufacturing, and marketing competencies contended in the literature can be extended to the global market context, but the specific type of competencies in these areas have to be achieved by concentration and coordination. In the following, we discuss the major findings of the study and their managerial implications.

It is found that in global industries, coordination of a firm's value-chain activities which is considered a key source of competitive advantage by Porter (1986) and Roth et al. (1991) can be broken down into three distinct competencies. These include coordination of R&D, coordination of manufacturing, and coordination of marketing. These three competencies correspond with the literature (e.g., Droge et al. 1995) that considers R&D competency, manufacturing competency, and marketing competency the sources of competitive advantage in the domestic market. What is important in these results is the global perspective of these findings. To date, while the importance of these competencies is well established in the domestic market, the extent to which these competencies are applicable in the global market context has not been assessed empirically. This study has made an important extension by empirically establish the relevance of these competencies in global marketing. Specifically, it is found that coordination of a firm's R&D activities across country locations has positive and significant effect on both a firm's global strategic position and firm's global competitiveness. Similarly, coordination of manufacturing has a positive effect on a firm's global competitiveness, while coordination of marketing influences a firm's global strategic position positively. These findings reinforce the literature (e.g., Porter 1986) that coordination is a key mechanism by which a firm in global industries can obtain competitive advantage. They also support the contention that R&D, manufacturing, and marketing competencies are important sources of competitive advantage. Therefore, the findings of the current study provide a solid basis to bridge the two streams of the literature.

Similarly, it is found that concentration of value-chain activities can also be broken down into three distinct competencies: concentration of R&D, manufacturing, and marketing. Again, this finding supports the literature on R&D, manufacturing, and marketing competencies. However, the effect of
the R&D, manufacturing, and marketing concentration on a firm's global strategic position and competitiveness is mixed. While the effect of concentration of R&D is found to influence a firm's global competitiveness positively, all other effects are not statistically significant. Thus, whether a firm's R&D, manufacturing, and marketing competencies can be realized through concentration remains unclear. Nevertheless, the findings here do not refute the role of concentration and more research is required before definitive conclusions can be made.

Several limitations of the study should be noted when one tries to generalize the findings to other context. First, the findings are valid only within the 23 global industries explicitly identified here. Further research is needed to see whether in other industries similar findings can be obtained. Second, the sample size of the study is moderate. Thus, future research needs to duplicate the findings to enhance the confidence in the findings. Third, the study is limited to BUs based in the U.S. Future research needs to extend the study to other countries in order to gain insight into the cross-cultural generalizability of the findings. Finally, the current study is focused on the value-chain activities. As such, a firm's competency in supporting activities such as human resources and financial management is not studied. Future research is needed to investigate the effect of such factors.

**Managerial Implications**

If indeed international business strategy is founded on location specific advantage and competitive advantage, the strategy of firms operating in an international environment should address the geographical or locational linkages of the functional activities of the firm (Roth 1992; Collis 1991). In order to do so, managers must bear in mind the distinctive nature of those functional activities, and that the effective concentration and coordination of these activities enables firms to enhance their competitive positions in the global marketplace. The exploitation of location-specific advantage necessitates an understanding of the independent nature of manufacturing, marketing, and R&D. Similarly, the successful coordination of the firm's functional activities mandates a familiarity with manufacturing, marketing, and R&D operations, in order to achieve competitive advantage. And in turn, it is the achievement of these two types of advantage which improves the global strategic position and competitiveness of the firm.

The findings of the current study have several implications for management with regard to how to compete more effectively in the global market. If global managers are to benefit from economies of scale and scope, as well as intra-firm learning in a global context, then the effective configuration of core competencies and the coordination of those competencies across national markets must be accomplished. Naturally, the identification of these com-
petencies as distinct characteristics of the firm is critical before any effective concentration or coordination can take place. As the results of this study indicate, R&D, manufacturing, and marketing are indeed three distinct firm competencies both within the concentration and coordination contexts.

Given that these competencies are distinct within the global environment, the empirical findings in this article suggest that the integration of certain functional activities across geographic locations can enhance the firm’s global competitive position. Managers are often confused in trying to determine the proper approach toward the attainment of location specific and competitive advantages in their global operations. In determining the best implementation of the firm’s functional activities and the linkage or integration of these activities across locations, global managers should focus on the interdependency of value-chain activities between markets, with high degrees of coordination between the respective R&D, manufacturing, and marketing efforts of the respective markets. As Rho, Hahn, and Yu noted in 1994, the time pressure on strategic decisions calls for a higher degree of consensus between related functional areas on cross-departmental decision-problems which occur at their interface. Having said this, and keeping in mind the critical linkages established in past research, several areas where managers may wish to focus their attention in order to enhance their global strategic position and/or global competitiveness are readily evident. This is particularly true within the domain of research and development coordination, which indicates that product development efforts should be tightly linked across the geographical locations of the firm. This is a critical finding to those managers who by necessity find themselves in organizations with established R&D efforts in multiple country locations. In this way managers can improve both their strategic positioning in the global market and their competitive position relative to other firms. It should be understood, however, that the concentration of research and development activities can enhance the competitiveness of the firm, where economies of scale and scope levels, as well as organizational learning, can benefit from a single country location and the resulting consolidation of resources. This is an important distinction: depending on the level of development of the firm’s R&D efforts, the coordination/concentration issue takes on a significantly different importance. At the same time, the somewhat traditional thinking regarding the concentration of value-chain activities to be beneficial to global effectiveness remains unfounded, an important consideration for strategic management when positioning the firm’s activities in the global marketplace. This ambiguity of relationships between concentration and competitiveness could be due to industry specific influences not addressed in this study. However, managers should be aware that configuration of manufacturing and marketing activities in a single country location is yet to be found to increase global competitive-
ness. Thus, this study shows there are indeed specific activities which can be coordinated to enhance performance. By focusing on these activities and their proper concentration and coordination across markets, the global strategic position and global competitiveness of the firm can improve.

REFERENCES


FIRST SUBMISSION: MARCH 1998
FIRST REVISION: JUNE 1998
SECOND REVISION: SEPTEMBER 1998
ACCEPTANCE: OCTOBER 1998
APPENDIX

Measurement of Variables

COORDINATION

"Value-adding activities in different country locations can be performed in concert or independently. With respect to our operations in all major markets, the following value-adding activities are": (1 = not coordinated at all; 7 = highly coordinated)

Manufacturing
- Sourcing/purchasing
- Material processing
- Sub-assembly
- Final assembly

R&D
- Research and development
- Product development

Marketing
- Development of promotional campaigns
- Pricing decisions
- Distribution facilities
- After-sale services

CONCENTRATION

"A particular value-adding activity can be dispersed across many country locations, or concentrated in only one or two country locations. In terms of locations, the following value-adding activities of our business unit are": (1 = Dispersed; 7 = Concentrated)

Manufacturing
- Sourcing/purchasing
- Material processing
- Sub-assembly
- Final assembly

R&D
- Research and development
- Product development

Marketing
- Development of promotional campaigns
- Pricing decisions
- Distribution facilities
- After-sale services

PERFORMANCE

(1 = Strongly agree; 7 = Strongly disagree)

1. The strategic position of our business unit in the global market is very strong.
2. Relative to our major competitors, our business unit is very competitive in the global market.