

The Strategies and Structures of Multinational Corporations.*

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The Strategies and Structures of Multinational Corporations.

Abstract:

I conceptualize eight firm international configurations based on the product market, geographic market and structural choices of firms. After taking these configurations to a comprehensive database to examine their relevance, I show that US firms cluster into five distinct and robust groupings that correspond with five of the eight configurations. An important contribution of this study is to show that product and geographic market characteristics need not move together – that is, differentiation in product markets need not require high responsiveness across geographic markets. Further, this paper offers two new archetypes based on product differentiation strategies that have not been considered in extant frameworks.

Ever since Chandler's (1962) pioneering study on the strategies and structures of organizations, the idea that firms need to have consistency and congruence across organizational elements underlies much research in both strategic management and organization theories (Van de Ven and Drazin, 1985, Ghoshal and Westney, 1993, Miles and Snow, 1994). Researchers have paid close attention to the relationship between a firm's strategy and structure because without consistency and congruence between a firm's strategic goals and the organizational structure to implement these goals, even the best managers, strategy or structure will not be able to produce the desired results. However, though it is commonly assumed across the strategy, organization theory and international business literatures that firms need to establish consistency and congruence across their operations, the type of "fit" that has been considered in these literatures is not the same. Fifteen years ago, Ghoshal and Westney (1993) observed that the frameworks and approaches that are used in the strategic management literature tend to focus more on the internal fit of an organization - meaning the relationship between a firm's product strategy and organizational structure - while models in the international business and organization theory literature tend to focus more on the external fit of an organization - meaning the relationship between a firm's structures and processes and the characteristics of its environment. Other researchers have echoed this theme and argued that more integrated approaches are needed when examining the different configurations and approaches of firms (Egelhoff, 2001, Miller, 1996).

Existing research on the strategies and structures of multinational firms has considered the relationship between either a firm's strategy and structure (see Stopford and Wells, 1972, Franko, 1973, Daniels et al., 1984, Egelhoff, 1982) or its response to environmental conditions (see Prahalad 1975, Prahalad and Doz, 1987 and Bartlett and Ghoshal, 1989). However, firm strategies, structures and responses to environments are not easily separated (Ghoshal and Westney, 1993). In fact, when considering only two of the three firm decisions across product market, geographic market and organizational structure elements that multinational firms confront, it is difficult to examine consistency and congruence because an important third element is missing. The dominant integration responsiveness (IR) framework that is commonly used to analyze firm international configurations focuses on the influence of geographic and structural elements without consideration for the product market choices of firms. This has led to a gap in our understanding of firm international strategies and structures because this

framework does not capture what has been argued to be a main motivator for firm foreign expansion in the international management literature: namely, exploiting proprietary assets with differentiated products in a standardized and integrated way throughout a firm's international operations

In this paper, I seek to fill this gap in our understanding of firm international strategies and structures by conceptualizing firm configurations that incorporate varying product market positions, geographic market responsiveness and structural integration choices by firms. I integrate key insights from separate frameworks that focus on either product market strategies, geographic market strategies or structural integration to incorporate all three of these elements into one framework that considers more complex configurations than extant studies on firm international strategies and structures commonly assume. For product market choices, I include Porter's generic positioning strategies of cost leader and differentiator. Though generic, these strategies incorporate differences in product market approaches and allow for heterogeneous choices across geographic market strategies. To capture geographic market choices, I incorporate the geographic market responsiveness characteristics that have long been highlighted in the international business literature. To incorporate organizational structural choices, I focus on product, people and knowledge integration across a firm's operations. From these product, geographic and structural integration elements, I characterize eight potential configurations of firm international strategies and structures that consider how varying product market positions interact with geographic market responsiveness and structural integration choices by firms.

The second objective of this paper is to take my conceptual configurations to a comprehensive database on the activities of US multinational corporations and examine how firms vary in their structural integration and geographic responsiveness across product market positions. I use an exploratory cluster analysis approach and incorporate statistical tests of prediction strength to determine the most robust groupings of the data. Though cluster analysis has been criticized because of the potential for researcher bias and imposition of group structures on data where no groups actually exist (Barney and Hoskisson, 1990 and Ketchen and Shook, 1995), I consider existing theories and frameworks to determine the variables that are included in the analysis. In addition, I use recent advances in cluster analysis techniques and consider the prediction strength of the resulting groups across separate samples to determine the most robust

groupings of US multinational corporations. It should be highlighted up front that this paper is not intended to be a causal examination of the influences on firm choices across different strategies and structures. Rather, this exploratory approach reveals consistent groupings of firms that exist in a dataset collected by the Bureau of Economic Analysis (BEA) at the US Department of Commerce that contains the most comprehensive information on US multinational corporations.

The results show that multiple but not all of my combinations are feasible. US firms cluster into five distinct and robust groupings that correspond well with five of my eight configurations, including a regional cost leader configuration, a regional differentiator configuration, a global cost leader configuration, a global differentiator configuration and a transnational differentiator configuration. In general, the data reveal that US multinational corporations do not have high levels of geographic responsiveness in their international operations. No firms cluster into a group that corresponds with either the multi-domestic differentiator or multi-domestic cost leader configuration. In contrast, two archetypes emerge from my framework and the data that have been omitted from extant models: the global differentiator - a firm with a product market differentiation strategy, low geographic market responsiveness and high structural integration, and the regional differentiator – a firm with a product market differentiation strategy, low geographic market responsiveness and low internal structural integration. Firms with differentiated products do not fit easily into existing frameworks that analyze international strategies and structures because the product strategies of these firms are not represented. However, by considering how different product market positions relate to both geographic market responsiveness and structural integration, the typology and results in this paper offer more complex configurations of firms than studies across several literatures commonly assume. An important contribution of this study is to show that product and geographic market characteristics need not move together – that is, differentiation in product markets need not require high responsiveness across geographic markets. In addition, these results suggest that before analyzing how fit across firm strategies and structures might impact firm performance, it is necessary to step back and reconsider whether the frameworks and approaches that have been used to categorize multinational firms incorporate enough of the complexity across product market, geographic market and structural integration characteristic to adequately represent relationships that are likely to impact firm performance.

International Strategy and Structure:

In his seminal work on Strategy and Structure, Alfred Chandler (1962) was the first to recognize the importance of consistency and congruence between an organization's strategy and structure. Early studies that analyzed the strategies and structures of multinational corporations (Stopford and Wells, 1972, Franko, 1973, Daniels et al., 1984, Egelhoff, 1982) were heavily influenced by Chandler's ideas. Stopford and Well's (1972) examined multinational firms' strategies and structures and developed a descriptive model to illustrate the typical stages of structural development for companies increasing their international activities. Subsequent research has employed more of a contingency approach by focusing on how firms respond to environmental factors in their international activities. The integration responsiveness (IR) framework (as developed by Prahalad 1975, Prahalad and Doz, 1987 and Bartlett and Ghoshal, 1989) has been described as the dominant approach to analyzing firm international strategies and structures in the international business literature (Divinney, Midgley and Venaik, 2000 and Malnight, 2001) and focuses on how firms respond to cost or local responsiveness pressures in the industries and countries in which they compete.

While there are different approaches that can be used to examine firm international strategies and structures, it can be difficult to appreciate the complex decisions that multinational firms make when considering existing frameworks and theoretical approaches in isolation because relationships across product market, geographic market and organizational structural elements are not incorporated in any of these frameworks. However, for multinational firms to achieve competitive advantage, they must configure their organizations to have consistency and congruence across not only their strategy and structure, but also within the environments in which they are active. In response to this issue, I incorporate distinctions across product market strategies, geographic market strategies and organizational structure to reveal more complex configurations than extant studies on firm international strategies and structures commonly assume. By allowing for produce market strategy differences, geographic responsiveness differences and differences across organizational structural integration, I hope to more fully explore the choices that firms face when establishing and implementing their international configurations.

As noted above, the integration responsiveness (IR) framework is the dominant approach used in analyzing firm international strategies and structures in the international business literature (Divinney, Midgley and Venaik, 2000 and Malnight, 2001). This approach identifies an important element in firm international strategies and structures with its focus on the tension between being more locally responsive or standardized across geographic markets. Given the prominence of this approach, I start by incorporating the insights from this framework regarding a firm's geographic market strategy.

Geographic Market Choices:

Because multinational corporations confront different national environments, geographic market conditions can play an important role in firm strategies and structures. As noted above, the integration responsiveness framework highlights an important tension that comes from environmental pressures, namely the conflicting pressure to be more locally responsive or more integrated and cost focused. The influence of the integration-differentiation concept of Lawrence and Lorsch (1967) can be found in IR framework and this core tension has been used to examine the strategic choices of multinational corporations in the foreign markets in which they operate for over two decades.

Insert Figure 1 about here

The IR framework (as depicted in Figure 1) offers a typology of four strategies, including an international, global, multidomestic and transnational strategy. The vertical axis focuses on global integration pressures, which are formed by the presence of global customers, global competitors, the need for cheaper costs and access to raw materials (Prahalad and Doz, 1987). At the extreme, firms that sell standardized goods that are produced in the most cost effective locations and that respond to homogenous consumer demands across country settings are responding to global integration pressures. In contrast, the horizontal axis represents local responsiveness pressures, which are formed by differences in customer needs across countries, in differences across distribution channels across countries, in varying government policies across countries, or from market structure differences across countries (Prahalad and Doz, 1987). At

the extreme, firms that have no linkages across their operations and sell customized products that are produced within the host country (which could be influenced by tariffs and/or government policies) are responding to local responsiveness pressures. Bartlett and Ghoshal (1987) emphasized the need for firms to be simultaneously responsive to different environments while also integrating operations to gain efficiency advantages. In theory, the ideal organization that can cope with both types of pressures is the transnational firm. Overall, this framework highlights the influence of environmental elements and considers how firm responses to these competing pressures impact the ways in which firms organize their international strategy and organization. By stressing the transnational approach, Bartlett and Ghoshal (1987) highlight an ideal approach in which firms configure their operations to benefit from both cost efficiencies and shared knowledge and local adaptation and responsiveness whenever possible.

The organization-environment interaction that is emphasized in the integration responsiveness framework is central to most strands of organizational theory. Effective exchanges across the organization-environment boundary are key to an organization's survival and the fit between a firm's internal structures and processes and the characteristics of its environment influences the effectiveness of such exchanges (Ghoshal and Westney, 1993). Contingency theory (Burns and Stalker, 1961, Lawrence and Lorsch, 1967, Galbraith, 1973) argues that the success of different organizations is largely dependent on the appropriate organizational structure-environment fit. There is no one best way of organizing. Rather, there are a number of contingency factors such as the complexity or uncertainty in the environment that impact firm organizations. The IR framework places the geographic market strategy of a firm at the forefront by giving prominence to firm responses to competing environmental pressures of integration or local responsiveness.

The geographic market tension between integration or responsiveness that lies at the core of the IR framework identifies an important environmental element that influences firm choices. Integration and responsiveness pressures have been shown to influence the international strategies and structures of multinational corporations across several empirical studies (Bartlett and Ghoshal, 1989; Prahalad and Doz, 1987; Roth and Morrison, 1990; Leong and Tan, 1992, Harzing, 2000). These studies show the importance of incorporating the geographic market influence on firm configurations and I will include the IR framework's focus on geographic

responsiveness in my framework below.

Product Market Strategies:

Though firm geographic market strategies are important to include, they are not sufficient when examining firm international configurations. In the integration responsiveness framework, differences in firm strategy amount to differences in integration or responsiveness to global environments that push MNCs towards one extreme of the other, or toward some combination of both. When using the integration responsiveness framework, one must assume that a firm does something well in its home market and focus on how the firm responds to environmental pressures, without much consideration for what that firm does well. However, by taking that approach, this framework has not incorporated how firm product choices and proprietary assets can also impact the strategic and structural decisions of multinational firms.

In both the strategic management and international business literatures, firm knowledge assets play an important role in firm product strategies because firms can transfer, augment and build their technological capabilities as they grow (Penrose, 1959, Wernerfelt, 1984, Hymer, 1976, Buckley and Casson, 1974, Caves, 1996). A knowledge based view of the firm emphasizes how a firm's accumulated knowledge provides firms with key competitive advantages, including resources and capabilities that can be used when firms are competing in foreign markets. Based on the influential writings of Hymer (1976) and incorporating transaction cost reasoning (Williamson 1979), the internalization theory argues that firms that have accumulated proprietary resources will be able to overcome liabilities of foreignness because of advantages that arise from their firm-specific assets and knowledge. The internalization theory seeks to explain why multinational enterprises exist – why firms would own operations abroad. It has been argued that firms will expand abroad when they can organize interdependencies between agents located in different countries more efficiently than markets (Hennart, 1982).

Most applications of the transaction cost/internalization theory to MNEs have focused on international interdependencies involving know-how and knowledge resources (Hymer, 1976, Buckley and Casson, 1976, Hennart, 1982). Markets for firm knowledge suffer from the problem of information asymmetry. As Arrow (1962) argued, the buyer of know-how does not

generally know its exact characteristics and the seller cannot provide the buyer with this information because she would be giving away the knowledge free of charge. Knowledge transfer within a firm can be more efficient because the firm can be protected from cheating in a market setting. A firm can reduce risk and increase its ability to appropriate the returns to its knowledge assets by establishing operations abroad and maintaining control over its proprietary knowledge. Through ownership of foreign expansion, firms can more fully appropriate the returns from their firm-specific proprietary knowledge.

Though proprietary knowledge is a key driver of firm international expansion in the internalization theory, Caves (1996) has argued that firm proprietary assets are not necessary to explain the common administrative control of firms that pursue vertical integration. He argues that firms can capture gains from economies of specialization and integration and benefit from differences in factor endowments and cost structures across countries. By fragmenting production and locating different stages of production across countries, firms can locate unskilled, labor intensive activities in countries where wages for unskilled relative to skilled workers are low. By integrating production in the most cost effective way, firms can use foreign countries to achieve low cost advantages throughout their operations. This suggests that though firm proprietary assets may be an important driver of firm foreign expansion, firms without such advantages can also use foreign markets to lower their costs and create more efficient and competitive operations.

Differences in firm knowledge assets or firm advantages are likely to influence not only the ways in which firms expand their operations abroad, but also the strategies and structures they implement. For example, firms with strong proprietary assets are not likely to pursue a strategy that focuses solely on minimizing costs as they expand abroad. Rather, these firms have proprietary assets that can be exploited in foreign markets to earn additional rents. This suggests that firms with and without knowledge assets are not likely to pursue the same geographic strategies because the first group can exploit their resources while the second group needs to create cost advantages through international expansion to access cheap production and create competitive advantage in their low cost strategy.

In my framework, I incorporate two different types of product market strategies. Rather than only consider the strong intangible assets that are implied by the internalization theory, I

adopt the approach of Porter (1987) by embracing two generic product positioning strategies that firms can pursue: differentiation and cost leadership. Porter has argued that competitive advantage is a function of either providing comparable buyer value to competitors while performing activities efficiently or performing activities at comparable cost to competitors but in unique ways that command a premium price. A firm that pursues a differentiation strategy offers products that are perceived to be unique. Companies employing differentiation strategies incur extra costs through R&D or advertising investments for example. Differentiation allows firms to achieve higher prices and earn price premiums. A strong brand, innovations and technology skills or operational excellence can all provide unique advantages to firms. These are the same types of proprietary advantages that are discussed in the internalization theory and that are argued to provide competitive advantages to firms. A differentiation strategy stands in contrast to a cost leadership strategy which emphasizes low cost, economies of scale and efficiency. By producing standardized products at lower costs, firms pursuing cost leadership strategies can benefit from economies of scale and experience curve effects. Unlike firms pursuing differentiation strategies, firms pursuing cost leadership strategies offer more basic products and these firms need preferential access to raw materials, components or cheap labor to achieve cost efficiencies.

Though these generic strategies have been used to describe domestic firm strategies far more than multinational firm strategies, there are studies that have considered these two types of strategic approaches for multinational firms (see Govindaragan 1988 and Govindaragan and Gupta, 1985, for example). Porter's generic strategies provide a useful distinction to incorporate product market strategies which will allow for varying responses across product and geographic markets by firms.

Structure and Integration:

The earliest examination of the structures of multinational corporations can be found in Stopford and Wells' (1972) study of 187 US MNCs. Stopford and Wells used a descriptive approach to illustrate typical stages of development and to capture these firms' international organizational structures. The strategies in the integration responsiveness framework correspond well with the structural implications of the Stopford and Well's model. The most cost effective approach suggests that firms have very coordinated activities with responsibility and centralized

decision making authority. In contrast, an approach that adapts products and services to local markets involves business units in each country that are quite independent of each other, with decision making responsibilities located at the more decentralized country or regional unit level. These early models of firm international structures suggest that it is important to consider measures of geographic dispersion, product diversification and the extent of a firm's international operations when examining the organizational structure of firms and they will be incorporated in my examination of US firms below.

Since the 1980s, scholarly interest in the traditional structures of multinational firms has waned and there has been much greater interest in non-structural and more informal approaches to organizing international firms (Egelhoff, 2001) because studies that focused on the structural form did not allow enough consideration for the subsidiary and the various strategic roles that subsidiaries can take (Birkinshaw, 1995). Over the last two decades, an MNC has often been conceptualized as an "inter-organizational network" with multiple vertical and horizontal relations, and with diverse resources that can be found throughout the subunits of the organization to allow firms to respond to both integration and responsiveness dimensions (Jarillo and Martinez, 1990, Ghoshal and Bartlett, 1990, Gupta and Govindarajan, 1991, 2000, and Hedlund, 1986). Rather than respond to either local responsiveness or integration pressures, the network view of multinational firms argues for multiple roles that subsidiaries can play and stresses the importance of coordination, integration and knowledge flows throughout firm operations. Subunits are linked to each other as well as to headquarters by cross-flows of people technology and products and key activities are performed in locations that offer comparative advantages.

In my framework, I seek to incorporate the structural integration of product, people and knowledge resources that the literature on subsidiary operations has highlighted because differences in firm product market strategies suggest different types of linkages and flows across people, product and knowledge resources. While both low cost and differentiation players can implement high levels of integration across their operations, differences in firm assets suggest these firms are likely to implement different types of integration across their worldwide operations. There is an important difference between firms that are trying to coordinate the lowest cost production system they can, versus those that are trying to produce standardized,

differentiated products while protecting and controlling their firm proprietary assets. By including several structural integration elements that subsidiary level studies have identified, I can allow for different types of structural integration that is consistent and congruent with a firm's product and geographic market strategies.

Because of their proprietary assets, differentiator firms are more likely to organize their operations to protect these assets. Transaction cost economics (Williamson, 1975, 1979) and theories that focus on asset specificity (like the internalization theory, Hymer, 1976; Buckley and Casson, 1974; Rugman, 1980) provide reasons why firms need to own their proprietary assets as they exploit these assets. But these firms also need to transfer and control their knowledge assets as they implement their product and geographic strategies. Several studies that have examined knowledge and information flows within firms have revealed how difficult knowledge transfer is (Mansfield and Romeo, 1980, Teece, 1977, Szluzanski, 1996). Many studies have focused on the important role that employees can play in transferring knowledge stocks (see Almeida and Kogut (1999) and Song, Almeida and Wu (2003) for example). For multinational firms trying to exploit parent firm knowledge, home country personnel can be used to oversee affiliates, to explain how to implement the practices and knowledge of the firm and to transfer knowledge and information across boundaries. Because most of the important elements of knowledge tend to be tacit in nature (Nelson and Winter, 1982), the ability to interact with employees from the parent firm is likely to improve the effectiveness of knowledge and information transfer. Firms with proprietary assets need to be concerned about not only protecting their knowledge assets but ensuring that their differentiated products meet their higher thresholds. Firms pursuing a differentiator product market strategy are more likely to use not only knowledge transfers but also personnel transfers to meet both goals. While both differentiation and low cost product market strategies are impacted by cost concerns, different product market strategies suggest that there can be differences across the structural integration of people and knowledge assets across these two types of firms. This implies that differentiators that are producing standardized differentiated products may have more extensive linkages in terms of people and knowledge transfers than firms pursuing a cost leader strategy.

Firms without knowledge assets may find arms-length transactions to be a cost effective method to source inputs, sell products and respond to cost pressures. An organization that can

source components from open markets in a number of countries is very different from an organization that is trying to protect its knowledge by making components in one location and shipping them across its operations. In their theoretical model, Devinney, Midgley and Venaik (2000) argue that transaction completeness influences the choice of structure in firms. If knowledge protection is a concern, firms will need to protect critical competencies and assets from competitors – in addition to monitoring and controlling the components of the value chain that are the driving concern of management (Divinney, Midgley and Venaik, 2000). Firms without such assets are more likely to be able to source goods from third parties in foreign countries.

To examine structural integration in my framework, I will consider linkages across firm operations in terms of people, products and knowledge flows. This allows for different types of structural integration across firms with varying product market strategies. While I would expect that both low cost and differentiator firm strategies can benefit from product linkages, I would expect to see more integration of people and knowledge flows in firms with proprietary assets. Further, firms with knowledge assets are less likely to locate their foreign operations in environments that lack institutional protections. While developing countries represent cheaper costs, there are also lower institutional protections in these countries. This suggests that differentiators are more likely to organize their operations in locations that protect these assets. Though both low cost and differentiator strategies can benefit from integration across their operations, there are several aspects of integration that can be included in an analysis of firm configurations. In my framework, I will include intra-firm product movements, personnel movements through expats from the parent firm, knowledge flows from a parent firm to affiliates and outsourcing in foreign countries (both to serve a foreign country and to serve the home country).

There are other geographic location implications as well. In countries with low transactional completeness (Divinney, Midgley and Venaik, 2000), low intellectual property protection (Markus, 2000), more political risk (Henisz, 2000) or institutional voids (Khanna and Palepu, 1997) firms need to work harder to protect critical competencies and assets from spilling over to competitors and to appropriate the returns to their technological assets. It is also more difficult to monitor and control critical value chain activities in these environments (Teece,

1992). Firms may not want to locate their technologically advanced activities in markets that do not provide adequate protection for these assets (Zhao, 2006) or where there is a risk of spillovers to competitors. This suggests that there may be differences across firm geographic location choices, depending on both the proprietary assets and the institutional conditions in the country. In addition, some country locations may not provide access to skilled workers or advanced inputs that are necessary for firms to produce their technologically differentiated products. Below, I will include consideration for additional geographic market characteristics of openness, intellectual property protection and political stability to make sure that I do not attribute responsiveness differences that might be due to these other geographic factors.

International Configurations of Firms:

As represented in Figure 2, I incorporate product market, geographic market and structural integration choices of firms into a cube that suggests eight potential firm configurations. This framework allows for a visual representation that is tractable. As with all frameworks that simplify alternatives down to a set of two choices on each axis, this framework represents important tensions from which firm decisions are more similar to one choice or the other. Clearly, firms can fall anywhere within the box that captures the choices across the three product, geographic and structural tensions and not many firms will fall at the extremes in these boxes. What is interesting about frameworks is their ability to capture important ideas and to provide a way to distinguish firm strategies and structures. In my framework, I have tried to capture the key insights across product market, geographic market and structure that are discussed above.

Insert Figure 2 about here

In these eight configurations, I incorporate varying product, geographic and structural integration characteristics. I start with the insights from the IR framework and incorporate geographic market responsiveness. This framework aggregates the environmental pressures that a firm faces across foreign markets. By including a high-low geographic responsiveness on the x

axis, my framework considers environmental pressures in a way that allows the model to be applied in different settings and to different firms. While this necessarily loses country-specific information, I follow this aggregation approach to be able to capture environmental pressures at the firm level of analysis. Next, I incorporate Porter's generic strategies on the z axis to capture firm product market positioning. By having an axis that presents the choice of low cost or differentiation strategy, I allow for these opposing firm positions to be captured in my framework. Finally, I incorporate structure by considering high and low levels of integration across firm operations on the y axis. Because different firm product market positioning can involve different types of integration, I will be including linkages that represent aspects of product, people and knowledge linkages across a firm's worldwide operations.

Similar to the IR framework, I include the names global, multi-domestic and transnational in six of my configuration names to reflect firm responses to geographic responsiveness pressures. To incorporate product market strategies, I incorporate the cost leader and differentiation strategies from Porter (1987). This produces a global cost leader, global differentiator, multi-domestic cost leader, multi-domestic differentiator, transnational cost leader and transnational differentiator. I have not included the name international strategy in this model, but rather incorporate a regional designation in my framework to capture firms that are more limited in their geographic scope of activities – I will discuss the reasons for replacing this name with a regional designation below.

In the top left of my cube are the global differentiator and the global cost leader. The global cost leader corresponds with the existing global strategy in the IR framework. Firms that fragment their production processes across countries to benefit from factor cost differentials across different country locations and to access cheaper inputs or raw materials into their production processes (Caves, 1996) to produce lower cost standardized goods fit well with this configuration. The global cost leader configuration focuses on firms that are accessing cheap inputs that can be used to serve other markets. An example of a firm that fits with a global cost leader strategy is the BIC corporation¹ with integrated product operations and standardized, low cost products that are priced lower than rival Gillette razors or rival ball point pens. In the back

¹ None of the examples used in this section come from the BEA survey data – they are all taken from case examples, news reports, academic articles or company annual reports.

of the top left of the cube is the global differentiator. This firm configuration corresponds well with the internalization theory logic of a firm that has proprietary assets that are exploited in a standardized and integrated way across multiple country locations. For these firms, integration is more likely to include people and knowledge linkages across firm operations in addition to product linkages. While these firms can reduce their costs by integrating their production activities, they can also protect their knowledge assets and successfully transfer their assets through people and knowledge linkages. An example of a firm that fits with this strategy is BMW, with its standardized, but differentiated product that has little adaptation (with engines produced primarily in Germany and then shipped to other locations).

In the bottom right of my cube are the multi-domestic differentiator and the multi-domestic cost leader. A multi-domestic differentiator offers a unique product or service that is customized or adapted to local markets. With higher environmental pressures for responsiveness, these firms are more likely to make changes to the differentiated products or services that have created advantages for these firms in their home market. This corresponds with the IR framework multi-domestic strategy. The classic example of a multi-domestic player was General Motors, which functioned historically with very self-contained entities. In the front bottom right is the multi-domestic cost leader. This is the one configuration of the eight that seems unlikely both in theory and practice. Low cost players are not likely to drop their focus on costs and produce adapted products for each market in which they compete. However, in theory, it could exist. If cost pressures are not high, but firms pursue cost leadership strategies, these firms may decide to offer more customized options across different country markets or more customized services.

By distinguishing two types of transnational strategies in the top right of my cube – the transnational differentiator and the transnational cost leader, it is possible to have firm strategies that incorporate both cost and responsiveness pressures, but allow one element to dominate the other. Despite the arguments about the ideal type of strategy by Bartlett and Ghoshal (1988, 1993), empirical tests and anecdotal stories of firms attempting to achieve the transnational strategy and a matrix structure fall very short of expectations. A transnational differentiator configuration allows for firms with differentiated and adapted products and services to focus more on integrated operations to achieve cost advantages while a transnational cost leader may

focus more on services for its low-cost standardized products. By incorporating the firm advantage into these transnational categories, the resulting configurations would highlight whether product integration or geographic responsiveness strategies dominate for a firm. Caterpillar or Unilever offers an example of firms that came from more multi-domestic approaches but added more product integration to benefit from efficiencies and become transnational differentiators. While Unilever has become more integrated and cost focused, it continues to have features of a multi-domestic because local responsiveness is still emphasized. An example of a firm that emphasized product integration more than geographic responsiveness, the transnational cost leader, is Motorola – a firm which has added more differentiated products to its global cost leader pursuits.

Finally, in my cube, I have changed the category of international strategy from the original IR framework. The international strategy and structure has not always been included in empirical tests of the IR framework (Harzing, 2000). This strategy represents firms that are mostly dependent on their home market and for whom foreign sales tend to be opportunities that do not require much attention on the part of home country managers. Given that this category has not always been included in empirical analyses, it is difficult to appreciate what this category generally represents.

The typologies for firms with low product integration and geographic responsiveness can be extended by considering studies that have focused on the home region versus global expansion choices of firms. Rugman and Verbeke (2004) have stressed the importance of the home region location of many firms' international operations. Empirical studies (Baden-Fuller and Stopford, 1991, Delios and Beamish, 1999 and Belderbos and Sleuwaegen, 1996 and 2005) have shown that many firms focus on their home region, even over long periods of time. Delios and Beamish (2005) and Belderbos and Sleuwaegen (1996) suggest that firms with regionally bound firm specific assets might have fewer capabilities, and certainly fewer capabilities that are globally transferable. Belderbos and Sleuwaegen argue that a more limited geographic scope may actually result in better performance for these firms (versus a wider scope of geographic expansion) due to the lack of globally competitive firm resources or capabilities to manage such expansion. Examining the European domestic appliance industry, Baden-Fuller and Stopford

(1991) have shown how changing economic conditions can actually diminish the value of global strategies for some firms.

Rugman and Verbeke (2004) give several examples of home region firms. Though trying to focus more on increasing its international presence, Wal-Mart has often been described as a regional cost leader. Rugman and Verbeke site Wal-Mart's 94% sales in North America as evidence of their regional status. Mitsubishi or Chrysler, with 86% and 93% sales in their home markets respectively, offer examples of regional differentiators in the competitive automobile industry.

By incorporating two regional configurations, I highlight two issues that are important to consider. First, while the internalization theory stresses the importance of firm proprietary assets to explain firm expansion abroad, studies that focus on regional expansion strategies reveal that firms that lack such intangible assets may be able to compete internationally with more local expansion strategies. Second, these studies have an underlying focus on the distance choices of firms as they invest in international operations. To remain in a firm's home region suggests either that firms have chosen to remain in the region they know best, or that their assets are only competitive in this region. This suggests that these firms could be pursuing a low cost or differentiation strategy in a market they know best. Overall, a regional approach allows for limitations on firm foreign expansion decisions and gives more identity to firms pursuing configurations with low product integration and low geographic responsiveness.

The Configurations of US Multinational Corporations

The second objective of this paper is to take the configurations that I have identified in Figure 2 to a comprehensive database on the activities of US multinational corporations and examine their relevance. I examine relevance in an exploratory way, using cluster analysis and incorporating statistical tests of prediction strength to determine the most robust groupings of firms. More specifically, I compare the groupings that result from a cluster analysis performed on the most representative dataset that is available for the population of US MNCs to my eight configurations.

Cluster analysis has also been called segmentation analysis or taxonomy analysis. It does not have a dependent variable, but rather generates groupings or associations across variables

that best separate the data. By using cluster analysis, I seek to identify the groups of firms which both minimize within group variation and maximize between group variation based on the variables that come from the prior research discussed above. I employ recent advances in cluster analysis techniques to determine the most robust grouping of the data before comparing them to my configurations.

Cluster analysis has been criticized in strategic management research because of the potential for researcher bias. Unlike techniques such as regression analysis, cluster analysis does not offer a test statistic that provides a clear answer regarding the support or lack of support for a set of hypotheses (Ketchen and Shook, 1996). In addition, most applications of cluster analysis in strategy have lacked an underlying theoretical rationale. Without a theoretical foundation, the clusters that are identified may not reflect any real conditions but instead may simply be statistical artifacts that capitalize on random numerical variation across organizations (Thomas and Venkatraman, 1988). To deal with these potential issues, I have based my variables on existing theories and frameworks. In addition, as described more below, I use recent advances in cluster analysis techniques and consider the prediction strength of the resulting groups. Further, I consider three separate benchmark years of data to determine how consistent the groupings are.

Data

I use confidential data from the benchmark surveys of US Direct Investment Abroad, administered by the Bureau of Economic Analysis (BEA) to examine the activities and operations of US multinational corporations. Because these surveys are mandatory, these data provide the most comprehensive information on the operations of U.S. MNCs available.² I restricted my observations to US parent firms in manufacturing industries (SIC codes 200-399). I also excluded firms in the petroleum refining industry because these firms tend to be outliers on almost all of my variables. My sample is also restricted to majority-owned affiliates, which are required to report more detailed information than minority-owned affiliates (meaning 50% or less ownership). Many of the majority-owned subsidiaries are fully owned (with the average

² Specifically, the International Investment and Trade in Services Survey Act requires U.S. MNCs to report detailed information on the financial and operating activities of both U.S. parent companies and their foreign affiliates, as well as information on the value of transactions between the parents and affiliates. (See Mataloni, R. and D. Yorgason, 2006, for a thorough description of definitions and survey methodology used by the BEA.)

ownership percent for all majority owned subsidiaries of manufacturing firms that report to the BEA over the time period 1994-2004 being 95%).

The BEA reporting thresholds have increased over time. When firms become exempt from reporting in the benchmark surveys, the BEA carries them forward by estimating data. This happens at both the parent and affiliate level information. I do not include any data at the affiliate or parent level that is estimated data. In effect, this means that smaller affiliates (those with assets, sales or net income below \$100 million in 1999) are not included in my analysis because some of the data items used in the analysis are not reported on the abbreviated survey forms filed by smaller affiliates. With these exclusions, I end up with a sample of 801 parent firms in 1999.

I considered data from the three most recent benchmark surveys that were administered by the BEA (including 1994, 1999 and 2004). The numbers of parent firms overall and in each group decreases over time because the thresholds for reporting have been rising over time (with the total number of parent firms that met the higher \$150 million threshold to fill out the BEA long form survey decreasing to 607 firms in 2004). When I create a panel of the same firms over these three benchmark surveys, there are very consistent findings in terms of group membership for individual firms that appear in each of these years. However, it should be noted that when I create a balanced panel over the three benchmark years, I am basically including only the largest firms that meet the reporting requirements in the 2004 benchmark surveys no matter the year they are reporting and discarding many firms (resulting in a sample of just under 400 parent firms in this balanced panel). Instead of presenting this partial population, I have presented results that are based on the 1999 benchmark survey only in Table 4, which includes the population of firms that report to the BEA (and that meet the reporting thresholds of \$100 million for that year).

Variables

Table 1 lists all variables that are included in the cluster analysis. Table 2 reports the mean values for each of the variables across the last three benchmark surveys (from 1994, 1999 and 2004). While I only report the results for the 1999 cluster analysis below, I include all three benchmark years in this table to show that the variables included in the analysis do not change

much over this time period. While there are some changes over the 10 years between the first and last surveys, many of the variables have very similar means over this time period.

Insert Tables 1 and 2 about here

Product Market Variables:

To examine firm product positioning strategies, I consider the influence of firm proprietary assets and services and include a firm's technological and service expenditure intensities in the US operations. For US technological intensity, I divided a firm's R&D expenditures in the US by its worldwide sales. For US services intensity, I divided a firm's sales in services in the US by its worldwide sales. By considering both technology and services investments, I can capture different types of differentiation advantages of firms. Low expenditures on R&D and services would represent a cost leader strategy.

I also include two more general product market strategies, including the overall product diversification choices of firms and the percent of foreign sales in a firm's core industry to total foreign sales. Stopford and Wells (1972) focused more on the product diversification strategies of firms and I want to include these variables to capture the potential that product diversification choices are driving firm configurations. I included the product diversity of each firm using a herfindahl type index that considers sales across three-digit SIC codes. I used the following formula to calculate this variable:

$$\text{Product Diversity} = 1 - \frac{\sum_{i=1}^n m_{ij}^2}{(\sum_{i=1}^n m_{ij})^2}$$

where m is sales in each 3 digit SIC code. I also included a measure of the percent of foreign sales that are in the firm's core 3-digit SIC code to examine foreign core product activities..

Geographic Market Variables:

To examine geographic responsiveness, I consider the influence of firm proprietary assets and services in foreign markets. I included a firm's technological expenditure and sales of

services intensities in the foreign operations. More specifically, for technological intensity, I divided a firm's total foreign R&D expenditures by its worldwide sales. For services intensity, I divided a firm's total foreign sales in services by its worldwide sales. By considering both technology and services investments, I can capture different types of responsiveness. I also include a measure of total foreign R&D employees (in foreign markets) divided by a firm's worldwide employees.

I also included other geographic market variables to capture potential differences in geographic strategies across firms with and without knowledge resources. To capture potential intellectual property protection differences the international operations of the US firms in my sample, I consulted the United States Trade Representative's Special 301 Priority Watch List, which lists countries that are of concern for American businesses.³ I created a measure that captures the percent of sales that are in countries on the USTR's Special 301 Priority Watch List. Next, I added two measures to capture how government policies might impact firm geographic operations. It may be harder to exploit and control proprietary assets in countries that have more restrictions on importing and exporting into the country. I calculated the weighted average percent of FDI/GDP for all firm foreign country sales. This country openness information comes from the World Bank's World Development Indicators. I also considered the percent of all foreign assets that are located in developing countries (using a very broad classification of non-OECD countries). Finally, I included a measure of the weighted average political risk of a firm's foreign operations using Henisz' (2000) POLCONV index of policy variability – again, to capture potential differences across my two generic strategies. Higher numbers in this index represent more political constraints (and less political risk).

Structure and Integration Variables:

To consider a firm's structure and integration, I included several variables that capture the extent and structure of a firm's worldwide operations and the linkages that firms establish across their operations in terms of products, people and knowledge flows.

³ Including countries like Argentina, Bahamas, Belize, Brazil, China, Colombia, Dominican Republic, Egypt, Greece, Hungary, India, Indonesia, Israel, Korea, Kuwait, Lebanon, Poland, Pakistan, Russia, Turkey, Ukraine, Uruguay, Venezuela.

Similar to the inclusion of a firm's product diversity above, I also include consideration for a firm's geographic dispersion. I consider the extent of foreign activities by measuring the percent of foreign to total assets of a firm. I measure the dispersion of firm activities by calculating a herfindahl type index that considers how dispersed firm assets are across all of the firm operations. Building on existing studies, Guillen (2007) specifies a measure of dispersion across firm activities that is included in this analysis. This measure is defined as:

$$\text{Geographic Dispersion} = \frac{1}{n} \sum_{i=1}^n (x_i)^2$$

where D is the dispersion index, n is the number of countries (including the home country) and x is the share of each country in the company's total assets. This index ranges from zero (minimum dispersion – all assets in one country) to one (when assets are evenly divided across the n countries).

If firms have more decentralized operations, I would expect more local sales in their affiliates. To capture the stand-alone nature of firm operations, I consider the level of local sales in foreign subsidiaries by including a measure that averages subsidiary host country sales by subsidiary total sales. I also capture how regional a firm is by including the ratio of home region (including the US, Mexico and Canada) sales to worldwide sales for each firm. I also included a measure of foreign assets to worldwide assets to measure how important foreign assets are more generally to each firm.

To capture people linkages across firm operations, I included the percent of US expats that are in foreign subsidiaries. To capture knowledge linkages from a firm's parent operations to its affiliates, I included the royalty payments that subsidiaries make to their parent firms.

To capture product linkages, I considered both internal and external flows of goods. At the parent level, I consider parent exports to foreign subsidiaries (as a percent of total sales) and parent imports from all foreign subsidiaries (as a percent of total sales). At the subsidiary level, I consider subsidiary exports to other subsidiaries (as a percent of total sales). Given the arguments above about the potential for differences in the level of intra-firm versus external sourcing and product integration, I also included imports from non-affiliated parties in foreign countries and parent exports to non-affiliated parties in foreign countries (both as a percent of

total firm sales). Further, I included subsidiary exports to non-affiliated parties in third countries (as a percent of total firm sales). These variables allow me to gauge whether there are differences between differentiators and cost leaders in the type of integration and cost reducing international strategies they implement.

Firm and Industry Controls:

Integration and local responsiveness pressures can also be influenced by industry level factors. Integration pressures reflect industry level factors while local responsiveness pressures refer more to differences in consumer expectations or demands across countries, differences in distribution channels, or differences in government policies that impact how integrated firm operations can be. To capture industry cost pressures, I consider how globally integrated a firm's core industry is. A global industry has been defined as one in which domestic markets are integrated across national boundaries and where a firm's competitive position in one country is affected by its position in other countries (Porter, 1986). Key elements in an industry's evolution toward becoming more global include standardization of products and services due to more similar consumer tastes and the development of global scale economies in manufacturing and R&D. To include consideration for industry integration and cost pressures, I follow Kobrin's (1991) operationalization of global industry integration and calculated the ratio of total affiliate and parent exports to total foreign sales for each 3 digit SIC code. This measure captures the level of intrafirm to total cross-border trade within an industry. I created this measure at the 3-digit SIC code level as this is the most detailed level of industry classification that is available in the BEA data. To capture local responsiveness pressures, I calculated the percent of industry foreign R&D and foreign service intensities in the firm's core 3-digit SIC code level industry. Finally, I also included controls for firm size (log of worldwide assets) and the average percent ownership in foreign subsidiary operations in the analysis.

K-Medians Cluster Analysis

I used k-median clustering to analyze the data. I clustered based on medians to avoid having outliers influence the groupings. In addition, when two or more variables are used to define distance, the one with the larger magnitude will dominate – to avoid this problem, it is

common to standardize all variables before using cluster analysis to group data (meaning to transform all variables so that they have a mean of zero and a standard deviation of one). Though the summary statistics and the summary results are reported below in their raw form (to provide more of a sense for the actual differences across these variables), I ran all of the cluster analyses using standardized variables.

In k-median clustering, the researcher specifies the number of clusters in advance. I considered two through ten groupings and used the prediction strength to determine which number of groups best categorized the data. Statisticians have argued that reliability can be determined by using resampling methods to examine whether results are reproducible (Hair et al., 1992). If high instability is observed, the inferred solutions are not valid, or at least miss some important aspects of the data (Bertrand and Bel Mufti, 2006). Statisticians have adopted prediction ideas to examine the robustness of the clusters by using randomly separated samples. For example, Tibshirani and Walther (2005) consider cluster stability and predication strength using randomly generated partitioning of the data to test robustness of various groupings of data. The degree of consistency in solutions indicates reliability (Hair et al., 1992). I follow these recent assessment techniques to test the stability of the clusters and to choose the number of clusters. The prediction strength results for one through eight clusters are shown in Chart 1 below given that my model predicted eight configurations and the prediction strength continues to decline after the five cluster solution.

To employ these prediction strength tests, I follow Tibshirani and Walther (2005) and estimate the number of clusters as a model selection problem. This technique adapts prediction ideas to examine clusters. I randomly select half of the observations and performed k-median clustering on this half using different numbers of clusters. I used the medoids (similar to centroids in kmeans clustering) from the first half of the sample as pre-determined cluster medoids for the second half of the sample. Next, using the second half of the data, I ran new cluster analyses without using the pre-determined medoids for each number of clusters. Finally, I calculate the prediction strength of the medoids on the second half of the data for each number of clusters. To do this, I examined the proportion of pairs of observations in the second half of the data that are in the same cluster using the pre-determined medoids and the non-predetermined medoids. If the number of clusters is too large, the “extra” medoids are likely to be different

across the two subsamples of the data. Using this method, Tibshirani and Walther (2005) argue that the right number of clusters is the maximum number of clusters for which prediction strength is reasonably high and define “high” prediction strength to be above .8 (meaning that 80 percent of the observations are grouped similarly when using pre-determined and non-predetermined group medoids). Because this method focuses on the pair-wise co-membership, I don’t actually compare clusters per se, rather the co-membership of a cluster is what is examined using this method.

Insert Table 3 about here

There are different approaches to dealing with variables that are correlated in cluster analysis. In general, the concern over high correlations across variables is that these correlated variables may overweight one or more underlying constructs in the analysis. Some studies use factor analysis (using principal components analysis with orthogonal rotation) and use uncorrelated factor scores as the basis for clustering (Ketchen and Shook, 1996). However, this is controversial because when factors with low variances are dropped, researchers may be excluding unique, important information. Table 3 shows the correlations across the variables included in the cluster analysis. As can be seen from this table, there are three variables that are potentially problematic, including Geographic Dispersion, Foreign Assets/WW Assets, Home Region Sales/WW Assets. There are also higher correlations between the product diversity and percent of core foreign sales to total foreign sales variables. I reran my cluster analysis and included only one of each of these potentially problematic variables at a time and the results were very similar to those reported below. Because the inclusion of these variables in the analysis does not appear to be disproportionately influencing the results and because there are some differences in the behavior of these variables across the groupings reported below, I have kept each of these variables in the results in Table 4.

Finally, to test the robustness of my resulting clusters of firms, I examined each of the benchmark years separately. The groupings in the data reveal similar patterns across these three years – though the means for some of the variables reported do increase or decrease over this time period. Given that the reporting thresholds change over this time period, the numbers in

each group vary over the benchmark years. Despite this variation in firm inclusion, the results show five robust clusters that are similar to those reported for 1999. I report the cluster analysis results for the year 1999 only below given that there are similar clusters for the population of firms that report in 1994 and 2004.

Results:

By including several elements to reflect product market strategy, geographic market strategy, and firm structure and integration in my cluster analysis, I have generated clusters that can reveal either my proposed configurations, some of my configurations or different configurations that are not at all captured by my framework. By using prediction strength to identify the most robust groupings of firms, I am not imposing my model of eight configurations on the data. Instead, I am allowing the data to show groupings based on relationships across multiple product market, geographic market and structural variables. This is an exploratory approach that examines the most comprehensive database on the operations of US multinational corporations and allows me to examine the relevancy of my configurations for US firms.

Insert Chart 1 about here

Chart 1 shows the prediction strength across the results when I specify one through eight cluster groupings on the 1999 data. Tibshirani and Walther (2005) have argued that the “right” number of clusters is the maximum number of clusters for which prediction strength is reasonably “high.” They consider prediction strength to be high when eighty percent or more of the observations are grouped similarly when using pre-determined and non-predetermined group medoids. Chart 1 shows the prediction strength for the BEA data when one to eight groupings are considered. Not too surprisingly, using one group has a 100% match. As can be seen in the figure, the prediction strengths are similar for two and five groupings. When looking at the data, the two grouping cluster results in one lower R&D intensive group that is focused more on the home region and one higher R&D intensive group that is more global in operations. However, some of the interesting differences across the firms in these groups are concealed with the two cluster results. As described by Tibshirani and Walther (2004), the better results will be for the

maximum number of clusters when the prediction strength is above .8. In the current analysis, the five group cluster continues to show the low and high R&D intensity distinction, but also reveals several other differences across these groups. Accordingly, I focus on the more detailed findings from the five group results.

Insert Chart 1 about here

Before discussing these groups, it is interesting to notice that none of the existing frameworks and perspectives that are used to discuss the international strategies and structures of firms is sufficient to capture some of the interesting differences across the approaches that firms are pursuing. By focusing on just the regional versus global perspective, other issues that influence the configurations of firms competing in similar countries are lost. By focusing on the integration versus responsiveness characteristics only, firm product market differences cannot be considered. By focusing on the internalization theory ideas of firm proprietary assets, a low cost approach is not considered. By integrating the ideas these ideas across both a framework and in a cluster analysis, the framework and results reveal more complex and rich descriptions of the international strategies and structures of US firms than is commonly portrayed.

Five Cluster Results:

Table Four shows the results from the five cluster group analysis. K-median clustering has been performed on standardized variables to produce these results. Table Four reports the means for each variable across each of the groups. These means are not based on the standardized variables – rather, they are based on the raw data to reveal differences across the actual mean values.

Insert Table 4 about here

In general, the cluster results show that the US firms clusters into five robust groupings. Given that my model contains eight configurations, the data do not show support for all of the

configurations in my model. However, the five groupings that appear correspond well with five of the eight configurations. I will discuss the main tensions that are apparent in the clusters and then I will describe each cluster in more detail.

There are several interesting differences across these clusters that correspond with my cube in Figure 2. First, the five clusters reveal distinct product market groupings that can be labeled cost leaders and differentiators. There are two groups with both low R&D and services intensities (groups one and four) that could be called cost leaders and there are three groups that have either high R&D or services intensities (groups two, three and five) and these groups can be called differentiators. For geographic market strategies, US firms have very low levels of responsiveness in their foreign operations. As can be seen in Table 4, there are clusters in which the average foreign R&D and/or services intensities are zero (groups one and four). While Groups Two, Three and Five are not zero, the highest foreign R&D or services intensities average to be 1.5%. Compared with the amount of R&D and service expenditures in the home market of these firms, this suggests that US firms are not pursuing geographic market strategies that have high levels of local responsiveness in either technological or service elements.

In building my framework, I also discussed the potential for different firm choices on country locations because of the need to protect and control firm knowledge assets. The results show some variation across the clusters in terms of percentages of sales in low IP protection countries, with the global cost leader configuration having the highest sales in the most IP risky countries. There is very little difference across the political stability variable or the country openness variable. This suggests that the institutional protections for intellectual property have the most impact of the geographic country variables across different product market strategies.

For structure and integration, US firms show different approaches to people, knowledge and product integration. Firms with lower levels of technological assets (groups one and four) have an average of zero knowledge flows through royalty payments while firms with knowledge assets have more extensive operations and transfer knowledge to their foreign affiliates (Groups Two and Five). There are very low levels of expats across all foreign affiliates, with only the regional cost leaders (group one) and the transnational differentiators (Group Two) having above zero average expats as a percent of total employees. Finally, for product flows, firms with the highest knowledge assets (Group 5) have the highest internal product flows from parents to

affiliates while regional players (Group Three) have the highest parent exports to non-affiliates and outsourced imports.

Overall, the results show support for five of the eight configurations in my cube, including a regional cost leader configuration, a regional differentiator configuration, a global cost leader configuration, a global differentiator configuration and a transnational differentiator configuration. These clusters reveal the importance of incorporating product market characteristics when examining firm international strategic and structural choices. These clusters also reveal different approaches to integration, depending on the product market choices of firms. Finally, though US firms do not have high levels of geographic responsiveness, those firms that have the most extensive foreign operations have higher levels of local responsiveness. This suggests that this classic IR tension may be more relevant to a subset of firms with more extensive foreign operations.

In Table 5, I summarize how these results fit into the framework developed above. The shaded portions of the cube represent configurations that can be found in the US data. Each of these configurations/groups is discussed below.

Insert Table 5 about here

Cost Leadership Configurations:

There are two groups that correspond with a cost leader product market approach. Groups One and Four fit well with the Regional Cost Leader and Global Cost Leader configurations (respectively) in my cube.

The firms in group one can be characterized as Regional Cost Leaders. These firms have below average R&D intensity across parent and subsidiary operations (column one in Table 4 shows that these firms have only 1% R&D intensity in the US and an average of zero R&D expenditure in foreign affiliates). They also have below average services intensity in the US and in their foreign subsidiaries. These firms do not devote many resources to either technological investments or services for their customers. North American sales dominate the activities of

these firms (with a mean of 96% of firm total sales coming from North America). These firms have the highest percent of operations in developing countries (mostly Mexico), with just over one fifth of all foreign assets located in developing countries. These firms source from both owned and arms-length foreign sources and have the lowest level of exports from the parent firm and the second highest percent of US Expats in foreign subsidiaries (though no group has very high levels of expats in foreign subsidiaries). These firms have the second highest local to total sales percent in their foreign affiliates. Because the operations of these firms are dominated by the North American market and they have low R&D and service intensity, these firms are pursuing a regional cost leadership approach.

The firms in group four can be characterized as Global Cost Leaders. These firms also have below average R&D intensity across parent and subsidiary operations (Column Four in Table Four shows that these firms have only 1% R&D intensity in the US and zero R&D expenditures in their foreign affiliates). These firms also have similarly low expenditures on R&D and services in foreign markets, suggesting that they are not differentiating their products or services either in the US or abroad. These firms are the smallest firms of any of the clusters. The North American continent is less important for these low R&D intensive firms, with 78% of all sales in North America. Almost a third of all assets of these firms are in foreign countries, but only 13% of these are assets are located in developing countries. These firms have similar levels of exports to both owned subsidiaries and arms-length parties in foreign countries as imports from owned subsidiaries in foreign countries. On average, these firms do not use expats in their foreign operations. Because the international operations and sales of these firms are less dominated by the North American market, these firms are pursuing a global low cost configuration.

Differentiation Configurations:

There are three groups with either average or above average R&D and service intensities, including Groups Two, Three and Five. I start by discussing the group with the average R&D intensity, but high services intensity, Group Three.

The firms in group three can be characterized as Regional Differentiators. These firms have average expenditures on R&D (column three in Table 4 shows that these firms have the

average R&D intensity across all firms, with 3% R&D intensity in the US and low R&D intensity in their foreign affiliates (with 1% R&D intensity in foreign countries). These firms have the highest US services intensity across all groups. This suggests that these firms compete with products that are associated with higher customer service. These firms have one of the lowest foreign assets percent of any cluster (12%) and North American sales dominate the sales of these firms (these firms have a high percent of North American sales at 92%). These firms also have the highest product diversity of all groupings, though more than half of all foreign sales are in their core industry. It is interesting to see that these firms have the highest foreign arms-length transactions of any of the groups – involving both importing to the parent (outsourced imports represent on average 4% of the worldwide sales of these firms) and exporting from the US to third parties in foreign countries (on average, exports to third parties in foreign countries represent 9% of worldwide sales). Regarding internal product linkages, these firms have the lowest amount of product linkages across their operations. These firms do not tend to have US expats in their foreign operations and they do not transfer knowledge via royalty payments from subsidiaries to parents. These firms have the least dispersed operations of any cluster. These firms have low internal people, product and knowledge flows while having the highest third-party transactions in foreign markets. Because of the dominance of the home region and the highest use of arms-length transactions in these regional markets, these firms show that a home region strategy is pursued by firms with a differentiated product market approach. It is interesting to note how much outsourcing and exporting is involved in this approach. I will return to this issue below given that these firms represent the largest number of firms across any of the groupings.

The firms in group five can be characterized as Global Differentiators. These firms have the lowest R&D and services expenditures in foreign markets across the differentiator clusters. These firms are producing standardized differentiated products throughout their operations. These firms have the highest US R&D intensity (column five in Table 4 shows that these firms have 5% R&D intensity in the US), which corresponds with a differentiated product market strategy. The low product diversity suggests a more focused strategy on a core industry. These firms also have the highest levels of exporting of parent firm products of any cluster (at 10% of worldwide sales). Taken together this suggests that these firms are producing a standardized differentiated product that they are selling across geographic markets and using parent firm parts

or final goods to serve many of these markets. These firms have 28% foreign assets and home region sales account for 69% of total sales. It is interesting to see that these firms also export to third parties (though not as much as firms in the home region outsourcing strategy). These firms have the lowest percent of foreign assets in developing countries (only 8%). These firms do not tend to use US expats in their foreign subsidiaries and the subsidiaries do not pay royalties to the US parent for knowledge transfers. Because of the importance of product integration throughout global operations, I refer to these firms as pursuing a global differentiator configuration.

Finally, the firms in group two can be characterized as Transnational Differentiators. These firms have above average R&D intensity and the highest R&D intensity in foreign markets (column two in Table 4 show that these firms have 4% R&D intensity in the US and 1.5% R&D intensity in foreign markets). They also have average services expenditures in the US and the highest services intensity in foreign affiliates. The high foreign R&D and services expenditures make these firms the most locally responsive/adaptive of the clusters. These firms have the highest percent of foreign assets (43%) and they are the largest firms. Home region sales account for 56% of the total sales of these firms – making the firms in this group the least reliant on North America. Developing country investments represent 10% of all foreign assets for these firms. These firms also have the lowest local sales percent of all groups (73%) and the second highest linkages across subsidiaries in terms of intra-firm product linkages. These firms use expats in their foreign subsidiaries, though the percent is not the highest. These firms also have the highest subsidiary product linkages of any group (in addition to having the highest subsidiary to non-related party exports). These firms have the most dispersed operations of any cluster. Because of the extent of foreign R&D expenditure, foreign R&D employees, foreign employment, expat usage, and product integration, I refer to these firms as pursuing a Transnational Differentiator configuration.

Insert Table 6 about here

Because of confidentiality concerns, I cannot provide examples of individual firms within these groupings. Not too surprisingly, there is some clustering of industries across these groupings - of the 55 possible numbers of industries, the numbers of industries across the groups

ranges from 26 to 45. The firms in group 2 have the lowest number of 3-digit industries, with 26. The highest number of 3-digit industries is in group 1 (with 45 industries). The size distribution does not change very much across these configurations. The largest size distribution occurs in group two, but the spread is not much different from the other configurations. In Table 6, I provide summary information across all of the strategy structure and environment variables, not just for my cube elements.

Discussion

Many studies across the strategic management, international business and organization theory literatures have analyzed issues of consistency and congruence across organizational elements (Chandler, 1962, Lawrence and Lorsch, 1967; Pennings, 1987; Bartlett and Ghoshal, 1989; Malnight, 2001). However, there are no theoretical or empirical studies that incorporate varying product market, geographic market and organizational structure elements into a conceptual analysis of firm international configurations. Instead, existing research on the strategies and structures of multinational firms has considered the relationship between either a firm's strategy and structure (see Stopford and Wells, 1972, Franko, 1973, Daniels et al., 1984, Egelhoff, 1982) or its response to environmental conditions (see Prahalad 1975, Prahalad and Doz, 1987 and Bartlett and Ghoshal, 1989). In this paper, I argue that all three elements need to be integrated into one framework because firm strategies, structures and responses to environments are not easily separated (Ghoshal and Westney, 1993). By allowing for varying product market strategies, geographic responsiveness strategies and organizational structural integration, I seek to develop a framework that captures more of the complexity that firms face when establishing and implementing their international configurations.

As I have argued in this paper, it is important to incorporate product market choices into the analysis of firm international strategies and structures because both the internalization theory (Buckley and Casson, 1976, Hennart, 1982, 2000) and transaction cost reasoning (Williamson, 1979, Hennart, 1982) highlight important issues that are clearly related to the configurations of firms with proprietary assets. Firm resources have long been considered to be a central determinant of the expansion decisions of firms (see Hymer, 1976 and Buckley and Casson,

1974) in both the strategic management literature and the international business literature. However, these resources do not figure prominently in the dominant integration responsiveness framework that is currently used to characterize firm international expansion strategies.

An important contribution of this study is to show that product and geographic market characteristics need not move together – that is, differentiation in product markets need not require high responsiveness across geographic markets. Just because firms pursue product differentiation strategies does not mean that they will also pursue high local responsiveness strategies across geographic markets, or have decentralized and separated subsidiary operations. Rather, firms with proprietary knowledge can sell differentiated but standardized products using highly integrated structures. Although studies on the international strategies and structures of multinational firms have moved away from the strategy and structure approach in the Stopford and Well's framework (Egelhoff, 2001), that approach incorporated product diversification choices by firms. However, unlike the Stopford and Well's approach, I have considered a more basic choice by firms than product diversification in terms of a low cost or differentiation position in product markets. By using Porter's generic strategies, I have been able to incorporate the prominent internalization theory logic in the international management literature to capture the configurations of firms with proprietary assets and differentiated products.

Two of my resulting configurations highlight elements that are not generally considered in existing frameworks. First, the global differentiator corresponds well with the internalization theory logic that has been discussed above. Second, the regional differentiator is interesting because it appears to be pursuing product diversity within its home region only. These regional differentiated players suggest that these firms may be trading-off geographic expansion with product diversification. As this group of firms does not exist in prior frameworks, additional research on this configuration could provide further insight into these home country regional players. While the regional differentiator group has much less internal structural integration, they also have the highest level of offshore outsourcing and arm's length exporting. Outsourcing is not a main consideration in any of the frameworks and perspectives reviewed in this paper. However, the summary statistics show fairly consistent percentages of offshore outsourcing and exporting to third parties in foreign countries across the ten years of data in Table Two. Though these statistics mask firm heterogeneity, they reveal no sudden increase in these activities within

the last couple of years. The results show that the largest grouping of firms have higher levels of outsourced than intra-firm foreign inputs and higher levels of exports to unrelated third parties than to owned subsidiaries. This suggests that firms with low product integration and low geographic responsiveness may be using arm's length transactions instead of investing in foreign operations. An interesting area for future research is to explore the product sourcing decisions of regional product diversified players. These firms can access both Canada and Mexico – it would be interesting to explore how these firms are using their neighboring countries across their product portfolio to compete in these markets.

The regional groupings show support for the importance of regional configurations for US firms more generally (following Rugman and Verbeke, 2004). The largest group by sheer numbers of firms has the highest home region sales percent of any other group. Regional strategy groupings are not just smaller firms. In fact, the smallest sized firms are more global than the regionally focused firms. However, the present study goes beyond the regional designation and suggests different approaches to foreign expansion by regional players. At a minimum, the present analysis reveals that simply calling the firms groups one and three “regional” firms does not reveal the different approaches that these firms are pursuing.

While I confirm the existence and importance of firm proprietary assets (as reflected through high R&D intensities), there are two groupings with low R&D intensities. While high R&D intensive firms correspond well with the internalization theory insights (including having high internal firm linkages), firms without such technological assets also have international operations and sales. The low R&D intensive firms are not just regional in their operations either – the low-cost global firms (group four in Table Four) have the second highest average sales outside of the North American home region. Further, while the internalization theory tends to focus on the importance of technological assets to explain ownership of operations in foreign countries, all firm groupings have high ownership percentages. While the results show that internalization theory logic is clearly relevant for many US firms, firms without strong proprietary assets are also owning operations abroad (in addition to using third parties for sourcing of inputs and sales of exports). These findings reveal limits of internalization theory reasoning when explaining multinational corporations and highlight the importance of considering additional perspectives when examining firm strategies and structures.

This study also makes an important contribution to empirical studies on multinational corporations by examining the most comprehensive database on the operations of US multinational corporations. Empirical support for the IR framework has mostly been case based. Bartlett and Ghoshal's (1989) influential study was based on case studies of nine MNCs while Prahalad and Doz (1987) interviewed just over 20 MNCs. Other larger sample studies have shown support for differences across global and locally responsive firm strategies, though the samples sizes are not generally large (Roth and Morrison, 1990; Leong and Tan, 1992, Harzing, 2000). In this study, I examined 801 US parent firms based on the BEA data – this is the population of firms that report to the BEA. While comprehensive, it should be noted that these are US firms with larger foreign affiliates – those that are required to submit more detailed reporting to the BEA. For 1999, the reporting threshold for sales, assets or net income is \$100 million. Therefore, smaller US multinationals are not included in these results.

By incorporating and analyzing varying product market strategies, geographic market strategies and structural integration, the conceptual and empirical analyses in this paper reveal more complex configurations of firms than studies across several literatures commonly assume. While not all of the configurations are born out in the data, the configurations that do exist highlight understudied relationships across the strategy-structure-environment elements of multinational corporations. This paper extends research that considers consistency and congruence across firm strategies and structures by examining both geographic and product market strategic characteristics and by considering how and why structural decisions by firms can result in different types of integration. Overall, the conceptual and empirical analyses in this paper offers not only more complex international configurations than are commonly assumed, but also two new archetypes based on product differentiation strategies that have not been considered in extant frameworks.

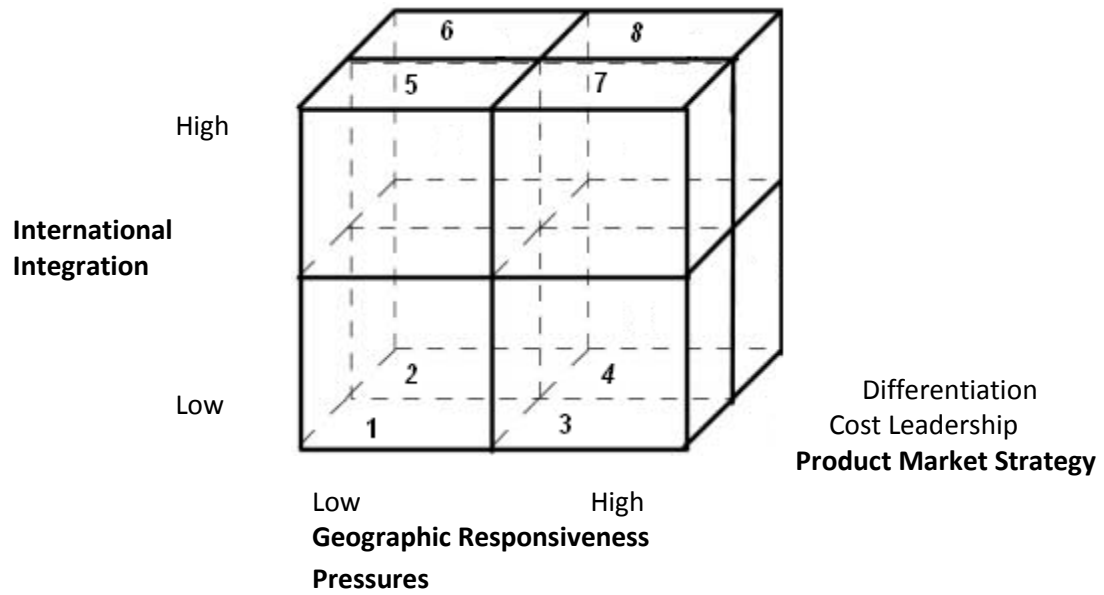
As with all studies that attempt to examine the international strategies and structures of firms, there are limitations that should be noted. First, I have only examined US data. While these data are comprehensive (and include public and private firms), there may be important differences across firms from different home countries. It would be interesting to compare the results of this analysis with a comprehensive sample of European, Japanese, Chinese, Korean, or several other multinational firms from different home countries. Given differences in the size

and importance of a firm's home market, firms from smaller home countries may be more aggressive in adopting regional strategies with higher levels of structural integration. Unlike many other countries, US firms have a very large home country market that can dominate firm sales and decisions. In addition and as mentioned above, I do not have access to advertising expenditures in the BEA data. Linking the BEA data to Compustat data would limit my sample (especially given the large numbers of firms that do not report advertising expenditures in Compustat. Future research can explore how local advertising impacts the responsiveness of multinational firms. Finally, the BEA surveys provide rich information on US foreign operations. However, there are issues I cannot examine with these data. For example, firms could be using different coordination mechanisms that include more temporary personnel transfers, annual meetings of key employees or different HR policies that can impact a firm's approach to international operations and I cannot capture these elements. This suggests that the insights from both large samples and rich case study analyses will continue to be useful in research that examines the configurations of firms.

Figure 1: The Integration Responsiveness Framework

High Integration	Global Strategy	Transnational Strategy
Low Integration	International Strategy	Multi-domestic Strategy
	Low Local Responsiveness	High Local Responsiveness

Figure 2: Typology of International Configurations



Configurations:

- 1 – Regional Cost Leader
- 2 – Regional Differentiator
- 3 – Multi-Domestic Cost Leader (Adapted Products)
- 4 – Multi-Domestic Differentiator (Adapted Products)
- 5 – Global Cost Leader (Standardized Products)
- 6 – Global Differentiator (Standardized Differentiated Products)
- 7 – Transnational Cost Leader
- 8 – Transnational Differentiator

Table 1: Description of Variables using the BEA data

Product Market Variables:

Parent R&D/WW Sales	A firm's R&D expenditures in the US divided by its worldwide sales
Parent Services/WW Sales	A firm's expenditures on services (intangibles) in the US divided by its worldwide sales
Product Diversity	A herfindahl type index that calculates how dispersed a firm's sales are across 3 digit SIC codes (see text for formula). Zero is no product diversity.

Geographic Market Variables:

Foreign R&D/WW Sales	A firm's R&D expenditure in foreign markets divided by its worldwide sales
Foreign Services/WW Sales	A firm's expenditures on services (intangibles) in foreign markets divided by worldwide sales
Foreign R&D Employees/WW Employees	A firm's total number of R&D employees in foreign markets divided by its worldwide employees
Developing Country Assets/Foreign Assets	A firm's cumulative assets that are in developing countries (using a very broad classification of non-OECD countries) divided by its foreign assets
Weighted Average Country Political Stability	The weighted average political constraint index for all firm foreign country sales using Henisz' PolCon political constraint index. Higher values reflect more politically stable countries (range is 0-1).
Weighted Average Country Openness	The weighted average percent of FDI/GDP for all countries in which a firm has operations.
Percent foreign Sales in 301 Countries/IP Risk	The percent of sales that are in countries included in the USTR's Special 301 Priority Watch List. Higher values mean more sales in low IP protection countries.

Structure and Integration Variables:

Geographic Dispersion	A herfindahl type index that calculates how dispersed a firm's assets are across all country operations (see text for formula). Zero would be no geographic dispersion
Affiliate Local Sales/Affiliate Total Sales	The aggregate ratio of local (within foreign country) sales to total sales for all foreign affiliates of a firm
Percent Foreign Core Sales/Foreign Total Sales	The percent of foreign sales that are in the main 3-digit manufacturing industry of the US parent firm. If a foreign affiliate distributes core firm products only (does

	not manufacture any products), this is included as core sales.
Home Region Sales/WW Sales	A firm's sales in North America (including the US, Mexico and Canada) divided by its worldwide sales
Foreign Assets/WW Assets	A firm's foreign assets divided by its worldwide assets
US Expatriates/WW Employees	A firm's total number of US expats employed in foreign affiliates divided by its worldwide employees
Royalties to Parents /WW Sales	The ratio of all royalty payments from foreign affiliates to US parent firms by worldwide sales
Affiliate Exports to US/WW Sales:	The ratio of foreign affiliate sales of goods to the US parent firm by a firm's worldwide sales
Parent Exports to Affiliates/WW Sales	The ratio of US parent goods exports to affiliated parties (subsidiaries) in foreign countries by a firm's worldwide sales
Affiliate to Affiliate Exports/WW Sales	The ratio of foreign affiliate goods exports to other related foreign affiliates
Non-Affiliate Exports to US/WW Sales	The ratio of unaffiliated foreign based sales of goods to the US parent firm by a firm's worldwide sales
Parent Exports to Non-Affiliates /WW Sales	The ratio of US parent goods exports to non-affiliated foreign parties by a firm's worldwide sales
Affiliate to Non-Affiliate Exports/WW Sales	The ratio of foreign affiliate goods exports to non-related foreign parties by worldwide sales
Developing Country Assets/Foreign Assets	A firm's cumulative assets that are in developing countries (using a very broad classification of non-OECD countries) divided by its foreign assets
Firm and Industry Controls:	
Industry Global Product Integration	The ratio of international sales by all US firms in the firm's primary 3-digit industry that are intra-firm (industry intrafirm sales/industry foreign sales).
Industry Average Foreign R&D Intensity	The average foreign R&D intensity for all firms in the focal firm's primary 3 digit SIC code.
Industry Average Foreign Services Intensity	The average foreign services intensity for all firms in the focal firm's primary 3 digit SIC code.
Foreign Ownership Percent	Average ownership percent across a firm's foreign affiliates
Size (log World Wide Assets)	The log of a firm's total US and foreign assets.

Table 2: Summary Statistics (Mean and St.Dev.) for 1994, 1999 and 2004

	1994	1999	2004
Product Market Variables:			
Parent R&D/WW Sales	.03 (.06)	.03 (.06)	.03 (.05)
Parent Services/WW Sales	.021 (.11)	.027 (.09)	.029 (.11)
Product Diversity	.37 (.27)	.39 (.27)	.38 (.29)
Percent Foreign Core Sales/Foreign Total Sales	.67 (.29)	.65 (.28)	.65 (.29)
Geographic Market Variables:			
Foreign R&D/WW Sales	.005 (.13)	.006 (.14)	.005 (.16)
Foreign Services/WW Sales	.004 (.012)	.003 (.011)	.003 (.01)
Foreign R&D Employees/WW Employees	.005 (.002)	.005 (.002)	.005 (.002)
Foreign Assets/WW Assets	.24 (.18)	.25 (.17)	.27 (.21)
Developing Country Assets/Foreign Assets	.12 (.28)	.12 (.28)	.13 (.29)
Weighted Average Country Political Stability	.42 (.08)	.41 (.07)	.39 (.09)
Weighted Average Country Openness	.07 (.03)	.07 (.04)	.07 (.03)
Percent foreign Sales in 301 Countries/IP Risk	.08 (.09)	.09 (.10)	.10 (.09)
Structure and Integration Variables:			
Geographic Dispersion	.37 (.27)	.38 (.31)	.41 (.24)
Affiliate Local Sales/Affiliate Total Sales	.69 (.29)	.78 (.25)	.68 (.33)
Home Region Sales/WW Assets	.78 (.19)	.76 (.19)	.74 (.21)
US Expatriates/WW Employees	.005 (.007)	.005 (.009)	.002 (.004)
Royalties to US Parents/WW Sales	.006 (.003)	.004 (.006)	.005 (.004)
Affiliate Exports to US/WW Sales	.02 (.04)	.02 (.06)	.03 (.05)
Parent Exports to Affiliates/WW Sales	.04	.04	.03

	(.05)	(.06)	(.06)
Affiliate to Affiliate Exports/WW Sales	.01	.02	.03
	(.03)	(.04)	(.05)
Outsourced US Imports/WW Sales	.02	.02	.02
	(.05)	(.06)	(.05)
Parent Exports to Non-Affiliates/WW Sales	.07	.07	.06
	(.08)	(.09)	(.08)
Affiliate to Non-Related Exports/WW Sales	.02	.02	.03
	(.05)	(.06)	(.06)
Firm and Industry Controls:			
Industry Global Product Integration	.18	.19	.22
	(.07)	(.08)	(.11)
Industry Average Foreign R&D Intensity	.01	.01	.01
	(.06)	(.08)	(.07)
Industry Average Foreign Services Intensity	.004	.003	.004
	(.005)	(.006)	(.006)
Foreign Ownership Percent	.94	.95	.95
	(.13)	(.12)	(.09)
Size (log WW Assets)	12.91	13.71	14.27
	(1.91)	(1.82)	(1.89)

Table 3: Correlations (1999 data)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.Size	1.0															
2.ParentRD%	.25	1.0														
3.ParentSvc%	.09	-.03	1.0													
4.ForRD%	.15	.28	-.01	1.0												
5.ForSvc%	.01	-.03	.29	-.01	1.0											
6.ForAssets%	.19	.14	-.10	.25	.03	1.0										
7.HomeRegSales	-.21	-.31	.07	-.19	-.05	-.73	1.0									
8.DevCtry%	.06	.03	-.06	-.05	-.03	.00	-.02	1.0								
9.GeoDisp	.18	.24	-.10	.20	-.03	.71	-.71	-.00	1.0							
10.ProductDiv	.32	-.03	.07	-.00	-.04	-.03	.07	-.06	-.08	1.0						
11.ForeignCore%	-.45	-.21	-.00	-.08	.04	-.30	.37	.06	-.32	-.68	1.0					
12.LocalSales%	-.14	-.17	.08	-.18	-.01	-.10	.07	-.16	-.04	.03	-.03	1.0				
13.Own%	-.03	.04	.02	.04	.01	.01	-.05	-.17	.06	-.01	-.05	-.02	1.0			
14.RoyaltiestoPar	-.09	.12	-.01	-.00	-.00	.03	-.07	.15	.05	-.06	.09	-.04	.02	1.0		
15.ParEmp%	-.18	-.14	.10	-.25	.03	-.61	.71	-.18	-.71	.06	.25	.17	-.04	-.03	1.0	
16.SubExpat%	.03	-.00	-.01	-.00	-.00	.07	.01	-.02	.05	-.04	.00	.02	-.04	-.01	-.08	1.0
17.ForRDEmp%	.08	.01	-.00	-.009	-.01	.03	.04	-.02	.00	-.01	-.02	-.01	-.04	-.01	-.03	.48
18.ParIntrImp%	.01	.11	-.07	.05	-.03	.17	-.17	.18	.17	-.09	.04	-.38	.07	.10	-.29	-.01
19.ParArmsImp%	.06	-.00	-.03	-.03	-.00	-.15	.16	-.14	-.17	.11	-.05	-.15	.04	-.02	-.10	-.01
20.ParIntraExp%	-.03	.24	-.08	-.01	-.03	.02	-.18	-.05	.23	-.09	-.09	.03	.09	-.02	-.03	-.01
21.ParArmsExp%	-.05	.09	-.08	-.04	-.04	-.20	.13	.02	-.16	.07	.01	-.15	-.09	.13	.15	-.05
22.SubSubExp%	.02	.04	-.03	.05	-.00	.14	-.13	-.46	.12	-.03	.00	-.06	.03	.01	-.11	-.00
23.SubArmExp%	-.01	.36	-.02	.19	-.01	.07	-.15	.16	.06	-.06	-.02	-.30	.03	.23	-.14	-.01
24.IndIntegration	.11	.21	-.22	.179	-.09	.09	-.14	.05	.14	-.05	-.04	-.35	.01	.05	-.17	-.01
25.IndAveForRD	.15	.48	-.08	.22	-.04	.07	-.16	-.03	.16	-.01	-.11	-.07	.05	.00	-.08	-.03
26.IndAveForSvc	.04	-.06	.75	-.05	.35	-.11	.07	-.07	-.11	-.01	.05	.09	.04	-.02	.12	-.02
27.CtryAvePolCon	-.14	.01	.05	.01	.00	-.09	.10	-.47	-.08	-.01	.03	.08	.12	.04	.15	.03
28.Ctry301SalesPerc	.19	.01	-.02	.00	-.03	.10	-.10	.42	.11	.04	-.07	-.02	-.20	-.03	-.22	-.02
29.CtryFDI%	-.09	.02	-.06	-.00	-.01	.06	-.13	-.05	.08	-.05	.03	-.06	.09	-.11	-.01	-.02

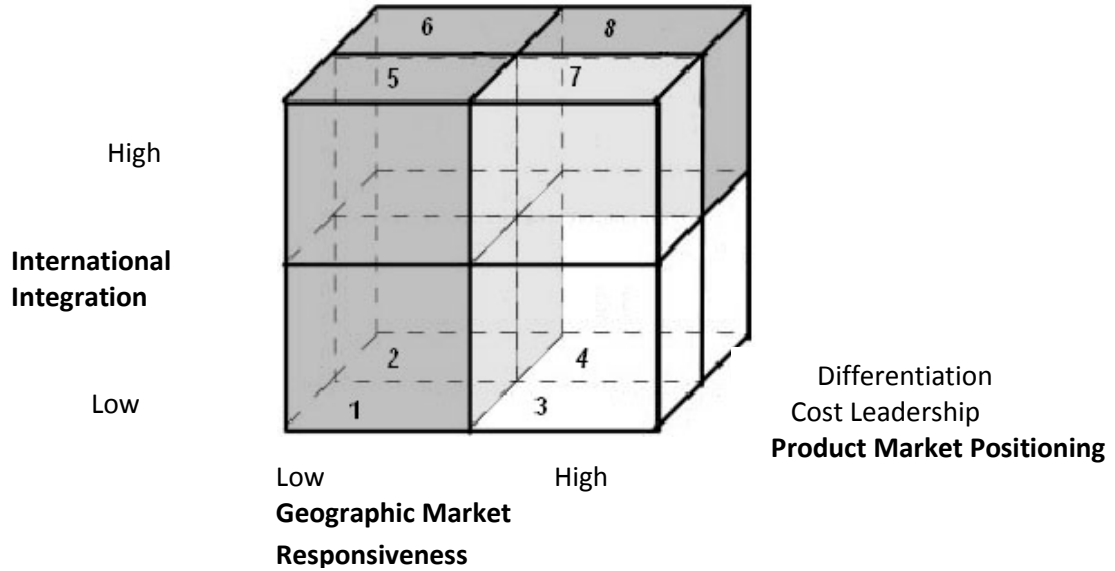
	17	18	19	20	21	22	23	24	25	26	27	28	29
18.ParIntralmp%	-.02	1.0											
19.ParArmsImp%	.06	.15	1.0										
20.ParIntraExp%	-.02	.25	.07	1.0									
21.ParArmsExp%	-.00	.06	.16	.01	1.0								
22.SubtoSubExp%	-.00	.05	-.03	.03	-.05	1.0							
23.SubArmsExp%	-.01	-.01	-.03	.01	.03	.14	1.0						
24.IndIntegration	.02	.25	.16	.15	.18	.11	.13	1.0					
25.IndAveRDint	.00	.14	.09	.28	.18	.06	.05	.29	1.0				
26.IndAveSvcInt	-.02	-.05	-.02	-.05	-.08	-.03	-.03	-.30	.10	1.0			
27.CtryAvePolCon	.03	-.08	-.07	-.02	.02	-.01	.03	-.04	.02	.08	1.0		
28.Ctry301Sales%	-.05	-.01	-.04	-.05	.04	.03	-.02	.04	.02	-.06	-.14	1.0	
29.CtryFDI%	-.02	.06	-.01	-.00	-.03	.01	.13	.02	-.01	-.06	.07	-.07	1.0

Table 4: K-Median Cluster Results for Manufacturing Industry Firms, 1999*

	One	Two	Three	Four	Five
Product Market Variables:					
Parent R&D/WW Sales	.01	.04	.03	.01	.05
Parent Services/WW Sales	.01	.02	.03	.01	.02
Product Diversity	.08	.43	.58	.03	.07
Percent Foreign Core Sales/Foreign Total Sales	.74	.49	.69	.93	.75
Geographic Market Variables:					
Foreign R&D/WW Sales	.00	.015	.005	.00	.003
Foreign Service Sales/WW Sales	.00	.015	.003	.00	.003
Foreign R&D Employees/WW Employees	.00	.01	.00	.00	.00
Developing Country Assets/Foreign Assets	.21	.10	.09	.13	.08
Weighted Average Country Political Stability	.46	.41	.44	.42	.43
Weighted Average Country Openness	.04	.06	.05	.07	.06
Percent foreign Sales in 301 Countries/IP Risk	.00	.07	.01	.12	.05
Structure and Integration Variables:					
Geographic Dispersion	.18	.55	.22	.32	.47
Affiliate Local Sales/Total Affiliate Sales	.86	.74	.76	.88	.79
Home Region Sales/WW Sales	.96	.56	.92	.78	.69
Foreign Assets/WW Assets	.11	.44	.12	.21	.28
US Expatriates/WW Employees	.003	.002	.00	.00	.00
Royalties to Parents/WW Sales	.00	.01	.00	.00	.01
Affiliate Exports to Parents/WW Sales	.03	.03	.01	.04	.04
Parent Exports to Affiliates/WW Sales	.01	.04	.03	.04	.10
Affiliate to Related Affiliate Exports/WW Sales	.00	.03	.01	.01	.01
Outsourced Imports to Parents/WW Sales	.02	.01	.04	.01	.02
Parent Exports to Non-Affiliates/WW Sales	.01	.03	.09	.04	.03
Affiliate to Non-Related Exports/WW Sales	.01	.02	.00	.00	.00
Firm and Industry Controls:					
Industry Global Product Integration	.16	.19	.17	.20	.19
Industry Average Foreign R&D Intensity	.00	.01	.002	.00	.00
Industry Average Foreign Services Intensity	.00	.01	.002	.00	.00
Foreign Ownership Percent	.94	.96	.95	.95	.96
Firm Size (log WW Assets)	13.33	15.42	14.57	13.76	13.21
Number of Firms in Group:	93	148	229	160	171
Not included in cluster analysis because of very high correlation with Foreign Assets/WW Assets:					
Average Number of Foreign Countries	2	28	3	8	10

*All Variables were standardized prior to clustering. The means of the group unstandardized variables are reported

Table 5: Configurations Identified in the Data:



Cube position:	1:	2:	5:	6:	8:
Configuration:	Regional Low Cost	Regional Differentiator	Global Low Cost	Global Differentiator	Transnational Differentiator
Cluster Number	1.	3.	4.	5.	2.
Product Positioning:					
R&D Intensity	1%	3%	1%	5%	4%
Service Intensity	1%	3%	1%	2%	2%
Product Diversity	Low	Highest	Low	Low	Med-High
Geographic Market Variables:					
Local Responsiveness	No	Low	No	Low	Medium
Structure and Integration:					
Foreign Assets Percent	Low	Low	Medium	Medium	Highest
Internal Product Links	Low	Low	Medium	Highest	Medium
Expats	Few	No	No	No	Few
Royalties to Parent	No	No	No	Low	Low
Outsourcing	Low	Highest	Medium	Medium	Low
Number of Firms:	93	229	160	171	148

Table 6: Details on Five Cluster Configurations

Regional Cost Leader (Group One – 93 firms)

- Product Market:
 - Lowest R&D intensity and services intensity in the US and in foreign affiliates (along with Group Four)
 - Low product diversity
- Geographic Market:
 - No R&D or service expenditures in foreign affiliates (along with Group Four)
 - North American sales dominate
 - Highest level of political stability in country sales
 - Highest percent of developing country assets of any group
 - Least percent of sales in IP risky countries (along with Group Three)
- Structure and Integration:
 - Lowest geographic dispersion
 - Lowest level of parent firm exports to foreign subsidiaries and third parties
 - Higher levels of imports to parent from subsidiaries than Group Four
 - Higher US expats in foreign affiliates than Group Four
 - Higher Royalties paid to parent firms than Group Four

Regional Differentiator (Group Three - 229 firms)

- Product Market:
 - Average Firm R&D intensity in the US
 - Highest firm services intensity in the US
 - Highest product diversity of any group
- Geographic Market:
 - Low R&D and services intensities in foreign affiliates
 - North American sales dominate
 - Least percent of sales in IP risky countries (along with Group Three)
 - Lower developing country assets than Group One
- Structure and Integration:
 - Highest arms length exporting in foreign markets of any group
 - Highest third party imports to the US of any group
 - Low levels of intra-firm integration (including expat, royalties and products)

Global Cost Leader (Group Four – 160 firms):

- Product Market:
 - Lowest R&D and services intensity in both the US and in foreign affiliates (along with Group One)
 - Lowest product diversity of any group
- Geographic Market:
 - No R&D and services expenditures in foreign affiliates (along with Group One)
 - Lower developing country activities than Group One – but still second highest percent across all groups
 - Second highest sales in IP risky countries
- Structure and Integration:
 - More global and geographically dispersed than group One
 - Uses both intra-firm and arms-length transactions for parent exports
 - Low levels of expats and royalties

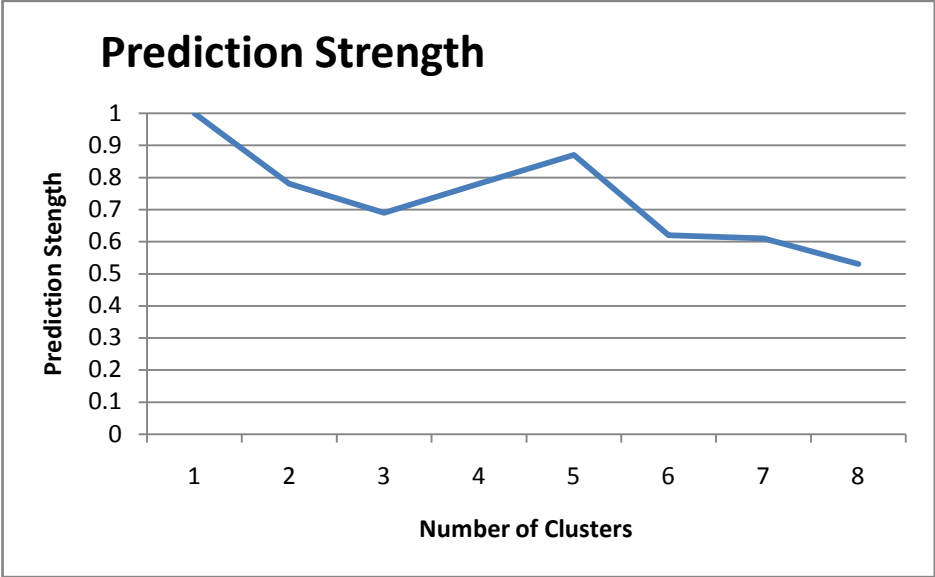
Global Differentiator (Group Five – 171 firms)

- Product Market:
 - Highest R&D intensity in US
 - Medium services sales intensity in US
 - Second lowest product diversity
- Geographic Market:
 - Low local responsiveness in both R&D and services
 - One third of sales outside North America
 - Lowest percent of foreign assets in developing countries
 - Second highest sales in politically stable and less IP risky countries
- Structure and Integration:
 - Second highest geographic dispersion – almost one-third of assets in foreign countries
 - Highest intra-firm product linkages of any group
 - Uses both intra-firm and arms length transaction
 - Mid level of arms length imports and exports compared to other groups

Transnational Differentiator (Group Two – 148 firms)

- Product Market:
 - Above average R&D intensity in US and highest R&D intensity abroad
 - Second highest product diversity
- Geographic Market:
 - Highest percent of foreign R&D employees
 - Highest services intensity in foreign subsidiaries
 - Lowest percent of sales in politically stable countries
 - Highest percent of sales in IP risky countries/ lowest levels of political stability
- Structure and Integration:
 - Highest percent of foreign assets and highest geographic dispersion
 - Highest percent of expats in foreign affiliates
 - Medium levels of product integration with highest levels of people and knowledge integration

**Chart 1: Number of Clusters and Prediction Strength using
K-Medians Clustering for Manufacturing Firms**



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