Both structural determinants and competitive factors can work to define the relevant environment for strategy formulation within an industry. This study examines the effects of each of these two sets of factors on global integration strategies, and finds that their impacts vary considerably from one industry to another. The study also investigates the relationship between a business's global integration strategy and its performance, using an industry-specific perspective. In the aggregate, the businesses studied appear to be under-globalized. However, this relationship varied significantly by industry; four of the industries studied appeared to be under-globalized, while the remaining three industries were at or near an optimal level of globalization.

Recent literature on international business has proclaimed a 'new era of globalization' (Bartlett and Ghoshal, 1989) and the 'new reality of global competition' (Prahalad and Doz, 1987). Some have suggested that globalization has become so pervasive that businesses that do not think and act globally will be at a competitive disadvantage in the 1990s (Levitt, 1983; Ohmae, 1989; Holstein, 1990; UNCTAD, 1993). Much of this writing has captured the attention of practitioners who are increasingly searching for new ways to compete in an ever-changing world. For managers, the message seems clear: markets are fast becoming 'borderless,' and strategies that fail to recognize the integration of markets are both shortsighted and misguided.

While few have taken issue with generalized claims of the increasing globalization of competition, a growing number of researchers have raised questions about the appropriateness of blindly adopting global strategies. Morrison, Ricks, and Roth (1991), for example, highlighted the success of regional strategies in health care products and pharmaceuticals. In other studies, Baden-Fuller and Stopford (1991) and The Economist (1991) showed that in white goods and tires, respectively, businesses pursuing global strategies were losing out to smaller, regional competitors. Other studies have shown that pressures for global integration are often misinterpreted and that competitors frequently adopt strategies that are either too global or not global.
enough (Douglas and Wind, 1987; Morrison, 1990; Yip, 1992; Stopford, 1993).

The degree to which strategies have or should become globalized is clearly a matter of debate. This paper examines this issue by studying the relationship between industry globalization, business strategy, and business performance. The paper begins by distinguishing an industry's structural characteristics from the competitive actions of businesses. Under a systems-structural view, competitive actions should coincide with structural imperatives (Astley and Van de Ven, 1983). However, evidence in global industries suggests that collective competitive actions are often inconsistent with structural characteristics (Morrison, 1990; Yip, 1992; Stopford, 1993). In industries where collective competitive actions coincide with structural characteristics, the imperatives for an individual business are clear and unequivocal. However, in industries where collective strategy is mismatched with structural imperatives, the determination of an appropriate business strategy is much more difficult. For an individual business, the question is: when structural characteristics conflict with the competitive norms, which should drive strategy?

Based on a sample of 124 businesses competing in 10 different industries, we address this question by examining the relationship between structural determinants and competitive action. Issues of fit between these two imperatives are then studied in the context of individual business strategy and performance on an industry-specific basis.

The paper is organized in six sections. In the first section the relevant literature on structural forces and global competition is reviewed. In the next section, a conceptual framework is developed that integrates both the structural and competitive perspectives of globalization. Propositions are developed in the third section of the paper. In the fourth section, the research methodology and data are discussed. The empirical analysis and results are presented in the fifth section. In the final section of the paper, a discussion of the results including the implications of our findings is presented.

GLOBAL COMPETITION: STRUCTURAL AND COMPETITIVE FORCES

Despite the growing body of literature on the globalization of competition, confusion remains over a variety of globalization-related issues. Many managers, for example, continue to associate global with anything international. 'International' and 'global' are frequently used interchangeably to describe a variety of strategies that mean different things to different people. In reality, however, the term 'global' has unique connotations. 'Global' refers to a particular type of industry (Porter, 1980, 1986) as well as a specific type of international strategy (Doz, 1980; Porter, 1986; Morrison, 1990; Yip, 1992). Examples of other international industry and strategy types include multidomestic, regional, and transnational (Bartlett and Ghoshal, 1989; Prahalad and Doz, 1987; Morrison et al., 1991). All three alternate industry and strategy types have 'aspects that are global or potentially global' (Yip, 1992: 1).

At the industry level, globalization can be meaningfully defined through references to either structural forces or the collective actions of businesses. For an individual business, structural forces and competitive actions are both relevant aspects of the environment and form the basis of a comprehensive industry analysis. At the macro level, however, the two are distinct in that the structural imperatives of the industry may well be different than the collective competitive actions in the industry (Porter, 1980; Cvar, 1984).

Structural forces perspective

The structural forces perspective has its roots in industry organization economics and contingency theory. The synthesis of contingency theory and industry organization economics has enabled researchers to identify alternative strategies for distinct industry contexts. A key assumption of this approach is that pressures to globally integrate or respond to local markets vary along a broad spectrum with endpoints that can be labeled 'global' and 'national' (Bartlett, 1987; Morrison and Roth, 1992). By examining relevant structural forces, researchers and managers can classify industries with resulting normative implications for business strategy content (Hunt, 1972; Hatten, 1974). For example, Kobrin (1991) developed an empirical measure of 'transnational integration' in 56 industries based on intrafirm trade. Structural forces have also been used to effectively identify other contexts, including fragmented industries (Dess, 1987; Keels et
Industry Determinants of Global Strategy

The importance of individual structural forces varies from industry to industry (Vernon, 1966; Caves, 1977; Porter, 1980; Fiegenbaum, McGee, and Thomas, 1987). In the case of global industries, three broad factors have been cited as structural determinants or 'drivers': (1) the potential for economies of scale in value adding activities; (2) differences in comparative advantages across countries; and (3) standardized market demand across countries (Porter, 1980; Hout, Porter, and Rudden, 1982; Kogut, 1991). While all industries share in these drivers to varying degrees, all three determinants function at high levels in global industries. In contrast, all three drivers would have little functionality in national or multidomestic industries.

All things being equal, global business strategies are encouraged in an industry dominated by global industry drivers (Hout et al., 1982; Yip, 1992). A global strategy consists of globally integrated operations and the cross-subsidization of international market share battles (Doz, 1986; Graham, 1978; Hamel and Prahalad, 1985; Jolly, 1988). In theory, a business which adopts a global strategy maximizes its ‘fit’ with structural imperatives.

Competitive action perspective

The second stream of literature relating to competition in global industries focuses on the ‘collective’ strategies of businesses. Rooted in social ecology, and with other linkages to population ecology (Aldrich, McKelvey, and Ulrich, 1984), the competitive action perspective makes a clear distinction between individual business strategy and group responses to the industry pressures. As argued by Astley and Fombrun (1983), the collective activities of organizations overwhelm individual strategies, and while businesses act collectively, they do not independently maintain control over the environment. As a result, the common or shared strategy of group members overwhelms the strategy of an individual business (Astley and Fombrun, 1983), thus putting intense pressure on individual businesses to develop strategies consistent with group norms. Under this perspective, the collective group represents shared industry membership, with strategic norms superseding exogenous structural forces as the relevant contingency for individual businesses (Thomas and Venkatraman, 1988; Fiegenbaum, McGee, and Thomas, 1987).

A related body of work that sheds additional light on the collective action phenomenon is institutionalization theory (Meyer and Rowan, 1977; DiMaggio and Powell, 1983). Institutionalization theory views organizations as social (as well as technical) phenomena that adopt patterns of behavior and activity that are appropriate to their environments. Thus, within an organizational field—the broad analogue of industry in IO Economics—member organizations move towards common structures and processes (termed ‘isomorphism’) through a combination of coercion, imitation, and normative expectation (DiMaggio and Powell, 1983). What this means for collective strategy is that there are typically strong social forces at work within an industry that push members to act in like fashion, even when such actions are in conflict with ‘technical’ imperatives. As stated by Meyer and Rowan (1977: 340), ‘conformity to institutionalized rules often conflicts sharply with efficiency criteria.’ One of the best examples of imitative behavior driving strategy in an international context is the movement of Japanese financial institutions and developers into North American real estate in the late 1980s (Carlton and Barsky, 1992). In this example, competitive actions and imitative behavior dominated decision making for all but the first movers in the industry. Structural imperatives appeared to have only a limited impact on Japanese decision making.

In the international domain, the roots of the competitive action perspective can be traced to Vernon (1966) and Wells (1968), who applied oligopoly theory developed by Hymer (1960) and later Kindleberger (1969) to show that the internationalization of businesses can be explained by the competitive dynamics of the industry. Vernon (1966) best articulated the role of collective action by arguing that the internationalization of competition is tied to three distinct factors: first, to the individual actions of an innovative business; second, the presence of favorable international structural conditions; and third—and most important at the industry level—the timely, collective reaction of
numerous other businesses to the threat of market loss in emerging international markets. Knickerbocker (1973) also argued that competitive actions rather than structural imperatives dominate decisions to go international. In an examination of U.S. manufacturers, Knickerbocker (1973) asserted that oligopolists had a tendency to follow each other into international markets to protect their competitive interests.

Thus, under a competitive action perspective, a global industry is one which ‘pits one multinational’s entire worldwide system of product and market positions against another’s’ (Hout et al., 1982: 103). Using this approach, a great deal of research has relied on high-profile competitors to identify global industries (see, for example, Cvar, 1984; Flaherty, 1986; Yoshino, 1986; Jolly, 1988). In these studies, industries are frequently classified as ‘global’ because researchers identified either individual businesses or two or three businesses competing with global strategies. These global businesses are then cited as representative of collective action or the competitive norms in the industry. Aircraft parts, tires, construction equipment, and pet food are examples of industries that have been classified as global through the extrapolation of case studies of high-profile businesses to all businesses in the industry. In the construction industry, for example, the strategies of Caterpillar and Komatsu discussed by Hout et al. (1982) were used by Doz (1987) to illustrate the global nature of the entire industry. Looking at the same industry a few years later, Johnson (1991) characterized the entire 1800-member U.S. construction equipment industry as global after examining seven key competitors in the industry.

BRINGING THE TWO SIDES TOGETHER: A CONCEPTUAL FRAMEWORK

The competitive action and structural forces perspectives represent divergent yet ultimately reconcilable views of global industries and global strategy. On the one hand, global competition is shaped through structural drivers (Yip, 1992), while on the other hand, global competition occurs through imitative behavior based on competitive norms that may or may not be structurally justified. The distinction between these two perspectives has become increasingly recognized in the literature. Bartlett (1987), Ghoshal (1987), Kogut (1989), and Stopford (1993) have all highlighted the need to distinguish between global industry structure and the competitive actions of businesses. To this end, Kobrin (1991: 18) has argued that a distinction must be made ‘between the inherent structure or economic organization of a business or industry and the characteristics of competition or the strategy of companies in that industry.’

Global industry is defined here in terms of ‘the significance of the competitive advantages of international operations’ (Kobrin, 1991: 18). This definition is consistent with both the structural forces and competitive action perspectives, in that competitive advantage is obtained only by achieving a low-cost or differentiated position (e.g. through international operations) relative to competing businesses in the industry (Porter, 1985). In other words, neither the structural forces nor competitive action perspectives is sufficient on its own to completely explain international industry imperatives for an individual business. However, both converge in that they represent the ‘broad operating environment’ for the business, and thus define the relevant context of business decision making (Bartlett, 1987). A two-dimensional space with axes representing structural determinants or the ‘degree to which industry structure favors globalization’ and competitive determinants or the ‘level of collective global competition in the industry’ can be constructed to represent the interaction of these two approaches (see Figure 1).

Figure 1 identifies the mismatches that often occur between structural pressures and the competitive actions of industry members. Three domains can be identified in the figure. First, a broad diagonal in which the level of competition matches the industry context. The funeral parlor industry, for example, exhibits a low need for integration and few economies of scale, indicating that competition should corre-

---

1 An important implicit assumption in this work is that global industry structure is oligopolistic, and hence that individual firm behavior matters. In the case of an atomistic industry where all participants are price takers, competitive actions by individual firms would not be expected to have any impact on business integration.
Industry Determinants of Global Strategy

Industry responses to pressures for global integration

Figure 1. Industry responses to pressures for global integration

Industries accordingly occur at a local level. The shipbuilding industry, in contrast, has the potential for global economies of scale as well as a high degree of integration, suggesting that competition should respond accordingly. Note that the diagonal band in Figure 1 represents an ideal ‘fit’ between industry structure and competitive state, and as such it is time specific; as structural drivers evolve so will the optimum level of global competition.

The second domain in Figure 1, the top left triangle, indicates the condition in which global competition is underdeveloped given the structural pressures of the industry. This area could include a number of ‘undiscovered’ global industries in which the structure favors globalization but the majority of businesses are still competing with less than global strategies. Over-the-counter pharmaceuticals and credit cards are industries that have been cited as having a much higher latent global potential than currently demonstrated by competitor strategy (Cvar, 1986; Yip, 1992). These industries offer potential first mover advantages for businesses which can rapidly adopt global strategies.

The third domain in Figure 1, the bottom right triangle, indicates the condition in which competition has overglobalized vis-à-vis existing industry pressures. As mentioned above, the tire and white goods industries have been cited as examples of industries that have overglobalized. Two possible reasons help explain why overly global competition has occurred in these industries: first, management may have misread the signs and pushed globalization when the industry could not support it; or second, competition may have become global because of oligopolistic games that, while often suboptimizing for the business, may meet ulterior corporate objectives (Kim, Hwang, and Burgers, 1989).

Matching business and industry responses

Inherent in the structural forces and competitive action perspectives is the recognition that businesses may not always realize the global opportunities and threats in their industry. Because an industry’s structure is defined independent of business strategy, a large number of international industries may consequentially have ‘global potential, even though they may not know it’ (Hout, et al., 1982: 99). This suggests that a business can gain a competitive advantage through accurately assessing the underlying structural potential for globalization rather than through examining the dominant competitive patterns in the industry (Bartlett, 1987; Stopford, 1993). As a result, performance can be maximized when businesses develop strategies that accurately reflect industry structure (Ginsberg and Venkatraman, 1985; Hofer, 1975).

The appropriate dimension of strategy here is the business unit’s global integration strategy, which can be defined as ‘rationalization that may entail standardization of product, centralization of technological development, or the vertical or horizontal integration of manufacturing’ (Kobrin, 1991: 18). A similar definition was proposed by Prahalad and Doz (1987: 14): ‘The centralized management of geographically dispersed activities on an ongoing basis.’ However, Kobrin’s definition is preferred because ‘centralization’ implies a concentration of activities at head office. In reality, many multinational corporations assign world product mandates to their affiliates that offer a form of ‘decentralized centralization’ (Roth and
Morrison, 1992), which is entirely consistent with the notion of a global integration strategy.\(^2\)

While structural conditions can be conceptually disentangled from the combined actions of competitors at the industry level of analysis, such a distinction cannot be made from the perspective of an individual business which views both sets of factors as part of its relevant operating environment. In broad terms, three possible industry configurations may develop in response to globalization pressures: an appropriate level of collective global competition; too much global competition; or too little. In turn, there are three possible positions that each business can take with respect to the industry’s position, namely more globally integrated, integrated to an equivalent extent, and less globally integrated. All else being equal, one would expect that a business whose relative global integration is more closely matched with environmental pressures would perform better. In graphical terms, it would be expected that the performance–integration plot in suitably global industries would be horizontal, whereas the under-integrated and over-integrated industries would have upward sloping and downward sloping plots respectively (see Figure 2).

It should be stressed here that the proposed relationships between business unit integration and performance assume a homogeneous set of industry participants that differ primarily in terms of their level of integration. Strategic group theory (Hatten and Schendel, 1977; McGee and Thomas, 1986; Porter, 1980) challenges this notion, by showing that within a given industry distinct groups can be identified which may be asymmetrically exposed to both structural forces and competitive actions, on account of mobility barriers which exist between the groups. There are industries where the appropriate dimension on which to identify strategic groups is the level of global integration. For example, Baden-Fuller and Stopford (1991) identified national (exporting), regional, and global players in the European white goods market. However, there are also industries where other dimensions are more appropriate. Determination of the critical dimensions for strategic group identification requires careful industry analysis. For the purposes of our study, the decision to focus on the business-unit level precluded such analysis, but the possible impact of intr industry groups on the results should be kept in mind.

### RESEARCH PROPOSITIONS

#### Structural forces

A number of testable propositions emerge from the preceding discussion. Following the structural forces perspective, structurally determined drivers can be expected to influence the global integration strategies of businesses. As discussed earlier, one such structural driver involves economies of scale that can be gained from integrating operations across countries (Porter, 1986; Ghoshal, 1987).

Scale economies are associated with such activities as research and development, raw material procurement, manufacturing operations, marketing, and sales. Strictly speaking, the minimum efficient scale (MES) for the activity is the critical variable, since there can be no further reductions in product unit cost above this level. However as Scherer et al. (1975) point out, measurement of the MES is fraught with difficulties. Furthermore, the concept has been applied primarily to manufacturing plants, where unit costs and size can be measured with some degree of accuracy.

---

\(^2\) Note that high global integration embraces two somewhat different scenarios: one in which all activity is centralized, and the other in which it is dispersed, but centrally coordinated (Porter, 1986). While this distinction is important, it cannot be captured in a single index, as used in this paper and by Kobrin (1991). Instead, industry-specific analyses are conducted later in the paper to control for the different levels of configuration and coordination that are found from industry to industry.
Because the current study is concerned with the broader integration of all value-adding activities, and not just manufacturing, MES could not be measured adequately. Instead, the broader notion of economies of scale is used here.

**Proposition 1:** Economies of scale are positively associated with the global integration of business activities.

A second structural driver is the differential comparative advantage that may exist between countries. The decision to locate certain value-added activities in a single global location is a function of both the availability of scale economies and also the existence of differential comparative advantage between countries (Kogut, 1985; Porter, 1986). While there are costs associated with globalizing activities—including transportation costs and government-induced tariffs or standards—evidence suggests that in global industries they are relatively insignificant (Porter, 1986). Differences in comparative advantage can be exploited only in an international context, and are maximized when comparative advantages for multiple activities can be linked across the value chain (Dunning, 1981; Porter, 1986). Because of this, businesses competing in global industries should, all things being equal, limit foreign direct investment to those countries with either low cost resource endowments or comparatively high national investment incentive levels (Buckley and Casson, 1981; Casson, 1986; Dunning, 1981). By contrast, in multidomestic industries, business strategy is based on market access with little global sourcing. Note that the issue of relevance here is whether or not value activities are cited according to country advantages in general, rather than where specific value elements are located.

**Proposition 2:** Differential comparative advantages between countries is positively associated with the global integration of business activities.

The third structural driver is the permeability of borders to the flow of information and technology. This has led to a gradual homogenization in demand patterns among consumers worldwide, and a corresponding increase in standardization for product offerings and distribution systems (Levitt, 1983; Ohmae, 1989). While a number of writers (e.g. Douglas and Wind, 1987; Morrison et al., 1991) have argued that national differences are converging much more slowly than has been suggested, linkages between the standardization of demand and the global integration of business activities have considerable support in the literature (Quelch and Hoff, 1986; Doz, 1987).

**Proposition 3:** Standardization of market demand is positively associated with the global integration of business activities.

**Competitive action**

Research has shown that a business's global integration strategy is frequently determined in response to the actions of competitors independent of structural forces (Knickerbocker, 1973; Hamel and Prahalad, 1985). In the context of this study, businesses would be expected to adopt global integration strategies that matched or improved upon those of competitors. In particular, as competitors make decisions to globalize, businesses are likely to perceive increasing pressures to integrate operations.

**Proposition 4:** Global competitive actions within the industry are positively associated with the global integration of business activities.

**Performance**

The industrial organization paradigm suggests that business performance is contingent on the fit between environment and conduct (strategy) (Porter, 1981). We would therefore expect to see superior performance in those businesses that have effectively matched their global integration strategy with the structural drivers in the industry. Using Figure 2, this establishes three rival propositions relating to global integration and performance.

**Proposition 5a:** The global integration of business activities is positively associated with performance in industries that have underglobalized.

**Proposition 5b:** The global integration of business activities is negatively associated with...
performance in industries that have overgloba-
lized.

Proposition 5c: In industries that are neither
overglobalized nor under globalized, no
relationship exists between global integration
of business activities and performance.

Environment–performance relationships

The relationship between industry structure and
business performance has been the focus of
considerable discussion in the management litera-
ture (Porter, 1980; Caves, 1982; Hitt, Ireland,
and Stadter, 1982; Ginsberg and Venkatraman,
1985). Industry structure helps explain why some
industries are consistently more profitable than
others (Porter, 1980). However, according to
contingency theory, industry structure has only
an indirect effect (via business strategy) on
business performance. It is only by achieving an
appropriate fit between industry demands and
strategy that the business can realize superior
performance (Drazin and Van de Ven, 1985;
Galbraith and Kazanjian, 1986; Miller, 1988).
Thus, it is proposed that industry structure will
have a strong effect on business strategy, but no
direct effect on business performance.

Proposition 6: Economies of scale will have
no direct effect on business peformance.

Proposition 7: Differential comparative
advantage between countries will have no direct
effect on business performance.

Proposition 8: Standardization of market
demand will have no direct effect on business
performance.

In contrast, the direct relationship between global
competitive actions and performance is expected
to be positive. While a traditional microeconomic
perspective would suggest that high levels of
competition are associated with average returns,
there are some factors specific to globalization
that may challenge this relationship. Specifically,
global competition opens up a number of new
markets that are often less price discerning.
Geringer, Beamish, and DaCosta (1989) showed,
for example, that for a sample of 200 large
multinational enterprises the level of internationalization was positively related to perform-
ance, without regard to the level of integration. Thus:

Proposition 9: Global competitive actions are
positively associated with business performance.

The nine preceding propositions are summarized
in Figure 3. Propositions 6 through 9 are included
in order to assess the validity of the contingency
framework, and to investigate conditions under
which this perspective may be too limiting.

RESEARCH METHODOLOGY AND
DATA

Sample

Given that a variety of researchers have identified
rising trade levels as a key indicator of industry
globalization (Cvar, 1984; Morrison, 1990; Kob-
rin, 1991; Yip, 1992), industries were selected
from the U.S. International Trade Commission
and industry sources that exhibited high levels
(greater than 50%) of international, intraindustry
trade. In all, 12 industries (four-digit SIC code)
were selected. Questionnaires were subsequently
sent to the CEO or president of medium and
large-sized U.S.-based businesses in each of these
industries (322 in total), as identified in America’s
Corporate Families and The Directory of Corpor-
ate Affiliations. Responses were received from
147 businesses, but for the purposes of this study
two industries were dropped due to the low
response rate of member businesses; a further
20 businesses were dropped due to incomplete
survey responses. As a result, the final sample
contained 124 businesses from 10 industries, with
between 4 and 26 businesses responding per
industry.

Measures

Structural forces and global competitive action

Despite the conceptual distinction between struc-
tural drivers and competitive forces, an empirical
distinction between the two can be difficult to
achieve. In part this is due to the fact that several potentially relevant measures are related to both constructs. As a result, a principal components factor analysis was performed on an eight-item scale which included measures of both the structural drivers and the competitive forces in the industry. This analysis yielded four factors: (1) standardization of market demands; (2) evidence of competitive action within the industry; (3) economies of scale; and (4) differences in comparative advantage across countries. Table 1 indicates the individual items associated with these four factors, along with key statistical information. As a result of this analysis, conceptual separation between the four independent variables was confirmed. Evidence of three distinct structural driver variables was also consistent with Hout et al. (1982). Subsequent analysis was undertaken using these four factors.

Global integration of business activities

This construct was measured using an eight-item scale. A principal components factor analysis conducted on this scale indicated a single construct representing the global integration of business activities. Two of these items (3 and 7) were subsequently dropped in order to improve the scale reliability.

Given the focus on industry-specific relationships in this paper, it was important to measure managers' assessments of the global integration of business activities relative to their specific industries. This was necessary to control for the variation in overall global integration levels between industries. A

3 A preliminary factor analysis was performed for a 12-item scale. However, four of these items were subsequently dropped due to either high cross-loadings or a high loading on a conceptually inconsistent factor.

4 Although the eigenvalue for the fourth factor is less than one, we retained all four factors as suggested by both prior theory and a factor scree plot.

---

**Figure 3** Summary of proposed relationships
Table 1. Factor analysis results confirming distinct structural and competitive drivers

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Buyer/customer needs are standardized worldwide</td>
<td>0.78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Standardized purchasing practices exist worldwide</td>
<td>0.60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Standardized product technology exists worldwide</td>
<td>0.74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Competitors market a standardized product worldwide</td>
<td>0.81</td>
<td>0.86</td>
<td></td>
<td>0.86</td>
</tr>
<tr>
<td>5. Competitors exist that have a presence in all key markets</td>
<td></td>
<td>0.82</td>
<td>0.86</td>
<td></td>
</tr>
<tr>
<td>6. International competition is intense</td>
<td></td>
<td></td>
<td></td>
<td>0.86</td>
</tr>
<tr>
<td>7. Business activities are susceptible to scale economies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Factor costs (wages, materials, capital) differ significantly from country to country</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eigenvalue</th>
<th>% Variance explained</th>
<th>% Cumulative variance</th>
<th>Factor name</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.47</td>
<td>30.8%</td>
<td>30.8%</td>
<td>Standardized market demands</td>
</tr>
<tr>
<td>1.54</td>
<td>19.3%</td>
<td>50.1%</td>
<td>Competitive actions</td>
</tr>
<tr>
<td>1.13</td>
<td>14.1%</td>
<td>64.2%</td>
<td>Economics of scale</td>
</tr>
<tr>
<td>0.71</td>
<td>8.8%</td>
<td>73.1%</td>
<td>Differences in comparative advantage</td>
</tr>
</tbody>
</table>

Note: Only factor loadings greater than or equal to 0.50 are included in the table.

correlation analysis of individual responses with the average of all businesses in the relevant industry was conducted. Correlations ranged from 0.92 to 0.97, confirming that the responses were industry specific and relative rather than absolute.

Performance

Performance was measured using subjective assessments of a business’s performance relative to other businesses in the same industry. While there are potential reporting biases in such measures, research has shown that self-reported performance data are generally reliable (e.g. Dess and Robinson, 1984). In addition, objective data are frequently not available at the business-unit level. Conceptually, it is the ability of the business to generate a superior performance relative to its industry that was viewed as most relevant, rather than absolute measures of performance. Three aspects of performance were assessed: return on assets, return on total investment, and sales growth. By combining financial and competitive performance characteristics in this way, greater construct validity was achieved.⁶

RESULTS

Partial least squares

To estimate the paths between the constructs shown in Figure 3, and thereby test the propositions advanced previously, a relatively new and powerful multivariate analysis technique known as partial least squares (PLS) was used (see Fornell and Bookstein, 1982, for a complete description). Partial least squares belongs to a family of techniques which also includes the better-known LISREL (Lohmoller, 1988).

PLS is most appropriate when sample sizes are small, when assumptions of multivariate normality and interval scaled data cannot be made, and when the researcher is primarily concerned with prediction of the dependent

⁶ A confirmatory factor analysis conducted on these three measures indicated a single construct (eigenvalue 2.28) which explained 76 percent of the variance in the original measures.
variable (Fornell and Bookstein, 1982). PLS is ideally suited to the early stages of theory building and testing, and it has been used by a growing number of researchers from a variety of disciplines (e.g., Barclay, 1991; Fornell and Robinson, 1983; Higgins, Duxbury, and Irving, 1992).

While it is possible to test the nine preceding propositions using univariate analysis, this was viewed as not totally appropriate given that the model proposed in Figure 3 involves independent equations that need to be estimated simultaneously. That is, the structural and competitive drivers are expected to influence business strategy at the same time that business strategy (and potentially the structural and competitive drivers) influence business performance. To avoid obtaining biased and inconsistent parameter estimates for these equations, the Figure 3 model must be analyzed using a multivariate estimation technique such as two-stage least squares (Pindyck and Rubinfeld, 1981) or PLS. While both techniques will provide acceptable parameter estimates, two-stage least squares requires the use of single measures for all dependent variables. In contrast, PLS permits multiple measures of both dependent and independent variables. Because global integration and performance were both assessed using multiple measures, use of PLS appeared to be more appropriate for the current study.

The path coefficients obtained from a PLS analysis are standardized regression coefficients, while the loadings of items on individual constructs are factor loadings. Factor scores created using these loadings are equivalent to weighted composite indices. Thus, PLS results can be easily interpreted by considering them in the context of regression and factor analysis. PLS provides a clear advantage over regression for two reasons: (1) it considers all path coefficients simultaneously to allow the analysis of direct, indirect, and spurious relationships; and (2) it estimates the individual item weightings in the context of the theoretical model rather than in isolation.

Generally, PLS results are presented in two stages. In the first stage, the researcher ensures that the measures used as operationalizations of the underlying constructs are both reliable and valid. Once convinced of the adequacy of the measurement model, the researcher can then proceed to interpret the resulting model coefficients.

**Validity and reliability of measures**

The acceptability of the measurement model used here was assessed by looking at the reliability of individual items, the internal consistency between items expected to measure the same construct, and the discriminant validity between constructs. Individual item reliability was determined by examining the loadings of measures on their corresponding constructs. In all cases, only individual factor loadings greater than 0.6 were retained, with most greater than 0.7, indicating a high degree of individual item reliability.

Internal consistency was assessed using a measure suggested by Fornell and Larcker (1981). This measure is similar to Cronbach's alpha as a measure of internal consistency, and interpretation of the values obtained is similar. Following the guideline proposed by Nunnally (1978), an internal consistency value of 0.7 or greater is reasonable for exploratory research. In the current study, the internal consistency values for all six constructs exceeded the 0.7 guideline (see Table 2), indicating good internal consistency.

The discriminant validity of constructs used in the model also needs to be assessed (Fornell and Larcker, 1981). This can be done in two ways. The diagonal elements in this matrix show the square root of the average variance extracted. For adequate discriminant validity, the diagonal elements should be greater than all other entries in the corresponding rows and columns, as is the case here. Second, no item loaded more highly on another construct than it did on its associated construct. Both of these criteria indicate that the discriminant validity of the constructs used in the current model is more than adequate.

**Tests of propositions**

Results for tests of the propositions are shown in Figure 4. All nine of the relationships examined were significant. The model explained 36 percent of the variance in global integration, and 12 percent of the variance in business performance.

As predicted, the impacts of economies of scale (PI), differential comparative advantage
Table 2. Measurement model

<table>
<thead>
<tr>
<th>Construct</th>
<th>Number of items</th>
<th>Internal consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economies of scale</td>
<td>1</td>
<td>1.000</td>
</tr>
<tr>
<td>Differences in comparative advantage</td>
<td>1</td>
<td>1.000</td>
</tr>
<tr>
<td>Standard market demands</td>
<td>4</td>
<td>0.824</td>
</tr>
<tr>
<td>Competitive actions</td>
<td>2</td>
<td>0.809</td>
</tr>
<tr>
<td>Business unit integration</td>
<td>6</td>
<td>0.878</td>
</tr>
<tr>
<td>Business unit performance</td>
<td>3</td>
<td>0.857</td>
</tr>
</tbody>
</table>

Table 3. Discriminant validity

<table>
<thead>
<tr>
<th>Correlations between constructs</th>
<th>Economies of scale</th>
<th>Differences in comparative advantage</th>
<th>Standard market demands</th>
<th>Competitive actions</th>
<th>Business unit integration</th>
<th>Business unit performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economies of scale</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differences in comparative advantage</td>
<td>0.201</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard market demands</td>
<td>-0.048</td>
<td>-0.197</td>
<td>0.736</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competitive actions</td>
<td>0.092</td>
<td>0.013</td>
<td>0.088</td>
<td>0.824</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business unit integration</td>
<td>0.459</td>
<td>0.234</td>
<td>-0.230</td>
<td>0.098</td>
<td>0.740</td>
<td></td>
</tr>
<tr>
<td>Business unit performance</td>
<td>0.219</td>
<td>0.003</td>
<td>-0.096</td>
<td>0.174</td>
<td>0.271</td>
<td>0.817</td>
</tr>
</tbody>
</table>

Figure 4. Summary of results. Note: all path coefficients are significant at $p < 0.001$

(P2), and competitive actions (P4) on global integration were all statistically significant and positive. In contrast, the relationship between standardized market demand and global integration was statistically significant and negative, contrary to prediction (P3).

The relationship between the global integration of business unit activities and performance was positive and significant. At an aggregate level of analysis, this finding supports P5a, while refuting P5b and P5c. On average, then, the businesses included in this study tended to be underglobalized.
Significant direct effects on performance were obtained for economies of scale (P6), comparative advantage (P7), and standardized market demands (P8), contrary to expectations. Competitive actions also had a significant positive impact on performance, as predicted (P9). The direct effects of these constructs on performance are in addition to their indirect effects through integration.

Although all four drivers have a significant impact on integration, the economies of scale factor is more than twice as important as the next closest driver, standard market demands (i.e., 0.421/0.194 = 2.2). Furthermore, when the direct and indirect effects of the structural and competitive factors on performance are combined, the economies of scale factor emerges as the single most important. That is, the total effect of economies of scale on performance (0.126 + (0.421)(0.202) = 0.211) is greater than each of the individual total effects of comparative advantage (−0.064), market demands (−0.113), and competitive actions (0.166). These results also suggest that use of the contingency framework may ignore strong direct effects of structural and competitive factors on business performance.

In part, this may be a reflection of a time lag between the strategic and structural responses of businesses relative to industry changes. Although the implicit assumption of contingency theory is that such time lags do not occur, the removal of this assumption would help explain the direct relationship that was observed between performance and structural and competitive factors.

### Additional analysis

The preceding analysis provides significant insights into the relationships between key structural determinants, global integration, and business performance, and offers a complete test of the nine propositions advanced earlier. However, as indicated in the introductory sections of this paper, distinct differences may exist between individual industries in the relative importance of structural and competitive drivers. Furthermore, the nature of the relationship between global integration and performance may vary substantially from one industry to another. As argued previously, businesses in one industry may tend to be underglobalized, while businesses in a second may tend to be overglobalized.

In this section, the relationships between the key structural determinants, global integration, and performance are examined at an industry-specific level of analysis. This was done in two stages. First, industry-specific multivariate regression analyses were completed, using a global integration index based on the six measurement items used previously as the dependent variable, and indices for the structural and competitive factors (formed by averaging the relevant items identified earlier in Table 1) as the independent variables.

In the second stage, a second set of regression analyses examined the relationship between global integration and performance at the industry-specific level, using a performance index as the dependent variable and the global integration index as the independent variable. Only 7 of the 10 industries surveyed were included in these analyses due to sample size problems. The three excluded industries had six or fewer observations, precluding meaningful analysis. Given the relatively small sample sizes for many of the retained industries, the following results should be interpreted with some degree of caution.

Results for the seven remaining industries are shown in Table 4. Each industry is identified by its four-digit SIC code and by its SIC descriptor. Three industries were found to have a significant relationship (p < 0.10) between at least one of the structural and competitive determinants and global integration. Furthermore, for four industries, the relationship between global integration and performance was significant (p < 0.10) and positive, while for the remaining three industries no significant relationship was found. There were no industries for which the global integration-performance relationship was found to be negative. Thus, four of the industries surveyed here appear to be underglobalized (P5a), while the other three are apparently already at an appropriate level of globalization (P5c).

No significant relationships between the structural and competitive determinants and global integration were found for the pesticides and agricultural chemicals industry (F,11 = 1.47), the mining machinery and equipment industry (F,11 = 0.08), the oil and gas field machinery and equipment industry (F,14 = 0.20), or the aircraft engines and parts industry (F,3 = 5.40). Both economies of scale and competitive actions were found to have a significant positive impact
Table 4. Industry-specific results

<table>
<thead>
<tr>
<th>SIC</th>
<th>Industry Name</th>
<th>N</th>
<th>Significant determinants of integration</th>
<th>Integration-performance slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>2879</td>
<td>Pesticides and agricultural chemicals</td>
<td>16</td>
<td>None</td>
<td>+</td>
</tr>
<tr>
<td>3532</td>
<td>Mining machinery and equipment, except oil and gas</td>
<td>16</td>
<td>None</td>
<td>+</td>
</tr>
<tr>
<td>3533</td>
<td>Oil and gas field machinery and equipment</td>
<td>19</td>
<td>None</td>
<td>+</td>
</tr>
<tr>
<td>3651</td>
<td>Household audio and video equipment</td>
<td>12</td>
<td>Economies of scale, Competitive actions</td>
<td>0</td>
</tr>
<tr>
<td>3674</td>
<td>Semiconductors and related devices</td>
<td>26</td>
<td>Competitive actions</td>
<td>0</td>
</tr>
<tr>
<td>3724</td>
<td>Aircraft engines and parts</td>
<td>8</td>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>3728</td>
<td>Aircraft parts and auxiliary equipment</td>
<td>14</td>
<td>Differential comparative advantage</td>
<td>+</td>
</tr>
</tbody>
</table>

The relationship between the extent of global integration and performance was significant and positive for pesticides and agricultural chemicals ($F_{1,7} = 24.50, p < 0.001$), while competitive actions alone had a significant positive impact on integration in the semiconductors and related devices industry ($F_{4.21} = 6.00, p < 0.01$). Finally, differential comparative advantage had a significant and positive influence on global integration for the aircraft parts and auxiliary equipment industry ($F_{4.9} = 5.20, p < 0.05$).

The relationship between the extent of global integration and performance was significant and positive for pesticides and agricultural chemicals ($F_{1,14} = 3.98, p < 0.10$), mining machinery and equipment ($F_{1,14} = 5.35, p < 0.05$), oil and gas field machinery and equipment ($F_{1,17} = 3.44, p < 0.10$), and aircraft parts and auxiliary equipment ($F_{1,12} = 7.11, p < 0.025$). In all four cases, more globally integrated businesses exhibited superior performance, suggesting that these industries tended to be underglobalized on average. In contrast, the relationship between global integration and performance was not significant for businesses in the household audio and video industry ($F_{1,10} = 0.19$), the semiconductor and related devices industry ($F_{1,14} = 2.05$), and the aircraft engines and parts industry ($F_{1,6} = 0.71$), indicating an acceptable level of globalization in these three cases.

**DISCUSSION**

Three broad findings emerge from the preceding examination of the relationships between industry, business strategy and performance. First, business strategy (in the form of decisions relating to the appropriate level of global integration for a business) is responsive to all of the underlying structural pressures for global integration, although the direction of the relationship was opposite to what was predicted in the case of standardized market demands. Second, competitive action pressures play a somewhat limited, though significant, role in shaping global integration strategies. Third, there is evidence that, in the aggregate, the industries studied here were ‘underglobalized,’ while at the industry-specific level there were examples of both ‘underglobalized’ and ‘optimally globalized’ industries.

**Structural pressures**

The global integration of business activities was shown to be heavily influenced by economies of scale and differences in comparative advantage, as predicted. The surprising result was a significant negative relationship between standardized market demands and global integration. This suggests that the businesses surveyed believed that differences between national markets remain important despite the trends towards global integration. A number of researchers have put forward arguments supporting this position. For example, Douglas and Wind (1987) noted that homogenization of demand is not pervasive, and that discerning customers continue to pay a premium for nonstandard products. Similarly, Takeuchi and Porter (1986) proposed that certain value activities not be integrated to achieve competitive
advantage. Finally, Morrison et al. (1991) have documented the increasing use of regional, rather than global, strategies.

With regard to direct influences on performance, there was evidence of significant associations from all three structural drivers: positive in the case of economies of scale, and negative for the other two. While the magnitudes of these paths were relatively small, this finding suggests that the contingency framework is only partially supported here. The implication is that business unit performance is impacted directly by these structural drivers, regardless of the level of global integration. 'Fit' between environmental demands and business strategy is still important, but not to such a degree that direct relationships between industry factors and performance can be overlooked.

In broader terms, it is interesting to note the predominance of economies of scale as a structural driver in this study. In a similar study, Johansson and Yip (1994) found economies of scale, as part of a larger construct called 'structural drivers,' to be significant, but less so than 'market drivers' such as standardization of demand. Kobrin (1991), however, using an objective measure of the minimum efficient scale (MES), found no significant relationship between MES and global integration ($r = 0.178$). This discrepancy bears discussion.

Kobrin's discussion (1991: 25) of the lack of relationship between MES and transnational integration made three main points: (1) the MES measure was a crude proxy based on a 'top 50' estimate and aggregated at the three-digit SIC code level; (2) the use of CAD-CAM technology had gone some way towards reducing the superiority of large manufacturing plants; and (3) clear anecdotal evidence, on an industry-by-industry basis, existed both to support and deny the existence of a relationship between MES and integration. He concluded that the importance of MES 'across all global industries may have been overstated' (1991: 28).

This study actually complements Kobrin's analysis quite effectively. The industry-specific analysis suggested that economies of scale were a significant driver of global integration in only three cases, namely mining machinery and equipment, semiconductors and related devices, and aircraft engines and parts. Building on Kobrin's anecdotal evidence, and his observation that the three-digit SIC code represents a very broad level of aggregation, the implication is that detailed industry analysis may be the only effective way of truly understanding the nature of economies of scale. Furthermore, the current study did not distinguish between manufacturing economies of scale and other capital-intensive business activities such as research and development. Kobrin actually found a very strong positive relationship between technological intensity and transnational integration, which is wholly consistent with the findings of the current study. In sum, while the relationship between economies of scale and integration was strong, it was not supported in every industry. Kobrin's assessment of the declining importance of MES as a driver of transnational integration cannot, therefore, be refuted.

**Competitive action**

The observed relationship between the competitive actions of industry players and the global integration strategies of businesses was significant. This is consistent with much of the literature on global strategy (Knickerbocker, 1973; Hamel and Prahalad, 1985) and with institutionalization theory (DiMaggio and Powell, 1983; Scott, 1987), although the magnitude of the relationship was relatively small. The issue here may, in fact, be less the phenomenon itself, but more the ability and/or willingness of managers to recognize it. The motives for competitive actions are often ambiguous; cross-subsidization, for example, can be undertaken for a variety of reasons including the benign (market entry), the devious (a threat of further action), or the illegal (dumping). Management's acknowledgement of the action is likely to depend more on the motive for, than the preponderance of, the action. Furthermore, management's rationalization of their actions on a post hoc basis will frequently obscure their genuine motives. Thus, while Knickerbocker's (1973) research, based on objective, industry-level data, yielded strong evidence for the phenomenon of competitive actions, Baden-Fuller and Stopford (1991: 504) effectively found no such evidence. Results from the current study fall between these two extremes. It is certainly possible that imitative behavior is less common now than it was in the late 1960s, but it would take an objective study akin to Knickerbocker's
study to verify this assertion. A separate, intriguing possibility is that imitative behavior is still a powerful force, but that U.S. businesses are fixating on overseas competitors not included in this study.

The existence of a positive relationship between competitive actions and performance was as predicted. The finding suggests that high levels of global competition—with or without business integration—are sufficient to induce superior performance. As discussed earlier, this is probably a facet of the broader relationship previously found between level of internationalization and performance (e.g., Geringer et al., 1989). Furthermore, because the current study’s findings are based on management perceptions, it is possible to speculate that those businesses that have recognized the intensity and importance of global competitors are also the ones exhibiting superior performance, while the poorer performers are those that have failed to acknowledge the new realities of global competition.

Global integration—performance

The positive relationship between the global integration of business activities and performance supported the proposition that the majority of industries are ‘underglobalized’ through the observation that the stronger performers are also those with more globally integrated strategies. At the industry level the proposition was confirmed, with the additional finding that four industries are ‘underglobalized’ and three are at an optimal level of global integration. While this interpretation was supported by the data, additional information is required to more fully understand the details of this relationship. It may be, for example, that groupings exist, such that the ‘global’ players outperform the ‘regional’ players, who outperform the ‘national’ players. This is a fruitful line of inquiry, building on a long tradition of research into strategic groups, but it would be unwise to attempt to infer such groupings from the data collected in this study. As noted earlier, meaningful strategic groups research relies on careful industry analysis to ensure that groups are constructed along the relevant dimensions, and this was precluded by the current data.

The broad conclusion that industries are either underglobalized or optimally globalized is consistent with the anecdotal evidence of several researchers including Hout et al. (1982), Porter (1986), and Yip (1992). However, the finding that underglobalized industries exist, and even appear to persist, raises an important question: why do managers in such industries fail to recognize the latent profit potential of integration and therefore adopt a more globally integrated strategy? The answer, in part, has to do with the norms and rules of competitive behavior that make managers myopic to paradigm-breaking strategic moves (Astley and Fombrun, 1983; DiMaggio and Powell 1983; Meyer and Rowan, 1977). The presence of groups within the industry could also be a factor. For example, the capital investment required to move from being a regional to a global player in an underglobalized industry may be prohibitively high, and thus constitute a mobility barrier. In such cases, the high-performing global players as well as the lower-performing regional players would be aware of the discrepancy in performance, but the performance gap would likely persist.

The present study has a number of limitations. The sampling frame included manufacturing businesses in industries with high levels of international intraindustry trade. Further research should be undertaken to extend this frame to businesses from multiple countries, nonmanufacturing industries, and industries with diverse levels of intraindustry trade. Another concern is that the ‘competitive action’ construct is inherently difficult to measure. One possibility would be to revert to Knickerbocker’s measures but this would require detailed time-series data at the business-unit level. Another possibility would be a more focused questionnaire which hones in on issues such as cross-subsidization. A third limitation relates to the global integration construct. Bartlett and Ghoshal (1989), among others, have suggested that integration is a fine-grained construct that varies according to the nature of the resource flow (product, capital, technology, people). This proposition was recently assessed by Rosenzweig (1993), who demonstrated significant but weak correlations between integration of different types of resource flows. He concluded that there were limitations associated with the use of a single measure (typically physical product flows) of integration. The current study used a reliable six-item scale reflecting a broader conceptualization of
integration than simply physical product flows. However, our view here of integration as a unidimensional construct is probably constraining, and future research should address this limitation.

Despite these concerns, the study adds considerably to our understanding of global competition. The study uses multiple respondents from 10 industries to investigate the impact which structural imperatives and competitive actions have on global integration strategies and performance. While some concerns need to be expressed over the use of a U.S. sample to draw global conclusions, the results offer tentative findings regarding the level of globalization in each of seven industries. It is interesting that no 'overglobalized' industries were found: this broadly concurs with Yip's findings (1992), but runs counter to one of the original assertions of the paper, namely that certain industries (e.g., tires and white goods) may have become 'overglobalized'.

ACKNOWLEDGEMENTS

The authors would like to thank Kendall Roth, George Yip, and three anonymous reviewers for this journal for their helpful comments on earlier versions of this article.

REFERENCES


