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Masaaki Kotabe

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Glenn S. Omura
Major professor

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GLOBAL SOURCING STRATEGIES BY EUROPEAN AND JAPANESE MULTINATIONAL FIRMS: AN EMPIRICAL STUDY

By

Masaaki Kotabe

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ABSTRACT

GLOBAL SOURCING STRATEGIES
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Statement of the problem. Despite the increasingly complex nature of trade and foreign production managed by multinational firms in global competition, little research has been done on sourcing strategies of the multinational firms on a global basis. Sourcing strategy refers to those decisions determining which production units will service which particular markets and how components will be supplied for production. The widely received international product cycle model describes the initial expansion of many firms, but today's mature multinational firms have developed a number of other strategies which defy the prediction of the model. This research seeks to offer a better explanation of contemporary sourcing strategies and their implications.

Methodology. A mail survey was employed to collect data from European and Japanese mature multinational manufacturing firms servicing the U.S. market. A questionnaire was sent to the U.S. subsidiaries of 200 European and 75 Japanese multinational firms. A total of three reminders resulted in 43 and 28 usable responses from European and Japanese firms, respectively, with a combined response rate of 28.4%.

Major Findings. Both components sourcing and assembly in developing countries are strongly influenced by the extent to which a product is made up of "standardized" components. It is also found that the "standardizedness" of components has little to do with the international life cycle stage of the product.

The high transportation costs and the instability of exchange rates motivate the foreign multinationals to source (manufacture) a large portion of the total sales of the product in the United States. If the level of product adaptation to the U.S. market is high, then the use of U.S.-made components appears to be crucial, although the final product may be assembled elsewhere with these components.

The novelty of patented knowledge and the product life cycle dictate the extent of major components sourced internally. A major assembly location is influenced by the U.S. market attractiveness and the transfer costs (in particular, the transportation costs and the instability of exchange rates). Findings show that, regardless of the product life cycle stage, the multinational firms could manufacture products anywhere on the globe, attenuated by the transfer costs as a major bottleneck to global sourcing.

The product's relative market share in the United States is influenced by the internal sourcing of major components, but neither affected by the internal/external assembly nor by the assembly locations. Contrarily, the product's sales growth rate in the U.S. market is somewhat

positively related to the internal assembly, and is strongly associated with the locations of final assembly. Despite the importance of the life cycle stage in determining its competitive strength, the products assembled in developing countries had a higher U.S. sales growth rate than those assembled in the foreign multinational firm's home country or in the United States. The product's competitive strength is hampered by a high level of product adaptation to the U.S. market. These findings suggest that the locational implications of the international product cycle theory be discarded.

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CHAPTER I

INTRODUCTION TO THE NATURE OF GLOBAL SOURCING STRATEGY

The Statement of the Problem

Theodore Levitt recently asserted in Harvard Business Review that well-managed companies have moved from emphasis on customizing products to offering globally standardized products which are advanced, functional, reliable, and low-priced, in somewhat poetic words[1]:

> Gone are accustomed differences in national or regional preference. Gone are the days when a company could sell last year's models--or lesser versions of advanced products--in the less-developed world. And gone are the days when prices, margins, and profits abroad were generally higher than at home. The globalization of markets is at hand (p. 92).

The globalization of markets has since become one of the major issues in international business and was debated of late in a special session at the 1985 AMA Educators' Conference held in Washington, D.C.[2] Although the ultimate globalization of markets is uncertain, the extensive geographical expansion of multinational firms is an already widely known fact.[3]

Multinational firms were uniquely an American phenomenon in the 1960's, when studies on international business caught on, producing many of the conceptual frameworks and theories we know today. The awesome strengths of U.S. multinational firms were so overwhelming that Europeans, for example, were seriously afraid of the

American dominance in European markets.[4] The 1970's and 1980's, however, have seen the tremendous development of multinational firms originating from European countries and Japan, having rendered the fear of the American dominance obsolete. U.S. multinational firms are now faced with competition from European and Japanese multinationals not only in the U.S. domestic market, but also in foreign markets including European and Japanese markets. The development of European and Japanese multinational firms has created a new competitive environment which may aptly be called the "globalization of competition".[5]

This new competition mandates the globalization of corporate strategy. Perlmutter developed a classification of managerial, if not philosophical, perspectives of competition in world markets: "ethnocentric", "polycentric", and "geocentric", but offered little practical guidance to corporate strategy development by multinationals.[6] Porter, on the other hand, enumerated sources for and impediments to the practice of global competition, but failed to provide any theoretical framework for it.[7]

Multinational firms not only facilitate the flow of capital among nations through direct investment abroad, but also significantly contribute to the world trade flow of goods and services as well. The scope of operations by mature multinational firms is revealed by Dunning and Pearse in a survey of 329 of the world's largest industrial firms

that the average overseas market sourcing ratio in 1977 (i.e., sales of overseas affiliates divided by sales of overseas affiliates plus parent company exports) was 68.1%.[8] The latest survey by United Nations Center on Transnational Corporations reports that, for the United States in 1977, 39% of its total imports and 36% of its total exports are classified as "intra-firm trade" between U.S. parent firms and their foreign affiliates as well as between the U.S. affiliates of foreign-owned multinational firms and their parent firms abroad.[9] The earlier survey by United Nations of multinational firms also shows that, in the case of U.S.-based multinational firms and their majority-owned overseas affiliates, the share of affiliate exports to parent in total affiliate exports to the United States was 74% in 1975, and that trade between overseas affiliates of U.S. multinationals constituted 42% of their sales to third countries.[10] Another study of 76 U.S. manufacturing multinational firms reveals that the composition in 1980 of U.S. parent companies' imports from their overseas affiliates is as follows: finished goods 20-25%, components 65-70%, and raw materials 10%.[11] From the sourcing perspective, it appears that U.S. manufacturing firms were investing abroad in order to establish less expensive sources of supply for sale in the United States. This "offshore" sourcing by U.S. firms for the U.S. market also has been encouraged by the U.S. tariff provisions for products imported under tariff items 806.30 and 807.00.

These tariff provisions permit the duty-free reentry to the United States of U.S. components sent abroad for further processing or assembly. In 1983, the total imports under tariff items 806.30 and 807.00 amounted to $22 billion.[12] The countries of the European Community and Japan also have similar tariff arrangements, although more restrictive in effect than the U.S. tariff provisions.[13] It has been recognized that sourcing patterns by European and Japanese firms are significantly different from those made by U.S. firms. It is generally said that European firms do relatively little foreign production for reimport to the home market, while Japanese firms manufacture components and products abroad, especially in Southeast Asia, primarily for export to countries other than Japan.[14]

Evidence clearly suggests the complex nature of trade and foreign production managed by multinational firms in global competition. The development of "global" marketing and sourcing strategies across different foreign markets, therefore, has become a central issue for many multinationals. In the past, a polycentric approach by which to organize operations on a country-by-country basis was the modus operandi by many multinationals. But, today, there is a growing realization of the advantages to be acquired by coordinating and integrating operations across national boundaries.[15]

Much of the empirical work on sourcing published so far has been aggregative in nature, usually focusing on intra-

firm trade involving parent companies and/or parent countries (usually the United States).[16] Indeed, there has been little empirical investigation at the individual firm level of factors influencing sourcing policy.[17] As early as 1969, Fayerweather described a conceptual model of global logistic planning involving the dynamic relationships among factories, markets, products, components, and their flows.[18] However, his discussion of global logistic plan remains descriptive with two illustrative cases.

Sourcing strategy generally refers to those decisions determining which production units will service which particular markets and how components will be supplied for production. The sourcing strategies of multinational firms have been extensively analyzed by proponents of the international product cycle model.[19] The international product cycle model is primarily an explanation of the evolution of sourcing strategy of a multinational manufacturing firm. The model provides a compelling description of dynamic patterns of international trade of manufactured products and direct investment as a product advances through its life cycle. Changes in inputs and product characteristics toward standardization over time would determine the most economic production location at any particular phase of the product's life.

Some studies dealt with offshore production in developing countries.[20] One finding is that the most likely candidates for sourcing in developing countries, often

referred to as offshore production, are those requiring large amounts of unskilled labor, regardless of the life cycle stage of the product.[21] Tsurumi has gone as far as to argue that the Japanese companies have been successful exporters as they did "ride an international product cycle upstream."[22]

In light of this, Vernon, the father of the international product cycle thesis, had revised his argument since his 1966 vintage of the model.[23] He stated in 1974 that, to the extent the national environments differ, U.S.-based multinational firms will tend to generate and develop innovations with special sensitivity to the conditions of the U.S. market, European-based firms with sensitivity to European conditions, Japanese firms to Japanese conditions.[24] Hence, the U.S. firms tend to specialize in innovations that are responsive to high incomes and high labor costs; the Europeans in innovations that are land- and material-saving; the Japanese in innovations that are material- and space-saving. In 1979, he appeared to contradict his 1974 vintage:

> It is no longer easy to assume that innovating firms are uninformed about conditions in foreign markets, whether in other advanced countries or in the developing world. Nor can it be assumed that US firms are exposed to a very different home environment from European and Japanese firms; although the gap between most of the developing countries and the advanced industrialized countries palpably remains, the differences among the advanced industrialized countries are reduced to trivial dimensions.[25]

Vernon hesitatingly anticipates that, seeking to exploit global scale economies, multinational firms are

likely to establish various component plants in both advanced industrialized countries and developing countries, and to crosshaul between plants for the assembly of final products.[26] Vernon recognizes that this pattern is at variance with the international product cycle model. As an explanation of international business behavior, the international product cycle model has limited explanatory power. It does describe the initial international expansion of many firms, but the mature multinational firms of today have succeeded in developing a number of other strategies for surviving in overseas sourcing and marketing.

Despite the growing importance of global sourcing, a majority of leading international marketing textbooks give it a passing mention. Cateora allocates only five pages to sourcing without mentioning any theoretical underpinning for it,[27] while Keegan makes a two-page brief on sourcing.[28] Apparently, there is a lack of appreciation in the international marketing literature for the importance of contemporary sourcing strategies by the mature multinational firms in the global market that may and do actually deviate from the sourcing pattern explained by the international product cycle model. It is, therefore, imperative for international marketers to search for a better explanation of the sourcing strategies of mature multinational firms.

Purpose and Scope of the Research

With these considerations in mind, this study will focus on the following research issues:

1. the types of sourcing strategies used by foreign multinational firms for marketing products in the United States,
2. the conditions which affect the choice of sourcing strategy,
3. the conditions under which the mode of entry used for a product introduction fails to follow the pattern described by the international product cycle model, and
4. the marketing performance of different sourcing strategies for the U.S. market.

Primarily, there are three objectives in this study. The first objective is to search for a better and fuller theoretical explanation of sourcing practices than the international product cycle model can offer. The literature suggests that the internalization theory developed as an extension of market imperfections theories casts better insight into the sourcing practices of multinational manufacturing firms. The second objective, therefore, is to analyze the sourcing practices of multinational manufacturing firms within the framework of the internalization theory, and to see to what extent the actual sourcing strategies deviate from the prediction of the product cycle model. Third, normative guidelines will be developed that will enable management of U.S. multinational firms to identify possibilities and limitations of global sourcing strategy.

The study emphasizes the intra-firm aspects of the multinational firms' sourcing strategy. As such, it is limited to an examination of the international movement of components and products within the foreign multinational firms in servicing the U.S. market. The implications of this study apply both to managers of multinational firms involved in sourcing decisions and equally to public policy makers of nations affected by the sourcing practices by multinational firms.

Organization of the Study

The next chapter (Chapter 2) traces a historical development of various theories of international trade and foreign direct investment which have culminated into consolidated theories of management of the multinational firms on a global basis. Several hypotheses are developed regarding the global sourcing strategies by the multinational firms.

Chapter 3 discusses research design and methodology used in this study. A typology of sourcing strategies is discussed which helps identify various sourcing practices in use. A sampling procedure and the major profile of European and Japanese multinational firms participating in the study are explained. The variables employed in testing the hypotheses are also elaborated upon in this chapter.

Chapters 4 and 5 offer the crux of this study. Chapter 4 deals first with the identification of various sourcing

practices in actual use by the foreign multinational firms, and then with the empirical examination of the hypotheses. Chapter 5 presents managerial, public policy, and methodological implications. Finally, this chapter concludes with the discussion of the limitations of this study and recommendations for future research.

Notes

1. Levitt, Theodore, "The Globalization of Markets," Harvard Business Review, 61, May-June 1983, 92-102.

2. 1985 AMA Educators' Conference held in Washington, D.C., August 11-14, 1985.

3. See, for example, United Nations Center on Transnational Corporations, Transnational Corporations in World Development, Third Survey, New York: United Nations, 1983.

4. See Servan-Schreiber, J.J., The American Challenge, New York: Atheneum, 1968; Barnet, R.J., and R.E. Muller, The Global Reach, New York: Simon and Schister, 1974.

5. See, for example, Vernon, Raymond, "The Location of Economic Activity," in Economic Analysis and the Multinational Enterprise, Dunning, John H., ed., London: George Allen and Unwin, 1974, 89-114; Vernon, Raymond, "The Product Cycle Hypothesis in a New International Environment," Oxford Bulletin of Economics and Statistics, 41, November 1979, 255-267; and Dunning, J.H., and R.D. Pearse, The World's Largest Industrial Enterprises, New York: St. Martin's Press, 1981, 21-23.

6. Perlmutter, Howard V., "The Tortuous Evolution of the Multinational Corporation," Columbia Journal of World Business, 4, January-February 1969, 9-18.

7. Porter, Michael, Chapter 13, "Competition in Global Industries," in his Competitive Strategy, New York: The Free Press, 1980.

8. Dunning and Pearse, 1981, p. 139.

9. United Nations Center on Transnational Corporations, 1983, p. 160.

10. United Nations and Social Council, Transnational Corporations in World Development: A Re-Examination, U.N. Commission on Transnational Corporations, Fourth Session, May 15-26, 1978, p.221.

11. Business International, The Effects of US Corporate Foreign Investment 1970-1980, New York: Business International Corporation, May 1982.

12. Grunwald, Joseph, and Kenneth Flamm, The Global Factory: Foreign Assembly in International Trade, Washington, D.C.: The Brookings Institution, 1985, 12-24.

13 Grunwald and Flamm, 24-34.

14. _____ and _____, 24-34.

15. Ghosh, Avijit, and Susan P. Douglas, "Pricing and Production Location Decisions in International Markets," 1985 AMA Educators' Proceedings, Chicago: American Marketing Association, 1985, 173-177.

16. See, for example, Moxon, Richard W., Offshore Production in the Less Developed Countries--A Case Study of Multinationality in the Electronics Industry, Bulletin No. 98-99, New York University Institute of Finance, July 1974; United Nations and Social Council, 1978; United Nations Center on Transnational Corporations, 1983; Dunning and Pearse, 1981; Grunwald and Flamm, 1985.

17. Buckley, Peter J., "The Foreign Investment Decision," Management Bibliographies and Reviews, 5, 1979, p. 192.

18. Fayerweather, John, International Business Management: A Conceptual Framework, New York: McGraw-Hill, 1969, p. 142.

19. See, for example, the following articles by Raymond Vernon, the originator of the international product cycle model: "International Investment and International Trade in the Product Cycle," Quarterly Journal of Economics, 80, May 1966, 190-207; "The Location of Economic Activity," in Dunning, ed., 1974; "The Product Cycle Hypothesis in a New International Environment," Oxford Bulletin of Economics and Statistics, 1979, 255-267.

20. See, for example, Moxon, 1974; de la Torre, Jose, "Foreign Investment and Export Dependency," Economic Development and Cultural Change, 23, October 1974, 133-150.

21. Moxon, 1974, p.61.

22. Tsurumi, Yoshi, The Japanese Are Coming: A Multinational Interaction of Firms and Politics, Cambridge, MA: Ballinger, 1976, p. 32; _____, Multinational Management, 2nd ed., Cambridge, MA: Ballinger, 1984, 98-99.

23. See the last two articles by Vernon cited in footnote 19.

24. Vernon, 1974, p. 93.

25. _____, 1979, 260-261.

26. _____, 1979, p. 293.

27. Cateora, Philip R., International Marketing, 6th ed., Homewood, IL: Richard D. Irwin, 1987, 588-592.

28. Keegan, Warren J., Multinational Marketing Management, 3rd ed., Englewood Cliff, NJ: Prentice-Hall, 1984, 253-254.

CHAPTER II

SURVEY OF THE LITERATURE

Introduction

Global sourcing strategies represent the highly complex nature of the operations of today's mature multinational firms. One such sourcing example is worth citing here:

> When a Minnesota farmer buys a tractor from his Ford Motor Company dealer, he probably does not know that its transmission was built by the firm's Belgian employees and its engine cast in Ford's English plant. His Canadian neighbor is probably no more aware that the Massey-Ferguson Industries Ltd. tractor he owns was assembled in the United States with engines shipped from Massey-Ferguson's English subsidiary, transmissions from its French facility, and axles from its Mexican affiliate.[1]

There are many other pieces of anecdotal evidence of various sourcing practices like the one cited above, which are beyond the textbook description of trade and foreign direct investment. Indeed, various sourcing practices encompass aspects of both trade and foreign direct investment combined in an elaborate way.

The uniqueness of global sourcing strategies is not limited to their complexities, however. International trade theorists have long ignored the fact that global sourcing strategies increasingly involve the international movement of components and finished products (i.e., trade), not between independent parties in different countries, but between affiliated foreign firms established through direct

investment by the multinational firm and between these affiliates and the parent firm itself. Trade theories implicitly assume that the transactions are accomplished by independent parties located in different countries.

Drucker recently coined the term "production sharing" to describe the complex nature of sourcing practices encompassing both trade and foreign investment aspects, although a theoretical linkage between trade and foreign direct investment is not clear.[2] Trade theories appear pertinent to global sourcing strategies as sourcing practices involve the intercountry movement of components and products which is generally dictated by comparative advantage. On the other hand, theories of foreign direct investment and multinational enterprise will be appropriate in explaining why the trade of components and products is carried out between affiliates including the parent firm rather than between independent external transactors.

In fact, trade theories and foreign direct investment theories originated quite independently of each other. Relevant theories of trade and foreign direct investment will be reviewed in the sections that follow. The literature review will reveal that, by the early 1970's, trade and foreign direct investment theories were converging, and even overlapping, since the same variables were increasingly used, though expressed differently, to explain both trade and investment involvement. In this

theoretical convergence can be found a better explanation of global sourcing strategies by mature multinational firms.

International Trade Theories

Developments prior to International product Cycle Model

Orthodox neo-classical theories of international trade are highly formal and rigorous general equilibrium models usually involving two factors of production, two goods, and two countries.[3] Trade is said to take place when one country has a comparative advantage in some product over the other country. The Heckscher-Ohlin factor endowment model, for example, asserts that each country will at least partially specialize in the production of goods which require relatively large amounts of resources with which it is comparatively endowed, and that it will export some of those products in exchange for other products which require relatively large amounts of resources with which it is comparatively poorly endowed.[4] Through the course of trade, not only product prices but also resource prices are expected to equalize internationally. Therefore, firms in relatively capital-rich countries, such as the United States, tend to export capital-intensive products (e.g., machinery) and import labor-intensive products (e.g., textiles). The Heckscher-Ohlin model has established the strong normative principle that free trade will maximize the welfare of all trading nations.

Though the logic of the Heckscher-Ohlin model was extremely appealing to many economists, Leontief's findings in 1953---later known as the Leontief Paradox---challenged the validity of this model.[5] Using the input-output table of the United States, he found that the United States had exported in 1947 products that contained relatively more labor than capital and imported products that contained relatively more capital than labor. Later, numerous attempts were made by many trade theorists to dispel the Leontief paradox, mostly to no avail. Other trade theorists, attacking the restrictive assumptions[6] of the Heckscher-Ohlin model, have since developed a number of post-Heckscher-Ohlin models of international trade: a) human skills theory, b) scale economy theory, c) technological gap theory, d) preference similarity theory, and e) international product cycle theory.

Human skills theory is a "neo-factor" derivative of the Heckscher-Ohlin factor endowment model in which the concept of skilled labor is introduced in place of labor.[7] "Neo-technology" models of scale economy theory[8] and technological gap theory[9] eliminated from the Heckscher-Ohlin model the assumptions of the identical production functions with constant returns to scale in a perfectly competitive market. On the other hand, preference-similarity theory[10] dropped the assumption of identical consumer preferences. Although each of these theories attacked the overt limitations of the Heckscher-Ohlin model

from various angles, none of them allowed for the interdependence of production relationships between countries that originates from the multinational firm's ability to transfer knowledge among its operating affiliates in various countries. These revisions to the Heckscher-Ohlin model failed to explain the phenomenon of direct investment in relation to international trade.[11] Finally, as an extension of technological gap theory, and equally influenced by preference similarity theory and others, a dynamic model of international product cycle was formulated by Vernon in his 1966 article.[12] The international product cycle theory not only replaced the Heckscher-Ohlin static model but offered a whole new paradigm to the dynamics of international trade in manufactured products.

The International Product Cycle Model---Linking Trade and Foreign Direct Investment

The product cycle model is successful in allowing for the phenomenon of overseas direct investment in relation to international trade, stressing successive stages of product standardization through time and space. The product cycle model incorporates into a dynamic framework the timing of innovation, the effects of scale economies and the roles of ignorance and uncertainty in influencing trade patterns.

In particular, the product cycle theory suggests three product stages: new product, maturing product, and standardized product. The input requirements change over the life cycle of a new product. At the new product stage,

much highly skilled labor or entrepreneurial skills are required for the development and improvement of the product. Because of the temporary monopoly position that the new product enjoys, the innovating firm extends its geographical horizon by exporting it to the countries that are or are becoming similar in income and demand characteristics to the innovating country. As the product moves toward maturity, marketing efforts at product differentiation and capital outlays for mass production become dominant. The development of local competitors overseas may form a threat to the innovator, which will create an incentive for the innovator's foreign direct investment in order to maintain the status quo of its competitive position abroad. Finally, at the standardized product stage, the technology stabilizes and the product enjoys general consumer acceptance. This leads to mass production which largely requires raw materials, capital, and unskilled labor. As the product matures and becomes standardized, comparative advantage tends to shift from an advanced country relatively abundant in skilled labor to a developing country abundant in unskilled and cheap labor.

Vernon further explained why the United States had a comparative advantage based on technology and innovation in the early stages of the product cycle. First, the United States had a high per-capita income by international standard--a fact which created a unique consumption pattern and a favorable market for new products. Second, the

development of new products required much skilled labor which was relatively abundant in the United States. Third, because of the U.S. high labor costs and the alleged tendency of innovations to be labor-saving, there was a greater incentive for innovation in the United States. Finally, the large and high-income U.S. market made it possible for the U.S. firm to reap economies of scale associated with the development and marketing of new products.

Wells confirmed that the United States had the advantage in exporting high-income consumer durable goods.[13] Gruber and others also gave modest empirical support in the U.S. trade for the product cycle model.[14] Parry found the relevance of the product cycle model in explaining U.K. pharmaceutical products.[15] Despite intrinsic difficulties associated with the cross-sectional studies applied to the essentially longitudinal nature of the product cycle model, these studies and others generally support the usefulness of the product cycle model in explaining patterns of trade in manufactured products.

In speculating on the last stage of the product cycle model in which the developing countries start exporting the mature products, Vernon alluded to the possibility of a multinational firm engaging in a mass production in these developing countries with unskilled and cheap labor of "standardized high-volume components".[16] He did not, however, elaborate on intra-firm trade by multinational

firms. Wells, Vernon's close associate, also failed to mention the intra-firm trade.[17] Despite the product cycle model's contribution in linking international trade with direct investment abroad, it still fails to explain the interdependence among affiliates of the multinational firm.

In the light of a dramatic rise in the 1970's in European and Japanese foreign direct investment, Vernon revised his views on the product cycle model in 1974.[18] Conceding that innovations of different sorts will originate from different countries (i.e., the United States, European countries, and Japan---all advanced industrialized countries), he noted that the innovations of European and Japanese firms have tended to place greater emphasis on land- and material-saving objectives, compared with those of U.S. firms which have traditionally been labor-saving in nature.[19]

International product Cycle Model as an Oligopolistic Theory

The Product Cycle Model Revised

The revised product cycle model[20] consists of three stages: innovation, maturity, and senescence in oligopolistic competition. In the revised model, Vernon emphasizes the oligopolistic competition rather than the product *per se*, but the essence of the revised model is very much like that of the original model, except for 1) allowing innovations of a different nature to originate from different countries subject to their respective

environmental conditions, and 2) recognizing the importance of global sourcing strategy under certain circumstances.

The innovating firm reaps monopoly profits and faces inelastic demand for its new product. The new product is initially exported from the home country, rather than manufactured by the innovating firm's foreign subsidiary located in foreign markets, for the following reasons: 1) since the firm's principal market tends to be at home, it may prefer a home location to minimize transport costs; 2) product specifications and production techniques for new products are typically in flux; and 3) the inelasticity in the demand for new products makes the innovator relatively indifferent to production costs.[21] It is a decline in the innovator's control over the technology of the product or production process, a standardization of the product and the process, and an increase in the demand elasticity for the product, that will eventually lead the innovating firm to establish production facilities overseas.

Once innovational leads are eroded, the basis for the competitive advantage of the multinational firm shifts from product innovation to the barriers to entry generated by scale in production, transportation, and marketing. The overriding concern at this stage becomes the stable oligopolistic conditions achieved through a) pricing conventions (e.g, base-point pricing and other coordinated pricing strategies), b) hostages and alliances (e.g., concentration of production in the main marketing areas of

rival firms, partnerships in joint ventures, and "follow-the-leader" overseas investment).

Finally, when the technology and consumer tastes become widely known and standardized, straightforward classical considerations of costs and prices become increasingly important. In some instances, the multinational firms may further try to differentiate their products to prolong their life. In some other cases, products may become "commodities" as in the case of computer silicon chips. The senescent oligopolies will evolve into competitive industries as innovation, product differentiation, and other barriers are eroded.

At this senescent oligopolistic competition, Vernon alludes to the importance of global sourcing strategy, as follows:

> (M)anufacturing enterprises often feel uneasy about relying on independent suppliers for important components or materials, even if there are many suppliers and they are reasonably competitive. If the components or materials must be produced according to strict quality standards or close delivery schedules in order to command the highest market price, reliance on an uncontrolled supplier--especially an uncontrolled supplier in a foreign country--can be uneconomic. This is a factor that pushed enterprises to establish their own overseas producing facilities.
>
> The propensity is even stronger if the buying enterprise is already multinational in structure. In that case, it may well be familiar with the operating conditions of some countries where the materials or components can be produced at low case; indeed, it may already have manufacturing subsidiaries in such a country. When that is so, the parent may elect to enlarge the scale and function of the existing subsidiary so that it can supply materials or components to other parts of the system. Beginning about the middle of the 1960s, multinational enterprises farmed out the manufacture of all sorts of components to their foreign subsidiaries, components

> which eventually would find their way into assembled electric razors, toys, automobiles, radios, and many other products in which costs and price were of importance.[22]

The difficulty of his argument is that global sourcing will not become part of the multinational firm's corporate strategy until its innovational lead which created entry barriers to competition has been eroded. The next section will address the reasons why the product cycle's view of global sourcing at the senescent stage is limited in scope.

Limitations of the Product Cycle Model

First of all, the stage-like evolution of foreign involvement may well represent the initial international expansion of many firms. For mature multinational firms with subsidiaries established in various parts of the world and with well-developed global market scanning capabilities, however, it may be too naive to assume that new products will always be developed initially to meet the needs of their home markets and later find their way to foreign markets. The naivete of this assumption has been strongly challenged in favor of global approach by Porter, Sheth, and Wind.[23] Their global approach which seeks similarities in markets points out the importance of simultaneously evaluating both home and foreign markets in search for similarities, while the product cycle model sees foreign markets as a logical market extension only after the domestic market.

Second, in the accelerated pace of new product introduction abroad and the shortening of innovational lead time,[24] it may not be feasible for these firms to wait until senescence arrives necessitating them to compete on the basis of costs and prices in the classical context of international trade. From the experience effect perspectives, Rapp strongly maintains that the migration of competitive advantage from the original innovator to follower firms is not just a function of changing factor costs and demand patterns, but it is "the innovator's failure to control this competitive evolution by pursuing a global strategy aimed at dominating a set of product-market segments."[25] The experience curve effect is widely known to result from learning by doing, technological improvements, and economies of scale.[26] The experience curve has also been seen as a key element of industry structure which forms an entry barrier to competition.[27] In this context, the multinational firm will also benefit by pushing for global markets from the beginning, rather than gradually widening its business horizons into foreign markets.

Third, as Giddy points out, the generation of MBA-trained businesspeople weaned on the product cycle theory have learned to anticipate, accelerate, and outsmart it.[28] Then it becomes possible for shrewd competitors to "ride over an international product cycle" in Tsurumi's words.[29] Thus, it is all the more apparent that the product cycle

model has lost much of its explanatory power, given the nature of global competition.

Finally, the product cycle model addresses itself to foreign direct investment as a "defensive" measure by which to protect the foreign markets that the firm initially serviced through exporting from its home country. In other words, the model fails to see the multinational firm's need for "offensive" direct investment in establishing a global sourcing system to simultaneously service various markets in the world, thereby rapidly accumulating experience in manufacturing and marketing. Leroy, for example, noted that both defensive and offensive motives for investing abroad repeatedly came out in empirical studies: a defensive motive as a response to a threat such as fear of losing a market or being "forced to invest to maintain a market," and an offensive motive as a response to a favorable actual or potential market.[30] In one study, "favorable market or source of supply" was generally the most important motive, whereas "forced to invest to maintain a market" was the seventh in importance, regardless of type of industry.[31]

Vernon himself is aware of the limited explanatory power of the product cycle model for the following reasons: 1) today's multinational firms are no longer uninformed about conditions in foreign markets, and 2) the environmental differences that existed in the 1960's have been reduced to trivial dimensions, especially among the advanced industrialized countries.[32]

Despite these limitations, the product cycle model has offered innovative thinking in that it considered both the ownership factors (e.g., technology, scale economies, and product differentiation) of the firms and the locational factors (e.g., labor cost, productivity, and transportation cost) of countries in a sequential fashion. Yet, the afore-discussed limitations point to the need for more general theories which incorporate both ownership and locational factors into a common analytical framework as does the product cycle model and also which address themselves to the limitations of the product cycle model.

Internalization Theory

Developments prior to Internalization Theory

The second strand of research that incorporates both the ownership and locational factors has been known as internalization theory of multinational firms. This theory is a reinterpretation and extension of the Coase theorem, strongly influenced by market imperfections theories of foreign direct investment that preceded the development of internalization theory.

As early as 1937, Coase questioned from a perspective of institutional economics why a "firm" exists at all. In his terminology, firms are "islands of conscious power" in an "ocean of unconscious cooperation."[33] In other words, it is more economically efficient to establish a firm for internal transactions than to rely on a price mechanism in

the marketplace since there is a cost of using the price mechanism. The Coase theorem argues that the firm will "internalize" (i.e., bring under its own ownership and control) transactions if there are imperfections in the market mechanism. The idea of the Coase theorem is not utterly new in the marketing literature. The Coase theorem has been used in the channel of distribution literature to explain the vertically coordinated channel relationship in such terms as a "domesticated marketing channel"[34] or "unified governance structure".[35]

Internalization theory in the international business literature attempts to explain why the multinational firm generally prefers direct investment abroad over exporting. Since global sourcing by the multinational firm encompasses intra-firm trade among its affiliated firms including the parent firm, trade theories alone cannot adequately explain the domain of global sourcing practices. It has yet to be explained why trade transactions are carried out, not by independent parties, but by the affiliates of the multinational firm. Foreign direct investment is a means by which to establish foreign affiliates such as joint ventures and subsidiaries abroad. In this context, internalization theory offers a link between trade theories and theories of foreign direct investment.

First of all, market imperfections theories of foreign direct investment will be reviewed as they preceded and strongly influenced internalization theory. Dunning

stresses that internalization theory pinpoints the essential and common characteristics of market imperfections theories (i.e., intangible asset and industrial organization theories).[36] In fact, internalization theory extends the market imperfections theories by focusing more on imperfections in intermediate product markets rather than on final product markets.[37]

Market Imperfections

Market imperfections theories are the attempts to identify the distinctive features of foreign direct investment in terms of ownership factors of multinational firms. The focus on market imperfections originated in Stephen Hymer's dissertation in 1960.[38] Based on Bain's notion of barriers to entry, Hymer asserts that firms undertaking direct investment abroad operate in an imperfect market environment, and that they must possess some special, non-marketed, ownership advantages over their local competitors in the countries in which they operate. His thesis has been further refined and theoretically extended by such theorists as Kindleberger, Caves, Johnson, and Knickerbocker.

These theories are composed of intangible asset and industrial organization approaches to the causes of foreign direct investment.[39] Intangible asset theories argue that the possession of some intangible asset is a major determinant of foreign direct investment. The intangible

assets have been identified as differentiated products, proprietary knowledge, and superior management and organizational skills. On the other hand, industrial organization theories attempt to explain the flow of foreign direct investment as an extension of oligopolistic rivalries in the investing countries to the world markets. The advantages of the multinational firm over its competitors, domestic or foreign, lie in the structural elements, or entry barriers, of industries in which they operate. However, the distinction between these approaches becomes blurred once one recognizes that the intangible assets of the firm in an industry will create entry barriers to its potential competitors. Kindleberger, for example, identifies barriers to entry, some of which arise from the firms' tangible and intangible assets:

a) imperfect competition in product market arising from product differentiation, special marketing skills, administered pricing, etc.,

b) imperfect competition in factor markets arising from the existence of patented or unavailable technology, of discrimination in access to capital, of differences in managerial skills,

c) internal and external economies of scale, and

d) government limitations on output or entry.[40]

Caves[41] emphasizes the multinational firm's ability to differentiate products as its main advantage over its local competitors in foreign markets, and states as follows:

> Here is the link to the basis for direct investment: The successful firm producing a differentiated product controls knowledge about serving the market that can be transferred to other national markets for their product

> at little or no cost. ---The proposition probably holds even for differentiation created through advertising; not only does the advertising to some extent spill across national boundaries, but also successful differentiation through advertising is normally accompanied by some accumulation of unique knowledge about marketing the product and adapting it to users' tastes.[42]

On the other hand, Johnson[43] delivers a proposition that the essence of the multinational firm is its ability to transfer advanced technology and managerial knowhow. He argues that knowledge, with a high cost of its production and little or no marginal cost of its dissemination, presents a dilemma. Efficiency in use requires that it be free, but incentives for the creation of such knowledge require granting of a temporary monopoly profit to the firm. Therefore, direct investment takes place when the firm can earn the maximum profit out of ownership and control of its technology and knowhow because of the imperfections in the market for them.

Within the same market imperfections framework, Knickerbocker[44] casts a more behavioral perspective on an oligopolistic reaction in which he observed the "bunching" or "follow-the-leader"-type direct investment abroad by U.S. multinational firms as defensive oligopolistic strategy.

Thus, the market imperfections approach has offered a variety of factors leading to foreign direct investment, but no single hypothesis offers a sufficient explanation of foreign direct investment. As explained previously, however, Vernon has been most instrumental in bringing these imperfections or oligopolistic factors into his revised

product cycle framework, in which he sees them as sequential entry barriers that firms in various stages of the product cycle may create to insulate themselves from competition.[45] In other words, the innovating firms are characterized by their high technological intensity, usually measured by their R & D expenditures. Once they become mature-product firms, they tend to seek product differentiation, economies of scale in production and distribution, and legal protection such as government licensing to protect themselves. Finally, when they become senescent standardized-product firms, they will resort to global sourcing production in low-cost locations.

While the market imperfections approach attempts to explain the decision to undertake foreign direct investment and its initial entry into a host country, it fails to explain the intra-firm workings of the parent company and its affiliates abroad. The market imperfections approach fails to answer <u>where</u> the multinational firm's ownership advantages are exploited, while the trade theories do not explain <u>why</u> the firm undertakes direct investment abroad instead of exporting there from its home base.

Recently, internalization theory has been developed to synthesize both trade and foreign direct investment aspects in a common framework. It casts new light on both aspects of the multinational firm's activities, and, in particular, the inner-workings of global sourcing strategy.

Internalization Theory

As an international extension of the Coase theorem, internalization theory has been resurrected in the literature most systematically by Buckley and Casson,[46] refined by Casson,[47] and further extended by Dunning.[48] Threads of its development can be observed in writings by Williamson,[49] Alchian and Demsetz,[50] McManus,[51] Gray,[52] Murray,[53] and Brown.[54]

Buckley and Casson explain the growth and activities of multinational firms with three postulates: a) firms maximize profit in a world of imperfect markets; b) when markets in intermediate products (both physical components and intangible production knowledge) are imperfect, there is an incentive to bypass them by creating internal markets, thereby bringing under common ownership and control the activities which are linked by the market; and c) internalization of markets across national boundaries generates multinational firms.[55] They mention four major groups of factors relevant to the internalization decision: a) industry-specific factors (i.e., the nature of the product and the structure of the external market), b) region-specific factors (i.e., the geographical and social characteristics of the regions linked by the market), c) nation-specific factors (i.e., the political and fiscal relations between the nations concerned), and d) firm-specific factors (i.e., the ability of the management to organize an internal market).[56]

Buckley and Casson's analysis, however, focuses on the industry-specific and firm-specific factors with the other factors receiving relatively ancillary attention. On the other hand, Dunning in his eclectic approach seeks to integrate the internalization theory with equal emphasis on all the factors identified by Buckley and Casson, and reformulate these factors as ownership-specific endowments of the firm (or ownership factors, for short) and location-specific endowments of countries (or locational factors, for short).[57] Dunning has thereby brought both ownership factors and locational factors into a proper perspective in relation to the motives of internalization.[58] In this regard, Dunning's eclectic approach to internalization theory is more encompassing in its treatment of the various factors than Buckley and Casson's, although it has been recognized that there is essentially no substantial difference between Dunning's eclectic theory and Buckley and Casson's internalization theory.[59] The ownership factors generally encompass Buckley and Casson's industry- and firm-specific factors, while the locational factors represent their region- and nation-specific factors.

Eclectic Interpretation of the Internalization Theory

Hirsh incorporated the ownership factors of the firm and the locational factors of countries into a theoretical two-country framework in which exporting and direct investment are alternative means of servicing a foreign

market.[60] Based on a cost minimization principle, he evaluated the interaction among production costs in home and foreign countries, firm-specific knowhow and other intangible proprietary assets, export marketing costs, and differential costs of controlling foreign production. He concluded that exporting should be a preferred mode of servicing the foreign market if costs of domestic production and export marketing costs (including transport costs and tariffs) are smaller than the costs of doing business abroad. Direct investment, on the other hand, should be undertaken if total costs of foreign operation are smaller than hypothetical costs of a local licensee firm utilizing the licensor's ownership advantages in production abroad and smaller than costs of exporting from home. In a summary, direct investment should be a preferred mode if the firm has internal differential advantage which is not easily available to local competitors. An empirical support of this notion was offered by by Buckley and Dunning.[61]

Further extending the Hirsh model, Dunning lays out three postulates of the internalization theory regarding foreign direct investment, as follows:

1) It possesses net ownership advantages vis-a-vis firms of other nationalities in serving particular markets. These ownership advantages largely take the form of the possession of intangible assets, which are, at least for a period of time, exclusive or specific to the firm possessing them.

2) Assuming condition (1) is satisfied, it must be more beneficial to the enterprise possessing these advantages to use them itself rather than to sell or lease them to foreign firms, i.e., for it to internalize its advantages through an extension of

its own activities rather than externalize them through licensing and similar contracts with independent firms.

3) Assuming conditions (1) and (2) are satisfied, it must be profitable for the enterprise to utilize these advantages in conjunction with at least some factor inputs (including natural resources) outside its home country; otherwise foreign markets would be served entirely by exports and domestic markets by domestic production.[62]

These postulates boil down to his eclectic hypothesis that the propensity of a firm to engage in international production is dependent both on the extent to which the firm possesses its ownership advantages and on the locational attractions of its endowments compared with those offered by other countries.[63] This hypothesis was partially supported in his 1980 study.[64]

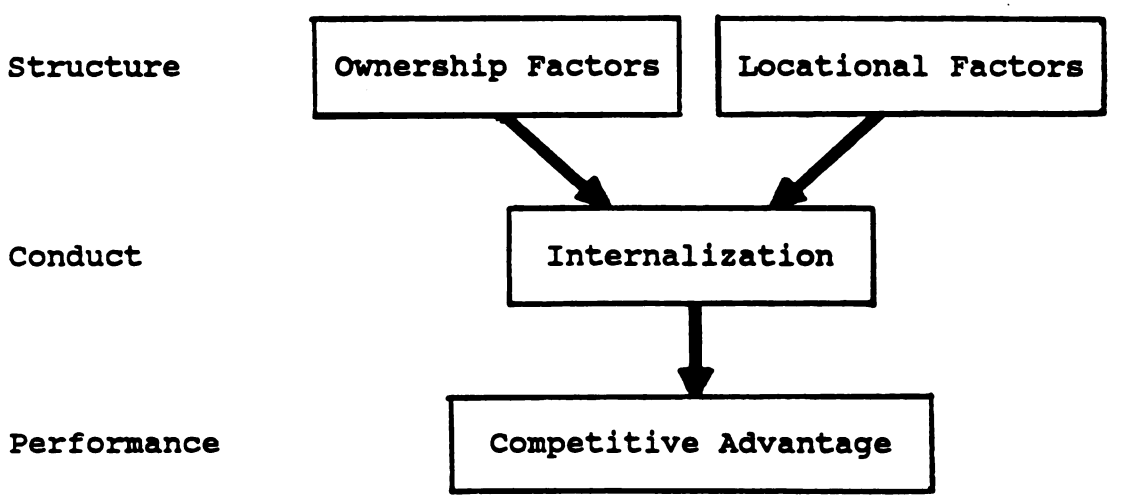
Indeed, Dunning's eclectic approach to the internalization can be likened to the industrial organization framework predicated on the concepts of market structure, market conduct, and market performance. He appears to see ownership-specific and location-specific advantages as "structural", while internalization as a behavioral manifestation of the firm (i.e., market conduct). Finally, as explained previously, internalization enhances the competitive advantages of the firm and the allocative efficiency in the world of imperfect external markets. The allocative efficiency is, however, outside of the scope of this research. Therefore, based on Dunning's and others' identifications of ownership, locational, and

internalization variables, the framework can be reformulated as shown in Figure 1.

Internalization theory views that multinational firms promote a more efficient distribution of scarce resources on a global scale. Since they are capable of overcoming distortions in the economic system by internalizing imperfect markets. Imperfect markets stem from barriers to the transfer of technology, tariff and non-tariff barriers, inappropriately valued exchange rates, and information imperfections.[65] Therefore, it is reasonable to expect that, in the context of global sourcing strategy, labor-intensive operations such as production and assembly of standardized components will be increasingly transplanted to developing countries which are abundant in such labor (i.e. low-cost production). It should also be expected that a low-technology multinational firm will locate its production facilities in labor-abundant regions of the world to service various markets including its own home country. If its new technology or product is expected to become obsolete in a short period of time, labor-intensive operations in developing countries will also be increasingly used by the multinational firm. It is because high expenditure on capital-intensive operations at home or in other developed countries would take a longer period to break even than would technology or product obsolescence to occur.[66] Of course, the transfer costs, including tariffs, non-tariff barriers, and transportation costs, would generally hamper

FIGURE 1

ECLECTIC APPROACH TO INTERNALIZATION



(LEGEND)

Ownership Factors:

1) firm size
2) management and organizational expertise
3) technological advantage (proprietary knowledge)
4) product differentiation
5) capital availability and access to capital

Locational Factors:

1) market size
2) production costs
   - labor costs/labor productivity
   - extent of production economies possible
   - infrastructure (commercial, legal, and transportation)
3) transfer costs
   - transport costs
   - tariffs, and non-tariff barriers
4) political factors
   - taxation
   - incentives/policies toward foreign direct investment

Internalization Factors:

1) market clearing factors
   - avoidance of transaction and negotiation costs
   - implementation of price discrimination
2) contractual factors
   - buyer uncertainty about nature and value of knowhow and technology, if sold
   - control of supplies and conditions of sale of inputs including proprietary technology
   - control of interdependent activities
   - seller's need to protect quality of products
3) intervention factors
   - avoidance and exploitation of government intervention (e.g., tariffs, quotas, price controls, tax differentials)

Competitive Advantages:

1) market share
2) profitability
3) growth

the extent of components sourcing and assembly operations in locations other than a market country. However, if components sourcing and assembly are internalized or performed by internal members of the multinational firm, they would manipulate transfer prices in such a way as to reduce or nullify the actual incidence of tariffs and non-tariff barriers of the importing market country, excepting transportation costs. Therefore, the following hypotheses are established:

H_{1a}: The higher the extent of standardized components in the product and the higher the degree of technological change, the higher the extent of components sourcing and assembly in developing countries relative to other locations.

H_{1b}: The higher the transfer costs, in particular, transportation costs, the higher the extent of components sourcing and assembly in the market country (i.e., the United States) relative to the non-market countries.

These hypotheses address the broad link between locational factors and internalization factors in Figure 1. The first hypothesis casts light on the role of sourcing and assembly in developing countries, often referred to as "offshore production". For standardized components and short-lived technological innovations, the firm will benefit by not investing in its own capital-intensive manufacturing facilities at home, since the firm can take advantage of inexpensive, yet productive, labor in developing countries by either operating less-capital-intensive (i.e., more labor-intensive) facilities there or having local subcontractors or subsidiaries perform the task of

components production and assembly. Transfer costs, however, usually limit the extent to which the components sourcing and assembly in non-market locations (including the developing third-party location) are used. The second hypothesis deals with the significance of the transfer costs in global sourcing.

Horizontal and Vertical Aspects of Global Sourcing

Internalization theory also provides insight into both horizontal and vertical integrations of the multinational firm. The horizontal and vertical aspects of integration are an inseparable part of the sourcing strategy of many multinational firms,[67] probably except for firms in extractive and basic materials industries in which vertical integration is crucial from procurement of raw minerals all the way to marketing of basic materials, such as petroleum, steel, and aluminum.

Horizontal integration refers to a geographical market expansion of the multinational firm's activity in the same or similar line of businesses or product-markets. Internalization theory argues that the multinational firm geographically extends its marketing activities in many countries as it internalizes the production and exploitation of knowledge within its corporate system. The core of the theory for horizontal expansion of the multinational firm is the notion that knowledge is a public good freely available within the firm and can be transmitted at low cost, and,

therefore, that the exploitation of proprietary knowledge is logically an international operation.

Vertical integration, with which this research is concerned, is an important factor in multi-plant sourcing by the multinational firm operating in various countries. First, both highly specific technology with little alternative use and new technology create an incentive for the firm to internalize the market, since their economic rent or value to the firm generally exceeds the market value or the value set by external market transactions. Second, there are economies of internalizing long-term contracts through "governance structure" as this structure internalizes the transactions and thereby substantially reduces the risk of supply disruptions and sudden price change.[68] Third, as Casson has recently pointed out, the management of the quality specification of components that the firm uses for its manufacture is important in order to retain the goodwill and confidence of consumers in its products, for consumers are usually not informed sufficiently of the quality of components---a market imperfection in consumer information.[69] Finally, there are economies gained through transfer price manipulations among the internal members of the multinational firm. As pointed out previously, the multinational firm manipulates its transfer prices so as to reduce or nullify the incidence of ad valorem tariffs and non-tariff barriers, to exploit international differentials in corporate income tax rates,

and to bypass exchange controls or exchange rate fluctuation.[70]

It is probably Dunning who offers the most succinct managerial explanation of the theory, as follows:

> (T)he international competitiveness of a country's products is attributable not only to the possession of superior resources of its enterprises but also to the desire and ability of these enterprises to internalize the advantages resulting from this possession; and servicing a foreign market through foreign production confers unique benefits of this kind (p. 402). ---It is not the orthodox type of monopoly advantages which give the enterprise an edge over its rivals--actual or potential--but the advantages which accrue through internalization, for example, transfer price manipulation, security of supplies and markets, and control over use of intermediate goods. It is not surplus entrepreneurial resources per se which lead to foreign direct investment, but the ability of enterprises to combine these resources with others to take advantage of the economies of production of joint products (p. 408).[71]

Therefore, focusing on the vertical aspects of sourcing strategy, the following hypotheses are established:

H_{2a}: In the aggregate, the extent of internal components sourcing and internal assembly is positively related to the novelty of technology, the specificity of technology, the risks of components supply disruptions and price change, and the quality specification of major components of the product.

H_{2b}: The extent of internal components sourcing is positively related to the extent of transfer price manipulation.

These hypotheses address the link between ownership factors and internalization factors as depicted in Figure 1. Hypothesis 2a casts light on the extent to which the firms brings proprietary technology and knowhow under ownership and control in servicing foreign markets. Technology in a

broad sense consists of patented knowledge, unpatented trade secrets, and proprietary methods of production. A firm which developed a new technology or a highly specialized technology with little alternative use has an incentive to maximize its economic return through internal use rather than licensing it to potential competitors. On the other hand, disruption in components supply, unexpected price change, and irregular components quality can constitute an enormous risk to the smooth flow of vertically integrated multi-plant operations, unless tightly managed. The importance of transfer pricing on the extent of internalization in multi-plant operations is addressed separately in Hypothesis 2b, since the transfer price manipulation is the result, rather than the cause, of the extent of internal components sourcing.

Contrasting International Product Cycle Theory with Internalization Theory

Product cycle theory and internalization theory have much in common in that both theories incorporate ownership-specific factors of the firms and location-specific factors of countries. However, product cycle theory assumes that different kinds of factors are important in different stages of the product cycle, while internalization theory flatly admits the importance of all kinds of factors in any, if at all, stage of the product. According to product cycle theory, technological innovation is the major variable which is most likely to be effectively exploited in the home

market. Therefore, the first introduction of the new product in foreign markets, usually, advanced industrialized foreign markets, will be through exports from the home base or domestic sourcing of the product. Internalization theory, however, hypothesizes that the method of servicing foreign markets depends not simply on ownership factors (e.g., technological innovations and product differentiation) and on locational factors (e.g., the relative market size of foreign countries, production costs and transfer costs), but also on internalization motives such as avoidance of import tariffs and assurance of the most profitable use of innovations.

Product cycle theory characterizes the mature-product firms as concerned with competitive stability. Oligopolistic stability or status quo is to be maintained through mutual cross-investment and "follow-the-leader"-type investments among competitors. Internalization theory views oligopolistic competition as a typical market imperfection or failure. Therefore, the above oligopolistic actions in pursuit of competitive status quo can be seen as internalizing actions whereby competitors' market power is neutralized.

Finally, the senescent stage of the product cycle in which globalized sourcing strategy is important as the firm's entry barriers, such as high technology level and product differentiation, have been eroded to the extent where cost-based competition is a typical pattern.

Internalization theory also claims that standardized components and products will be sourced in labor-abundant countries for world markets, and that the importance of reliable supplies of components will push the firms to establish their overseas producing facilities. This last point is also emphasized by Vernon.[72] In other words, the predictions of the product cycle and the internalization theories will converge as products and production processes become standardized. Even in the case of the innovative product stage, it is conceivable to see the product cycle argument as a special case of the internalization theory. Since innovations usually respond to the needs of the domestic market, European and Japanese multinational firms will develop new products in their countries for their domestic markets, respectively. This line of reasoning, however, ignores some equally important locational factors of foreign markets, such as their relative market size (or more broadly, market attractiveness) and relative production costs. Product cycle theory argues that, initially, new products will be exported to advanced foreign markets, and that, if threatened by local competition, then the multinational firms will respond to it by establishing manufacturing facilities in the foreign markets so as to reduce transfer costs and to better cater to the needs of those markets. This stage-based evolution of product cycle theory is very parochial in its view, however, in contrast with internalization theory, for the former assumes that

innovations are made in response only to domestic needs. In the era of global markets, today's multinational firms are unlikely to behave as product cycle theory predicts. Therefore, the following hypothesis is established:

> H_3: The likelihood of assembly in the United States, as opposed to non-U.S. locations, increases as U.S. market attractiveness and transfer costs increase.

This hypothesis focuses on locational factors of the U.S. market (See Figure 1 on pp. 38-39). The attractiveness of the U.S. market will primarily determine the extent to which the firm will commit its capital expenditure for local manufacture in the United States. On the other hand, the transfer costs, including transportation cost, U.S. tariffs and non-tariff barriers, tend to motivate the firm to locate sourcing facilities in the United States.

Finally, product cycle theory attributes initial competitive advantage to the "newness" or "innovativeness" of the product. According to this theory, competitive advantage will decline as the product becomes standardized. On the other hand, internalization theory holds that competitive advantage is rather a function of the extent of internalization. Internalization refers to both the internal transfer and utilization of new product or technology and the internal utilization of various locational factors abroad in such a way as to enhance the competitive strength of the firm on a global scale. However, components can be assembled into a final product anywhere by the multinational firm, depending on the extent

of transfer costs. In other words, assembly locations are rather a function of transfer costs than a determinant of the product's competitive strength or marketing performance. Therefore, the following hypothesis is established:

> H_4: The competitive strength (or marketing performance) of a product is positively related to the extent of internal components sourcing and the extent of internal assembly, but not related to assembly locations.

This hypothesis follows directly from the previous hypotheses, linking the extent of internalization to the product's competitive strength as shown in Figure 1 (pp. 38-39). According to internalization theory, the extent of internalization indicates the extent to which the firm has reduced imperfections, that is, inefficiency in global sourcing.

To recapitulate, internalization theory can provide better insight into the workings of mature multinational firms than product cycle theory. Product cycle theory may be more suitable in explaining the evolution of start-up firms about to "take off" into foreign markets, while internalization theory appears more useful in explaining the corporate management of mature multinational firms already operating in many foreign countries. A historical development of theories of international trade, foreign investment, and management of the multinational firm is summarized in Table 1. Although internalization theory is promising for a study of global sourcing strategy, available

TABLE 1

A SUMMARY OF THEORIES OF INTERNATIONAL TRADE, FOREIGN DIRECT INVESTMENT, AND MANAGEMENT OF THE MULTINATIONAL FIRM

	FACTORS	FACTOR ENDOWMENT	HUMAN SKILLS	SCALE ECONOMY	PREFERENCE SIMILARITY	TECHNOLOGY GAP	INTERNATIONAL PRODUCT CYCLE	MARKET IMPERFECTIONS	INTERNALIZATION
COMPARATIVE ADVANTAGE (LOCATION FACTORS)	Capital	+	-	?	-	?	+	?	+
	Labor	+	-	-	-	-	+	-	+
	Skill (Exogenous)	-	+	-	-	?	+	-	+
	Scale Economy (Exogenous)	-	-	+	-	-	+	?	+
	Market Demand	-	-	-	+	+	+	-	+
	Transfer Costs	-	-	-	-	-	+	-	+
COMPETITIVE ADVANTAGE (OWNERSHIP FACTORS)	Firm Size	-	-	?	-	?	+	+	+
	Technology	-	-	?	-	+	+	+	+
	Scale Economy (Endogenous)	-	-	?	-	?	+	+	+
	Product Differentiation	-	-	-	-	-	?	+	+
	Managerial Skill	-	-	-	-	-	+	+	+
LATERAL INTRA-FIRM TRANSACTION		-	-	-	-	-	-/+	+	+
TYPES OF TRANSACTION		inter-industry	inter-industry	inter-industry	intra-industry	inter- & intra-industry	intra-industry trade & investment	intra-industry investment	intra-industry trade & investment

(NOTE) "+" indicates the factor considered in a theory, and "-" indicates the factor not being considered.
"?" indicates the factor is implicitly assumed to exist.

empirical studies testing this theory have several shortcomings and limitations that require scrutiny.

Critique of Past Studies and Extensions

Within the framework of internalization theory, a number of empirical studies have appeared with modest success. Unlike studies of foreign direct investment and those of trade, these empirical studies generally consider the relative importance of foreign production vis-a-vis exporting. The difficulty and limitations of these studies will be discussed in this section. The discussion will make clear the importance of this study as it extends the existing research stream and also better capture the domain of internalization theory.

Dunning's empirical studies focus on the ownership and locational factors which will determine the competitive advantage of U.S. multinational firms in foreign markets and the extent to which foreign production is undertaken relative to exporting. His 1980 study of the involvement of U.S. firms in seven countries and in fourteen manufacturing industries had two overriding hypotheses:

1) The competitive advantage of a country's enterprises in servicing foreign markets is determined both by the ownership advantages of these enterprises, relative to those of enterprises of other nationalities, and the location advantages of the countries in which they produce, relative to those of other countries.

2) The <u>form</u> of the involvement, or participation, will essentially depend on the relative attractiveness and/or production of the endowments of the home and host countries.[73]

Despite the elaborate conceptualization of the internalization model, his choice of some of the indicator variables and interpretation of his findings were somewhat misleading. For example, he found that market size relative to the U.S. market and skilled employment ratio in foreign countries are positively related to U.S. involvement, whether the involvement is exporting to or local manufacturing in the foreign countries. It is not clear, however, why the skilled employment ratio in foreign countries positively influence U.S. exports to those countries, although high skill level is understandably a factor which can be internalized through local manufacturing. In some cases, relative wages in foreign countries, a proxy for cost determinant of foreign production, were found to be positively related to the share of U.S. exports in total sales in these foreign countries. No reason was given for this relationship, but it can be speculated that high wages indicate high per capita income, rather than cost determinant of foreign production, which manifest itself in increase in imports, that is, increase in exports from the United States.

Another shortcoming of his study, of which he was aware, was that the market was assumed to be supplied either by exporting from the United States or by U.S. firms' local production in the market, and therefore, that the

possibility of third-party country sourcing was completely assumed away. In fact, third-party sourcing, especially in developing countries, by U.S. multinational firms has recently received an increasing amount of attention as it affects the domestic employment and economic structure in the United States[74] as much as it affects the multinationals' global competitiveness.[75] Finally, the unit of analysis in his study being manufacturing industries, the inner workings of multinational firms could not be detected, and the very fact that different technological intensity leads to different sourcing patterns was not at all considered.

In another study originally published in 1979, he paid some attention to technological intensity of different industries in testing internalization theory, and elaborated on the manifestations of ownership and locational factors using the concept of revealed comparative advantage.[76] However, this study as well assumed away the possibility of third-party country sourcing.

On the other hand, Buckley and Pearse analyzed the sourcing policies of the world's largest multinational firms from the perspectives of foreign production and exporting including intra-firm trade.[77] They found that research-intensive firms are more overseas-production oriented than non-research-intensive firms, once internal exports (U.S. parent companies' exports to their foreign affiliates) are excluded. In a way, this finding appears to contradict the

expectations of the international product cycle regarding offshore production in mature to senescent industries. In addition, their statistical analysis revealed little discernible difference in the extent of foreign production between research-intensive and non-research-intensive firms. This again presents a dilemma to the prognosis of the product cycle model that research-intensive firms tend to export from their home bases while non-research-intensive firms tend to resort to worldwide sourcing. Similar findings can also be observed in Dunning and Pearse's painstakingly collected data on the world's largest industrial firms,[78] and in Buckley's analysis of a subsample of firms collected in the former's data base.[79]

It is largely due to the aggregate nature of the data used, however, that it is difficult to delve into the inner workings of multinational firms. These studies which used relatively aggregate data could not provide an precise picture of the sourcing strategies used by multinational firms.

On the other hand, the Harvard Multinational Enterprise Project was instrumental in the 1970's in developing a product-level data base in order to gain a more precise and comprehensive picture of the international spread of manufacturing for U.S. products.[80] Out of this data base came a study of international technology transfer, supportive of internalization theory.[81] It has found that, among others, the probability of internal transfer of

technology is higher, a) the greater the experience of internal transfer in the past, b) the closer the cultural proximity of transferee countries, c) the larger the R & D involvement in the technology, and d) the newer and more radical the technology. Teece[82], Wilson[83], and Sleuwaegen[84] also studied the effect of new technology on the extent of internal transfer, with a similar finding.

These studies constitute one step forward in studying the sourcing strategy of multinational firms at the product level, but still fail to encompass the fact that the multinational firms are increasingly engaged in sourcing practices involving more than parent and affiliates in foreign markets. There is ultimately no substitute data base available in any published form for micro-level studies of actual sourcing practices within particular firms and industries.[85] Yet, these studies and other published reports cited in Chapter 1 have provided some insight into the extent of global sourcing strategies of multinational firms. Based on a typology of sourcing strategies developed by Kotabe and Omura,[86] this study will complement the existing studies by introducing a four-country framework for sourcing strategies at the product level. The typology of sourcing strategies will be explained in the next chapter.

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CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

Research Objectives

The purpose of this study is two-fold. The first phase of the study is exploratory. An exploratory research is important in the area of global sourcing as its stage of theoretical and conceptual development corresponds to the early stage of development of marketing thought. In the early 1910's, L.D.H. Weld literally "followed shipments of butter and eggs and other commodities from the country shipper in Minnesota through the wholesalers, jobbers, and retailers to New York, Chicago, and other cities, ---(and) analyzed each item of expense involved in this passage through the channels of trade."[1] He chronicled the distribution of agricultural commodities in a book titled "Marketing of Farm Products",[2] which then made a major contribution to the body of marketing thought. As Zaltman, et al. also pointed out, exploratory research is to:

> clarify existing ideas about relations among concepts and perhaps discover new hypotheses. This is useful when the state of available evidence is internally contradictory or insufficient to permit the statement of formal hypotheses or the detection of new concepts.[3]

For the exploratory phase of this study, a typology of global sourcing strategies developed by Kotabe and Omura[4] is adopted for identifying sourcing strategies in actual use. A typology is useful in systematically identifying the whole gamut of alternative sourcing strategies as a feasible

set. Kotabe and Omura's typology encompasses four fundamental decisions related to sourcing strategies: 1) production locations, 2) phases of production, 3) internal/external components sourcing, and 4) internal/external assembly.

Of course, there are other important dimensions in the analysis of the global sourcing strategy of the firm. Clearly such considerations regarding the procurement of raw materials in the case of backward integration, inventory management on a global scale, the flow of capital funds, the availability of managerial skills, and the organizational structure are vital to operational success in the global sourcing strategy. However, these are of secondary importance for the objectives of this study. Kotabe and Omura's typology is reproduced in Table 2. A brief explanation of each of these dimensions is in order.

1. Production Locations

Production locations are classified into four groups. Products, including components, can be made in a "home" country, in a "market" country, or in some other "third-party" country. "Third-party" refers to any location other than a "home" country and a "market" country. "Third-party" countries are further divided into "developed third-party" and "developing third-party" countries. This last subclassification is useful such that "developed third-

TABLE 2

TYPOLOGY OF GLOBAL SOURCING STRATEGIES

PHASES OF PRODUCTION / LOCATION	COMPONENTS SOURCING		FINAL ASSEMBLY	
HOME	INTERNAL	C_{11}	INTERNAL	A_{11}
	EXTERNAL	C_{12}	EXTERNAL	A_{12}
MARKET	INTERNAL	C_{21}	INTERNAL	A_{21}
	EXTERNAL	C_{22}	EXTERNAL	A_{22}
DEVELOPED THIRD	INTERNAL	C_{31}	INTERNAL	A_{31}
	EXTERNAL	C_{32}	EXTERNAL	A_{32}
DEVELOPING THIRD	INTERNAL	C_{41}	INTERNAL	A_{41}
	EXTERNAL	C_{42}	EXTERNAL	A_{42}

(NOTE) More precise measurements are introduced so as to supplement the significance of domestic, market, and third-party country sourcing patterns. The following notations are used for this purpose, with subscripts 1 and 2 for internal and external sourcing, respectively:

$w = w_1 + w_2$ = percentage of the value of the components sourced domestically,

$x = x_1 + x_2$ = percentage of the value of the components sourced in a foreign market country,

$y = y_1 + y_2$ = percentage of the value of the components sourced in a developed third-party country, and

$z = z_1 + z_2$ = percentage of the value of the components sourced in a developing third-party country,

where $w + x + y + z$ = 100 percent,

$w_1 + x_1 + y_1 + z_1$ = total percentage of the value of the components sourced internally, and

$w_2 + x_2 + y_2 + z_2$ = total percentage of the value of the components sourced externally.

party" countries tend to be capital-abundant, while "developing third-party" countries tend to be labor-abundant.

2. Phases of Production

The production process is divided into intermediate products (or components, for short) and final processing or assembly. A manufactured final product is composed of components which have gone through final processing or assembly. Final processing may be a more appropriate term for operations involving a significant change in the structure of components used, such as chemical processing. On the other hand, final assembly may be more apt to describe operations involving a building-up of components, such as automobile assembling. For the sake of simplicity, the terms--"components" and "final assembly"--is used thereafter.

3. Internal/External Sourcing

The third dimension of the concept of global sourcing strategy is a make-or-buy decision with respect to components. A clarification has to be made regarding internal vs. external sourcing. If a components transaction is of an 'intra-firm' kind, it can be deemed 'internal' sourcing. Transactions between a parent company and its wholly-owned subsidiaries are clearly 'intra-firm'. Transactions between the parent company and its majority-owned affiliates are also fairly clearly of an 'intra-firm'

kind.[5] The degrees of intra-firmness become more uncertain, however, in the case of the company's transactions with 50/50 or minority-participated joint ventures abroad, with local firms under a management contract or licensing agreement, or even with local firms which have longstanding mutually trustworthy customer relationships. Therefore, some arbitrariness is bound to be necessary for the definition of 'intra-firm' or 'internal' sourcing. This study adopts the commonly used criterion that the relationship is "internal" if an affiliate is majority-owned, and "external" otherwise.[6]

4. Internal/External Assembly

The last dimension of the concept of global sourcing has to do with who performs the assembly of components into final products. The same dichotomy is introduced here as in the internal vs. external sourcing decision-making. The internal assembly refers to the assembly performed by an "internal" member of the multinational firm, whereas the external assembly refers to the assembly performed by a firm "external" to the multinational firm. As in the case of the internal/external sourcing, the intra-firmness of the assembly is a matter of degree, and is subject to the same question as to what constitutes "internal" members. Therefore, the same operational criteria is used for the dichotomization of "internal" and "external" members.

To recapitulate, there are four alternative production locations, two phases of production, two alternative ways of components sourcing, and two alternative ways of final assembly. To facilitate the identification of all possible alternative sourcing strategies, the dimensions and the levels of each dimension have been converted to a simple notation, $C_{ij}A_{kl}$. This system identifies 64 possible alternative sourcing strategies in all.

In fact, there are many other variants of these sourcing strategies so far identified. In the case of a simple exporting abroad of a product internally manufactured at home, suppose that 60% of necessary components in value were sourced in-house while the remaining 40% came from a third-party country or countries. If a situation like this arises, the majority rule will be applied to any of the dimensions of global sourcing strategy. Hence, this sourcing pattern will be classified as $C_{11}A_{11}$, as a majority of components were sourced within the firm at home.

As also shown in Table 2, Kotabe and Omura further offer more precise measurements to supplement the significance of domestic, market, and third-party country sourcing patterns. The sourcing ratios, denoted by w_m, x_m, y_m, and z_m, where m = 1, 2, help further clarify the variations existing within each of those alternative sourcing strategies.

The typology of global sourcing strategies at the product level is an important research tool for two

significant reasons. First, while relatively aggregate intra-firm trade data, such as the trade statistics published by the U.S. Department of Commerce, are useful as general guides to the extent and nature of intra-firm trade, there has been no substitute at all for micro-level studies of sourcing practices within particular firms.[7] Second, the typology deals with sourcing practices in a four-country framework involving a home country, a foreign market country, a developed third-party country, and a developing third-party country. Available intra-firm trade statistics, however, deal with trade in the traditional "between-two-countries" framework. One such example is trade statistics on U.S. imports from U.S. majority-owned foreign affiliates. Obviously, Kotabe and Omura's typology adds much more to realism.

The second phase of the study examines these sourcing strategies from the perspective of the internalization theory. The literature suggests that the internalization theory is more appropriate than the international product cycle theory in explaining the global sourcing strategy of mature multinational firms. For this phase, the hypotheses established in the previous chapter will be tested.

Hypotheses

H_{1a}: The higher the extent of standardized components in the product and the higher the degree of technological change, the higher the extent of components sourcing and assembly in developing countries relative to other locations.

H_{1b}: The higher the transfer costs, in particular, transportation costs, the higher the extent of components sourcing and assembly in the market country (i.e., the United States) relative to the non-market countries.

H_{2a}: In the aggregate, the extent of internal components sourcing and internal assembly is positively related to the novelty of technology, the specificity of technology, the risks of components supply disruptions and price change, and the quality specification of major components of the product.

H_{2b}: The extent of internal components sourcing is positively related to the extent of transfer price manipulation.

H_3 : The likelihood of assembly in the United States, as opposed to non-U.S. locations, increases as U.S. market attractiveness and transfer costs increase.

H_4 : The competitive strength (or marketing performance) of a product is positively related to the extent of internal components sourcing and the extent of internal assembly, but not related to assembly locations.

The Sample

Since the unit of the analysis in this study is the product, a two-stage sampling was employed. In the first stage, a sample of majority-owned affiliates of the European and Japanese multinational firms operating in the United States was selected. The second stage involved requesting the participating firms to identify and select for this study one major product marketed in the United States over the past 10 years.

The International Directory of Corporate Affiliations 1985/1986 (IDCA, hereafter) was used as a sampling frame for this study.[8] The IDCA is an extensive directory listing

over 27,500 European and Japanese firms, including parent firms and foreign affiliates. It includes the names of parent firms and their affiliates, their approximate annual sales, size of employment, and SIC lines of businesses they are in (classified by SIC code). Based on the information available in the IDCA, a number of criteria were established for the selection of a sample of firms used in this study, as follows:

1. The parent firm is headquartered in a Western European country or in Japan. Since well over 80% of the foreign multinational firms are of the Western European and of the Japanese origin, they represent by far a significant portion of international business.[9]
2. The parent firm's major line of business is in manufacturing which belongs to selected industrial categories used in the Fortune International 500 Directory (electronics; transportation equipment; scientific and photographic equipment; motor vehicles and parts; aerospace; computers and office equipment; and industrial and farm equipment). A common characteristic of these industries is that a manufactured final product is made up of easily identifiable and separable components. Manufacturing operations involving a significant change in the structure of components used, such as in chemical processing, are excluded because of the inherent difficulty in defining what constitutes components.

3. The affiliate of a foreign multinational firm operating in the United States is more than 50% owned by the foreign parent firm (Such affiliates are hereafter referred to as subsidiaries). The 50% ownership rule is to differentiate between internal and external affiliates to a parent firm.
4. The subsidiary is in the same or similar lines of businesses as its foreign parent firm. Businesses unrelated to the parent firm's major line of business tend to operate independently of the parent. Since a major objective of this study is to establish sourcing linkage among internal members of the multinational firm, the unrelated businesses are excluded.
5. The subsidiary directly reports to its foreign parent firm. If the U.S. subsidiary is a holding company operating as a regional headquarters, then subsidiaries which directly report to the U.S. holding company are selected.
6. If a foreign parent firm has no more than three U.S. subsidiaries, the largest subsidiary (in terms of annual sales, or employment, whichever is available) is selected. For a foreign parent firm with more than three U.S. subsidiaries, approximately 1/3 the number of subsidiaries are selected. However, a maximum number of subsidiaries selected from a multinational firm does not exceed five. (In a pretest, a more restrictive selection rule was used.)

7. If any of the criterion information (2 - 6) is missing, the subsidiary that meets the largest number of criteria is selected.

Based on these criteria, 250 foreign subsidiaries --175 European and 75 Japanese--were identified.

A pretest of the research instrument and several phone calls to the respondents assured that the chief executive officers of the subsidiaries were fairly knowledgeable of and sometimes directly responsible for their sourcing decisions. Therefore, a personal letter was sent to the chief executive officer of each subsidiary, requesting him (her) to identify one of its major products which has been and still is marketed in the United States over the past ten years, regardless of the origin of the product. It was hoped that the high level of cooperation and the credibility of information could be assured by obtaining top management's participation in the study.

The Research Instrument

The research instrument consisted of a cover letter and a questionnaire, which are shown in Appendices A and B, respectively. The cover page of the questionnaire included an explanation of the purpose of the study and instructions which also served as a cover letter. Expecting that the questionnaire could be forwarded by the chief executive officer to the person or department in charge of sourcing decisions, a separate cover letter was enclosed. To elicit

a response to the questionnaire, the cover letter strongly pointed out the importance of a high response rate in order to improve the usefulness of the survey's results to the participants and to the interested scholars alike. To further encourage the firm's participation, it was promised both on the cover letter and on the cover page of the questionnaire that a copy of the research results would be sent to the participant upon completion.

Other than the above-mentioned inducements, various techniques were employed to increase the response rate. The cover letter and the questionnaire were enclosed unfolded in a 9'x12' Manila envelope. Along with the research instrument, a preaddressed stamped reply envelope was enclosed as a matter of courtesy for the return of the questionnaire. Based on the summary findings by Kanuk and Berenson on the response rate literature,[10] multiple followups appear to be the most potent technique for increasing the response rate. They also pointed out the mixed results of the effect of personalization and preliminary notification on the response rate. Therefore, only the followup technique was employed in this study. A followup reminder letter (as shown in Appendix C) was sent to the sample two and a half weeks after the first mailing of the questionnaire. Two weeks after the first wave of a followup reminder, the second wave of a followup reminder (essentially, the same as in Appendix C) was sent to the sample. Finally, about a three weeks after the second

followup reminder, the third and last wave of a followup reminder and an identical copy of the questionnaire was sent to the firms in the sample which had not responded. Since many of the participants in the survey requested a copy of the research results, those firms were identified and therefore excluded from the mailing list. Table 3 shows the distribution of questionnaire returns. Although no chi-square analysis cannot be made due to the expected cell frequency constraint, the four batches of returns are fairly similar across all the variables in the questionnaire. Therefore, it is assured that the pattern of questionnaire returns did not introduce any measurable systematic error.

Profile of the Respondents

Out of a sample of 250 foreign subsidiaries of the European and Japanese origin operating in the United States ---200 European and 75 Japanese subsidiaries---, 75 responses were received. Four of these returns were later deemed unusable, resulting in 71 usable returns with the effective response rate of 28.4%.

Tables 4 through 9 present a profile of the firms participating in the study. As shown in Table 3, the majority of participating firms are wholly-owned subsidiaries or divisions operating in the United States. Table 5 shows 80% of respondents are in the cadre of top

TABLE 3

DISTRIBUTION OF QUESTIONNAIRE RETURNS

Technique Used	Returns
Questionnaire Mailed	10
First Reminder (2 1/2 weeks later)	25
Second Reminder (2 weeks later)	16
Third Reminder with a Questionnaire (3 weeks later)	24
TOTAL	75

TABLE 4

POSITION OF PARTICIPATING FIRMS WITHIN THE MULTINATIONAL CORPORATE SYSTEM

	Number of Firms		
Position	European	Japanese	Total
Corporate Headquarters	6	6	12
Division	10	3	13
Subsidiary	26	19	44
Not Specified	0	1	1
TOTAL	43	28	71

TABLE 5

TITLE OF RESPONDENTS REPRESENTING THE FIRMS

Title	Number of Respondents
President	20
Vice President	6
Vice President-Marketing, Sales, or Advertising	10
Vice President-General Manager	6
Vice President-Finance; Controller or Treasurer	5
Vice President-Business Development	1
Vice President-Manufacturing	1
Director	2
Director of Corporate Planning	6
Materials/Purchasing Manager	3
Marketing Research Manager	2
Administration Manager	2
Accounting Manager	2
Product Business Manager	1
Plant Manger	1
Executive Staff	2
Not Specified	1
TOTAL	71

TABLE 6

NATIONALITY OF THE PARENT HEADQUARTERS OF PARTICIPATING FIRMS[1]

Country	Sample n	Sample %	Actual Distribution %
EUROPEAN	43	60.6	61.7
Belgium	1	1.4	1.6
Denmark	1	1.4	0.5
Finland	3	4.2	1.8
France[2]	1 1/2	2.1	9.4
Italy	1	1.4	2.6
Netherlands	0	0.0	2.6
Sweden	5	7.0	5.2
Switzerland	6	8.5	3.4
United Kingdom[2]	9 1/2	13.4	20.5
West Germany	11	15.5	13.9
Not Specified	4	5.6	-
JAPANESE	28	39.4	38.3
TOTAL	71	100.0	100.0

[1]Individual numbers may not sum to the subtotals shown due to rounding.
[2]One respondent reported a dual nationality.

TABLE 7

DISTRIBUTION OF PARENT FIRMS
BY 1985 ANNUAL SALES VOLUME

Number of Firm Sales Volume	European	Japanese	Total
$5 billion and over	6	17	23
$2.5-$4.9 billion	6	2	8
$1.5-$2.4 billion	7	3	10
$1.4 billion and less	22	5	27
Not Specified	2	1	3
TOTAL	43	28	71

NOTE: Due to insufficient information on the sales volume reported in the directory, the actual distribution of parent firms by annual sales volume can not be reported.

TABLE 8

INDUSTRY CLASSIFICATION OF PARTICIPATING FIRMS

Number of Firm	European			Japanese			Total		
	Sample		Actual Distribution	Sample		Actual Distribution	Sample		Actual Distribution
Industry	n	%	%	n	%	%	n	%	%
Metal Products	5	11.6	12.8	1	3.6	3.8	6	8.5	10.7
Electronics	5	11.6	23.1	18	64.3	43.4	23	32.4	26.7
Transportation Equipment	3	7.0	6.4	0	0.0	7.5	3	4.2	4.6
Motor Vehicles & Parts	1	2.3	21.8	1	3.6	7.5	2	2.8	26.0
Aerospace	1	2.3	7.7	0	0.0	0.0	1	1.4	3.8
Scientific & Photo Equipment	3	7.0	2.6	0	0.0	3.8	3	4.2	2.3
Computers & Office Equipment	5	11.6	9.0	5	17.9	26.4	10	14.1	9.2
Industrial & Farm Equipment	12	27.9	17.9	1	3.6	7.5	13	18.3	16.8
Not Specified	8	18.6	-	2	7.1	-	10	14.1	-
TOTAL	43	100.0	100.0	28	100.0	100.0	71	100.0	100.0

NOTE: Individual percentage figures may not sum to 100 due to rounding.

TABLE 9

CLASSIFICATION OF PRODUCT TYPES

Number of Firm Product Type	European	Japanese	Total
CONSUMER PRODUCT			
1) Durable Product	11	18	29
2) Nondurable Product	3	1	4
INDUSTRIAL PRODUCT			
1) Durable Product	32	9	41
2) Nondurable Product	3	3	6
TOTAL	48	31	79

NOTE: Several products belong to both consumer and industrial products. Thus, due to such dual classifications, the total does not equal the number of respondents.

management, including presidents, vice presidents, and directors.

Tables 6 and 7 show the countries of parent firms and their 1985 global sales volumes. The level of involvement in U.S. operations by foreign multinational firms in our sample (measured by the number of manufacturing subsidiaries in the United States) closely matches the actual distribution of foreign multinational firms operating in the United States, with two major exceptions. First, there is no Dutch parent firm represented in our sample. Second, French firms appear somewhat underrepresented. A majority of European parent firms represented in this study had an annual sales of $1.4 billion or less in 1985, while a majority of Japanese parent firms had an annual sales of over $5 billion. As an analysis later indicates, the size of the multinational corporate system does not significantly affect sourcing strategy in any particular way. Hence, it may be said that this peculiar distribution of the sizes of parent firms does not bias the findings of the study. If the number of responses is indicative of the level of interest in global sourcing, it may be further conjectured that smaller European multinational firms and larger Japanese multinational firms are particularly interested in global sourcing.

Table 8 reveals the industry participation of European and Japanese multinational firms. Europeans are particularly competitive in industrial and farm equipment

industry, whereas Japanese command a strong competitive position in electronics industry, as amply evidenced in Fortune International 500.[11] As shown in Table 9, 88.6% of all the products subject to the study are classified as either consumer durable products or industrial durable products or both. 74.4% of the European durable products are for industrial use in contrast with 66.7% of the Japanese durable products being for consumer use. These statistics typify the commonly recognized business orientations by European and Japanese firms.

Evaluation of Information Received

First of all, top management's involvement in this study was extremely high, as shown in Table 5. Second, as some of the respondents indicated in our telephone conversations and also on the questionnaire, the issue of global sourcing would be a difficult area to research unless top management consciously engaged in utilizing resources on a global basis. Third, the level of respondents' interest in this study is very high, as evidenced by 66.2% of them requesting our research findings.

With the exception of four unusable questionnaires, most of the other questionnaires were complete. There were two cases, however, in which responses to 5-point itemized rating questions and matched dichotomous questions were inconsistent. In both cases, it was judged that the quantitative representations of components sourcing were

more internally consistent and, therefore, replaced its dichotomous representation.

Overall, the levels of management's professional caliber, knowledge, and cooperation were excellent. Although the reliability of responses is difficult to establish, the high level of management involvement suggests reliability may follow. Further, since the findings of this study have been requested by a large majority of respondents, the care and accuracy of their responses should follow.

The next section shows the operationalization of the variables used in this study. There are several strategically important variables and other variables that are not addressed by internalization theory but that might have some bearing on sourcing practices. These additional variables will be treated as control variables. Therefore, the hypotheses will be tested net of the effect of the control variables. The variables in the hypotheses will be explained first, followed by the control variables. A summary of the variables is also listed in Appendix D.

Operationalization of the Variables

Variables in the Hypotheses

1) Extent of Components Sourcing in Developing Countries (LDCSORC):

Respondents were asked to indicate what percentage of the total value of components originated from a developing country or countries for the manufacture of the product.

This is part of the question regarding components sourcing from various locations of the world.

2) Extent of Assembly in Developing Countries (LDCASBL):

Since there were only three cases in our sample of assembly in developing countries as part of a major sourcing strategy, no meaningful analysis could be made. However, the assembly in developing countries as part of a mix of multiple sourcing strategies was observed in seven cases. Given a mix of multiple sourcing strategies, this variable is operationalized as the percentage of the sales volume of the product sourced from developing countries.

3) Extent of Standardized Components in the Product (STANDARD):

Since it was possible for respondents to interpret the "standardizedness" of components in various and subjective ways, a common denominator needed to be established to achieve the comparability of responses. They were asked a hypothetical question composed of two parts on a four-point scale, "Ignoring transportation costs, approximately what percent of the total value of components in the product could be sourced from local firms in newly developing countries (NIC's) such as Taiwan, South Korea, and Brazil 1) without technical assistance from your firm, and 2) with technical assistance from your firm?". The responses to these two parts of the question are highly correlated ($r=.52$, $p=.0001$), but the correlation is much less than perfect. This is probably due to the fact that different

techniques involved in components production have different knowhow transferability, which is evidenced by the ratio of the two variances (.55 and 1.29, respectively; F=2.35, p<.0001). Initially, two ways of operationalizing this variable were considered. First, each part of the question was used separately. Second, a summated variable was developed by adding these two parts together. However, the second part of the question measured not simply the standardizedness of the product but also the transferability of knowhow in components production. The confounding of two constructs resulted in a large variance, which would make it difficult to find significant results. Therefore, the first part of the question is used hereafter as a measure of the extent of standardized components in the product.

4) Degree of Technological Change (TECHCH):

A two-item measure was used. First, respondents were asked whether there had been major technological changes in the product or in the methods of production since the introduction of the product in the United States. Second, they were also asked whether there would be major technological changes within the next three years. The two items were highly correlated (r=.81, p<.0001), and were added together to create TECHCH.

5) Extent of Components Sourcing in the United States (USSORC):

Respondents were asked to indicate for their major sourcing strategy what percentage of the total value of the components in the product was sourced within the United States.

6) Extent of Assembly in the United States (USASBL):

To establish comparability of this variable with LDCASBL, it is measured as the percentage of the product manufactured in the United States relative to each product's total U.S. sales volume.

7) Transfer Costs (TNTBARR, TRANCOST, and EXCHANGE):

Respondents were asked to rate the importance of 14 transfer-costs variables on a 5-point scale as a determinant of their current sourcing strategy. The variables considered were the stability of the exchange rates (EXCH1 for components sourcing, and EXCH2 for assembly decisions; in this order hereafter), U.S. import tariff levels on major components (TARFCOM1 and TARFCOM2), U.S. import tariff levels on the finished product (TARFPRD1 and TARFPRD2), U.S. non-tariff and legal barriers on importation of major components (NTBCOM1 and NTBCOM2), U.S. non-tariff and legal barriers on importation of the finished product (NTBPRD1 and NTBPRD2), transportation costs to the U.S. market for major components (TRANCOM1 and TRANCOM2), and transportation costs to the U.S. market for the finished product (TRANPRD1 and TRANPRD2).

A principal components factor analysis with varimax rotation was used to establish the dimensionality of these variables representing the transfer costs. As a result of a scree test, three factors were deemed sufficient and are shown in Table 10. It is clearly indicated in this table that these three factors represent the tariff and non-tariff barriers on imports, and the transportation costs to the U.S. market, and the stability of the exchange rates, respectively. Therefore, factor scores were computed to represent the factors (TNTBARR, TRANCOST, and EXCHANGE, respectively).

8) Extent of Internal Components Sourcing in the Aggregate (INTSORC1 and INTSORC2):

The extent of internal components sourcing in the aggregate, or more specifically, the percentage of the total value of components internally sourced for the manufacture of the product, was estimated in two ways. In this study, the components were classified into two groups: 1) the "standardized" components which could be sourced from newly industrializing countries without any technical assistance from the respondent's firm, and 2) the "major" components which could not. The first definition of the extent of internal components (INTSORC1) is inclusive of both standardized and major components, whereas the second definition (INTSORC2) contains only the major components.

First, respondents in the European sample (in the

TABLE 10

PRINCIPAL COMPONENTS FACTOR ANALYSIS
FOR VARIABLES REPRESENTING TRANSFER COSTS[a]

VARIABLES	FACTOR1	FACTOR2	FACTOR3
EXCH1	.2492	.1427	.7452
TARFCOM1	.7258	.3978	.2268
TARFPRD1	.7465	.2674	.1011
NTBCOM1	.7841	.2068	-.0349
NTBPRD1	.7499	.0840	.0597
TRANCOM1	.3167	.7369	.1811
TRANPRD1	.1628	.8040	.1646
EXCH2	.0419	.2802	.9316
TARFCOM2	.6620	.2797	.3728
TARFPRD2	.6786	.2096	.2715
NTBCOM2	.7073	.2534	.2847
NTBPRD2	.6965	.2006	.1899
TRANCOM2	.3637	.7954	.2306
TRANPRD2	.2567	.8559	.1500
EXPLAINED VARIANCE	4.5342	3.1597	1.9550

[a]Loadings exceeding .4 are underlined.

Japanese sample) were asked to indicate what percentage of the total value of components originated from each of the six (five) locations ($COMPO_i$, i=1,2,3,...). For the European sample, the components sourcing locations were the parent's country, other Western European countries, the United States, Japan, other developed countries, and developing countries. For the Japanese sample, the components sourcing locations were Japan, the United States, Western European countries, other developed countries, and developing countries. Next, the respondents were asked to indicate what percentage of the components sourced in each of the above locations was supplied by the internal members of the parent system (INT_i, i=1,2,3,...). The internal members were defined to include the parent firm, its fully-owned subsidiaries, and majority-owned affiliates and joint ventures. Therefore, the extent of internal components sourcing for the manufacture of the product in a major sourcing strategy (INTSORC1) was estimated as follows:

$$INTSORC1=\sum(COMPO_i) \times (INT_i),$$

where i=1,2,...,6 for the European sample, and

i=1,2,...,5 for the Japanese sample.

For each of the components sourcing locations, the percentage of the total value of components originating from it ($COMPO_i$) is multiplied by the percentage figure indicative of the extent of internal sourcing (INT_i). Then, the sum of these products indicates the overall percentage of components internally sourced ($INTSORC_i$).

To define INTSORC2, it was necessary to remove the value of the standardized components from INTSORC1. The percentage of the value of the standardized components in the product was previously estimated (STANDARD; See pp.87-88 for detail). Therefore, INTSORC2 was estimated as follows:

INTSORC2=INTSORC1 x (1-STANDARD).

9) Internal Assembly (INTASBL);

Respondents were asked whether, in the assembly or final processing location indicated as major in a mix of multiple sourcing strategies, more than 50% of the U.S. sales volume of the product was assembled or finally processed by their parent firm or other internal members of the parent system. The responses were dichotomous (Yes=1, and No=0).

10) Technology-Related Variables (KNOWHOW, PRDTECH, PATENT, and NEWPRD):

The "novelty" level of the product or technology has been defined loosely in the international business literature, and therefore, demands more precise definitions. traditionally been used loosely. The importance to the firm of new products is well addressed especially in the international product cycle model, in which "new" products are new both to the firm and to the market, and in which new products and innovative products are synonymous. However, many empirical studies of the product cycle model erroneously assume that new products are R & D-intensive. A mature product may be less R & D-intensive than it was as a

new product, but may still be more R & D-intensive than another new product. Therefore, these empirical studies which have found a positive correlation between R & D intensity and foreign sales do not necessarily support the validity of the product cycle model.[87] Besides, many studies have used aggregate industry data, which may not disclose strategic variations among different products. It is also possible that aggregate industry data do not reflect management's view of a product.[88]

Therefore, in order to gain more managerial insight into the novelty and importance of products to the firm, management's perception of what constitutes a "new" product should be introduced. Through his extensive interviews with executives, Leroy concluded that management's view of a new product relates to the degree of difference in a) technological sophistication and b) functional performance between the firm's present product and its previous product in the product line.[89] On the other hand, the Harvard Multinational Enterprise Project (HMEP) classifies new products into "innovations" and "imitations" based on the following two criteria: a) the impact of the product's technology on the market and b) the level of commercial success (measured by its cumulative sales volume in dollars).[90] In other words, Leroy defined the novelty of products from the firm's (or management's) perspective, while the HMEP from the market's viewpoint.

Based on the firm-referenced criteria and the market-referenced criteria, Leroy's measures were modified and used in this study. Respondents were asked to rate 10 questions regarding the novelty of product-related technology. Nine of the questions, measured on a 4-point scale, dealt with patents, trade secrets, and proprietary methods of production related to the manufacture of the product. Each of these technology-related variables was measured in terms of its level of novelty to the firm (PATENT1, SECRET1, and METHOD1), in terms of its level of novelty to the U.S. market (PATENT2, SECRET2, and METHOD2), and in terms of its specificity or applicability to other uses (PATENT3, SECRET3, and METHOD3). The last question, measured on a 3-point scale, dealt with the novelty of the product to the firm in terms of its functional performance in satisfying customer needs (PRODPEFRM).

To see whether the two technology-related constructs in the hypothesis (i.e., the novelty of technology and the specificity of technology) were viable constructs, a principal components factor analysis with varimax rotation was applied to these 10 product-related technology measures. As shown in Table 11, the results of the factor analysis after a scree test indicate that the specificity- and novelty-related measures did not form the original technology constructs in the hypothesis. Therefore, new constructs needed to be developed. METHOD1, SECRET2, METHOD2, SECRET3, and METHOD3 load heavily on Factor 1. All

TABLE 11

PRINCIPAL COMPONENTS FACTOR ANALYSIS
FOR NOVELTY-OF-TECHNOLOGY RELATED VARIABLES[a]

VARIABLES	FACTOR1	FACTOR2	FACTOR3	FACTOR4
PATENT1	-.0441	.7707	.6370	.0786
SECRET1	.3523	.7259	.1977	.0416
METHOD1	.4534	.7605	-.0177	.1277
PATENT2	.2459	.2882	.7092	.0202
SECRET2	.6830	.2008	.2674	.0211
METHOD2	.6282	.2965	.2136	-.0875
PATENT3	.3053	.0052	.7031	.0084
SECRET3	.8437	.0865	.2369	-.0745
METHOD3	.7485	.2058	.0960	-.0443
PRODPEFRM	-.0956	.1101	.0363	.9893
EXPLAINED VARIANCE	2.6275	1.9725	1.6262	1.0190

[a]Loadings exceeding .4 are underlined.

of the variables representing the novelty of product-related technology to the firm (PATENT1, SECRET1, and METHOD1) have heavy loadings on Factor 2. Factor 3 is represented by all of the patent measures (PATENT1, PATENT2, and PATENT3). PRODPEFRM is the only variable with a strong bearing on Factor 4. It is clear that the four factors represented the novelty of proprietary knowledge (KNOWHOW), the novelty of the product-related technology to the firm (PRDTECH), the value of patented knowledge (PATENT), and the novelty of the product performance to the firm (NEWPRD). Subsequently, factor scores were computed and used in this study to represent the newly developed technology-related constructs.

Based on internalization theory, it can be argued that the newer the patents and the newer the unpatented proprietary knowhow, the more likely the firm will internalize them as the external market mechanism often fails to determine their fair market value, especially their long-term benefit to the firm. The theory does not, however, explain how the novelty of the product performance to the firm affects the firm's decision on the extent of internalization. Therefore, no particular hypothesis is made of it.

11) Risks of Components Supply Disruptions and Price Change (DISRUPT and PRICECH):

Respondents rated a 3-point scale question as to whether the firm had good alternative sources of supply of major components for the product from independent suppliers

(DISRUPT), and also a 3-point scale question regarding the effect of unstable price (cost) fluctuations in the supply of major components on their manufacturing and marketing operations for the U.S. market in the long run (PRICECH).

12) Quality Specification for Major Components (QUALITY):

Similarly, respondents were also asked to indicate on a 3-point scale question how rigid their quality specification for major components of the manufacture of the product is.

13) Extent of Transfer Pricing Manipulation (TRNPRICE):

Transfer pricing refers to the value-determination process for transfers made within a multinational corporate system, as between the parent firm and its subsidiaries or among its subsidiaries. It generally encompasses the transfer of loans, services, and the use of tangible and intangible property.[12] In this study, however, the importance of transfer pricing is narrowly defined to reflect the value determination process for transfers of components between the internal members of the parent system.

Respondents were asked whether transfer prices for the components sourced from the internal members in various locations are generally set above (or below) the market price or at arms' length. Arm's length pricing refers to charging the internal members the same price any buyer outside the firm pays, and can be seen as reflective of the market mechanism. The importance of transfer pricing to the

firm is evident if intracorporate prices are set below or above the market price as a way of shifting profits between countries for purposes of reducing the corporate income tax on the parent system as a whole or reducing the incidence of the ad valorem tariffs on components and products, or both. Since the purpose of the hypothesis is to see how extensively transfer prices are manipulated for sourcing of components and products from various locations, a dummy variable was created to reflect the use of transfer pricing to the firm (IMPTRANS: transfer prices above or below the market price=1, and transfer prices at arms' length=0). As is recalled, the extent of internal components sourcing in various locations was estimated as $(COMPO_i)*(INT_i)$. The importance of transfer pricing in a sourcing strategy as a whole was, therefore, derived as follows:

$$TRNPRICE = \sum(COMPO_i) * (INT_i) * (IMPTRANS_i),$$

where i=1,2,...,6 for the European sample, and

i=1,2,...,5 for the Japanese sample.

If transfer prices other than at arms' length are used in internal components sourcing in all the locations, TRNPRICE will equal the percentage of the components sourced internally (INTSORC1). If, on the other hand, all transfers of internally sourced components are made at arms' length, then TRNPRICE will be zero.

14) Assembly Location (ASBLLOC):

Respondents were asked which country was the major location in which the product was assembled or finally

processed. In order to establish the comparability between European and Japanese cases, the three-location framework was developed. The first assembly location is the home location. For the European firms, the home location consists of their home country and other countries in the European Community. For the Japanese firms, it is Japan. The second assembly location is the United States as a foreign market to the European and Japanese multinational firms. Finally, the third assembly location is the developing country or countries.

15) U.S. Market Attractiveness (GROWTH, PROFIT, and CONCENTR):

Respondents were asked to rate on a 5-point scale the seven items measuring the U.S. market attractiveness. The measure was developed by Burke for a domestic context,[13] and was modified for the international context in this study. Based on multinational portfolio analysis argued by Channon and Jalland[14] and by Wind and Douglas,[15] U.S. market size and four-firm industry concentration were added to, and the stage of product life cycle was removed from the Burke's measure. Although Burke's 6-item market-attractiveness measure had a very high internal consistency (Cronbach's alpha=.92), the modified market-attractiveness measure in this study yielded a relatively low internal consistency (Cronbach's alpha=.44).[16] The items were U.S. sales volume relative to sales in the parent country (MKT1), average gross margin (MKT2), average gross pretax margin in dollars

(MKT3), four-firm concentration (MKT4), short-term future market growth rate (MKT5), long-term future market growth rate (MKT6), and prospect for 3-year future profit (MKT7).

A varimax-rotated principal components factor analysis after a scree test indicated that there were three discrete factors instead of one. The results of the factor analysis are shown in Table 12. MKT5 and MKT6 heavily load on Factor 1, thus representing the expected future market growth rate (GROWTH). MKT2, MKT3, and MKT7 have high loadings on Factor 2, bearing on the profitability in the U.S. market (PROFIT). Finally, Factor 4 represents MKT4, that is, the four-firm industry concentration (CONCENTR). Interestingly, MKT1 had a very low loading on any of the first three factors extracted. Factor scores were computed to represent the three market-attractiveness constructs in this study.

16) Relative Competitive Strength (PERFORM1 and PERFORM2):

Burke's measure of a business unit's relative competitive strength was deemed too broad to measure the relative competitive strength of the product. Therefore, the competitive strength of the product was operationalized somewhat narrowly, including its market share (PERFORM1), sales growth rate (PERFORM2), and pretax profitability (PERFORM3) relative to competition in the U.S. market. This multiple-item measure of competitive strength also follows the convention of various contingency approaches to marketing strategy, such as General Electric's Industry Attractiveness-Business Position Matrix and Shell

TABLE 12

PRINCIPAL COMPONENTS FACTOR ANALYSIS
FOR MARKET ATTRACTIVENESS MEASURES[a]

VARIABLES	FACTOR1	FACTOR2	FACTOR3
MKT1	.2219	.1335	.1214
MKT2	.0119	<u>.9563</u>	.0631
MKT3	.1212	<u>.6954</u>	.2481
MKT4	.1459	.1232	<u>.9826</u>
MKT5	<u>.9616</u>	.0810	.0980
MKT6	<u>.7877</u>	.0778	.0637
MKT7	.3475	<u>.4770</u>	-.0749
EXPLAINED VARIANCE	1.7512	1.6713	1.0650

[a]Loadings exceeding .4 are underlined.

International's Directional Policy Matrix.[17] Respondents rated these four items on a 5-point scale.

A correlation analysis indicates that PERFORM1 and PERFORM3 are significantly correlated (r_{13}=.38, p<.001), while PERFORM2 is independent of the others (r_{12}=.07 and r_{23}=.14, p>.20). A high positive correlation between PERFORM1 and PERFORM3 is consistent with the PIMS' finding.[18] Therefore, PERFORM1 is used to represent a relative market share, while PERFORM2 is used to represent a sales growth rate.

Factors Not Considered in the Hypotheses That Might Affect Sourcing Strategy: Control Variables

There are several strategically important and other variables that are not addressed by internalization theory but that might have some bearing on sourcing practices. Namely, strategically important variables are the size of the multinational firm, the international life cycle stage of the product, product adaptation and modification (i.e., model change), and market share objectives. The type of the product and the nationality of the firm (European vs. Japanese) may also have some bearing on sourcing practices. These variables are incorporated into each of the hypotheses as control variables.

1) Size of the Multinational Firm (SIZE):

The firm size may influence management's business horizon and scope, thereby affecting its sourcing practices on a global basis. It was measured by 1985 consolidated global sales volume of the multinational firm on a four-point scale, representing the Fortune International 500's largest 100, second largest 100, third largest 100, and so on.

2) International Product Cycle Stage (PLC):

Patterned after Well's definition of the international cycle stages,[19] the international product cycle is thought to have four stages on a global basis: new stage, growth stage, maturity stage, and decline stage. Respondents were asked to identify the life cycle stage of the product on a four-point scale question. Although the international product cycle is seen composed of discrete stages, it is rather a continual process in which these characteristics appear as time elapses and are somewhat arbitrarily defined as stages. Therefore, this variable was treated as a continuous variable.[20]

3) Product Adaptation (ADAPT):

As Keegan's international marketing paradigm shows, the adaptation of a product to the needs of a local market could be critically important.[21] However, it is not known whether the level and necessity of product adaptation adversely affect sourcing practices. The level of product adaptation

was measured on a four-point scale, ranging from no adaptation at all to substantial adaptation.

4) Product Modification (MODIFY):

As amply evidenced in the automobile industry, frequent product modifications or model changes mandated by competition may require extensive retooling, and thus, increased control of production facilities around the world by the parent firm. How it affects sourcing practices is not clear, however. This variable was measured on a four-point scale ranging from no regular periodic pattern of change to semiannual modification.

5) Market Share Objective (MKTOBJ):

The different roles of the product with respect to overall market share in the United States may affect sourcing practices differently. Based on Burke's classification of three market share objectives, a three-point scale measure was developed.[22] It was believed that market share objectives represented the various levels of the firm's resource commitment to the market. "To increase the product's market share" requires more corporate resources, both financial and personnel, than "to maintain its market share". Maintenance of the product's market share demands more resources than "to allow its market share to fall". Therefore, MKTOBJ was treated as a continuous variable in this study.

6) Nationality of the Multinational Firm (REGION):

Because of the geographical proximity of European multinational firms and also because of the fact that free mobility of factors of production is allowed in the European Community, it was assumed that European firms have essentially similar sourcing practices. Therefore, the nationality of multinational firms was identified either as European or as Japanese in this study.

7) Type of the Product (TYPE):

Although the author is not aware of any study that proves or disproves whether sourcing practices vary by product type, the product type was looked at from two dimensions: 1) consumer product vs. industrial product, and 2) durable product vs. non-durable product. It was later found, however, that a number of consumer products, durable or otherwise, were also marketed for industry use. Therefore, the second dimension of the product type--durable vs. nondurable--was considered in this study.

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CHAPTER IV

SURVEY RESULTS

Profile of Sourcing Strategies

This section shows various sourcing strategies observed in our sample of firms. As Kotabe and Omura's typology of sourcing strategies shows, a sourcing strategy is seen composed of components sourcing and final product assembly. A clarification of the sourcing terminology used in this study is in order. Components sourcing and product assembly are respectively identified as such, while the term, "sourcing" or "sourcing strategy", is used to capture both components sourcing and product assembly. A term, "product sourcing", is occasionally used to emphasize where a final product originate from, as opposed to where it is assembled. For instance, as a result of components sourcing and product assembly, say, in France, a final product is "sourced" from France. If a final product is assembled in the United States, then it is said to be "sourced" in the United States.

It should be noted that multinational firms do frequently use a mix of various sourcing strategies simultaneously in marketing a product in foreign markets. Although it is difficult to incorporate various sourcing strategies in a single framework for an empirical study, strong theoretical underpinnings for multiple sourcing strategy have been offered by Grosse.[1] To gain some

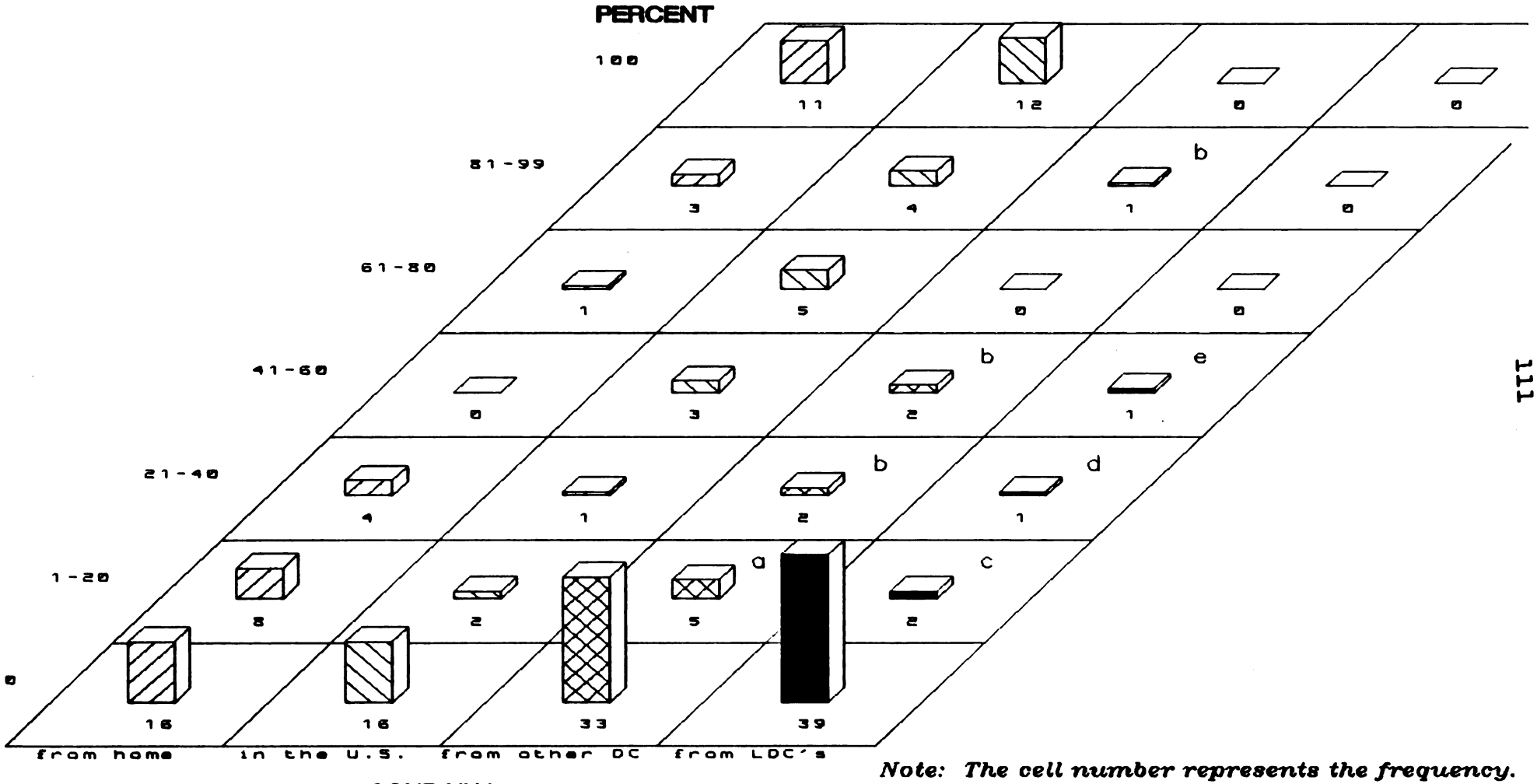
realistic insight into multiple sourcing strategy, respondents were initially asked which sourcing strategies were used to market the product in the United States, and how much of the sales volume was attributable to each sourcing strategy. Subsequently, they were asked to proceed with the questionnaire for a sourcing strategy that they considered as major, which was the focus of this study. Figures 2 and 3 show the extent of multiple sourcing strategies being used by European and Japanese multinational firms, respectively.

As revealed in Figures 2 and 3, only 41 of the 71 respondents reported a single sourcing strategy. In other words, in 55.7% of the cases, all the product marketed in the United States was either exported from home to or manufactured in the United States. The remaining 44.3% of the sample adopted a mix of two or more sourcing strategies for the U.S. market. 46.5% of the European sample manufactured the product in the United States for U.S. sale in contrast with 32.1% of the Japanese sample doing so. 34.9% of the European sample and 53.6% of the Japanese sample sold more than 60% of the product by way of exporting from their own home countries. This finding confirms that Japanese firms are more oriented toward exporting, while European firms, toward local manufacture in the United States.

Because of their geographical proximity, it is not surprising to find that some European firms exported to the

Figure 2

MULTIPLE SOURCING OF PRODUCTS BY EUROPEAN FIRMS (n=43)

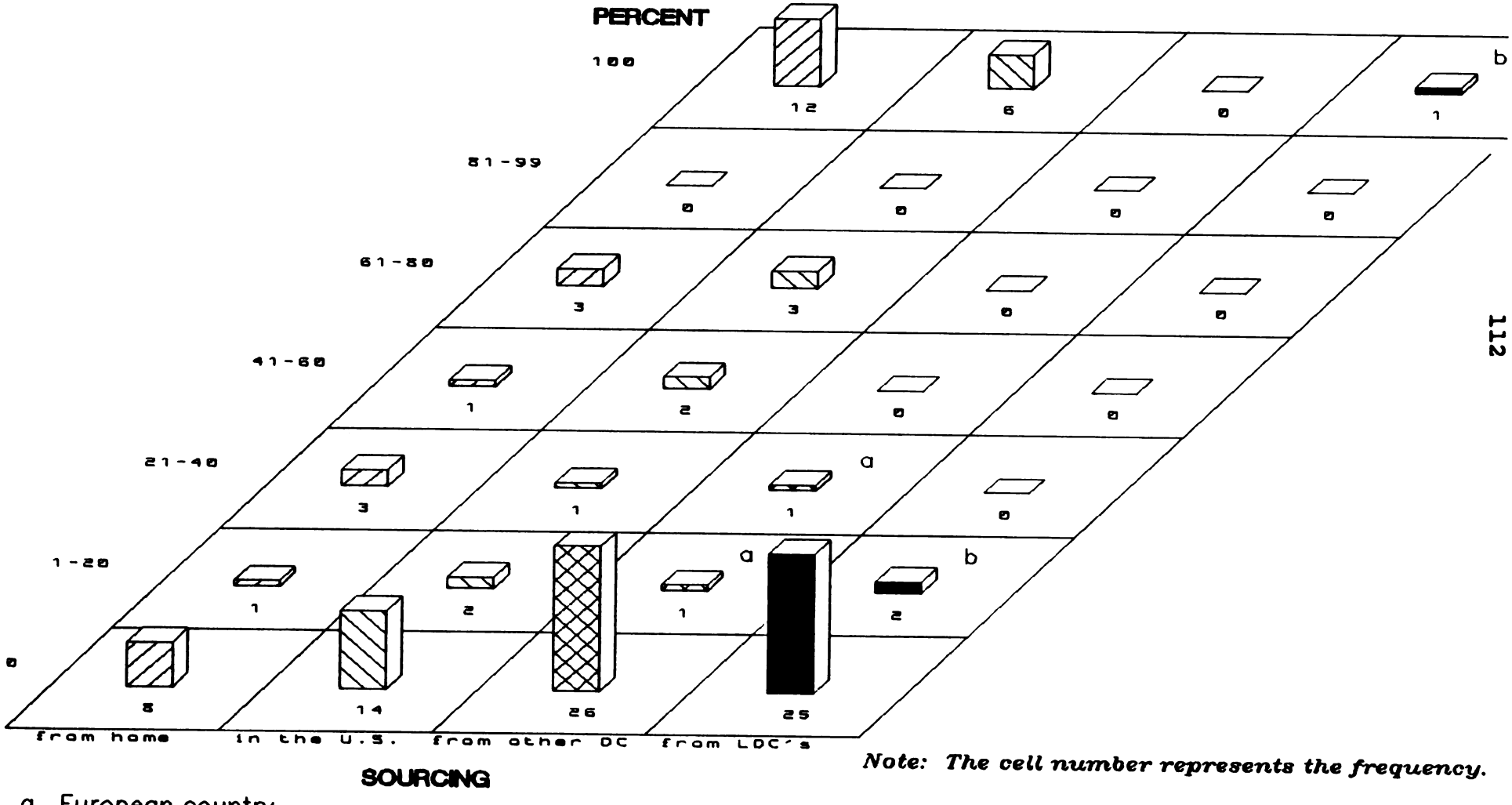


Note: The cell number represents the frequency.

a. Includes two cases from Japan and one case from Canada
b. Other European countries
   Brazil and unspecified LDC
   Unspecified LDC
   Puerto Rico (treated as a LDC)

FIGURE 3

MULTIPLE SOURCING OF PRODUCTS BY JAPANESE FIRMS (n-28)



Note: The cell number represents the frequency.

a. European country
b. Asian countries

United States the product manufactured in other European countries outside of their home countries. However, this strategy is not used in any significant way. There is only one case of a European firm exporting from another European country more than 80% of the product sold in the United States. Among the non-European developed countries, Japan and Canada were product sourcing sites for some European firms, from which to export a certain percentage of products sold in the United States.

The reverse appears to be the case with Japanese firms. Two Japanese firms exported the products to the United States from their European facilities. There were a few cases in which part of the sales volume in the United States originated from the product shipped from developing countries, such as Brazil and Taiwan. In this sample of firms, therefore, product sourcing from developing countries does not appear to be a major force in global sourcing strategies.

Now focusing on the sourcing strategies that the respondents identified as major, the typology of sourcing strategies helps identify the significance of components sourcing and product assembly on a global scale. Figures 2 and 3 showed the final assembly locations from which the product was shipped to the U.S. market. Figures 4 and 5, on the other hand, reveal for a "major" sourcing strategy how components were produced and moved for manufacture of a product for sale in the United States. Although the

FIGURE 4

FREQUENCY OF MAJOR SOURCING STRATEGIES
FOR EUROPEAN FIRMS (n=43)

Components Sourcing (C_{ij})		Assembly Location (A_{kl})							
		Home		United States		Other DC's		LDC's	
		Internal	External	Internal	External	Internal	External	Internal	External
Home	Internal	9		2	1			1	
	External	7							
U.S.	Internal			2					
	External			8	7				1
Other DC's	Internal					2			
	External					1	1		
LDC's	Internal								
	External			1					

Average Sourcing Patterns

$C_{11}A_{11}$ (w=74, x=16, y= 8, z= 1; INTERNAL COMPONENTS SOURCING=60%)
$C_{11}A_{21}$ (w=60, x=40, y= 0, z= 0; INTERNAL COMPONENTS SOURCING=72%)
$C_{11}A_{22}$ (w=90, x= 0, y=10, z= 0; INTERNAL COMPONENTS SOURCING=58%)
$C_{11}A_{41}$ (w=50, x=50, y= 0, z= 0; INTERNAL COMPONENTS SOURCING=60%)
$C_{12}A_{11}$ (w=81, x= 5, y=14, z= 0; INTERNAL COMPONENTS SOURCING=30%)
$C_{21}A_{21}$ (w=10, x=80, y=10, z= 0; INTERNAL COMPONENTS SOURCING=68%)
$C_{22}A_{21}$ (w=13, x=77, y= 6, z= 4; INTERNAL COMPONENTS SOURCING=43%)
$C_{22}A_{22}$ (w= 3, x=94, y= 3, z= 0; INTERNAL COMPONENTS SOURCING=15%)
$C_{22}A_{42}$ (w= 0, x= 0, y=40, z=60; INTERNAL COMPONENTS SOURCING= 5%)
$C_{31}A_{31}$ (w=10, x= 5, y=85, z= 0; INTERNAL COMPONENTS SOURCING=65%)
$C_{32}A_{31}$ (w= 0, x= 0, y=70, z=30; INTERNAL COMPONENTS SOURCING=13%)
$C_{32}A_{32}$ (w=10, x=30, y=60, z= 0; INTERNAL COMPONENTS SOURCING=21%)
$C_{42}A_{21}$ (w= 0, x=25, y= 0, z=75; INTERNAL COMPONENTS SOURCING=12%)

MEAN (w=39, x=42, y=14, z= 5; INTERNAL COMPONENTS SOURCING=41%)

FIGURE 5

FREQUENCY OF MAJOR SOURCING STRATEGIES
FOR JAPANESE FIRMS (n=28)

Components Sourcing (C_{ij})		Assembly Location (A_{kl})							
		Home		United States		Other DC's		LDC's	
		Internal	External	Internal	External	Internal	External	Internal	External
Home	Internal	14		4	1				
	External	1		1	1				
U.S.	Internal			1					
	External			3	1				
Other DC's	Internal								
	External								
LDC's	Internal								
	External								1

Average Sourcing Patterns

$C_{11}A_{11}$ (w= 96, x= 1, y= 0 z= 3; INTERNAL COMPONENTS SOURCING=71%)
$C_{11}A_{21}$ (w= 64, x=36, y= 0, z= 0; INTERNAL COMPONENTS SOURCING=64%)
$C_{11}A_{22}$ (w= 50, x=30, y=20, z= 0; INTERNAL COMPONENTS SOURCING=59%)
$C_{12}A_{11}$ (w=100, x= 0, y= 0, z= 0; INTERNAL COMPONENTS SOURCING=38%)
$C_{12}A_{21}$ (w= 50, x=50, y= 0, z= 0; INTERNAL COMPONENTS SOURCING=25%)
$C_{12}A_{22}$ (w=100, x= 0, y= 0, z= 0; INTERNAL COMPONENTS SOURCING=13%)
$C_{21}A_{21}$ (w= 40, x=60, y= 0, z= 0; INTERNAL COMPONENTS SOURCING=n.a.)
$C_{22}A_{21}$ (w= 17, x=68, y= 7, z= 8; INTERNAL COMPONENTS SOURCING=32%)
$C_{22}A_{22}$ (w= 8, x=90, y= 2, z= 0; INTERNAL COMPONENTS SOURCING=12%)
$C_{42}A_{41}$ (w= 20, x=20, y= 0, z=60; INTERNAL COMPONENTS SOURCING=14%)

MEAN (w= 72, x=21, y= 2, z= 5; INTERNAL COMPONENTS SOURCING=56%)

typology identifies 64 possible sourcing patterns, 14 different "major" sourcing patterns were reported in the European sample and 10 different "major" patterns in the Japanese sample. This finding should not, however, negate the significance of other sourcing strategies in a strategy mix identified in Figures 2 and 3, although they were not scrutinized for typological purposes.

Several points are clear, however. First, assembly locations are generally major components sourcing locations also, as indicated by a left-to-right diagonal distribution of sourcing patterns. These are primarily explained by the traditional paradigms of exporting ($C_{11}A_{11}$, $C_{12}A_{11}$, $C_{31}A_{31}$, $C_{32}A_{31}$, and $C_{42}A_{41}$), minority joint venture, subcontracting, or licensing ($C_{32}A_{32}$), and local manufacture by way of foreign direct investment ($C_{21}A_{21}$ and $C_{22}A_{21}$). Sourcing patterns off this diagonal are somewhat more complicated. Traditional trade and investment theories failed to address these off-diagonal sourcing practices. For example, $C_{11}A_{21}$ involves a local manufacture of a product by a subsidiary in the United States with a majority of components produced and shipped to the subsidiary by its parent firm in a foreign country. $C_{42}A_{21}$ indicates a local manufacture of a product by a subsidiary in the United States with a majority of components produced and shipped to the subsidiary by unaffiliated or minority-owned firms in developing countries.

Second, in the case of manufacture in the United States, Japanese firms appear more likely to source components from their home country than European firms. This reflects the gradual transition of Japanese strategy from export orientation to direct investment orientation as a means of coping with and appeasing the U.S. frustration over massive trade imbalances between the two nations.[2] It may also reflect Japanese reluctance to use U.S.-made components.[3]

Third, a close look into the origins of components (w, x, y, and z in Figures 4 and 5) reveals additional insight into the sourcing practices of foreign multinational firms. Components could be sourced from various locations. One such example is a Japanese case of manufacture in the United States ($C_{22}A_{21}$), where a majority of components was sourced in the United States along with 17% originating from Japan, 7% from European countries, and 8% from developing countries. Even in the case of typical European direct exports ($C_{11}A_{11}$), components were sourced from all over the world, on the average, with about three quarters of components sourced in their home countries, 16% from the United States, 8% from other European countries and sometimes from Japan, and a small portion of 1% from developing countries. Although these examples are not dominant forms of sourcing practices, they point out the fact that global sourcing has become a strong possibility.

This study is a major attempt to understand the implications of various sourcing strategies by foreign multinational firms involved in marketing products in the United States. A theoretical paradigm was forwarded and four sets of hypotheses were developed in Chapter 3. The following sections show the results derived from testing these hypotheses.

Testing of the Hypotheses

Hypothesis 1a: The extent of components sourcing and assembly in developing countries relative to other locations will be higher, the higher the extent of standardized components in the product and the higher the degree of technological obsolescence.

Using a stepwise regression analysis, each of the two dependent variables, LDCSORC and LDCASBL, was regressed on the independent variables, STANDARD, TECHCH, SIZE, PLC, ADAPT, MKTOBJ, REGION, and TYPE. Table 13 shows the result of the analysis. STANDARD and PLC are significant variables for components sourcing in developing countries, while STANDARD is the only significant variable for assembly in developing countries. It indicates that the extents of both components sourcing (LDCSORC) and assembly (LDCASBL) in developing countries are positively related to and explained by the extent of standardized components in the product (STANDARD), although the relationship between LDCSORC and STANDARD ($p<.01$) is somewhat stronger than between LDCASBL and STANDARD ($p<.05$). It was found that the nationality of the multinational firm (REGION) and the type of the product

TABLE 13

STEPWISE REGRESSION ANALYSIS FOR COMPONENTS SOURCING AND ASSEMBLY IN DEVELOPING COUNTRIES[a]

	Independent Variables									
Dependent Variable	STANDARD	TECHCH	SIZE	PLC	ADAPT	MODIFY	MKTOBJ	REGION	TYPE	R^2
LDCSORC	.367[c]	n.s.[f]	n.s.	.175[e]	n.s.	n.s.	n.s.	n.s.	n.s.	.178[b]
LDCASBL	.244[d]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.060[d]

[a] All coefficients are in standardized form.
[b] p=.001
[c] p<.01
[d] p<.05
[e] p<.20
[f] Not significant at the .20 level

(TYPE) did not significantly affect components sourcing and assembly in developing countries. Although the degree of technological change (TECHCH) was found insignificant, it was suspected that a small but statistically significant correlation between STANDARD and TECHCH ($r=-.26$, $p=.03$) might have somewhat reduced the explanatory power of TECHCH in the model. When TECHCH was forced into each of the models in place of STANDARD, it was found much less significant ($p=.25$) than STANDARD. The faster the degree of technological change of the product, the more difficult it is to standardize components in the product. Therefore, the fast degree of technological change would probably make it somewhat difficult for the firm to source hard-to-standardize components from developing countries.

For components sourcing in developing countries, the statistically significant control variable is PLC ($p<.20$), though much weaker than STANDARD. However, none of the other control variables is significant in explaining components sourcing and assembly in developing countries. It is interesting to note that the correlation between STANDARD and PLC is extremely low ($r=.11$, $p=.35$). Contrary to the international product cycle argument, it indicates that the extent of standardized components in the product and the life cycle stage of the product are independent.

In conclusion, the hypothesis is generally supported although TECHCH is not significant. It can also be

concluded that PLC is marginally important in explaining LDCSORC and is not important at all in explaining LDCASBL.

Hypothesis 1b: The extent of components sourcing and assembly in the market country (i.e., the United States) relative to the non-market countries will be higher, the higher the transfer costs, in particular, the higher the transportation costs.

A stepwise regression analysis was employed. Each of the dependent variables (USSORC and USASBL) was respectively regressed on the independent variables (TNTBARR, TRANCOST, and EXCHANGE, SIZE, PLC, ADAPT, MODIFY, MKTOBJ, REGION, and TYPE). The results of the analysis are shown in Table 14.

The findings generally support the hypothesis. Among the variables representing transfer costs, TRANCOST and EXCHANGE are found to be significant for both models. As expected, TRANCOST is positively related, and EXCHANGE, negatively related, to USSORC and to USASBL. Among the control variables, PLC, ADAPT, and SIZE (in order of significance) are all positively related to USSORC, while only PLC and SIZE are positively related to USASBL. SIZE appears to be more important for USASBL than for USSORC. MODIFY and MKTOBJ are not significant in either of the models, indicating that the frequency of product modifications or model changes and the market share commitment would not affect the firm's sourcing strategy. Since REGION and TYPE are not significant, the sourcing strategy does not appear to be different either between

TABLE 14

STEPWISE REGRESSION ANALYSIS FOR THE EXTENT OF COMPONENTS SOURCING AND ASSEMBLY IN THE UNITED STATES RELATIVE TO THE OTHER LOCATIONS[a]

Dependent Variable	Independent Variables										R^2
	TNTBARR	TRANCOST	EXCHANGE	SIZE	PLC	ADAPT	MODIFY	MKTOBJ	REGION	TYPE	
USSORC	n.s.	.204[c]	-.264[c]	.185[e]	.293[c]	.193[d]	n.s.[f]	n.s.	n.s.	n.s.	.307[b]
USASBL	n.s.	.281[c]	-.194[d]	.252[c]	.269[c]	n.s.	n.s.	n.s.	n.s.	n.s.	.290[b]

[a] All coefficients are in standardized form.
[b] $p<.001$
[c] $p<.05$
[d] $p<.10$
[e] $p<.20$
[f] Not significant at the .20 level.

European and Japanese firms or between durable and non-durable products.

Overall, it can be concluded that the extent of components sourcing in the United States (USSORC) will be high, if 1) transportation costs (TRANCOST) are high in shipping components and finished products to the United States from abroad, 2) exchange rates (EXCHANGE) are unstable, 3) the product is in the later stage of its life cycle (PLC), and 4) the level of product adaptation to the U.S. market (ADAPT) is high. For the extent of assembly in the United States (USASBL), however, the level of product adaptation appears to be of little significance. It should also be pointed out that the international product cycle notion is found to be important, but not sufficient enough in explaining the extent of components sourcing and assembly in the United States relative to the other locations. Since PLC is not significantly correlated with any of the other independent variables in the models, it can be further concluded that TRANCOST and EXCHANGE derived from internalization theory along with some control variables (namely, SALES and ADAPT) supplement, rather than replace, the international product cycle argument.

Hypothesis 2a: In the aggregate, the extent of internal components sourcing and internal assembly is positively related to the novelty of technology, the specificity of technology, the risks of components supply disruptions and price change, and the quality specification of major components of the product.

(1) Extent of Internal Components Sourcing (INTSORC1 and INTSORC2):

Table 15 shows the results of the stepwise regression analysis. PATENT and PLC are the only significant variables in both models for the extent internal components sourcing (INTSORC1 and INTSORC2). PATENT is positively related to both INTSORC1 and INTSORC2 ($p<.10$ and $p<.05$, respectively), as expected. Among the control variables, PLC is negatively related to both INTSORC1 and INTSORC2 ($p<.05$ and $p<.01$, respectively). The importance of patented knowledge and product life cycle stage is all the more clear for the internal sourcing of major components. Since PATENT and PLC are independent constructs as attested by their low correlation ($r=-.09$, $p=.51$), it is concluded that the novelty of patented knowledge is positively related to, and the product life cycle stage is negatively related to the extent of internal components sourcing at large, and in particular, to the extent of the internal sourcing of major components.

With the exception of patented knowledge (PATENT), no other technology-related variables are found significant. Proprietary knowhow composed of trade secrets and proprietary methods of production (KNOWHOW), product-related technology (PRDTECH), and the novelty of a product to the

TABLE 15

STEPWISE REGRESSION ANALYSIS FOR THE EXTENT OF INTERNAL COMPONENTS SOURCING[a]

Dependent Variable	Independent Variables								
	KNOWHOW	PRDTECH	PATENT	NEWPRD	DISRUPT	PRICECH	QUALITY	PLC[b]	R^2
INTSORC1	n.s.	n.s.	.208[e]	n.s.	n.s.	n.s.	n.s.	-.303[d]	.146[c]
INTSORC2	n.s.	n.s.	.256[d]	n.s.	n.s.	n.s.	n.s.	-.342[c]	.198[c]

[a] All coefficients are in standardized form.
[b] Since none of the control variables other than PLC is significant at the .20 level, only PLC is shown.
[c] $p<.01$
[d] $p<.05$
[e] $p<.10$
[f] Not significant at the .20 level.

firm (NEWPRD) appear to have no significant impact on the extent of internal components sourcing. Three plausible explanations may be offered. First, KNOWHOW, PRODTECH, and NEWPRD may not be divisible into discrete phases in such a way as to be transferred to various internal members of the multinational firm. Second, as Davidson and McFetridge[a] point out, such proprietary technology may require more experience by management involved for smooth transfer between the internal members than patents. Lastly, since most of the respondents in the sample reported that their quality specification for major components of the product (QUALITY) is very rigid ($\bar{x}$=2.76 and s=.43 on a 3-point scale), some of the firms might have weeded out independent suppliers of inferior-quality components, thereby assuring themselves of reliable independent suppliers on a long-term contractual basis.

Incidentally, because of this small variance in QUALITY, it is not found significant in explaining the extent of internal components sourcing. Risks of components supply disruption and price change (DISRUPT and PRICECH) also do not have any significant impact on the extent of internal components sourcing. None of these variables is significantly correlated with PATENT or PLC. The results of the regression analysis seem to indicate that the multinational firm treats DISRUPT and PRICECH as exogenous, contrary to the prediction of internalization theory. The risk of components supply disruption due to the lack of

good alternate sources of supply and the risk of price fluctuations due to exchange rate fluctuations or price increases may not be sufficient enough to prompt many multinational firms to commit a great amount of financial and human resources in establishing their own internal suppliers of components on a global basis. These explanations raise for future research the issue of how components sourcing decisions, in particular, make-or-buy decisions, are made on a global basis.

(2) Extent of Internal Assembly (INTASBL):

The extent of internal assembly has been measured dichotomously as either "internal" if more than 50% of the U.S. sales of the the product was assembled or finally processed by internal members of the multinational firm, or "external", otherwise. Since an analytical procedure for this hypothesis test is a discriminant analysis, two categorical independent variables (REGION and TYPE) needed to be controlled for. A chi-square analysis in Tables 16 and 17 indicates that European and Japanese firms have a similar distribution of internal and external assemblies (chi-square=1.783, p=.18), while the durable products are by far more likely to be assembled internally than the non-durable products (chi-square=9.559, p=.002). Therefore, a separate discriminant analysis was called for the durable products and for the non-durable products. A stepwise canonical discriminant analysis was used to determine which variable(s) could effectively discriminate between internal

TABLE 16

DISTRIBUTION OF INTERNAL AND EXTERNAL ASSEMBLIES BY REGION

	Internal	External
European	33	10
Japanese	25	3

X^2=1.783
p = .180

TABLE 17

DISTRIBUTION OF INTERNAL AND EXTERNAL ASSEMBLIES BY PRODUCT TYPE

	Internal	External
Durable	54	8
Non-durable	4	5

X^2=9.559
p = .002

Note: One of the cells has fe<5.

and external assembly for the durable and for the non-durable products.

There is an upward bias in the predictive power of a discriminant analysis because the discriminant technique tends to fit the sample data in ways that are systematically better than would be expected by chance alone. Therefore, the validity of the discriminant function needs to be established. The split sample approach is most frequently used, which consists of splitting the original sample into two groups and evaluating how well the discriminant function derived from the first group can predict the classification of the second group. However, the relatively small sample size in this study defied this approach. Therefore, as suggested by Frank, Massey, and Morrison,[4] a "scrambled" sample approach was used, in which the original data were "scrambled" by reassigning groups to individuals at random, and then carrying out a discriminant analysis to evaluate a sample bias. This scrambled sample approach was replicated 10 times and the average random classification accuracy was calculated, against which the actual classification accuracy was compared. This validation technique was used wherever appropriate in this study.

Durable Products:

As shown in Table 18, one significant canonical discriminant function was derived ($p=.03$), generally supporting the hypothesis, whether or not the control

TABLE 18

STEPWISE CANONICAL DISCRIMINANT ANALYSIS
FOR THE EXTENT OF INTERNAL ASSEMBLY STRATEGY
(DURABLE PRODUCTS; N=56)

	WITHOUT CONTROL VARIABLES		WITH CONTROL VARIABLES		T-TEST	
VARIABLES	STANDARDIZED COEFFICIENTS	LOADING	STANDARDIZED COEFFICIENTS	LOADING	INTERNAL ASSEMBLY	EXTERNAL ASSEMBLY
KNOWHOW	-[a]	-	-	-	-.06	-.08[f]
PRDTECH	.452	.457	.334	.432	.03	-.46[e]
PATENT	-	-	-	-	.08	-.25[f]
NEWPRD	-.430	-.265	-.373	-.250	-.07	.24[f]
DISRUPT	-	-	-	-	2.06	2.25[f]
PRICECH	-	-	-	-	2.21	2.00[f]
QUALITY	2.100	.820	.835	.775	2.81	2.38[d]
SIZE	N.A.	N.A.	-	-	2.62	3.00[f]
PLC	N.A.	N.A.	-	-	2.53	2.75[f]
MODIFY	N.A.	N.A.	.374	.557	1.65	1.00[c]
ADAPT	N.A.	N.A.	-	-	2.29	2.25[f]
MKTOBJ	N.A.	N.A.	-	-	1.22	1.13[f]
Canonical Correlation	.3978		.4211			
Eigenvalue	.1880		.2155			
Wilks' Lambda	.8418		.8227			
F-ratio	3.259		2.748			
Degrees of Freedom	3, 52		4, 51			
Significance	.0287		.0381			
Classification Accuracy	76.8%[b]		79.0%[b]			

[a] Variables indicated as such were not significant at the .20 level and excluded from the analysis.

[b] For the model without strategic variables, the average random classification accuracy based on the "scrambled" sample-based validation is 64.6%; for the model with strategic variables, it is 60.5%.

[c] p<.001

[d] p<.01

[e] p<.20

[f] Not significant at the .20 level.

variables were considered. Interestingly, for the assembly of the durable products, the variables (PATENT and PLC) found significant in explaining the extent of internal components sourcing are not significant in discriminating between internal and external assembly. Rather, PRDTECH, QUALITY, MODIFY, and marginally NEWPRD were found to be significant discriminants. The classification accuracy has increased marginally by adding the control variables, of which only MODIFY is significant.

Profiles of internal and external assembly with respect to each of the independent variables generally confirm the results of the discriminant analysis. The internal assembly is associated with significantly higher scores on PRDTECH, QUALITY, and MODIFY, than is the external assembly. High scores on PRDTECH, QUALITY, and MODIFY indicate that the products are likely to be assembled by the internal members of the parent system if the firm's technology (i.e., patents, trade secrets, and proprietary methods of production) is fairly new, the quality specifications for major components are very high, and model changes are frequent.

The negative sign on NEWPRD in the discriminant function was not anticipated, although no particular hypothesis had been established. However, the mean NEWPRD scores are not significantly different between internal and external assembly ($p>.20$). Although not conclusive, these results could indicate that, if the products are to satisfy

the customer needs not currently met by the pre-existing products in the firm's product line, then the firms may have some tendency to contract out the assembly through licensing or subcontracting. Since the multinational operation requires sufficient economies of scale in production and marketing, the product new to the firm's product line may fail to meet the minimum economies of scale requirement.

It should also be noted that no control variables other than MODIFY have any significant bearing on the internal/external assembly decision for durable products. It indicates that the size of the multinational firm, the stage of the product life cycle, the level of product adaptation to the U.S. market, and the market share commitment do not appear to affect the internal/external assembly decision.

Non-durable Products:

As Table 19 shows, as a result of a stepwise canonical discriminant analysis, one canonical discriminant function was extracted with two (three) variables in the model without (with) control variables. With the exception of DISRUPT, the results do not support the hypothesis for non-durable products. Despite the small sample of 9 cases, the results were significant with a classification accuracy of 100%, whether or not the control variables were considered ($p<.02$). PATENT, DISRUPT, and PLC are relatively important variables in differentiating the internal assembly from the external assembly. The differences in the mean scores of

TABLE 19

STEPWISE CANONICAL DISCRIMINANT ANALYSIS
FOR THE EXTENT OF INTERNAL ASSEMBLY STRATEGY
(NON-DURABLE PRODUCTS; N=9)

	WITHOUT CONTROL VARIABLES		WITH CONTROL VARIABLES		T-TEST	
VARIABLES	STANDARDIZED COEFFICIENTS	LOADING	STANDARDIZED COEFFICIENTS	LOADING	INTERNAL ASSEMBLY	EXTERNAL ASSEMBLY
KNOWHOW	-[a]	-	-	-	1.01	-.09[d]
NEWPRD	-	-	-	-	- .09	.53[e]
PATENT	-1.3621	-.6856	-1.6019	-.6272	-1.00	.39[c]
PRDPEFRM	-	-	-	-	.55	-.17[d]
DISRUPT	1.3276	.6650	1.6613	.6084	2.25	1.60[d]
PRICECH	-	-	-	-	2.25	2.40[e]
QUALITY	-	-	-	-	2.75	2.80[e]
SIZE	N.A.	N.A.	-	-	2.00	2.20[e]
PLC	N.A.	N.A.	-1.1124	-.5966	2.25	3.00[d]
MODIFY	N.A.	N.A.	-	-	1.26	1.60[e]
ADAPT	N.A.	N.A.	-	-	1.75	2.40[e]
MKTOBJ	N.A.	N.A.	-	-	1.25	1.00[e]
Canonical Correlation	.8573		.9371			
Eigenvalue	2.7721		7.2029			
Wilks' Lambda	.2651		.1219			
F-ratio	8.316		12.005			
Degrees of Freedom	2, 7		3, 5			
Significance	.0186		.0101			
Classification Accuracy	100%[b]		100%[b]			

[a] Variables indicated as such were not significant at the .20 level and excluded from the analysis.

[b] For the model without control variables, the average random classification accuracy based on the "scrambled" sample-based validation is 48.5%; for the model with control variables, it is 57.0%.

[c] p<.10

[d] p<.20

[e] Not significant at the .20 level.

these variables between internal and external assembly amplify the results of the discriminant analysis.

The findings are interesting for the following reason. The variables important for the internal/external assembly decision for the durable products differ from those for the non-durable products. For the non-durable products, the negative signs on PATENT and PLC, and the positive sign on DISRUPT indicate that the high novelty of patented knowledge and the late stage of the product life cycle are associated with the external assembly, whereas the lack of alternative sources of supply of major components is associated with the internal assembly.

However, the negative sign on PATENT was not expected. It could be conjectured that, since much of the patented knowledge for non-durable products does not manifest itself as much in the form of parts and components as it does for durable products, and thus, is more difficult for foreign competitors to imitate, it allows the patent-holding firm to control the level of dissemination of patented knowledge through, say, licensing or minority-participated joint ventures (i.e., a form of external assembly).
The negative sign on PLC also indicates that the later the stage of the product life cycle, the more likely the non-durable products are assembled by the firms external to the multinational parent system. These results confirm Telesio's findings in his study of foreign licensing by U.S. and non-U.S. multinationals that "process" innovations are

more readily licensed than "product" innovation, especially in the later stage of the product life cycle.[5]

Hypothesis 2b: <u>The extent of internal components sourcing is positively related to the extent of transfer price manipulation</u>.

None of the non-durable product cases involved transfer pricing below or above the market price. As indicated in the previous section, it may not be the components in the non-durable product, but rather, patented knowhow involved in the manufacture of the product, that determines the value of the product. If so, transfer pricing above or below the market price for the components would be relatively of little importance.

As shown in Table 20, 56.8% of the European firms and 76.0% of the Japanese firms do not use any particular manipulated transfer prices in the transfer of internally sourced components for the manufacture of the durable products. Among the firms which use the non-market transfer prices, a majority engaged in transfer price manipulation for no more than 20% of the components that go into the product. The European firms tend to manipulate transfer prices more extensively than the Japanese firms.

For those durable-product cases in which the transfer prices are manipulated, the relationship between TRNPRICE and INTSORC1 is depicted in Figure 6. The observations close to the diagonal line indicate a high involvement in transfer price manipulation. The observations on the

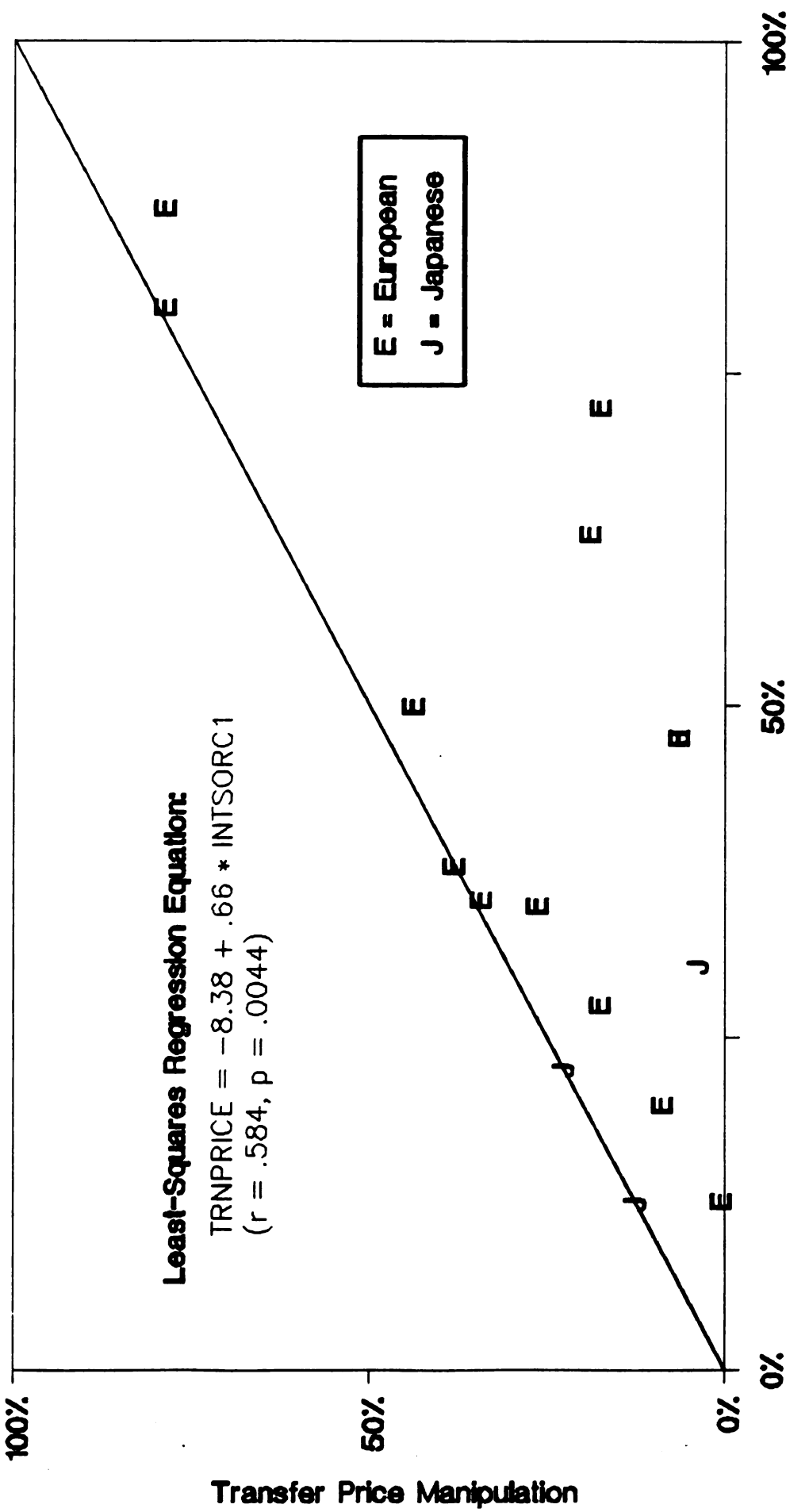
TABLE 20

EXTENT OF TRANSFER PRICE MANIPULATION FOR DURABLE PRODUCTS
AT OTHER THAN ARMS' LENGTH BY REGION

	0%	1-19%	20-39%	40-59%	60-79%	80-100%	TOTAL
European Firms	21	10	3	1	2	0	37
Japanese Firms	19	5	1	0	0	0	25

Figure 6

Cases of Transfer Price Manipulation in the Transfer of Components for the Manufacture of Durable Products (n=22)



diagonal line are the ones in which all the internally sourced components are artificially priced either above or below the market price. The estimated least-squares regression equation indicates that 66% of the internally sourced components is subject to transfer price manipulations above or below the market price. It could be misleading, however. As Figure 4 shows, there appear to be two groups of transfer price manipulations. In the first group (observations close to the diagonal line), a very large portion of the internally sourced components is subject to the transfer price manipulation, regardless of the extent of internal components sourcing. In the second group (observations close to the horizontal line), the extent of transfer price manipulation is relatively low, regardless of the extent of internal components sourcing.

Overall, the hypothesis is weakly supported. The price manipulations in the transfer of components appears to be relatively limited in importance for European and Japanese sourcing strategies in servicing the U.S. market. For those cases in which transfer prices are manipulated, however, the extent of internal components sourcing and the extent of transfer price manipulations are strongly correlated, as expected ($r=.58$, $p=.0044$).

Hypothesis 3: The assembly in the United States is associated with the higher U.S. market attractiveness and the higher transfer costs than is the assembly in other locations.

It has been indicated in a profile of a mix of multiple sourcing strategies that Japanese firms are somewhat more export-oriented than European firms. Table 21 shows the assembly locations for sourcing strategies identified by the European and Japanese firms as a major one in a mix. A chi-square analysis indicates that the difference in assembly locations between European and Japanese firms is not at all statistically significant (chi-square = .349, p=.84, although the result may be somewhat biased as two of the cells have fe < 5).

On the other hand, Table 22 shows the pattern of assembly locations by product type. As in Hypothesis 2b, it was initially suspected that assembly location decisions could differ between durable and non-durable products, motivated by different factors.

An initial stepwise canonical discriminant analysis on the assembly locations by region and by product type indicated that essentially the same variables were significant in discriminating among the three assembly locations. Therefore, a stepwise discriminant analysis was subsequently employed on the all cases combined to increase the sample size.

The stepwise discriminant analysis with and without the control variables yielded the same result, with no

TABLE 21

DISTRIBUTION OF ASSEMBLY LOCATIONS BY REGION

	Home[a]	United States	LDC's
European	20	21	2
Japanese	15	12	1

$X^2 = .349$
$p = .84$

[a]For the European case, "home" includes a home country and/or other European countries. For the Japanese case, it is Japan only.

TABLE 22

DISTRIBUTION OF ASSEMBLY LOCATIONS BY PRODUCT TYPE

	Home	United States	LDC's
Durable	32	29	1
Non-Durable	3	4	2

Note: A chi-square analysis could not be performed due to small expected frequencies in a number of cells.

additional discriminant power gained by considering the control variables. Generally, multicollinearity among the independent variables is not a major problem except the correlation between GROWTH and PLC (r=-.47, p=.0001). PLC has been defined essentially as the sales growth rate on a global basis, whereas GROWTH is indicative of the sales growth rate in the United States. The strong negative correlation indicates that the earlier the product life cycle stage on a global basis, the higher will be the sales growth rate in the U.S. market. A subsequent discriminant analysis with GROWTH replaced by PLC generated virtually the same result. Therefore, the following analysis is based on the result of the initial discriminant analysis without the control variables.

Two canonical discriminant functions were derived. The first discriminant function is highly significant (p=.001), while the second function is marginal in significance (p=.16). Since the second function adds little in the interpretation of the results, it is eliminated from the analysis. The results of the stepwise discriminant analysis is shown in Table 23.

The centroids in Table 23 show that U.S. assembly is systematically different from home-country assembly and assembly in developing countries. As the coefficients of the discriminant function indicate, high scores on GROWTH, PROFIT, and EXCHANGE are associated with assembly in non-U.S. locations. On the other hand, a high score on TRANCOST

TABLE 23

CANONICAL DISCRIMINANT ANALYSIS
FOR ASSEMBLY LOCATION STRATEGIES[a]

VARIABLES	STANDARDIZED COEFFICIENTS	DISCRIMINANT LOADINGS
GROWTH	-.7654	-.5106
PROFIT	-.2926	-.3597
CONCENTR	_[b]	-
TNTBARR	-	-
TRANCOST	.8463	.6518
EXCHANGE	-.4515	-.2933

Eigenvalue	.4399
Wilks' Lambda	.6345
% of Variance	82.3
Canonical Correlation	.5527
F value	3.5763
Significance	.001
Classification Accuracy	69.4%
"Scrambled" Sample-Based Random Classification	44.5%
Centroids:	
Home Assembly	-.5133
U.S. Assembly	.6956
LDC Assembly	-1.1883

[a]The control variables are not significant at the .20 level, and therefore are not shown.

[b]Variables indicated as such are not significant at the .20 level and excluded from the analysis.

is associated with assembly in the United States. CONCENTR and TNTBARR do not appear to have any bearing on the assembly location strategy.

For all the significant variables but EXCHANGE, the home-country assembly and the assembly in developing countries have similar mean scores in contrast to the U.S. assembly. Therefore, the non-U.S. assembly strategies are combined so as to be compared with the U.S. assembly strategy. Table 24 shows the results of the t-test comparing the mean scores on the independent variables between U.S. assembly and non-U.S. assembly strategies. The results of the comparison of the mean scores on the independent variables between U.S. assembly and non-U.S. assembly strategies further confirm the findings of the discriminant analysis.

The positive sign on TRANCOST and the negative sign on EXCHANGE in the canonical discriminant function are as expected and support the hypothesis that the higher the transfer costs (i.e., the higher transportation costs to the U.S. market and the more unstable the exchange rate), the more preferred the assembly in the United States is over the assembly elsewhere. However, the negative signs on the two significant market attractiveness measures, GROWTH and PROFIT, were not expected. High levels of overall market growth rate and profitability in the U.S. market were expected to make management of the foreign multinational firms feel that there be a high level of financial

TABLE 24

COMPARISON OF THE MEAN SCORES ON THE INDEPENDENT VARIABLES FOR ASSEMBLY LOCATION STRATEGIES

VARIABLES	U.S. ASSEMBLY		NON-U.S. ASSEMBLY		SIGNIFICANCE
			HOME ASSEMBLY	LDC ASSEMBLY	
GROWTH	-.2504	<	.1830	.5137	.05
PROFIT	-.1356	<	.0125	1.2592	.10
CONCENTR	-.0812		.0347	.4456	n.s.
TNTBARR	.1188		-.1146	.0346	n.s.
TRANCOST	.3287	>	-.2350	-.7805	.008
EXCHANGE[a]	-.1597		.2084	-.6264	n.s.

[a] In all the variables but EXCHANGE, the home-country assembly strategy and the LDC assembly strategy consistently have a higher or lower mean score than the U.S. assembly strategy. In the variable EXCHANGE, it is noted that the LDC assembly strategy has the smallest mean, followed by the U.S. assembly strategy, although the difference is not statistically significant.

commitment by directly investing in the bricks and mortar for manufacture in the United States.

The management apparently viewed that, as long as the future market growth rate and the profitability were both high, there would not be any particular reason to set up an manufacturing operation in the United States. According to the international product cycle argument, the multinational firm would establish production facilities in the foreign market (i.e., the United States) for defensive purposes, that is, to defend its competitive position (e.g., market share) against local competitors. Although this is a plausible argument, it fails to explain why the assembly in developing countries is also strongly associated with the high future market growth rate (GROWTH), and the high profitability (PROFIT), as shown in Table 24.

As is recalled, GROWTH (in the U.S. market) is highly correlated with PLC (on a global basis), but much less than perfectly ($r = -.47$, $p=.0001$). This may imply that the product life cycle stage itself does not determine an optimal assembly location. It is also recalled that the product life cycle stage (PLC) and the percentage of the standardized components in the product (STANDARD) are little correlated ($r = .11$, $p = .35$). Therefore, it may be conjectured that the product assembly in developing countries (i.e., exporting from developing countries) is a viable alternative to exporting from home if a high-growth product (alternatively, at an early stage of the product

life cycle) is made up of a high percentage of standardized components. This argument raises the issue (for future research) of how the multinational firms deal with the benefit of product standardization (i.e., a global product) and the product adaptation often necessitated by the different needs and customs of foreign markets.

Hypothesis 4: The competitive strength (or marketing performance) of a product is positively related to a) the extent of internal components sourcing, and b) the extent of internal assembly, but not related to c) assembly locations.

As discussed in Chapter 3, the competitive strength of a product has two independent components: the product's relative market share (PERFORM1) and the product's sales growth rate (PERFORM2). A general linear model (Analysis of Covariance) was used separately for the relative market share (PERFORM1) and the sales growth rate (PERFORM2).

The extent of internal components sourcing has been defined in two ways. INTSORC1 represents the percentage of the value of all the components in the product sourced internally, while INTSORC2 excludes from INTSORC1 the value of the components which are "standardized". Since a preliminary analysis indicated that INTSORC2 was a better predictor than INTSORC1 of the product's competitive strength (PERFORM1 and PERFORM2), INTSORC2 was used in subsequent analyses.

Relative Market Share (PERFORM1):

Table 25 shows the ANCOVA results for PERFORM1. A covariance-controlled t-ratio for each variable was computed to determine whether each of the variables was significant in explaining the product's relative market share after accounting for the impact of the other variables. The hypothesis expected that INTSORC2 and INTASBL would be significant with a positive sign, and that ASBLLOC would not be significant. INTSORC2 was found to be a significant variable ($p<.05$) with a positive sign, while ASBLLOC was not significant ($p>.80$) as expected. The results generally support the hypothesis. It was unexpected, however, that INTASBL failed to be significant in explaining the product's relative market share ($p=.22$).

It is apparent that the extent of internal sourcing of major components is positively related to the product's relative market share, whereas the the extent of internal assembly (i.e., more that 50% of the U.S. sales of the product manufactured by the internal members of the multinational firm) has little bearing on the product's competitive strength. In other words, the internal sourcing of major components appears to be the key determinant of the product's relative market share, whether the product is assembled by the internal members (i.e., subsidiaries) of the multinational firm or by the external members (i.e., licensees, minority-participated joint ventures, or independent manufactures on a contractual agreement).

TABLE 25

ANALYSIS-OF-COVARIANCE RESULTS
FOR THE PRODUCT'S RELATIVE MARKET SHARE

PARAMETER		ESTIMATE[a]	STANDARD ERROR	t	SIGNIFICANCE
intercept		1.6390	1.0588	1.55	.13
INTSORC2		.0174	.0068	2.02	.05
INTASBL[b]	0	.5248	.4222	1.24	.22
	1	.0000	-	-	-
ASBLLOC[c]	1	-.1236	.7331	-.17	.87
	2	-.1375	.7203	-.19	.85
	3	.0000	-	-	-
SIZE		.1243	.1206	1.03	.31
PLC		.0616	.1986	.31	.76
ADAPT		-.2103	.1316	-1.60	.12
MODIFY		.1420	.1693	.84	.41
MKTOBJ		-.7607	.3117	-2.44	.02
REGION[d]	0	-.0839	.3268	-.26	.80
	1	.0000	-	-	-
TYPE[e]	0	.6000	.4580	1.31	.20
	1	.0000	-	-	-

[a] Estimated coefficients are covariance-adjusted and in unstandardized form.
[b] 0 = external assembly, and
1 = internal assembly.
[c] 1 = assembly in the home country,
2 = assembly in the United States, and
3 = assembly in the developing country (or countries).
Also note that, for European firm, the home country includes their home bases and other European countries in the European Community, while, for Japanese firms, the home country is Japan only.
[d] 0 = European firms, and
1 = Japanese firms.
[e] 1 = durable product, and
0 = non-durable product.

Some additional insight can be obtained by examining the control variables. Among them, MKTOBJ and ADAPT are found significant (p=.02 and p=.12, respectively). SIZE, PLC, MODIFY, and REGION are not significant at all (p>.30), while TYPE is marginally significant (p=.20). In other words, the size of the multinational firm, the product life cycle stage, the frequency of product modification or model change, the nationality of the firm, and possibly, the product type have no particular bearing on the product's relative market share.

It is not surprising that MKTOBJ is negatively related to PERFORM1, indicating that a high corporate commitment to market share is associated with a low relative market share for the product. The firm attempts to increase its relative market share when its current market share is low. Conversely, when its market share is high (possibly perceived as a cash cow), the firm maintains its current market share or even allows it to fall.

Interestingly, ADAPT is a significant variable with a negative sign, indicating that the higher the level of product adaptation to the U.S. market, the lower the product's relative market share. Although product adaptation is often a means by which to effectively meet the different needs and wants of foreign customers (i.e., U.S. customers), the high level of product adaptation apparently worsens the product's relative market share. Product adaptation is a reactive, rather than proactive, strategic

concept, and is often necessitated by the market needs. A high level of product adaptation may make it difficult for the multinational firm to reap economies of scale in production and marketing on a global basis. This finding strongly supports Levitt's call for the development of a globally acceptable product which would not require any major adaptation, other than cosmetic change, to foreign markets.[6]

Sales Growth Rate (PERFORM2):

Table 26 shows the ANCOVA results for PERFORM2. With the exception of INTASBL being weakly significant ($p<.20$), none of the other hypothesized relationships is observed for PERFORM2. Therefore, for the sales growth rate as an indicator of the product's competitive strength, the hypothesis is not generally supported.

Contrary to the hypothesis, ASBLLOC is highly significant, with final assembly operations in the parent firm's home base ($p<.02$) and in the United States ($p<.01$) having a negative impact on the product's sales growth rate relative to final assembly in developing countries. Not surprisingly, the product life cycle stage (PLC) is negatively related to the product's sales growth rate ($p=.02$). This relationship is obvious, since the U.S. sales growth rate for the product generally corresponds to the worldwide sales growth pattern which PLC represents. Based the results on these two variables, it is very interesting to note that, contrary to the notion of international

TABLE 26

ANALYSIS-OF-COVARIANCE RESULTS
FOR THE PRODUCT'S SALES GROWTH RATE

PARAMETER		ESTIMATE[a]	STANDARD ERROR	t	SIGNIFICANCE
intercept		7.0557	.8321	8.48	.0001
INTSORC2		.0046	.0053	.87	.39
INTASBL[b]	0	-.4439	.3318	-1.34	.19
	1	.0000	-	-	-
ASBLLOC[c]	1	-1.3747	.5761	-2.39	.02
	2	-1.4862	.5660	-2.63	.01
	3	.0000	-	-	-
SIZE		-.0580	.0948	-.61	.58
PLC		-.3691	.1561	-2.37	.02
ADAPT		-.2181	.1034	-2.11	.04
MODIFY		-.2477	.1331	-1.86	.07
MKTOBJ		.3391	.2449	1.36	.18
REGION[d]	0	-.3329	.2569	-1.30	.20
	1	.0000	-	-	-
TYPE[e]	0	-.2184	.3600	-.61	.55
	1	.0000	-	-	-

[a] Estimated coefficients are covariance-adjusted and in unstandardized form.

[b] 0 = external assembly, and
1 = internal assembly.

[c] 1 = assembly in the home country,
2 = assembly in the United States, and
3 = assembly in the developing country (or countries).
Also note that, for European firm, the home country includes their home bases and other European countries in the European Community, while, for Japanese firms, the home country is Japan only.

[d] 0 = European firms, and
1 = Japanese firms.

[e] 1 = durable product, and
0 = non-durable product.

product cycle theory, a high sales growth rate is not related to final assembly either in the foreign parent firm's home base or in the United States. Rather, it is related to final assembly in developing countries. This point may indicate that a number of foreign multinational firms in the sample have more global orientation than expected by international product cycle theory, therefore supporting the global assumption of internalization theory.

ADAPT and MODIFY are significantly related to PERFORM2 ($p=.04$ and $p=.07$, respectively), while MKTOBJ and REGION are weakly related to PERFORM2 ($p=.18$ and $p=.20$, respectively). Product adaptation (ADAPT) and product modification or model change (MODIFY) and are negatively related to the product's sales growth rate, indicating that the more frequent the model changes and the more extensive the level of product adaptation to the U.S. market, the lower is the product's sales growth rate in the United States. As discussed earlier regarding product adaptation, a high frequency of model change as well as a high level of product adaptation may make it difficult for the multinational firm to move down the experience curve by reaping economies of scale in and learning knowhow involved in production and marketing. Product adaptation is a reactive strategic concept and may be avoided, if not completely, once a globally acceptable product is conceived and developed. The firm may not afford to avoid model changes, however, if its competitors change or modify their products on a regular basis for competitive

reasons. Since this study is cross-sectional in nature, it may be conjectured that, because of lagged customer acceptance, the products, competing in an industry with frequent model changes being a norm, may likely face a slower sales growth rate than in an industry without.

It is interesting to recognize that the firm's commitment to market share (MKTOBJ) is weakly but positively related to sales growth rate (PERFORM2). This positive relationship is a mirror image of what was observed in the relationship between MKTOBJ and PERFORM1. In other words, when a relative market share is low, the firm strives to increase it (i.e., a high commitment to market share) and thus, if successful, obtain a high sales growth rate.

Lastly, a marginally significant difference in sales growth rate between European and Japanese firms (REGION) is observed ($p=.20$). It somewhat appears that, in the aggregate, European firms have experienced a slower sales growth rate than Japanese firms.

Although the hypothesis is not generally supported for the sales growth rate as an indicator of the product's competitive strength, one caveat is offered. As apparent from the section for Hypothesis 2a, PLC and INTSORC2 are significantly correlated ($r = -.325$, $p = .006$). The negative correlation between PLC and INTSORC2 indicates that the extent of internal sourcing of major components decreases as the product life cycle stage progresses. Since it was suspected that a collinearity between the two

variables may have nullified the effect of INTSORC2 on PERFORM2, an ANCOVA was performed on PERFORM2 without PLC in the model. This analysis has not changed any of the results except for INTSORC2, which is found somewhat significant (p=.14) with a positive sign as expected. Although both PLC and INTSORC2 are not simultaneously significant in the model for PERFORM2, the product life cycle stage discussed in international product cycle theory (represented by PLC) and the extent of internal sourcing of major components in internalization theory (represented by INTSORC2) may be used alternatively to explain the product's competitive advantage measured by sales growth rate.

Summary

Primarily, there were two objectives in this study. First of all, the typology of sourcing strategies was employed to categorize sourcing practices in actual use by European and Japanese multinational firms. Although the typology identifies 64 alternative sourcing strategies in servicing the U.S. market, a limited number of sourcing strategies are in actual use. Yet, the traditional concept of modes of entry such as exporting and direct investment was found inadequate in explaining the movement of components and finished product on a global scale.

Second, the implications of internalization theory were tested at the product level. A study at the product level has been called for so as to evaluate the adequacy of the

theory for decision-making purposes. Along with the variables originating from the theory, a number of control variables (i.e., firm size, product life cycle, product adaptation, product modification, market share objective, regional difference, and product type) were also considered in relation to sourcing strategies.

Japanese firms may be somewhat more export-oriented than European firms. However, the regional difference in orientation is found so marginal, contrary to the common notion that Japanese firms are extremely export-oriented. Both components sourcing and assembly in developing countries are strongly influenced by the extent to which a product is made up of "standardized" components--the components that could be produced by local firms in newly industrializing countries (NIC's) such as Taiwan and Brazil without any technical assistance from the multinational firm. It is also found that the "standardizedness" of components has little to do with the international life cycle stage of the product.

However, the high transportation costs and the instability of exchange rates motivate the foreign multinationals to source (manufacture) a large portion of the total sales of the product in the United States. The components sourcing and assembly in the United States are employed in a later stage of the product life cycle--a finding partially supportive of international product cycle theory. The large foreign multinational firms tend to

assemble products in the United States. However, the firm size has very weak bearing on where components are sourced from for assembly in the United States. If the level of product adaptation to the U.S. market is high, then U.S.-made components appear to be crucial. Yet, the final product may be assembled elsewhere with U.S.-sourced components.

For both durable and non-durable products, the novelty of patented knowledge and the product life cycle dictate the extent of major components sourced internally. Patents make it possible for the firm to enjoy a temporarily sanctioned monopoly. As the product life stage progresses, however, an increasing number of alternative suppliers of components appear, thereby reducing the necessity for the firm to source components internally.

On the other hand, the internal/external assembly decision is influenced by different factors for each of the product types. For durable products, the high level of novelty of the product technology to the firm (in terms of patents, trade secrets, and production techniques), the rigid quality specification for major components of the product, and the frequent model change tend to motivate the firm to internally assemble the product. For nondurable products, since they involve much more intangible "process" innovations rather tangible "product" innovations in parts and components, it appears easier for the firm to control the level of dissemination of patented knowledge through an

external assembly such as licensing and minority-participated joint ventures, especially in the later stage of the product life cycle.

Transfer of components and products between internal members of corporate system require that prices be established. However, intracorporate transfer prices may be manipulated to some extent in such a way as to reduce the incidence of ad valorem tariffs and corporate income taxes on a global scale. Transfer price manipulations are reported only in the sourcing of durable products for the U.S. market. As far as the intrafirm transfer of components and products are concerned, a majority of firms do not employ transfer prices either above or below the market or "arms' lengths" prices. However, of the firms which manipulate transfer prices, some engaged in transfer pricing extensively while others do so for only a small portion of the components and products.

A major assembly location is influenced by the U.S. market attractiveness and the transfer costs (in particular, the transportation costs and the instability of exchange rates). The higher the market growth rate and the higher the overall profitability in the U.S. market, the foreign multinational firms are more likely to service the U.S. market by exporting products either from their home countries or from the developing countries. If the transportation costs for the product exported from abroad are high and the exchange rates are unstable, then the

assembly in the United States is a preferred sourcing strategy. Unfortunately, international product cycle theory could not accommodate the possibility of various sourcing patterns available to the firm regardless of the product life cycle stage. This finding may be indicative of the fact that the multinational firms could manufacture products literally anywhere on the globe, attenuated by the transfer costs as the major bottlenecks to global sourcing.

The product's competitive strength in the U.S. market is composed of two discrete factors: the product's relative market share and sales growth rate. The product's relative market share in the United States is influenced by the extent to which major components are sourced internally, but neither affected by the internal/external assembly nor by the assembly locations. As stated earlier, the high level of internal sourcing of major components is reflective of the fact that the firm is endowed with the high novelty of patented knowledge. Whether the product is finally assembled by the internal members (e.g. subsidiaries) of the multinational firm or by the external members (e.g., licensees, minority-owned affiliates, or subcontractors) does not appear to affect the product's market performance. Neither does the assembly location.

Contrarily, the product's sales growth rate in the U.S. market is somewhat positively related to the internal assembly, and is strongly associated with the locations of final assembly. Paradoxically, despite the importance of

the life cycle stage in determining its competitive strength, the products assembled in developing countries had a higher U.S. sales growth rate than those assembled in the foreign multinational firm's home country and in the United States. This finding shows an obvious limitation of the international cycle argument.

Finally, the product's relative market share and sales growth rate appear to be hampered by a high level of product adaptation to the U.S. market, while the product's sales growth rate is also negatively affected by frequent model changes. This point offers a strong call for the development of a globally acceptable product.

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CHAPTER V

CONCLUSIONS: IMPLICATIONS AND RECOMMENDATIONS

What has been missing in the international business literature is a holistic perspective of the movement of components and products managed by the multinational firm utilizing both the comparative advantages of various locations on the globe and the firm's competitive advantages. The typology was used as a tool to identify various sourcing practices in actual and potential use by European and Japanese multinational firms in servicing the United States. The internalization theory is instrumental in identifying the underlying factors which make various sourcing strategies feasible and also the factors which keep the firms from adopting them. As such, this study has offered timely empirical findings that identify the possibilities and limitations of various sourcing strategies by which to improve the operational efficiency of multinational firms and, therefore, their marketing performance. Based on the findings in Chapter 4, this chapter first presents managerial and public policy implications. Next, methodological implications and limitations are discussed. Lastly, several recommendations for future research are presented.

Managerial Implications

1. Nature of Global Sourcing Strategy

It is widely recognized that the expansion of European and Japanese firms into the U.S. production through direct investment has been staggering, while that of U.S. firms' direct investment abroad has slowed down since the 1970's.[1,2] A point that Davidson made with respect to mature U.S. multinational firms applies equally well to mature European and Japanese multinational firms:

> Multinational enterprises have made substantial investments in developing channels of distribution, manufacturing facilities, and local management expertise in foreign countries. These investments represent important resources that can be utilized to promote further foreign expansion. .....Multinational firms can utilize the capacity of their established international systems to best advantage by introducing additional complementary product lines into existing subsidiaries.[3]

Now that many European and Japanese multinational firms have affiliates established in many parts of the world, they have become capable of tapping various resources on a global scale, if they opt to do so. Global strategy mandates that the affiliates of the multinational firm become part of a system in manufacturing, marketing, and financial management rather than operating independently of others.

Global sourcing strategy has been conceived of as a set of various alternative ways of servicing foreign markets. In fact, many firms simultaneously use a mix of multiple sourcing strategies in marketing their products in the United States. Multiple sourcing strategy generally

requires a high level of coordination between parent firms and their foreign affiliates in terms of their corporate product policy and production schedule on a global scale. More than 80% of the firms participating in this study indicated that the parent company policy is to develop either standardized products worldwide or standardized products worldwide with some specific adaptation for some markets, if necessary. A high level of product standardization within the corporate system makes it easy for the parent and its foreign affiliates to coordinate their worldwide production schedule in a way that the U.S. market could be serviced from various sourcing locations, depending upon the level of U.S. demand for the product.

Although this study does not bring to light how coordinated the sourcing of components is for firms which use a mix of multiple sourcing strategies in servicing the U.S. market, a high level of coordination in components sourcing is equally anticipated. A high level of worldwide product standardization would not be possible, if the components that went into the product were not standardized.

2. Sourcing and Locations

Despite cultural differences among industrially advanced countries including most of the Western European countries, Japan, and the United States, the productive capacity, labor costs, and consumption pattern have become quite similar. Therefore, it appears to have become a strong technical possibility that components could be

procured and be assembled into a finished product in any of these developed countries. The stage-like evolution of sourcing patterns as predicated by international cycle theory may no longer apply to mature multinational firms as two major theoretical foundations of the international cycle theory do not always hold. The first theoretical foundation is that world demand for a new product or innovation gradually expands as time elapses. The second foundation is that an optimal production location shifts in a predictable way from home to developed markets and then to developing countries. The naivete of these assumptions is strongly challenged in favor of a global approach that mature multinational firms take in search of similarities in various markets. In the accelerated tempo of new product introduction abroad and the shortening of innovational lead time, these firms may not afford to seek foreign markets only after the saturation of their domestic markets. In addition, today's multinational firms are extensively informed about conditions in foreign markets, while the environmental differences that existed in the 1960's have been reduced to trivial dimensions, especially among industrialized countries.

A cross-sectional relationship between the production (assembly) location and the product life cycle stage in a major sourcing strategy is shown in Table 27. This study has shown that the assembly location is strongly affected by the U.S. market attractiveness (i.e., growth and profit

TABLE 27

RELATIONSHIP BETWEEN PRODUCTION (ASSEMBLY) LOCATION AND PRODUCT LIFE CYCLE STAGE IN A MAJOR SOURCING STRATEGY

	PRODUCT LIFE CYCLE			
PRODUCTION LOCATION	New	Growth	Mature	Decline
Home Country[a]	5	12	17	1
United States	2	7	21	3
Developing Countries	0	1	2	0

[a]For the European firms, "home country" includes their country of origin and other Western European countries in the European Community. For the Japanese firms, it is Japan only.

potential), the stability of exchange rates, and transportation costs. High U.S. market attractiveness encourages European and Japanese multinational firms to export their products not only from their home countries but, interestingly, also from their facilities in developing countries. Their export orientation in light of the high U.S. market attractiveness is economically feasible because high profit margins in the United States enable them to sufficiently recoup the cost of transporting their products to the U.S. market. U.S. tariff and non-tariff barriers are of little importance to European and Japanese multinational firms. However, if transportation costs are prohibitively high, the product is likely to be manufactured in the United States regardless of its life cycle stage. On the other hand, this export orientation also tends to be hampered by the recent instability of exchange rates.

It appears that the propensity of production in the United States somewhat tends to increase as the product matures. The evidence is far from clear, however. It is all the more interesting to note that production in developing countries has been observed in a few cases for products in the growth or maturity stage of the product life cycle, but none in the decline stage. Tables 28 and 29 show where products were originally introduced and how they were initially marketed in the United States by European and Japanese multinational firms. In general, a majority of new products were originally introduced at home, and

TABLE 28

REGION IN WHICH THE PRODUCT WAS ORIGINALLY MARKETED

	FIRM		
REGION	European	Japanese	Total
Home Country	29	23	52
European Countries	15	7	22
United States	15	7	22
	59	37	96

NOTE: Due to simultaneous introduction of the product in more than one region, totals do not equal the number of responding firms.

TABLE 29

MODE OF INITIAL INTRODUCTION OF THE PRODUCT IN THE UNITED STATES

MODE OF INITIAL ENTRY	FIRM		Total
	European	Japanese	
1. Export from home	27	23	50
2. Export from EC	0	1	1
3. Manufacture in US	14	4	18
4. Export from Asian Country[a]	1	0	1
5. Multiple Entry	1	0	1
	43	28	71

[a]Excludes Japan.

subsequently introduced in the United States. The initial mode of entry for the U.S. market was either through exporting from home or manufacturing in the United States, with an exception of one product exported from a developing Asian country. About 33% of the European firms initially marketed their products by manufacturing them in the United States, while 82% of the Japanese firms entered the U.S. market by way of exporting from Japan. The export orientation of the Japanese firms at the time of their initial introduction of products in the United States is understandable, since their globalization is a relatively recent development.[4]

The evidence shown here (Tables 27, 28, and 29) matches Leroy's findings with the product strategies of U.S. multinational firms that there are many products which skip the initial export phase or the local manufacture phase in the international product cycle and that the product which has gone through all the life cycle phases is rarely observed.[5] The analysis in Chapter 4 confirms that the international cycle argument generally helps explain the cases of production (assembly) in the United States by European and Japanese multinational firms as a defensive move to protect their U.S. competitive position once achieved through exports. However, other sourcing practices cannot be explained by the international cycle argument.

Components sourcing from various locations other than the production (assembly) location has been observed,

regardless of the product life cycle stage. As a rule, an assembly location is most likely to be the location in which a majority of components is sourced. Essentially, as for the assembly locations, the same factors affect the corporate decision on locations in which components are sourced, with a notable exception of product adaptation. If there is a strong need to adapt a product to the U.S. market, it becomes necessary for foreign multinational firms to source an increasing portion of components in the United States, although they may be assembled into a finished product elsewhere. It is plausible that a high degree of product adaptation required for the U.S. market indicates the unavailability of, or the difficulty in sourcing abroad, some of the components which meet the U.S. standard or specification.

It is interesting to note, however, that a high degree of product adaptation cuts into the product's competitive strength (i.e., market share and sales growth rate) relative to competition in the U.S. market. Frequent model changes also appear to hamper the product's sales growth. Product adaptation and frequent model changes generally make it difficult for foreign multinational firms to move down the experience curve on a global scale by increasing their economies of scale and accumulating knowledge base in manufacturing and marketing the product. In order to be successful and stay competitive in the foreign market, multinational firms should strive to develop a globally

acceptable product with no more than a cosmetic level of product adaptation and modification, if at all, to meet the specific demands in different and changing markets. As the consumption and product use pattern across various countries, particularly, among developed countries has gradually become similar, Levitt's call for a global product should be more than a provocative thought and should be taken seriously by the multinational firms.

3. Sourcing in Developing Countries

Besides product standardization, mature multinational firms have explored a possibility of integrating their sourcing practice on a global scale by engaging in the so-called "offshore production," that is, by sourcing components and finished products in developing countries.

Offshore production has been seen as an attempt to integrate production on a global scale by taking advantage of inexpensive but skilled labor in some developing countries. According to the international product cycle theory, this "offshore production" will be used by multinational firms when the product is in the later stage of the life cycle because keen price competition necessitates the procurement of inexpensive labor and components, usually, in developing countries for the firm to stay competitive in global markets. Interestingly, the findings of this study are not as conclusive as is required to support the international product cycle argument. The product life cycle stage is weakly related to components

sourcing in developing countries, while it is not at all related to assembly in those countries. Above all, the product life cycle stage on a global basis is not at all related to the "sourceability" of components and products in developing countries, although the international cycle theory claims that it is. In other words, regardless of the product's life cycle stage, "offshore production," or components sourcing and assembly in developing countries, could be a feasible and, probably, cost-efficient strategy, provided that the product is made up of a high percentage of standard components that could be procured in developing countries.

4. Internal Components Sourcing and Assembly

The extent of major components sourced from the internal members of the multinational corporate system and the extent of final production or assembly made by the internal members are motivated by different factors and are also different between durable and non-durable products. It has been widely recognized that the competitive strength of the firm strongly hinges on its prowess in R&D activities which lead to innovations (i.e., patents, trade secrets, and proprietary methods of production). This study has found that new innovations take place at any stage of the product life cycle. It indicates that continued innovations are a critical strategy in sustaining the product's competitive edge in a marketplace independently of the product's life cycle stage.

This study has found that the extent of internal sourcing of major components is positively related to the product's relative market share, while the extent of internal assembly is weakly related to the product's sales growth rate. It is no wonder that the firm retains for internal use the type of innovations which could give a competitive edge over its competitors. Innovations which are protected by patents motivate the firm to internally utilize them to its fullest advantage. Patents provide the firm with a virtual but temporary monopoly of components, products, and possibly, production knowhow that its competitors could not easily emulate. Production knowhow protected by patents generally allows the firm to produce components and products more efficiently than its competitors can.

The nature of patents also appears different between durable and non-durable products. Patents for the manufacture of durable products tend to be "product" innovations reflected in critical components of the product or the product itself, while those for the manufacture of non-durable products tend to be "process" innovations associated with innovative manufacturing processes. It is conjectured that, since much of the patented knowledge for non-durable products does not manifest itself as much in the form of tangible components as it does for durable products, the former is more difficult to be imitated by foreign competitors, thereby enabling the firm to control the level

of dissemination of such patented knowledge through licensing and other indirect methods of product assembly. If so, the multinational firm utilizes patents for the manufacture of durable products within itself through internal sourcing of major components, and can easily license patents for the manufacture of non-durable products to contractual partners outside of the firm.

For durable products, whether or not internal members of the multinational corporate system should assemble a finished product is strongly influenced by 1) the high product quality standard desired by the firm, 2) the frequency of model changes, and marginally by 3) the novelty of the product itself to the firm. These factors all require continual monitoring of the manufacturing process and a good deal of communications between the headquarters and the internal members which actually manufacture the product. The headquarters' continual monitoring and communication are usually best assured and rendered internally within the multinational corporate system. For these reasons, if a high level of the parent's involvement in the manufacturing operation of its internal members is necessary, an internal assembly strategy is obviously preferred over an external assembly strategy regardless of the product's life cycle stage.

5. Competitive Strength of the Product

As pointed out earlier, the product's competitive strength strongly hinges on innovations spawned by the

firm's R&D process. It is also true that the product life cycle stage is, by definition, indicative of the product's competitive strength in a marketplace. Interestingly, this study has found that the product's competitive strength is neither related to its assembly location nor is it influenced by who assembles the product.

In other words, if the parent's continual control over the manufacturing process is not necessary, licensing or a minority-participated joint venture (a form of external assembly) will bring about a similar level of product performance as will be the case with the parent or its subsidiary assembling the product. This indicates a multitude of sourcing strategies from which the foreign multinational firm could choose flexibly without sacrificing the product's competitive strength in the U.S. market. As pointed out previously, a high level of product adaptation also increases the procurement of components in the United States, thereby limiting the firm's capacity to take full advantage of global sourcing. This study does not show, however, to what extent the product adaptation can or cannot be avoided for the product to be marketed in the United States. In general, this finding points out the importance of product standardization on a global scale to the extent possible in increasing the product's market performance.

In conclusion, global sourcing appears to require the standardization of the specification of the components and the product. Once the components and the product are

standardized, it will be further possible for the multinational firm to better integrate the resources of developing countries into the global sourcing of components and finished products. Such possibility has been observed in this study. Despite a small number of components sourcing and product assembly in developing countries, the products sourced from the developing countries have enjoyed a high competitive strength in the United States. Apparently, the globalization of sourcing practices is limited by the transfer costs, in particular, transportation costs. The next section discusses public policy implications in light of the dawn of global sourcing by multinational firms of any origin.

Public Policy Implications

Public policy makers in the home countries of European and Japanese multinational firms, in the United States, and in developing countries alike, may find this study relevant as the multinational firms with a global orientation affect all parties one way or another. If global sourcing strategy promises the multinational firms increased operational efficiency and profitability, it will have a tremendous impact on public policy at home and abroad. Since many of government actions and policies are aimed at controlling multinational firms, the interests of governments at home and abroad will increasingly come in conflict with those of the multinational firms. In particular, employment and

technological issues have been and will be the major areas of concern for both governments.

The more globally oriented the multinational firms become, the more likely it is that they will transfer abroad part or even all of their manufacturing operations as they see fit, resulting in "export" of domestic employment opportunities at least in the short run. This phenomenon has recently come to be known as the "hollowing-out" of corporations which has become a hotly debated issue in the United States[6] and also quite recently in Japan in the wake of the enormous appreciation of the Japanese yen relative to the U.S. dollar.[7] The loss of employment at home has always been a politically sensitive issue. For example, the Burke-Hartke bill introduced in the U.S. Congress in 1971 was such an attempt to discourage U.S. multinational firms from increasing their foreign production.[8]

In a sense, technology transfer is a double-edged sword. There is some concern about a rapid diffusion abroad of technology and innovation developed at home. Hasty introduction abroad by multinational firms of new technology through licensing and direct investment might shorten the parent country's technological advantage over foreign competition,[9] further weakening the notion of the international product cycle. On the other hand, developing countries are concerned about their overdependence on technology controlled by firms in the industrial countries, although they recognize technology transfer and employment

opportunity provided by foreign multinational firms essential to economic development.

Multinational firms are known to have transferred new technology abroad within their corporate systems so that they could internally take advantage of technological superiority and local resources as well to their best advantage. It is apparent that multinational firms continue to do so despite the governments' concern over technology transfers.

From a macroeconomic perspective, there are two opposing viewpoints on the economic efficiency of multinational firms.[10] The first viewpoint is that they promote a more efficient distribution of resources within the corporate systems as they are able to overcome distortions in the market system such as barriers to technology transfer, tariffs and non-tariff barriers, distorted exchange rates, and barriers to information flow. The second view, on the other hand, is that they further distort the functioning of the market system as they operate in oligopolistic markets, thereby engaging in restrictive practices, raising entry barriers, and consequently adversely affecting the efficiency of global resource allocation.

However, it is not an easy task to examine whether the operational efficiency of multinational firms is a result of their economically efficient use of scarce resources on a global scale or it is due to their monopoly power in the

market.[11] Indeed, the multinational firms have both of these characteristics. Whichever characteristic weighs more, multinational firms will act according to their profit motive on a global scale. Therefore, regardless of the objectives of public policy at home and abroad, the costs and benefits of operations by multinational firms should be examined. Especially in developing countries, an excessive amount of control over foreign multinational firms will likely further thwart the development of their economies, since the multinational firms could freely choose a country which offers favorable business environments by providing them with incentives to locate components sourcing and/or assembly facilities. Mutual global sourcing practices by European and Japanese multinational firms along with that of U.S. multinational firms will definitely promote a further consolidation and unification of the developed economies, which could be seen as a development of a virtual "customs union" encompassing the European Community, Japan, and the United States, referred to as the "Triad Power".[12]

Methodological Implications

As critiqued in Chapter 2, the major limitations of the past studies testing internalization theory concern the two-country framework and the aggregate data used. Despite the global perspective of internalization theory, all the past studies applied a two-country model in which a foreign market or a group of foreign markets is supplied either by

exporting from a firm in the home country or by its foreign production in the foreign market(s). The two-country framework has thus assumed away the increasing importance of components sourcing and assembly in a third-party country. Kotabe and Omura's typology of global sourcing strategies used in this study is a timely development such that it has incorporated into a single framework various sourcing strategies originating from third-party countries as well as from home and market countries. This typology, being a classification scheme, does not offer underlying factors which will determine an optimal sourcing strategy or a mix of multiple sourcing strategies for a given product. Based on the multiple-country framework of the typology, the global implications of internalization theory has been placed in a proper perspective.

A second implication of this study relates to the data used. As Leroy[13] and Mullor-Sebastian[14] point out, there is always a dilemma in choosing between macro and micro data for a study of multinational firms. Leroy has concluded in his study of the international product cycle model that the international product cycle may be present in the aggregate without being observable for individual products.[15] Therefore, findings based on macro or aggregate data have limited relevance to managers of the multinational firm. Mullor-Sebastian likewise stresses managers' perception of a product being different from what aggregate data show.[16] Since the past studies of internalization theory based their

findings on aggregate data, it is uncertain whether the findings are applicable to managerial decision-making. Based on the product-level data, this study has confirmed that the theoretical implications of internalization theory generally apply to management of sourcing strategies on a global basis. However, this theory, as does any other theory, addresses itself to a limited number of key variables for management of global sourcing strategies. In this respect, it fails to explain such issues of strategic importance to the firm as product adaptation and modification, management of a product line, the strategic roles of the products for the firm (or a strategic business unit of the firm), and organizational strategy.

Limitations and Recommendations

This study is limited both in research methodology and in scope. The limitations of this study open a door to future research. Methodologically, this study was cross-sectional in nature, and presented the results based on a snapshot of the sourcing strategies of European and Japanese multinational firms. A cross-sectional research may not truly represent the dynamic nature of global sourcing strategy which could change over time. Therefore, a longitudinal study of sourcing practices by mature multinational firms is strongly called for. It will be a descriptive case-study type of research, tracing the

development over time of a product with a strong focus on how and from where components are sourced.

The research consisted of a sample of European and Japanese multinational firms. A low response rate was achieved because of the nature of the questionnaire which required from the respondent a fair amount of knowledge of sourcing practices on a global scale. Almost 50% of the firms actually used a mix of multiple sourcing strategies simultaneously in order to service the U.S. market. Since the focus of this study was on a sourcing strategy that each respondent considered as "major", relatively minor sourcing practices in a given multiple sourcing mix were not studied. In addition, the typology of sourcing strategies used in this study did not represent all the variables considered by multinational strategists. Finally, it must be recognized that the responses to the questionnaire were assumed to accurately represent the actual sourcing practices, and that the decisions regarding the sourcing strategies had been made rationally. Therefore, replication of similar studies is called for so as to further provide cumulative evidence in global sourcing practices.

This study is also limited in scope for the following reasons. The limitations of this study open a door to future research. First, only one product or product line per firm has been the focus of this study. In fact, a large majority of multinational firms operate in more than one industry. The synergistic effect of the firm's

diversification on its market performance has not been considered in this study. In this regard, a global strategic planning framework should be developed, which goes beyond the simplistic application of various portfolio analyses to the international sphere.

Second, the relationship of the organizational structure of a multinational firm with its sourcing practices has not been studied. Different organizational structures may affect the extent to which global sourcing is possible. Beyond the formal organizational structure of a multinational firm, the sourcing practices may be studied at the strategic business unit level.

Third, this study has assumed that the parent firm can effectively manage its affiliates only if the parent owns more than 50% of their outstanding corporate stocks. The parent firm's long-lasting contractual relationships with independent firms could prove to be as effective in controlling the operations of these non-affiliates. This study has also ignored the notion of a strategic alliance, a sort of a synergistic joint venture in which two or more firms contribute their respective superior technology and/or knowhow to make possible what could not otherwise be achieved by each individual firm. Nothing is known in these cases as to how sourcing decisions are made and how enforceable they are.

The last limitation in this study is that the United States is treated as a major market for European and

Japanese firms. Although this is true, they may look at the whole market as a single market. As in the case of Phillips, a giant electronics firm headquartered in the Netherlands, it is possible to centralize all manufacturing operations in one location, thereby enjoying enormous economies of scale in production. Components sourcing and assembly location decisions may not be made only with respect to the U.S. market. It is also known that some firms apparently synchronize their worldwide production in various locations with the worldwide demand for the product. In other words, a mix of multiple sourcing practices, say, both exporting from home and foreign production in the U.S. market, is used when the U.S. demand for the product is at the peak, whereas the U.S. market is serviced by production here at the time of sluggish U.S. demand with a part of U.S. production exported to some other foreign market. This is a very interesting area to be studied.

The issue of demand-supply synchronization on a global scale is logically tied to the issue of product adaptation. This study has found that a high level of product adaptation does not improve the product's market performance. Rather, it tends to weaken the product's market performance relative to competition. Levitt's call for a global product is to the point in that global sourcing and demand-supply synchronization that accompanies it are made possible by developing a global product which would require no more than cosmetic adaptation to various markets in the world.

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14. Mullor-Sebastian, Alicia, "The Product Life Cycle Theory: Empirical Evidence," Journal of International Business Studies, 14, Winter 1983, 95-105.

15. Leroy, p.178

16. Mullor-Sebastian, p.96

APPENDICES

APPENDIX A COVER LETTER (EUROPEAN VERSION)

Dear Executive:

Herein enclosed is a questionnaire, requesting your firm's participation in the Michigan State University Survey of Global Sourcing Strategies by European Multinationals.

We believe that a high rate of participation will greatly improve the usefulness of the survey's results to the participants and to interested scholars. We would be very appreciative, therefore, if your staff could find the time to complete the questionnaire for one of your major products currently marketed in the United States.

As soon as our data collection is completed, a letter will be sent to all of the participants who have requested a copy of our results. The letter will indicate the anticipated nature of our research report and its expected completion date.

If you have any questions about the project or interpreting the questionnaire, please call Dr. Glenn S. Omura of Michigan State University at (517) 353-6381, or myself at (314) 882-7672.

Sincerely,

Masaaki Kotabe
Assistant Professor of Marketing
University of Missouri-Columbia

APPENDIX A COVER LETTER (JAPANESE VERSION)

Dear Executive:

Herein enclosed is a questionnaire, requesting your firm's participation in the Michigan State University Survey of Global Sourcing Strategies by Japanese Multinationals.

We believe that a high rate of participation will greatly improve the usefulness of the survey's results to the participants and to interested scholars. We would be very appreciative, therefore, if your staff could find the time to complete the questionnaire for one of your major products currently marketed in the United States.

As soon as our data collection is completed, a letter will be sent to all of the participants who have requested a copy of our results. The letter will indicate the anticipated nature of our research report and its expected completion date.

If you have any questions about the project or interpreting the questionnaire, please call Dr. Glenn S. Omura of Michigan State University at (517) 353-6381, or myself at (314) 882-7672.

Sincerely,

Masaaki Kotabe
Assistant Professor of Marketing
University of Missouri-Columbia

APPENDIX B QUESTIONNAIRE (EUROPEAN VERSION)

MICHIGAN STATE UNIVERSITY
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
SURVEY OF
GLOBAL SOURCING STRATEGIES

Dear Executive:

The Graduate School of Business Administration at Michigan State University is conducting research on "Global Sourcing Strategies by Affiliates of European Multinationals in the United States." Our objectives are:

1) To develop a typology of sourcing strategies which will help identify the strategic alternatives available,

2) To develop managerial guidelines that will enable management of multinational firms to select the sourcing strategy most appropriate to their competitive situation and resource position, and

3) To estimate the likely performance from the use of given strategies under given competitive and resource conditions.

We would greatly appreciate your firm's participation in this survey. In return, we would like to send you a copy of the research results. Please note that the questionnaire does not require disclosure of any proprietary information concerning the product or your firm. Nevertheless, you have our assurance that your responses will be kept strictly confidential, and that your firm's name will not appear in any tabulation of results of this research project.

The purpose of the questionnaire is to determine current corporate practice regarding the sourcing strategy for a product marketed in the United States. Please select one of your major products which has been and is still marketed in the US market within the past ten years, whether the product is exported from your parent's home country or from elsewhere, or whether it is manufactured in the United States or elsewhere.

Thank you very much in advance for your help in this important project. If you have any questions about the project or interpreting the questionnaire, please call us at the numbers below.

After you have completed the questionnaire, please return it in the enclosed envelope. It would be greatly appreciated if you could return it as soon as possible. If we can obtain your cooperation in this matter, we will be able to send you the results much more quickly.

Glenn S. Omura
Associate Professor
of Marketing
Michigan State University
Ph. 517/353-6381

Masaaki Kotabe
Assistant Professor
of Marketing
University of Missouri-Columbia
Ph. 314/882-3282

(A) GENERAL INFORMATION

A1. Your job title in the corporation _____

A2. Your department _____

A3. Your department's position within the parent corporate system

____ 1) corporate headquarters ____ 2) division ____ 3) subsidiary ____ 4) other (please specify) _____

A4. In which country is your parent company headquartered? COUNTRY: _____

A5. Fiscal year 1985 sales volume of your parent corporate system as a whole:

____ 1) $5 billion and over ____ 2) $2.5-$4.9 billion ____ 3) $1.5-$2.4 billion ____ 4) $1.4 billion or less

A6. For product development, the parent company policy is to attempt to have ...

____ 1) Standardized Products Worldwide

____ 2) Standard Products with Specific Adaptation for Some Markets

____ 3) Unique Product Designed for Each Country

____ 4) Other (please describe) _____

(B) MAIN FEATURES OF THE PRODUCT

INSTRUCTION: Please select one of your major products currently marketed in the United States and respond to the following questions.

B1. Name of the Product (Optional) _____

B2. The type of this product is best described as ... (Check only one of the following categories)

CONSUMER PRODUCT:

____ 1) Durable Product

____ 2) Non-Durable Product

INDUSTRIAL PRODUCT:

____ 3) Durable Product

____ 4) Non-Durable Product

B3. The type of the business which produces this product is best described as: ____ ____
(Select one category from the appendix list attached on the last page of this questionnaire)

B4. For the U.S. market, has this product been modified ... (Check one)

____ 1) Not at all? ____ 2) Slightly? ____ 3) Moderately? ____ 4) Substantially?

B5. Is it typical practice for your division and your major competitors to physically change all or part of the line of products offered ... (Check one)

____ 1) Semiannually? ____ 2) Annually? ____ 3) At intervals longer than one year? ____ 4) No regular periodic pattern of change?

(C) MARKETING OF THE PRODUCT

C1. When and in which region was the product marketed first? YEAR: 19_____

____ 1) Parent's country ____ 2) other European country(ies) ____ 3) United States ____ 4) Japan

____ 5) Other (please specify) _____

C2. When was the product initially marketed in the United States? YEAR: 19_____

C3. How was the product initially marketed in the United States? (Check one only)

____ 1) Export from the parent's home country ____ 2) Export from other European country ____ 3) Manufacture in the United States ____ 4) Export from Japan

____ 5) Export from other developed country ____ 6) Export from Asian country other than Japan ____ 7) Other (please describe) _____

C4. Current role of the product with respect to overall market share in the United States is to:

____ 1) To increase its market share

____ 2) To maintain its market share

____ 3) To allow its market share to fall

C5. In which regions (or countries) <u>other than the United States</u> is the product currently marketed? (Check as many as apply)

____ a) Parent's country ____ b) Other European country(ies) ____ c) Canada ____ d) Japan

____ e) other developed country(ies) ____ f) Latin America ____ g) Other country(ies)

C6. Current stage of the product life cycle for this product <u>worldwide</u>: (Check one only)

____ 1) New Stage: Primary demand for product just starting to grow; product still unfamiliar to many potential users

____ 2) Growth Stage: Demand growing at 10% or more annually in real terms; technology and/or competitive structure still changing

____ 3) Maturity Stage: Product familiar to vast majority of prospective users; technology and competitive structure reasonably stable

____ 4) Decline Stage: Product viewed as a commodity; demand declining

C7. During the most recent data year, which modes of entry were used to market the product in the United States, and how much of the sales volume came from each mode of entry? (Accuracy within 10% is adequate)

Mode	Check as many as apply	Percent
a. The Finished Product Exported from Parent's Country	____ →	____
b. The Finished Product Exported from Other European Country	____ →	____
c. The Finished Product Assembled (or Processed) in the US	____ →	____
d. The Finished Product Exported from Japan	____ →	____
e. The Finished Product Exported from Other Developed Country	____ →	____
f. The Finished Product Exported from Asian Country Other Than Japan	____ →	____
g. Other (please describe) _____	____ →	____
		TOTAL = 100%

INSTRUCTION: From now on, all questions are related to the major mode of marketing the product for the US market with the highest percentage as identified in Question C7. In case of ties, pick the mode you feel is the most important.

(D) PRODUCT INFORMATION

Product Technology

D1. In terms of the following aspects of technology, for your firm: does this product represent a ... (Circle each of your responses)

	Minor Change Of A Previous Product In Your Product Line?	Major Change Of A Previous Product In Your Product Line?	Totally New To Your Firm?	Not Applicable
D11. PATENTS	1	2	3	4
D12. TRADE SECRETS	1	2	3	4
D13. PROPRIETARY METHODS OF PRODUCTION	1	2	3	4

D2. As a technical development, how would you rate the product in terms of its competitive impact on the U.S. market for the following aspects of technology? (Circle each of your responses)

	Minor	Major	Hard to Appraise	Not Applicable
D21. PATENTS	1	2	3	4
D22. TRADE SECRETS	1	2	3	4
D23. PROPRIETARY METHODS OF PRODUCTION	1	2	3	4

D3. Have there been major technological changes in the product offered by your firm and/or your major competitors operating in the U.S. market, or in the methods of production, since the introduction of your product?

____ 1) Yes ____ 2) No

D4. Is it likely that there will be major technological changes in the product offered by your firm and/or your major competitors operating in the U.S. market, or in the methods of production, within the next 3 years?

____ 1) Yes ____ 2) No

D5. How many alternative applications (or uses) are there of the technology incorporated in this product in terms of ... (Circle each of your responses)

	Few	Several	Many	Not Applicable
D51. PATENTS?	1	2	3	4
D52. TRADE SECRETS?	1	2	3	4
D53. PROPRIETARY METHODS OF PRODUCTION?	1	2	3	4

Product Performance

D6. In terms of functional performance, for your firm: does this product ... (Check one only)

____ 1) Satisfy customer needs equally as well as a pre-existing product in your product line?

____ 2) Satisfy customer needs better than a pre-existing product in your product line?

____ 3) Satisfy customer needs not met by your pre-existing products?

Composition of the Product

D7. Ignoring transportation costs, approximately what percent of the total value (in your purchase price) of components in the product could be sourced from local firms in newly industrializing countries such as Taiwan, South Korea, and Brazil, under the following two conditions?

a) Without technical assistance from your firm:

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) More than 75% ____ 5) Don't know

b) With technical assistance from your firm:

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) More than 75% ____ 5) Don't know

(E) SOURCING INFORMATION

Components Supply

E1. Does your firm have good alternate sources of supply of major components for the product from independent suppliers?

____ 1) No ____ 2) Yes, but with difficulty ____ 3) Yes, with no difficulty

E2. If there were unstable price (cost) fluctuations in the supply of major components for the product, how would they affect your manufacturing and marketing operations for the U.S. market in the long run?

____ 1) Slightly ____ 2) Moderately ____ 3) Substantially

E3. How rigid is your quality specification for major components of the product?

____ 1) Not very rigid ____ 2) Moderately rigid ____ 3) Very rigid

Components Sourcing Location

E4. Which of the following components-supplying regions is responsible for the greatest percentage of the total value (in your purchase price) of components in the product? (Check one)

____ 1) Parent's country ____ 2) Other European country(ies) ____ 3) United States ____ 4) Japan

____ 5) Other developed country(ies) ____ 6) Developing country(ies)

If the major sourcing location is 6) Developing country(ies), list the names of up to three of the most important countries:

---------- ---------- ----------

E5. Of the components sourced in the region identified above, is more than 50% supplied by your parent firm or its internal members (i.e., your parent company's fully-owned subsidiaries or majority-owned affiliates in this region)?

____ 1) Yes ____ 2) No

E6. Regardless of who are the suppliers of components for the manufacture of the product, approximately what percentage of the total value of components comes from each of the following six locations? (Accuracy within 10% is adequate: Total = 100%)

a) Parent's country _____ % b) Other European country(ies) _____ %

c) United States _____ % d) Japan _____ %

e) Other developed country(ies) _____ % f) Developing country(ies) _____ %

Internal/External Components Sourcing

INSTRUCTION: "INTERNAL MEMBERS" of the parent system include the parent, fully-owned subsidiaries, and majority-owned affiliates and joint ventures.
"EXTERNAL MEMBERS" are independent suppliers and minority-owned affiliates.

E7. Of the components sourced in the parent's country as identified in Question E6 (if this is 0%, skip to Question E8), approximately what percent is supplied by internal members of the parent system?

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) more than 75% ____ 5) Don't know

For the manufacture of the product for the U.S. market, transfer prices for the components sourced from the internal members in the parent's country are generally set ...

____ 1) Above the market price

____ 2) At "arms' length" or market price

____ 3) Below the market price

____ 4) Don't know

E8. Of the components sourced in other European country(ies) as identified in Question E6 (if this is 0%, skip to Question E9), approximately what percent is supplied by internal members of the parent system?

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) more than 75% ____ 5) Don't know

For the manufacture of the product for the U.S. market, transfer prices for the components sourced from the internal members in the other European country(ies) are generally set ...

____ 1) Above the market price

____ 2) At "arms' length" or market price

____ 3) Below the market price

____ 4) Don't know

E9. Of the components sourced in the United States as identified in Question E6 (if this is 0%, skip to Question E10), approximately what percent is supplied by internal members of the parent system?

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) more than 75% ____ 5) Don't know

For the manufacture of the product for the U.S. market, transfer prices for the components sourced from the internal members in the United States are generally set ...

____ 1) Above the market price

____ 2) At "arms' length" or market price

____ 3) Below the market price

____ 4) Don't know

E10. Of the components sourced in Japan as identified in Question E6 (if this is 0%, skip to Question E11), approximately what percent is supplied by internal members of the parent system?

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) more than 75% ____ 5) Don't know

For the manufacture of the product for the U.S. market, transfer prices for the components sourced from the internal members in Japan are generally set ...

____ 1) Above the market price

____ 2) At "arms' length" or market price

____ 3) Below the market price

____ 4) Don't know

E11. Of the components sourced in the other developed country(ies) as identified in Question E6 (if this is 0%, skip to Question E12), approximately what percent is supplied by internal members of the parent system?

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) more than 75% ____ 5) Don't know

For the manufacture of the product for the U.S. market, transfer prices for the components sourced from the internal members in the other developed country(ies) are generally set ...

____ 1) Above the market price

____ 2) At "arms' length" or market price

____ 3) Below the market price

____ 4) Don't know

E12. Of the components sourced in the developing country(ies) as identified in Question E6 (if this is 0%, skip to Question E13), approximately what percent is supplied by internal members of the parent system?

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) more than 75% ____ 5) Don't know

For the manufacture of the product for the U.S. market, transfer prices for the components sourced from the internal members in the developing countries are generally set ...

____ 1) Above the market price

____ 2) At "arms' length" or market price

____ 3) Below the market price

____ 4) Don't know

Factors Affecting Decisions on Sourcing Locations

In general, how important is each of the following factors as a determinant of your current components sourcing decision as identified in Questions E4 and E6? (Rate all factors and circle a number for each factor)

	Not At All Important	Somewhat Important	Important	Very Important	Extremely Important
E13. Low technological sophistication of the product	1	2	3	4	5
E14. Low costs of production	1	2	3	4	5
E15. High stability of the exchange rate(s)	1	2	3	4	5
E16. High U.S. import tariff levels on major components	1	2	3	4	5
E17. High U.S. import tariff levels on the finished product.	1	2	3	4	5
E18. High U.S. non-tariff and legal barriers on importation of major components	1	2	3	4	5
E19. High U.S. non-tariff and legal barriers on importation of the finished product	1	2	3	4	5
E20. High transportation costs to the U.S. market for major components	1	2	3	4	5
E21. High transportation costs to the U.S. market for the finished product	1	2	3	4	5

Assembly (Final Processing) Location for the Product

E22. Which of the following countries is the major location in which the product is assembled (or finally processed)? (Check one)

____ 1) Parent's country ____ 2) Other European country(ies) ____ 3) United States ____ 4) Japan

____ 5) Other developed country(ies) ____ 6) Developing country(ies)

If the assembly (or final processing) location is 6) developing country(ies), list the names of up to three of the most important countries:

_____ _____ _____

E23. Of the assembly (or final processing) in the location identified above, is more than 50% done by your parent firm or its internal members of the parent system?

____ 1) Yes ____ 2) No

Factors Affecting Decisions on Assembly (or Final Processing) Locations

In general, how important is each of the following factors as a determinant of your current assembly (or final processing) location as identified in question E22? (Rate all factors and circle a number for each factor)

	Not At All Important	Somewhat Important	Important	Very Important	Extremely Important
E24. Low technological sophistication of the product	1	2	3	4	5
E25. Low costs of production	1	2	3	4	5
E26. High stability of the exchange rate(s)	1	2	3	4	5
E27. High U.S. import tariff levels on major components	1	2	3	4	5
E28. High U.S. import tariff levels on the finished product.	1	2	3	4	5
E29. High U.S. non-tariff and legal barriers on importation of major components	1	2	3	4	5
E30. High U.S. non-tariff and legal barriers on importation of the finished product	1	2	3	4	5
E31. High transportation costs to the U.S. market for major components	1	2	3	4	5
E32. High transportation costs to the U.S. market for the finished product	1	2	3	4	5

(F) MARKET INFORMATION

INSTRUCTION: Rate all of the following characteristics of the U.S. market by circling a number for each question:

Characteristics of the U.S. Market	Very Low	Low	Moderate	High	Very High
F1. Sales volume relative to sales in the parent country ..	1	2	3	4	5
F2. Average gross margin	1	2	3	4	5
F3. Average gross pretax profit (in dollars)	1	2	3	4	5
F4. Four-firm industry concentration	1	2	3	4	5
F5. Short-term (3-year) future market growth rate	1	2	3	4	5
F6. Long-term (10-year) future market growth rate	1	2	3	4	5
F7. Prospects for (3-year) future profit	1	2	3	4	5

Your Product's Market Performance relative to the Competitors' in the U.S. Market

	Very Low	Low	Moderate	High	Very High
F8. Your Market share	1	2	3	4	5
F9. Your Ability to gain market share	1	2	3	4	5
F10. Your Sales growth rate	1	2	3	4	5
F11. Your Pretax profitability (in dollars)	1	2	3	4	5

* *

SPECIFIC IDENTIFICATION (OPTIONAL)

Thank you very much for your time, cooperation, and prompt return of this survey instrument. Your cooperation will prove to be very fruitful in this survey. If you would like a copy of the results of this survey, please fill out the following:

Name _____

Company _____

Address _____

_____

NOTE: IF YOU WISH TO RETURN THIS FORM ANONYMOUSLY AND WOULD LIKE A COPY OF THE RESULTS, PLEASE SEND A POSTCARD WITH WITH YOUR NAME AND ADDRESS TO MR. M. KOTABE AT THE ADDRESS SHOWN ON THE ENCLOSED BUSINESS REPLY ENVELOPE.

APPENDIX: BUSINESS CLASSIFICATION CODE (for Question B3)

10 Food	23 Electronics
11 Tobacco	24 Transportation Equipment
12 Textiles	25 Scientific and Photographic Equipment
13 Apparel	26 Motor Vehicles and Parts
14 Furniture	27 Aerospace
15 Forest Products	28 Pharmaceuticals
16 Publishing, Printing	29 Soaps, Cosmetics
17 Chemicals	30 Computers, Office Equipment
18 Petroleum Refining	31 Industrial and Farm Equipment
19 Rubber Products	32 Jewelry, Silverware
20 Leather	33 Toys, Sporting Goods
21 Building Materials	34 Beverages
22 Metal Products	35 Other

APPENDIX B QUESTIONNAIRE (JAPANESE VERSION)

MICHIGAN STATE UNIVERSITY
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
SURVEY OF
GLOBAL SOURCING STRATEGIES

Dear Executive:

The Graduate School of Business Administration at Michigan State University is conducting research on "Global Sourcing Strategies by Affiliates of Japanese Multinationals in the United States." Our objectives are:

1) To develop a typology of sourcing strategies which will help identify the strategic alternatives available,

2) To develop managerial guidelines that will enable management of multinational firms to select the sourcing strategy most appropriate to their competitive situation and resource position, and

3) To estimate the likely performance from the use of given strategies under given competitive and resource conditions.

We would greatly appreciate your firm's participation in this survey. In return, we would like to send you a copy of the research results. Please note that the questionnaire does not require disclosure of any proprietary information concerning the product or your firm. Nevertheless, you have our assurance that your responses will be kept strictly confidential, and that your firm's name will not appear in any tabulation of results of this research project.

The purpose of the questionnaire is to determine current corporate practice regarding the sourcing strategy for a product marketed in the United States. Please select one of your major products which has been and is still marketed in the US market within the past ten years, whether the product is exported from Japan or from elsewhere, or whether it is manufactured in the United States or elsewhere.

Thank you very much in advance for your help in this important project. If you have any questions about the project or interpreting the questionnaire, please call us at the numbers below.

After you have completed the questionnaire, please return it in the enclosed envelope. It would be greatly appreciated if you could return it as soon as possible. If we can obtain your cooperation in this matter, we will be able to send you the results much more quickly.

Glenn S. Omura
Associate Professor
of Marketing
Michigan State University
Ph. 517/353-6381

Masaaki Kotabe
Assistant Professor
of Marketing
University of Missouri-Columbia
Ph. 314/882-3282

(A) GENERAL INFORMATION

A1. Your job title in the corporation _____

A2. Your department _____

A3. Your department's position within the parent corporate system

____ 1) corporate headquarters ____ 2) division ____ 3) subsidiary ____ 4) other (please specify) _____

A4. Fiscal year 1985 sales volume of your parent corporate system as a whole:

____ 1) $5 billion and over ____ 2) $2.5-$4.9 billion ____ 3) $1.5-$2.4 billion ____ 4) $1.4 billion or less

A5. For product development, the parent company policy is to attempt to have ...

____ 1) Standardized Products Worldwide

____ 2) Standard Products with Specific Adaptation for Some Markets

____ 3) Unique Product Designed for Each Country

____ 4) Other (please describe) _____

(B) MAIN FEATURES OF THE PRODUCT

INSTRUCTION: Please select one of your major products currently marketed in the United States and respond to the following questions.

B1. Name of the Product (Optional) _____

B2. The type of this product is best described as ... (Check only one of the following categories)

CONSUMER PRODUCT:

____ 1) Durable Product

____ 2) Non-Durable Product

INDUSTRIAL PRODUCT:

____ 3) Durable Product

____ 4) Non-Durable Product

B3. The type of the business which produces this product is best described as: ____ ____
(Select one category from the appendix list attached on the last page of this questionnaire)

B4. For the U.S. market, has this product been modified ... (Check one)

____ 1) Not at all? ____ 2) Slightly? ____ 3) Moderately? ____ 4) Substantially?

B5. Is it typical practice for your division and your major competitors to physically change all or part of the line of products offered ... (Check one)

____ 1) Semiannually? ____ 2) Annually? ____ 3) At intervals longer than one year? ____ 4) No regular periodic pattern of change?

(C) MARKETING OF THE PRODUCT

C1. When and in which region was the product marketed first? YEAR: 19_____

____ 1) Japan ____ 2) United States ____ 3) Western Europe ____ 4) Other Asian country(ies)

____ 5) Other (please specify) _____

C2. When was the product initially marketed in the United States? YEAR: 19_____

C3. How was the product initially marketed in the United States? (Check one only)

____ 1) Export from Japan ___ 2) Export from Western European country ____ 3) Manufacture in the United States ____ 4)Export from other developed country

____ 5)Export from Asian country other than Japan ____ 6) Other (please describe) _____

C4. Current role of the product with respect to overall market share in the United States is to:

____ 1) To increase its market share

____ 2) To maintain its market share

____ 3) To allow its market share to fall

C5. In which regions (or countries) <u>other than the United States</u> is the product currently marketed? (Check as many as apply)

____ a) Japan ____ b) Western Europe ____ c) Canada ____ d) Other developed country(ies)

____ e) Latin America ____ f) Other country(ies)

C6. Current stage of the product life cycle for this product <u>worldwide</u>: (Check one only)

____ 1) New Stage: Primary demand for product just starting to grow; product still unfamiliar to many potential users

____ 2) Growth Stage: Demand growing at 10% or more annually in real terms; technology and/or competitive structure still changing

____ 3) Maturity Stage: Product familiar to vast majority of prospective users; technology and competitive structure reasonably stable

____ 4) Decline Stage: Product viewed as a commodity; demand declining

C7. During the most recent data year, which modes of entry were used to market the product in the United States, and how much of the sales volume came from each mode of entry? (Accuracy within 10% is adequate)

Mode	Check as many as apply	Percent
a. The Finished Product Exported from Japan	____ →	____
b. The Finished Product Exported from Western European Country	____ →	____
c. The Finished Product Assembled (or Processed) in the U.S.	____ →	____
d. The Finished Product Exported from Other Developed Country	____ →	____
e. The Finished Product Exported from Other Asian Country	____ →	____
f. Other (please describe) _____	____ →	____
		TOTAL = 100%

INSTRUCTION: From now on, all questions are related to the major mode of marketing the product for the U.S. market with the highest percentage as identified in Question C7. In case of ties, pick the mode that you feel is the most important.

(D) PRODUCT INFORMATION

Product Technology

D1. In terms of the following aspects of technology, for your firm: is this product ... (Circle each of your responses)

	Minor Change Of A Previous Product In Your Product Line?	Major Change Of A Previous Product In Your Product Line?	Totally New To Your Firm?	Not Applicable
D11. PATENTS	1	2	3	4
D12. TRADE SECRETS	1	2	3	4
D13. PROPRIETARY METHODS OF PRODUCTION	1	2	3	4

D2. As a technical development, how would you rate the product in terms of its competitive impact on the U.S. market for the following aspects of technology? (Circle each of your responses)

	Minor	Major	Hard to Appraise	Not Applicable
D21. PATENTS	1	2	3	4
D22. TRADE SECRETS	1	2	3	4
D23. PROPRIETARY METHODS OF PRODUCTION	1	2	3	4

D3. Have there been major technological changes in the product offered by your firm and/or your major competitors operating in the U.S. market, or in the methods of production, since the introduction of your product?

____ 1) Yes ____ 2) No

D4. Is it likely that there will be major technological changes in the product offered by your firm and/or your major competitors operating in the U.S. market, or in the methods of production, within the next 3 years?

____ 1) Yes ____ 2) No

D5. How many alternative applications (or uses) are there of the technology incorporated in this product in terms of ... (Circle each of your responses)

	Few	Several	Many	Not Applicable
D51. PATENTS?	1	2	3	4
D52. TRADE SECRETS?	1	2	3	4
D53. PROPRIETARY METHODS OF PRODUCTION?	1	2	3	4

Product Performance

D6. In terms of functional performance, for your firm: does this product ... (Check one)

____ 1) Satisfy customer needs equally as well as a pre-existing product in your product line?

____ 2) Satisfy customer needs better than a pre-existing product in your product line?

____ 3) Satisfy customer needs not met by your pre-existing products?

Composition of the Product

D7. Ignoring transportation costs, approximately what percent of the total value (in your purchase price) of components in the product could be sourced from local firms in newly industrializing countries such as Taiwan, South Korea, and Brazil, under the following two conditions?

a) Without technical assistance from your firm:

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) More than 75% ____ 5) Don't know

b) With technical assistance from your firm:

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) More than 75% ____ 5) Don't know

(E) SOURCING INFORMATION

Components Supply

E1. Does your firm have good alternate sources of supply of major components for the product from independent suppliers?

____ 1) No ____ 2) Yes, but with difficulty ____ 3) Yes, with no difficulty

E2. If there were unstable price (cost) fluctuations in the supply of major components for the product, how would they affect your manufacturing and marketing operations for the U.S. market in the long run?

____ 1) Slightly ____ 2) Moderately ____ 3) Substantially

E3. How rigid is your quality specification for major components of the product?

____ 1) Not very rigid ____ 2) Moderately rigid ____ 3) Very rigid

Components Sourcing Location

E4. Which of the following components-supplying regions is responsible for the greatest percentage of the total value (in your purchase price) of components in the product? (Check one)

____ 1) Japan ____ 2) Western Europe ____ 3) United States ____ 4) Other developed country(ies)

____ 5) Developing country(ies)

If the major sourcing location is 5) Developing country(ies), list the names of up to three of the most important countries:

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E5. Of the components sourced in the region identified above, is more than 50% supplied by your parent firm or its internal members (i.e., your parent company's fully-owned subsidiaries or majority-owned affiliates in this region)?

____ 1) Yes ____ 2) No

E6. Regardless of who are the suppliers of components for the manufacture of the product, approximately what percentage of the total value (in your purchase price) of components comes from each of the following five locations? (Accuracy within 10% is adequate: Total = 100%)

a) Japan _____ % b) Western Europe _____ %

c) United States _____ % d) Other developed country(ies) _____ %

e) Developing country(ies) _____ %

Internal/External Components Sourcing

INSTRUCTION: "INTERNAL MEMBERS" of the parent system include the parent, its fully-owned subsidiaries, and majority-owned affiliates and joint ventures.
"EXTERNAL MEMBERS" are independent suppliers and minority-owned affiliates.

E7. Of the components sourced in Japan as identified in Question E6 (if this is 0%, skip to Question E8), approximately what percent is supplied by internal members of the parent system?

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) more than 75% ____ 5) Don't know

For the manufacture of the product for the U.S. market, transfer prices for the components sourced from the internal members in Japan are generally set ...

____ 1) Above the market price

____ 2) At "arms' length" or market price

____ 3) Below the market price

____ 4) Don't know

E8. Of the components sourced in Western Europe as identified in Question E6 (if this is 0%, skip to Question E9), approximately what percent is supplied by internal members of the parent system?

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) more than 75% ____ 5) Don't know

For the manufacture of the product for the U.S. market, transfer prices for the components sourced from the internal members in Western Europe are generally set ...

____ 1) Above the market price

____ 2) At "arms' length" or market price

____ 3) Below the market price

____ 4) Don't know

E9. Of the components sourced in the United States as identified in Question E6 (if this is 0%, skip to Question E10), approximately what percent is supplied by internal members of the parent system?

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) more than 75% ____ 5) Don't know

For the manufacture of the product for the U.S. market, transfer prices for the components sourced from the internal members in the United States are generally set ...

____ 1) Above the market price

____ 2) At "arms' length" or market price

____ 3) Below the market price

____ 4) Don't know

E10. Of the components sourced in the other developed country(ies) as identified in Question E6 (if this is 0%, skip to Question E11), approximately what percent is supplied by internal members of the parent system?

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) more than 75% ____ 5) Don't know

For the manufacture of the product for the U.S. market, transfer prices for the components sourced from the internal members in the other developed country(ies) are generally set ...

____ 1) Above the market price

____ 2) At 'arms' length' or market price

____ 3) Below the market price

____ 4) Don't know

E11. Of the components sourced in the developing country(ies) as identified in Question E6 (if this is 0%, skip to Question E12), approximately what percent is supplied by internal members of the parent system?

____ 1) 25% or less ____ 2) 26-50% ____ 3) 51-75% ____ 4) more than 75% ____ 5) Don't know

For the manufacture of the product for the U.S. market, transfer prices for the components sourced from the internal members in the developing countries are generally set ...

____ 1) Above the market price

____ 2) At 'arms' length' or market price

____ 3) Below the market price

____ 4) Don't know

Factors Affecting Decisions on Sourcing Locations

In general, how important is each of the following factors as a determinant of your current components sourcing decision as identified in Questions E4 and E6? (Rate all factors and circle a number for each factor)

	Not At All Important	Somewhat Important	Important	Very Important	Extremely Important
E12. Low technological sophistication of the product	1	2	3	4	5
E13. Low costs of production	1	2	3	4	5
E14. High stability of the exchange rate(s)	1	2	3	4	5
E15. High U.S. import tariff levels on major components	1	2	3	4	5
E16. High U.S. import tariff levels on the finished product.	1	2	3	4	5
E17. High U.S. non-tariff and legal barriers on importation of major components	1	2	3	4	5
E18. High U.S. non-tariff and legal barriers on importation of the finished product	1	2	3	4	5
E19. High transportation costs to the U.S. market for major components	1	2	3	4	5
E20. High transportation costs to the U.S. market for the finished product	1	2	3	4	5

Assembly (Final Processing) Location for the Product

E21. Which of the following countries is the major location in which the product is assembled (or finally processed)? (Check one)

____ 1) Japan ____ 2) Western Europe ____ 3) United States ____ 4) Other developed country(ies)

____ 5) Developing country(ies)

If the assembly (or final processing) location is 5) developing country(ies), list the names of up to three of the most important countries:

---------- ---------- ----------

E22. Of the assembly (or final processing) in the location identified above, is more than 50% done by your parent firm or its internal members of the parent system?

____ 1) Yes ____ 2) No

Factors Affecting Decisions on Assembly (or Final Processing) Locations

In general, how important is each of the following factors as a determinant of your current assembly (or final processing) location as identified in question E21? (Rate all factors and circle a number for each factor)

	Not At All Important	Somewhat Important	Important	Very Important	Extremely Important
E23. Low technological sophistication of the product	1	2	3	4	5
E24. Low costs of production	1	2	3	4	5
E25. High stability of the exchange rate(s)	1	2	3	4	5
E26. High U.S. import tariff levels on major components	1	2	3	4	5
E27. High U.S. import tariff levels on the finished product.	1	2	3	4	5
E28. High U.S. non-tariff and legal barriers on importation of major components	1	2	3	4	5
E29. High U.S. non-tariff and legal barriers on importation of the finished product	1	2	3	4	5
E30. High transportation costs to the U.S. market for major components	1	2	3	4	5
E31. High transportation costs to the U.S. market for the finished product	1	2	3	4	5

(F) MARKET INFORMATION

INSTRUCTION: Rate all of the following characteristics of the U.S. market by circling a number for each question:

Characteristics of the U.S. Market	Very Low	Low	Moderate	High	Very High
F1. Sales volume relative to sales in your parent country .	1	2	3	4	5
F2. Average gross margin	1	2	3	4	5
F3. Average gross pretax profit (in dollars)	1	2	3	4	5
F4. Four-firm industry concentration	1	2	3	4	5
F5. Short-term (3-year) future market growth rate	1	2	3	4	5
F6. Long-term (10-year) future market growth rate	1	2	3	4	5
F7. Prospects for (3-year) future profit	1	2	3	4	5

Your Product's Market Performance relative to the Competitors' in the U.S. Market

	Very Low	Low	Moderate	High	Very High
F8. Your Market Share	1	2	3	4	5
F9. Your Ability to Gain Market Share	1	2	3	4	5
F10. Your Sales Growth Rate	1	2	3	4	5
F11. Your Pretax Profitability (in Dollars)	1	2	3	4	5

* *

SPECIFIC IDENTIFICATION (OPTIONAL)

Thank you very much for your time, cooperation, and prompt return of this survey instrument. Your cooperation will prove to be very fruitful in this survey. If you would like a copy of the results of this survey, please fill out the following:

Name _____

Company _____

Address _____

_____

NOTE: IF YOU WISH TO RETURN THIS FORM ANONYMOUSLY AND WOULD LIKE A COPY OF THE RESULTS, PLEASE SEND A POSTCARD WITH WITH YOUR NAME AND ADDRESS TO MR. M. KOTABE AT THE ADDRESS SHOWN ON THE ENCLOSED BUSINESS REPLY ENVELOPE.

APPENDIX: **BUSINESS CLASSIFICATION CODE** (for Question B3)

10 Food	23 Electronics
11 Tobacco	24 Transportation Equipment
12 Textiles	25 Scientific and Photographic Equipment
13 Apparel	26 Motor Vehicles and Parts
14 Furniture	27 Aerospace
15 Forest Products	28 Pharmaceuticals
16 Publishing, Printing	29 Soaps, Cosmetics
17 Chemicals	30 Computers, Office Equipment
18 Petroleum Refining	31 Industrial and Farm Equipment
19 Rubber Products	32 Jewelry, Silverware
20 Leather	33 Toys, Sporting Goods
21 Building Materials	34 Beverages
22 Metal Products	35 Other

APPENDIX C FOLLOWUP LETTER (EUROPEAN VERSION)

Dear Executive:

We sent you a questionnaire about two weeks ago, requesting your firm's participation in the Michigan State University Survey of Global Sourcing Strategies by European Multinationals.

Your firm has been selected randomly as one of our sample of 250 representative affiliates of the European multinationals. Your response is critically important for our research. We would be very appreciative, therefore, if your staff could find the time to complete the questionnaire for one of your major products currently marketed in the United States.

(For fear that our questionnaire had lost its way to your company, another copy of the same questionnaire is herein enclosed.)[a]

If you have any questions about the project or interpreting the questionnaire, please call Dr. Glenn S. Omura of Michigan State University at (517) 353-6381, or myself at (314) 882-7672.

In the event that your response is in the mail, we would like to thank you for your cooperation.

Sincerely,

Masaaki Kotabe
Assistant Professor of Marketing
University of Missouri-Columbia

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[a]The statement in parentheses is added in the second followup letter.

APPENDIX C FOLLOWUP LETTER (JAPANESE VERSION)

Dear Executive:

We sent you a questionnaire about two weeks ago, requesting your firm's participation in the Michigan State University Survey of Global Sourcing Strategies by Japanese Multinationals.

Your firm has been selected randomly as one of our sample of 75 representative affiliates of the Japanese multinationals. Your response is critically important for our research. We would be very appreciative, therefore, if your staff could find the time to complete the questionnaire for one of your major products currently marketed in the United States.

(For fear that our questionnaire had lost its way to your company, another copy of the same questionnaire is herein enclosed.)[a]

If you have any questions about the project or interpreting the questionnaire, please call Dr. Glenn S. Omura of Michigan State University at (517) 353-6381, or myself at (314) 882-7672.

In the event that your response is in the mail, we would like to thank you for your cooperation.

Sincerely,

Masaaki Kotabe
Assistant Professor of Marketing
University of Missouri-Columbia

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[a]The statement in parentheses is added in the second followup letter.

APPENDIX D

LIST OF THE VARIABLES

Variables in the Hypotheses

1) LDCSORC=Extent of Components Sourcing in Developing Countries:

The percentage of the total value of components originating from a developing country or countries for the manufacture of the product.

2) LDCASBL=Extent of Assembly in Developing Countries:

The percentage of the sales volume of the product sourced from developing countries.

3) STANDARD=Extent of Standardized Components in the Product:

The percentage of the total value of components in the product that could be sourced from local firms in newly developing countries (NIC's) such as Taiwan, South Korea, and Brazil without technical assistance from the multinational firm.

4) TECHCH=Degree of Technological Change:

Major technological changes in the product or in the methods of production that have taken place since the introduction of the product in the United States or are expected to take place within the next three years.

5) USSORC=Extent of Components Sourcing in the United States:

The percentage of the total value of the components in the product was sourced within the United States for a major sourcing strategy.

6) USASBL=Extent of Assembly in the United States:

The percentage of the total U.S. sales volume of the product being manufactured in the United States.

7) TNTBARR=Tariff and Nontariff Barriers on Imports:

A factor score with high loadings from the following variables: U.S. import tariff levels on major components (TARFCOM1 and TARFCOM2), U.S. import tariff levels on the finished product (TARFPRD1 and TARFPRD2), U.S. non-tariff and legal barriers on importation of major components (NTBCOM1 and NTBCOM2), U.S. non-tariff and legal barriers on importation of the finished product (NTBPRD1 and NTBPRD2).

8) TRANCOST=Transportation Costs to the U.S. Market:

A factor score with high loadings from the following variables: Transportation costs to the U.S. market for major components (TRANCOM1 and TRANCOM2), and transportation costs to the U.S. market for the finished product (TRANPRD1 and TRANPRD2).

9) EXCHANGE=Stability of the Exchange Rates:

A factor score with high loadings from the following variables: The stability of the exchange rates for components sourcing (EXCH1), and for assembly decisions (EXCH2).

10) INTSORC1 and INTSORC2=Extent of Internal Components Sourcing in the Aggregate:

INTSORC1 is inclusive of both standardized and major components, whereas INTSORC2 contains only the major components.

11) INTASBL=Internal Assembly:

A dichotomous variable (Yes=1, and No=0) representing whether, in the assembly or final processing location indicated as major in a mix of multiple sourcing strategies, more than 50% of the U.S. sales volume of the product was assembled or finally processed by their parent firm or other internal members of the parent system.

12) KNOWHOW=The Firm's Proprietary Knowldege:

A factor score with high loadings from the following variables: Trade secrets in terms of their novelty to the U.S. market (SECRET2) and in terms of their applicability to other uses (SECRET3), and proprietary methods of production in terms of their novelty to the firm (METHOD1) and to the U.S. market (METHOD2) and in terms of their applicability to other uses (METHOD3).

13) PRDTECH=The Firm's Product Technology:

A factor score with high loadings from the following variables: The novelty to the firm of patents (PATENT1), trade secrets (SECRET1), and prprietary methods of production (METHOD1).

14) PATENT=The Firm's Patents:

A factor score with high loadings from the following variables: The novelty of patents to the firm (PATENT1), to the U.S. market (PATENT2), and their applicability to other uses (PATENT3).

15) NEWPRD=The Product's Functional Performance:

A factor score with a high loading from the novelty of the product to the firm in terms of its functional performance in satisfying customer needs (PRODPEFRM).

16) DISRUPT=Risk of Components Supply Disruptions:

A 3-point scale question as to whether the firm has good alternative sources of supply of major components for the product from independent suppliers.

17) PRICECH=Risk of Unstable Price Fluctuations for Major Components:

A 3-point scale question regarding the effect of unstable price (cost) fluctuations in the supply of major components on their manufacturing and marketing operations for the U.S. market in the long run.

18) QUALITY=Quality Specification for Major Components:

A 3-point scale question as to how rigid the quality specification is for major components of the manufacture of the product.

19) TRNPRICE=Extent of Transfer Pricing Manipulation:

The importance of transfer pricing in a sourcing strategy as a whole.

20) ASBLLOC=Assembly Location:

The major location in which the product was assembled or finally processed. Based on a three-location framework, the first assembly location is the home location. For the European firms, the home location consists of their home country and other countries in the European Community. For the Japanese firms, it is Japan. The second assembly location is the United States as a foreign market to the European and Japanese multinational firms. Finally, the third assembly location is the developing country or countries.

21) PROFIT=Profitability in the U.S. Market:

A factor score with high loadings from average gross margin (MKT2) and average gross pretax margin in dollars (MKT3).

22) CONCENTR=Four-Firm Industry Concentration:

A factor score with a high loading from four-firm concentration (MKT4).

23) GROWTH=Expected Market Growth Rate:

A factor score with high loadings from short-term future market growth rate (MKT5) and long-term future market growth rate (MKT6).

24) PERFORM1=The Product's Relative Market Share:

A 5-point measure of a product's market share relative to competition in the United States

25) PERFORM2=The Product's Sales Growth Rate:

A 5-point measure of a product's sales growth rate relative to competition in the United States

Control Variables

1) SIZE=Size of the Multinational Firm:

It was measured by 1985 consolidated global sales volume of the multinational firm on a four-point scale, representing the Fortune International 500's largest 100, second largest 100, third largest 100, and so on.

2) PLC=International Product Cycle Stage:

The life cycle stage of the product is identified on a four-point scale question: new stage, growth stage, maturity stage, and decline stage.

3) ADAPT=Product Adaptation:

The level of product adaptation is measured on a four-point scale, ranging from no adaptation at all to substantial adaptation.

4) MODIFY=Product Modification:

Product modification or model change is measured on a four-point scale ranging from no regular periodic pattern of change to semiannual modification.

5) MKTOBJ=Market Share Objective:

A three-point scale measure representing the level of the firm's resource commitment to the market: "To increase the product's market share" requires more corporate resources, both financial and personnel, than "to maintain its market share". Maintenance of the product's market share demands more resources than "to allow its market share to fall".

6) REGION=Nationality of the Multinational Firm:

The nationality of multinational firms is identified either as European (0) or as Japanese (1).

7) TYPE=Type of the Product:

The type of the product is identified either as durable (1) or as non-durable (0).

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