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GLOBALIZATION OF AN ETHNOCENTRIC FIRM: AN EVOLUTIONARY PERSPECTIVE

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This paper investigates the globalization process at one traditionally ethnocentric firm. Whereas there has been substantial research on how multinational corporations (MNCs) structure and manage worldwide activities, little research has investigated how MNCs move toward proposed integrated network structures. The paper develops an evolutionary perspective of this process at traditionally ethnocentric firms, suggesting that it is driven by a shifting mix of strategic objectives over time, each of which differs in its impact on various functions. The paper suggests that globalization occurs at the level of the function, rather than the firm, and highlights important differences in the timing, sequence, and objectives of the process across functions. It also describes the importance of development patterns across functions, as changes in one function create opportunities and requirements for changes in others. Finally, the paper develops a framework of the process that can be tested at subsequent sites.

There has been a rapid escalation in research on the topic of globalization, associated with changes in how multinational corporations (MNCs) structure and manage worldwide activities. These studies have collectively led to a rich descriptive and normative understanding of the complex strategic, organizational, and administrative issues involved in managing MNCs in an increasingly complex global competitive environment. There have also been a number of models proposed describing how MNCs organize worldwide operations (Perlmutter, 1969; Hedlund, 1986; Prahalad and Doz, 1987; Bartlett and Ghoshal, 1989; White and Poynter, 1990), with a common feature being the treatment of MNCs within integrated network structures, as opposed to earlier treatment within dyadic structures. However, an important element missing in the literature has been an understanding of the transition process as MNCs move toward new global operating structures. There has been limited detailed research focusing on the process by which new management approaches, such as those described in the models, evolve. Within an integrated network view of the MNC, understanding the globalization *process*, in a manner similar to the seminal Stopford and Wells (1972) study of the evolution within dyadic models, has become a major challenge.

This paper develops an evolutionary perspective of the globalization process based on an extensive study at Eli Lilly and Company, a traditionally ethnocentric firm.[1] Rather than

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[1] Perlmutter (1969) first developed the ethnocentric model, one which has subsequently been further refined and developed by Bartlett and Ghoshal (1989) in their international model. Whereas the ethnocentric model was based on a largely centralized worldwide operating structure, a second traditional approach, a decentralized structure, has also been developed. Perlmutter referred to this second approach as a polycentric model, while Bartlett and Ghoshal referred to it as a multinational model. Porter (1986) also developed a decentralized model, referred to as multidomestic. In focusing

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being a uniform process, the research suggests that globalization involves a complex mix of strategic objectives over time as the company responds to changing external and internal challenges and opportunities. External challenges and opportunities reflect the emergence of global industries, associated with growing interdependence across national markets (e.g., Hout, Porter, and Rudden, 1982). Internal challenges and opportunities are associated with increasing interdependence of a firm's worldwide operations, reflected in motivations for operating internationally shifting from emphasizing local to global factors. At any time, a firm may be pursuing one or more objectives, each of which may differ in its impact on various functions. A firm's ability to achieve each objective, in turn, is impacted by a number of factors, including its existing resources and ability to perform various functions globally.

This perspective supports earlier research by focusing the globalization process at the level of the function (e.g., Hedlund, 1986; Porter, 1986; Bartlett and Ghoshal, 1989), arguing that the process involves complex development patterns both within and across functions. For firms internally building international operations (as opposed to using acquisitions or alliances), this paper defines four development stages for individual functions (appendage, participation, contribution, and integration) as ethnocentric firms first install new resources in affiliates and then gradually adjust how they contribute to and are integrated into global activities. Changes in a firm's organization (including its reporting structure, management systems, and culture) are initially used to support the resource build up. Subsequent organizational changes are then used to gradually integrate globally dispersed resources and activities. Within functions, important differences are highlighted in the timing, sequence, and objectives of the globalization process, with some functions moving toward integrated global structures, while others remain at some intermediate stage. Interfunctional patterns are also identified as changes in one function create opportunities and lead to changes in others.

In developing an evolutionary perspective of the globalization process, I first briefly review literature on how MNCs structure and manage worldwide operations. This review emphasizes the need to investigate the globalization process within individual firms and describes the research methodology used in this study. I then present an overview of the evolutionary perspective of the globalization process and subsequently develop important components of the perspective based on findings at Eli Lilly and Company. These components include functional development processes, patterns across functions, shifting strategic objectives, and patterns in how the firm moved toward each successive stage. Finally, I discuss implications of these findings and suggest additional topics for future research.

NEED FOR STUDY OF THE GLOBALIZATION PROCESS

From dyadic toward integrated network approaches to MNCs

A long stream of literature has focused on the evolution of *how* MNCs structure worldwide activities, with several studies addressing the initial foreign investment decision process (e.g., Aharoni, 1966; Brooke and Remmers, 1970) and the resulting structuring of overseas activities. Stopford and Wells (1972) investigated how 187 large, diversified, and geographically dispersed U.S. firms altered their structures as they developed more complex strategies.[2] In terms of evolving approaches to managing worldwide operations, they identified several stages of MNC development associated with: (1) the initial establishment of foreign activities, (2) the formation of an international division to enhance centralized control, and (3) the movement to either a worldwide product or area structure. Although not identified in their survey, Stopford and Wells projected a fourth stage, described as

on this literature stream, this study should be distinguished from a larger literature stream associated with the 'internationalization process,' associated with why and how firms in general operate internationally (e.g., see Kogut and Zander [1993] for a review). This paper focuses on adjustments to the internal management of established MNCs, as opposed to the process of becoming international.

[2] The evolution described here represents that found in U.S. firms. Franko (1976), and later Bartlett and Ghoshal (1989) described different evolutionary paths for European MNCs. Other studies also investigated the early structuring of U.S. firm's foreign operations, with conclusions consistent with Stopford and Wells (e.g., Brooke and Remmers, 1970; de Bodinat, 1975).

a grid (or matrix), that would develop as the requirements for communication and coordination exceeded the ability of previous structures to respond.

A key assumption behind this evolution was the principle of 'unity of command.' implying a dyadic relationship among operating units. Stopford and Wells described this dyadic principle as follows: 'one man has sole responsibility for a specified part of the business and is accountable to a single superior officer' (1972: 27). In their model a key driver behind the selection of an operating structure was an attempt to orient a firm's reporting structure to respond to the primary challenges facing it at any point in time. An important distinction between the Stopford and Wells evolutionary model and subsequent integrated network models was their emphasis on this unity of command reporting structure, as opposed to control and coordination through complex, horizontal relationships among worldwide operating units.[3]

Toward integrated network models

In the 1970s and 1980s, research on the objectives of operating globally built an expanding theoretical foundation, reflected in extensive discussions of global industries (Hout *et al.*, 1982) and global strategies (see Ghoshal, 1987; and Kogut, 1989; for reviews). Vernon (1979) was one early proponent of expanding the nature and scope of worldwide activities with his discussions on the 'global scanner.' An emerging theme in this literature was the treatment of MNCs within integrated network models, viewing worldwide operations as specialized and interdependent (Bartlett, 1986; Bartlett and Ghoshal, 1986). An important proposition behind this view was that operating a network created additional value directly from being multinational in nature, associated with cross-border exchanges among operating units.

Kogut (1983) and Porter (1986) developed important dimensions of the emerging approach.[4] Their work emphasized the structuring of activities globally based on flows among dispersed operating units, indicating the need to both strategically allocate tasks globally (impacting where resources are located) and develop the organizational mechanisms to manage and maximize the benefits of resulting exchanges (impacting how activities are linked). This view introduced an important step away from reliance on the unity of command approach. As the interaction among worldwide operating units expanded, the need arose to expand coordination mechanisms beyond the hierarchical reporting relationships found in dyadic models.

Building on this integrated network approach and the seminal work of Perlmutter (1969), a number of organizational models were developed, including the heterarchy (Hedlund, 1986), the multifocal organization (Prahalad and Doz, 1987), the transnational organization (Bartlett and Ghoshal, 1989), and the horizontal organization (White and Poynter, 1990).[5] Given rapid changes in the competitive environment of many industries, some writers have stressed the need to move toward these integrated network structures, claiming that the critical challenge facing MNC management was developing the 'organizational capability' (Bartlett and Ghoshal, 1989) necessary to acquire network characteristics.

Need for study of the globalization process

Although previous research described and contrasted the traditional and proposed MNC organizational approaches, there has been limited investigation of the process within firms as they move toward integrated network structures. Investigating this process requires longitudinal

[3] As both the relative importance of international operations and their diversity mounted, it became increasingly difficult for an MNC to maintain an approach based on 'sole responsibility' by a single individual. This led Stopford and Wells to project a grid, or matrix, structure under which responsibility for international units would be shared between two executives. However, Stopford and Wells did not discuss organizational adjustments beyond these changes in reporting relationships.

[4] Kogut (1983) distinguished between the locational structure and operating flexibility aspects, while Porter (1986) emphasized an MNC's configuration of assets and coordination of flows. Similar dimensions were also developed by Lawrence and Lorsch (1967) in their seminal discussion of differentiation and integration.

[5] To understand the primary focus of these models, as well as how they differed from traditional approaches, a useful framework is the global integration–national responsiveness framework developed by Prahalad (1976) and subsequently expanded by others (e.g., Doz, Bartlett, and Prahalad, 1981; Bartlett, 1985; Prahalad and Doz, 1987; Bartlett and Ghoshal, 1989).

studies examining the change process over time within individual firms, in line with a long research tradition highlighting the need to understand process to interpret outcomes (e.g., Cyert and March, 1963; Simon, 1976), as well as the growing emphasis on strategy process research (e.g., Van de Ven and Huber, 1990; Chakravarthy and Doz, 1992).

In this research, globalization (at the level of the firm) has been defined as the movement from traditional toward geocentric-type (Perlmutter, 1969), or integrated network, models. An important implication of this definition is its focus. Rather than emphasizing *where* a firm operates, this definition reflects adjustments in *how* it manages and structures worldwide activities. Drawing on this definition, this research focused on the globalization process, including the actions taken by MNC management and the resultant changes in the firm's operations and activities. The research objective was to begin investigating the complex process by which fundamental change occurred. The specific research questions included identifying: (a) the specific actions taken by a firm over time, (b) the sequence and timing of such actions, (c) interactions between actions supporting or hindering pursuit of overall objectives, and (d) the effectiveness of the process in fundamentally altering its global operations. Examination of these issues all serve directly to overcome limitations in earlier studies.

Research methodology

Following criteria put forth by Yin (1989), a case study research methodology was selected,[6] investigating the globalization process through a detailed study of one ethnocentric firm to allow sufficiently detailed analysis of the complex process and its impact throughout the organization. The research objective was to investigate the process at one site and, based on the findings, develop a framework for testing at subsequent sites. An initial *a priori* assumption was that differences between traditional ethnocentric (centralized) and polycentric (decentralized) operating structures would have an important impact on the globalization process and this research began to investigate the process at previously ethnocentric firms.

Two important factors were used in selecting a site for this research. The first was to select an industry moving toward a global structure. The study targeted the pharmaceutical industry, one frequently cited as becoming increasingly global. The second criteria was to select a firm actively altering how it operated globally. The research focused on Eli Lilly and Company, a traditional industry leader, investigating changes between 1980 and 1993 and focusing on its activities in Europe.[7] The period was one of gradual but important change for Lilly, many of which were described by its management as related to an effort to 'globalize' activities, resulting in significant changes in where and how key functions were performed.

Data collection involved two sources: semi-structured interviews and archival documents, with multiple sources used to enable triangulation of the data. Semistructured interviews, each lasting about one and a half hours, were conducted with more than 125 executives across major functions, geographic locations, and levels of the company. Initial interviews were conducted between 1989 and 1991, with follow up interviews in 1993 to update and supplement findings from the original study. Multiple interviews were conducted with key participants. Detailed notes were taken, but interviews were not recorded. Documented sources were used to supplement and substantiate information collected through the interviews.

Data analysis involved an emergent process in

[6] Yin (1989) distinguished five research strategies: experiments, surveys, archival analysis, history, and case studies; along with factors for determining the appropriate methodology. Yin's criteria were based on: (1) the type of research question, (2) the extent of control an investigator has over actual behavioral events, and (3) the degree of focus on contemporary, as opposed to historical, events. Following Yin's criteria, the appropriate research strategy is the case study methodology, because it related to how MNCs altered their organizational systems, offered little control on the part of the researcher, and dealt with contemporary events. Yin defined a case study as 'an empirical inquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used.' (p. 23.).

[7] Whereas European pharmaceutical companies are generally considered to have more emphasis on worldwide operations, many also traditionally operated within polycentric approaches. Given the objective of investigating the globalization process at a traditionally ethnocentric firm, a U.S. pharmaceutical supplier was selected.

first building intimate familiarity with the data and subsequently constructing grounded interpretations and representations. Initially detailed case write-ups were prepared and circulated among key participants to verify overall accuracy. Analysis then involved categorizing data from multiple sources, with hard data (e.g., formal organizational changes, operating and financial performance results) contrasted to qualitative data to develop an accurate picture of the change process. An important method for substantiating patterns and findings involved their presentation back to key participants and other researchers involved in the study.

Paper overview

The following sections develop an evolutionary perspective of the globalization process by describing and modeling findings at Lilly. The first section highlights important changes in the pharmaceutical industry and at Lilly. It then outlines the adjustment process within individual functions, highlighting four development stages based on the shifting roles of international operating units. These stages are defined in this paper as appendage (affiliates emphasizing downstream activities in leveraging domestic capabilities), participation (affiliates performing an expanded array of tasks locally to further develop market opportunities), contribution (affiliate resources used to respond to mounting global competitive pressures), and integration (domestic and international units are merged in a single global structure). The next section models the process at Lilly, highlighting intrafunctional and interfunctional development patterns. The paper then integrates the findings and discusses the contribution and limitations of the study.

GLOBALIZATION AT ELI LILLY AND COMPANY

Industry background

In 1991, the world market for pharmaceuticals totaled $195 billion, having grown at a 5-year compound annual rate of 14 percent. Seven markets (United States, Japan, Canada, Germany, United Kingdom, France, and Italy) accounted for about 75 percent of the world market, with the largest single market, the United States, accounting for about 30 percent of the total. The industry had been both highly profitable and research intensive, and was projected to continue its growth based in part on medical advances and a steadily aging population.[8] However, despite the large growth potential of this industry, there were significant challenges facing suppliers. Figure 1 summarizes these challenges, which included rising drug development expenses, lengthening regulatory approval times, growing cost containment pressures, and increasing generic competition.

The cost and time associated with developing, obtaining regulatory approval of, and introducing new products had grown substantially. Various available estimates indicated that the cost of new drug development increased from $54 million in 1976 to $87 million in 1982 to $231 million by 1990 to $359 million in 1993 (Pharmaceutical Manufacturers Association [PMA], 1993). The time required to obtain regulatory approval for new compounds also increased from 60 days in the early 1960s to 10–12 years in the late 1980s (PMA, 1993).[9] There was substantial risk associated with the R&D process, with only one out of every 5,000 to 10,000 compounds discovered in research laboratories being developed into a marketable product. There were two additional mounting challenges after new products were launched. Spiraling health costs represented a large and growing portion of the national budgets of most major markets, by 1990 reaching more than 12 percent of GNP in the United States and between 6 percent and 9 percent of GNP in the major European markets (PMA, 1993). As a result, all major markets had an increasing emphasis on cost containment,

[8] As an example, total R&D expenditures by U.S. Pharmaceutical Manufacturers Association (PMA) members grew from 13.1 percent of sales in 1981 to 16.5 percent of sales in 1989. In terms of profitability, the industry ranked first in terms of both return on sales and return on equity between 1986 and 1989. For its growth prospects, with the aging population, people over 65 years old were generally estimated to require three to four times the medical support of those under 65.

[9] Lengthening approval time was a significant challenge given the limited patent life for products. A patent application was typically filed 1–2 years before IND submission, and restricted competition for 17 years after the patent was issued. Additional time required to secure regulatory approval directly reduced the period under which the product could be marketed under patent protection.

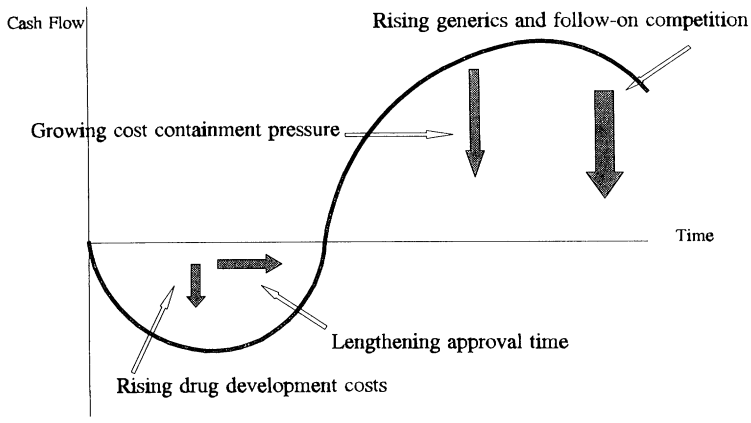


Figure 1. Representation of pharmaceutical industry challenges

reflected in the growing use of price controls, restrictive reimbursement schemes, and managed health care programs,[10] reducing the flexibility of pharmaceuticals suppliers to recoup growing R&D investment costs during a shortened patent protected marketing period. Finally, there was growing competition from generic drugs once a patent expired, with sales dropping by as much as 35 percent to 50 percent in the first year after a patent expired and continuing to decline thereafter, and the growth of 'follow-on' products, treating the same therapeutic indication, introduced by competitors.

Pharmaceutical industry trends created at least four worldwide interdependencies affecting how suppliers operated globally. The first pressure was to increase the flow of new products to support the expanded scale in R&D, reflected in growing development costs. Increasing product flow led some firms to expand worldwide R&D activities to tap into expanding sources of innovation. A second pressure was speeding the approval and launch of compounds under development, leading many firms to develop products on a worldwide basis by performing clinical trials in multiple markets to expedite the entire process. A third pressure was to expand sales to worldwide markets, as opposed to concentrating sales within an individual market, to recoup development costs and maximize returns during a shortened effective patent life. Finally, global cost containment initiatives pressured firms to improve the cost effectiveness of all activities, a relatively new pressure given traditional high profitability levels. These pressures mounted throughout the period of the study, increasing pressure on firms to respond.

Eli Lilly and Company

Founded in 1876, Lilly became the leading U.S. pharmaceutical supplier in the early 1940s, a position it held until the mid-1980s. It received its first international order in 1884, beginning a long history of steadily expanding business around the world. Before 1950, most OUS (company term for 'outside the United States') activities were export focused, with few overseas offices. Beginning in the 1950s, Lilly undertook a systematic expansion of its OUS operations through the establishment of offices in key markets and hiring of local nationals to staff them. Throughout this expansion, the company's approach to managing OUS activities was based on tight, conservative controls, carefully reg-

[10] Price controls and restrictive reimbursement policies were more common in Europe during the 1980s, as compared to the United States, due to the existence of national health insurance systems. In the late 1980s, these systems paid for a majority of the costs of pharmaceutical products, ranging from 50 percent (Belgium, Denmark, Greece) to 65 percent (France, Italy, Portugal, The Netherlands) to 76 percent (United Kingdom). Price control pressures mounted throughout the 1980s as national health insurance programs became an increasing burden on each country's national budget. Regulatory variations were reflected in significant differences in price levels across Europe.

ulating head count and costs, and measuring each country on bottom-line profitability. All activities within a geographic market were the responsibility of affiliate management, which focused on local sales. By 1980, OUS operations had grown to become an important element of Lilly's total success, representing 39 percent of total sales. However, these activities, under Eli Lilly International Corporation (ELIC), still operated outside the company's primary domestic focus, selling the company's domestic-focused products. The company closely resembled the traditional ethnocentric model.[11]

Beginning in the 1980s, Lilly fundamentally altered where important functions were performed and how new products were developed and marketed. As a result, total OUS sales and profits increased by 200 percent and 350 percent between 1985 and 1990, respectively, far outpacing domestic growth rates.[12] However in 1993, Lilly still lagged significantly behind its major competitors in terms of its market position outside the United States, maintaining one of the highest percentages of total sales in its domestic market among leading worldwide competitors.[13] Whereas Lilly's globalization process was far from over, the company had made a number of changes, significantly altering how it operated globally. The company put in place resources that both enhanced its worldwide position and installed a base that management expected to continue to draw upon in further building its global presence. The section that follows describes important components of the change process.

Functional development stages

An important component of Lilly's globalization process was the gradual adjustment of where and how important functions, or tasks, were performed. Functions involved in the process included discovery research, clinical, manufacturing, and marketing (see DiMasi, Henson, and Grabowski, 1991, for an outline of the pharmaceutical business process).[14] Rather than move immediately from its ethnocentric structure to an integrated network one, the company gradually expanded resources and capabilities for performing tasks at key affiliates, altering their roles in the company's worldwide operations. At Lilly, functions passed through up to four common development stages, defined earlier as appendage, participation, contribution, and integration.

[11] Management periodically spoke of large global opportunities, but its consistent success in the U.S. market precluded any strong drive for changing its traditional, centralized strategy. One long-term affiliate executive noted: 'Our overseas operations have never operated as true affiliates, but rather as appendages to a traditional Indiana company. We were never encouraged or allowed to look at our local environment and consider what it would take for us to be truly successful. In our everyday operational management, we've never had sufficient span of control to properly manage our activities.'

[12] The company's efforts were reflected in a number of changes, primarily between 1985 and 1990. The clinical function, responsibility for undertaking all activities necessary to obtain regulatory approval of new products, had OUS staffing increase by more than 40 percent in the second half of the 1980s, with development expenditures increasing by more than 350 percent. OUS marketing staffing grew by more than 50 percent in the late 1980s as it moved from ranking 35th (in terms of revenues) in the important European market in the early 1980s to 19th in 1990.

Whereas in the first half of the 1980s, OUS financial performance deteriorated, they grew rapidly in the second half. Between 1980 and 1985, OUS sales and profits dropped from 38 percent and 27 percent of total sales and profits to 28 percent and 25 percent, respectively (a significant portion of which management attributed to the strengthening U.S. dollar). International sales grew by only 1.6 percent during the 5-year period. While U.S. pharmaceutical operations grew at a compound annual growth rate of 8 percent, major European affiliates grew at rates between 11 percent and 30 percent, a trend projected to continue up to 1994. In 1985, the United States accounted for 72 percent of total pharmaceutical sales. By 1989, this share dropped to 65 percent, and was projected to decline to 60 percent by 1994.

[13] Another measure of its lagging position was the number of the leading seven national markets in which it ranked either in the top 10 or the top 25. In 1990, Lilly ranked in the top 10 only in the United States and was in the top 25 in 5 of the top 7 markets, a significant improvement from earlier in the decade but still trailing its major competitors. Competitors ranked number one and two in the world were in the top 10 in 6 of the leading 7 markets and were ranked in the top 25 in all 7.

[14] Briefly, discovery involves basic research to identify potential new compounds to treat disease indications. Clinical tests with these compounds for safety and efficacy through a series of clinical trials involving gradually increasing numbers of tests in patients are then conducted. Manufacturing involves the initial production of materials for clinical trial use, and then bulk production of a drug's active ingredient and formulation, fill, and finish processes before the actual sale of a final product. Marketing and sales are then responsible for promotion and sale of products. Key stages in the development of new products include first injection of new products in human patients, submission of a new drug application (NDA) for regulatory approval in each market in which a drug will be sold, and receipt of NDA approval allowing such sale.

Appendage

In the early 1980s, Lilly was a classic ethnocentric firm, with extensive worldwide operations managed as *appendages*. Operating as an appendage meant limiting OUS operations to downstream activities required to support local sales. For discovery research, 90 percent of all expenditures were centralized at domestic facilities. About 95 percent of clinical trials for regulatory applications were conducted in the United States. For manufacturing, affiliates had only local 'formulation, fill, and finish' facilities, relying on shipments of bulk compounds from large centralized production facilities. Finally, characteristic of ethnocentric firms, all marketing programs used for worldwide sales were developed at the headquarters.

Organizationally, domestic units were the dominant source of all strategies, technologies, products, and resources. Affiliates, under ELIC, were responsible for local implementation and were measured on the basis of local bottom-line profitability. Decision making was highly centralized. Primary flow patterns involved shipments of products and other resources from domestic operations to affiliates, who were expected to submit financial data used in control systems and generate dividends.

Participation

A first phase in altering how individual functions at Lilly operated globally consisted of having major affiliates *participate* locally in important tasks to expand the company's ability to meet local market opportunities for products. The first function to enter this stage was clinical. In the early 1980s, management's objectives for expanding its worldwide operations focused on increasing sales of products under development. About two-thirds of Lilly's total sales were in North America, a market representing only about one-third of the total world market, and OUS markets thus represented important untapped opportunities. One senior executive commented on the role of clinical in this challenge:

> To begin to expand our business overseas, we needed to develop 'friends' in each market who would support the sales of our products. The best way we could achieve this was clearly through working with the local opinion leaders, and this would involve working with them for the clinical trials for our products.

Before 1980, clinical testing of Lilly products occurred in the United States, a pattern supported by the leadership position of the U.S. Food and Drug Administration (FDA). At the time, a typical Lilly U.S. new drug application (NDA) used only data from U.S. trials, whereas OUS applications used 95 percent U.S. data and 5 percent local data. Major affiliates maintained only small clinical organizations for processing applications and coordinating limited local trials. In 1983, Lilly formed an independent OUS clinical unit and hired a well-known academic researcher to plan and oversee the building of clinical organization at major affiliates. As the OUS unit was separate from the domestic one (which continued to supply clinical trial data for all NDAs), it was able to gradually build affiliate activities. The unit's initial objective was to perform local clinical trials to build relations with local investigators, with data from the trials being used only in local applications. This objective emphasized building local resources and gaining experience[15] and between 1983 and 1985, affiliates hired staff and used the OUS clinical unit to transfer procedures and systems. New clinical staff reported to affiliate management, but on a functional basis coordinated with the new OUS unit.

A second function to enter the participation stage was marketing. By 1985, new high-potential products under development were expected to be launched before the end of the decade. Along with expanded national contacts built by clinical, this situation created an opportunity to increase OUS sales. In 1986, Lilly formed a worldwide pharmaceutical business unit, moving ELIC under the president of the Pharmaceutical Division (with one executive responsible for U.S. marketing and another for OUS operations). A non-U.S. executive was appointed as president of ELIC, a first for the company. At the time, the company ranked 35th in terms of revenues in the important European region and ELIC management established goals of reaching the top 20 in Europe by 1990, the top 15 by 1995, and the top 10 within the 1990s.

[15] Performing clinical trials required professional staff (medical doctors) with knowledge of the company's detailed clinical trial procedures, as well as extensive local contacts with leading medical researchers and opinion leaders in competition with established local competitors.

ELIC increased total OUS sales staff by 50 percent between 1986 and 1990, concentrating the expansion in six major markets. (Staffing at other affiliates declined by 5%.) It also upgraded the quality of the staff by recruiting university graduates, a requirement in the United States but a standard it had not been able to maintain at affiliates. (In 1986 about 40% of its European sales force were university graduates; by 1989, 75% were.) The new product planning process within the OUS unit was altered to enable affiliates input on new products, allowing them to rely less on U.S.-designed marketing programs. Local management were required to develop plans for meeting local growth objectives. ELIC senior management took a strong leadership role in the build up, initiating a series of meetings to encourage direct interaction among staff from different locations. ELIC also championed OUS activities within Indy (company term for Indianapolis headquarters), representing its interests to senior corporate management.

The primary objectives of the globalization process at this stage was enhancing affiliate ability to perform an increasing array of activities to facilitate pursuit of local market opportunities for products, with adjustments in the firm's organization to support the build up at affiliates. Under independent OUS functional units, a number of tasks were introduced at major affiliates, accompanied by significant expansion of resources required to perform them. The process emphasized responding to local requirements and building local experience, and thus resulted in independent efforts within each affiliate coordinated and supported by the OUS functional unit, while the domestic units remained responsible for meeting global requirements. Affiliates relied on flows of financial, technical, and human resources from the domestic units, coordinated by the OUS unit. Measurement and control continued to be based on centralized management systems, evaluating affiliates on local profitability, with some subjective measures introduced to evaluate success in performing new tasks.

Contribution

The next development phase was associated with expanding the scope of affiliate activities, using their expanded resources and activities to *contribute* to global, as opposed to just local, requirements. In the face of mounting competitive pressures, this phase witnessed the firm beginning to focus on worldwide efficiency by expanding cross-border exchanges as an alternative to duplicating resources within each market. This shift required the company to not only upgrade resources and standardize activities to meet worldwide standards, but also to build linkages among previously independent affiliates to facilitate increased interactions. At Lilly, the first function to enter this stage was again clinical.

By 1985, industry pressures had mounted, including the requirement for an increasing number of clinical trials for obtaining regulatory approval of new products.[16] This requirement challenged Lilly's ability to find a sufficient number of patients only in the United States in a timely manner, leading management to speak of new objectives for OUS clinical operations—and using them to expedite the worldwide regulatory approval process by increasing the available pool of investigators and patients to meet growing requirements.[17] The previous build up of OUS clinical operations provided the potential to meet these emerging global objectives, but exploiting these opportunities required upgrading affiliate capabilities to domestic unit standards and creating mechanisms to facilitate global exchanges of clinical trial data, standards and regulatory requirements, and other information.

Between 1985 and 1990, the company made a number of changes in its OUS clinical organization. Whereas its initial focus had been on building local presences, after 1985 it shifted toward supplying clinical trial data meeting worldwide standards and requirements, upgrading affiliate clinical activities. OUS clinical staffing increased by more than 40 percent between 1985 and 1990, with staffing at key affiliates growing by more than 80 percent, and total OUS development expenditures increased by more than 350 percent. Upgrading also involved increasing communication among affiliates by initiating meetings bringing all OUS staff involved

[16] For example, Lilly officials noted that the company performed about 1,500 clinical trials for one product launched in the early 1980s. For a similar product launched around the end of the decade, it performed more than 10,000 trials.

[17] One senior executive explained the importance of this objective, 'Cutting the time from invention to marketing is the single most important determinant of our growth rate.'

on a compound together to coordinate activities and share experiences. Meetings were linked to the domestic unit by executives in the OUS clinical unit. To support its expanding activities, a regional clinical organization took on an expanded role (beyond monitoring affiliates and processing local NDAs) strengthening support for and facilitating interaction among affiliates.

A second function in the contribution stage was marketing. In 1990, marketing had achieved its initial goal of entering the top 20 in Europe, ranking number 19, with significant improvements across all major markets. However during the late 1980s, interdependence among markets grew due to the movement toward an integrated market in Europe. Interdependence affected a number of important decisions, including product pricing, where significant differences existed across markets.[18] Interdependence among affiliates presented a serious challenge to Lilly management, as regional or global objectives became increasingly important in coordinating activities, potentially even overriding local objectives.

Between 1990 and 1993, Lilly fundamentally altered the structure of its worldwide marketing organization, separating the worldwide headquarters and four regional organizations. An important component of this adjustment was the formation of a North American affiliate parallel to those previously existing in other regions of the world, a significant step in creating a truly global headquarters unit by treating domestic activities as only one geographic region. In managing worldwide activities, Lilly created a decision matrix allocating authority based on the impact of a decision—be it local, regional, or global. Headquarters staff were responsible for establishing policies requiring centralized control (e.g., pricing), as well as managing global planning systems and activities, while regional and local management were delegated authority to operate within these global guidelines. Exchanges across geographic operations were facilitated by a number of mechanisms, including common planning systems, product-focused teams designed to communicate and transfer expertise and experience across units, and frequent meetings among regional- and country-based staff at various levels of the organization.

At this phase, the focus of the globalization process shifted toward enhancing the company's ability to utilize affiliate activities to respond to global, as opposed to just local, objectives. Organizationally, adjustments were made to coordinate increasing exchanges of information and resources (including capital) to affiliates to strengthen their operations, as well as to facilitate expanded interaction among traditionally independent operating units. The company introduced horizontal linkages among dispersed units, using mechanisms such as meetings, transfers of staff, and modification of information and planning systems to facilitate exchanges (e.g., a global computerized clinical trial data base). Expanding interaction resulted in increasingly complex exchange patterns among operations, having important implications on how decisions were made and local organizations measured and evaluated. Affiliate measurement began to incorporate subjective measures of total contribution to worldwide requirements, while continuing to emphasize local profitability. Decision making and management control systems expanded beyond primary reliance on centralization of decision authority at the headquarters to include the expanded use of management systems (e.g., planning systems, measurement and evaluation systems, new procedures and meetings) and growing staff exchanges. At this stage, while there continued to be structural independence (separating domestic and OUS operations in clinical, and four geographic regions in marketing), worldwide activities were increasingly conducted within the context of global operating policies.

Integration

The next phase of the globalization process involved the movement toward a single, inte-

[18] Governments exercised controls over prices through a variety of methods, ranging from required price approval (France, Italy, Belgium, Portugal, Spain) to controlling profits (United Kingdom). Although West Germany did not directly control prices, it did exert influence through regulations regarding reimbursements. Estimates of industry average price levels in Europe (with Spanish levels indexed at 100) in 1989 were: Spain 100; Portugal 107; France 113; Italy 118; Belgium 131; United Kingdom 201; The Netherlands 229; West Germany 251. By 1990, so-called 'parallel trade,' or trade by independent firms taking advantage of these differentials, represented a potentially serious threat to pharmaceutical suppliers. In 1989, Lilly officials quoted estimates of parallel trade accounting for between 3 percent and 10 percent of the U.K. market and 1 percent of the West German market. There was, however, the potential for these levels to rise significantly.

grated global organization, resembling the geocentric-type models found in the literature. As affiliate experience and capabilities increased and as exchanges among units expanded, the opportunity emerged to *integrate* worldwide operating units to strengthen not only international operations, but also domestic ones.

One function which entered this stage in the early 1990s was clinical. From a starting point in the early 1980s when OUS clinical activities were used only to support NDAs, the company had created an organization capable of contributing to the firm's worldwide requirements.[19] However, the organization faced a number of challenges in 1990, many attributed within the company to the continuing operation of separate and autonomous domestic and OUS units. The domestic unit had largely been uninvolved and unaffected by the build up at affiliates, which had been coordinated exclusively within the OUS unit. The company had not created internal systems to enable distant operations to interact effectively, which subsequently deterred its ability to allocate resources globally, including leveraging affiliate resources.

To integrate its worldwide clinical operations, Lilly instituted a series of changes between 1990 and 1993. In 1990, it put its U.S. and OUS clinical units under a single executive, forming a Global Development Coordination Team (GDCT) to repare a plan for 'globalizing' the function. During the next 3 years, it instituted a series of organizational changes. Initially, three vice presidents shared worldwide responsibility for clinical, with each having both a geographic and therapeutic area of responsibility. Under these vice presidents were several Global Physicians, located throughout the world, charged with coordinating the development of individual compounds. In 1991, Lilly also introduced a new product development planning system based on 'global clinical plans,' specifying and planning for the simultaneous worldwide launch of new products. To support the involvement of local affiliates in corporate development activities, a system was installed under which affiliates were reimbursed for the full costs of its activities associated with these global plans.

In 1993, Lilly installed a new structure based on balancing centralized planning and global management within therapeutic area activities against decentralization of affiliate activities. The new structure involved centrally developing global product development plans and operating procedures and policies, with affiliates subsequently 'bidding' for locally performing clinical trials, which had to comply with global standards. Organizationally reporting to the head of clinical were five Global Therapeutic Directors (GTDs) and several global staff units. GTDs had formal authority for coordinating all development activities within their therapeutic area, drawing on the global staff units to manage global operating systems and policies and local affiliates to undertake the actual clinical trials within the context of global development plans.[20]

A second function to enter the integration stage was manufacturing.[21] As Lilly augmented its total worldwide activities and as the interdependence among markets grew, manufacturing activities became increasingly associated with the company's global strategy. For example, some national governments required investment in local facilities to secure concessions in other areas (e.g., higher prices for new products). Given industry economics and the increasing

[19] For one product introduced in the early 1980s, only 25 percent of the trials were conducted outside the United States, with the data primarily being used to support local applications. For a product introduced in 1986, about 50 percent of all clinical trials were conducted outside the United States and the data was included in local NDAs. For a drug launched in 1991, about 60 percent of all clinical trials were conducted outside the United States and worldwide data was consolidated into one global NDA.

[20] The new system essentially created an internal market mechanism for managing global development activities. Affiliates would 'bid' for conducting clinical trials, for which they were reimbursed by the headquarters. GTDs could decide where trials would be conducted based on where expertise existed and where affiliates had demonstrated their ability to efficiently conduct the activities. Although there was no formal reporting relationship to affiliate clinical staff, headquarters clinical staff were expected to guide and manage worldwide activities through the combination of establishing global development plans and operating policies and systems.

[21] Lilly's manufacturing activities could be divided into three primary subactivities. Manufacturing development represented the linkage with R&D for process development and small-quantity production and was largely centralized at Indy. Bulk production was responsible for large-scale production of compounds, reporting through a functional management structure, and was primarily located either in the United States or, following industry practices, in tax haven locations. Formulation, fill, and finish plants, processing bulk materials for final sales, were scattered throughout the world supporting national sales activities and reported through affiliate management.

interdependence of worldwide operations, these opportunities became closely associated with the company's overall strategy, and manufacturing management increasingly stressed both maximizing global technology capabilities and accommodating growing requirements for local investment.

In 1988, Lilly formed a Manufacturing Strategy Committee, made up of senior representatives from manufacturing, engineering, development, marketing, finance, personnel, and ELIC, to consider the full implications of manufacturing investments. Subsequently, a new manufacturing structure was also introduced, emphasizing centralized strategic direction and guidelines for worldwide activities (e.g., capacity, make-or-buy decisions, technical standards, measurement criteria) and decentralized day-to-day operating decisions by local staff reporting to affiliate management. There was no formal reporting relationship between local facilities and Indy manufacturing executives, who rather exercised control through establishing and managing global operating policies, standards, and systems. The company introduced a global manufacturing policy book, the goal of which was to focus on improving performance measurement and decision making. Supporting the new policies were a series of ongoing forums and meetings, not based on reporting relationships but rather among 'colleagues' sharing information on common issues and concerns, with discussions focused on global policies and measurement systems.

Integration represented a fundamental shift in how activities were structured and managed. In both functions, integration did not involve a shift in reporting relationships, but rather the centralized establishment of common worldwide policies and guidelines, setting operational boundaries within which worldwide facilities operated. In clinical, it also involved centralized management of global development plans, procedures, and systems, which were subsequently decentralized in terms of day-to-day management within affiliates. In both functions, these stages clearly represented a fundamental movement away from reliance on reporting relationships for coordinating and controlling worldwide activities.

Beyond functional integration

Integration represented a fundamental shift from previous phases in the globalization process at Lilly. Rather than operating within the context of separate domestic and international units, management spoke of reallocating global resources to move toward a single global functional organization. While the change process between 1980 and 1993 stressed the gradual integration of activities across national borders within individual functions, by 1993 Lilly management increasingly spoke of a new type of integration—cross-functional integration in managing key worldwide business processes and the global management of businesses.[22] Process management was associated with cross-functionally integrating worldwide activities in discovery research (to increase the flow of high potential new products through improved scientific management), in overall drug development (to speed the global approval of new products), and in sales (associated with effective management of manufacturing, marketing, and sales in worldwide markets). At the same time, Lilly management spoke of the need to expand cross-functional integration in globally managing strategic businesses. Thus by 1993, integration at Lilly had expanded beyond globalization (or cross-border) integration of individual functions to cross-functional integration around business processes and products.

However, the new emphasis on cross-functional integration sought to build on capabilities developed within the functional development processes. Without first enhancing the company's ability to perform individual functions globally, the potential for cross-functional integration would have been limited. In this regard, the study suggested a sequential relationship across these processes—first building global functional capabilities and then enhancing the firm's ability to draw on these capabilities not only within, but also across functions.

[22] In responding to mounting industry pressures, Lilly management began to focus on three fundamental processes, associated with (a) discovery, (b) development, and (c) manufacture and sale of its products. Each of these processes was associated with a mix of activities and functions. For example, clinical was involved in both development (where it was responsible for managing worldwide clinical trial programs, working with regulators to secure regulatory approval) as well as in the actual sale of products (working with medical opinion leaders).

MODELLING THE GLOBALIZATION PROCESS

Research at Eli Lilly and Company has helped develop an evolutionary view of the globalization process at traditionally ethnocentric firms. It suggests that over time companies pursue multiple objectives, differing in their impact on various functions, and a company's ability to achieve each objective is affected by its ability to perform various activities globally. The research also suggests that an important component of the globalization process occurs at the level of the function, with significant variations in the process across functions as firms gradually expand the ability of international units to perform tasks to meet local and global objectives. At any time, the globalization process is made up of various functions at different development stages, responding to distinct strategic pressures and pursuing diverse objectives in terms of the desired worldwide operating structure.

This section models the globalization process at traditionally ethnocentric firms based on findings at Lilly by developing both intra- and interfunctional development patterns. In presenting the findings, it develops important patterns at Lilly, emphasizing what these patterns suggest about the globalization process for ethnocentric firms.

Intrafunctional development patterns

This research suggests that at ethnocentric firms, individual functions pass through up to four key development stages. An *appendage* stage, associated with the traditional structure, has affiliates leverage domestic resources and capabilities within individual national markets. A *participation* stage is associated with affiliates locally performing an increasing array of tasks to meet local requirements. A *contribution* stage is associated with upgrading affiliate activities to enable the firm to use them to augment its ability to respond to mounting global objectives. An *integration* stage is associated with combining domestic and international operations into a single integrated network structure. These development stages were used in a modified format by key functions at Lilly. Table 1 summarizes organizational characteristics at each stage, while Table 2 portrays the functional development patterns observed within individual functions.

A number of important findings emerge from these findings. First, the timing of development varies significantly by function. Rather than being consistent across the organization, each function can be at a different stage in the globalization process at any point in time. Second, the development patterns can vary in terms of the stages through which a function passes. The research suggests that functions initially involved in the process may move successively from stage to stage, while subsequent ones may bypass some intermediate stages through leveraging organizational resources and experience gained in other functions. Third, the objective of the process may differ by function. For some functions, the process involves moving toward an integrated worldwide organization, while for others the objective may well remain at some intermediate stage.

Corresponding organizational adjustments

An important topic in modeling the change process within functions is analyzing adjustments in a firm's organization throughout the process. Research at Lilly identifies important linkages between adjustments in a firm's resources configuration and organization, two dimensions of its worldwide activities highlighted in the literature, outlined in Figure 2.

At the appendage stage associated with the traditional ethnocentric structure, the organization focuses on *directing* international activities in line with domestic strategies. In moving to the participation stage, the organizational focus shifts toward *managing* the build-up of resources within individual affiliates, using domestic systems, procedures, and staff, as required. Rather than alter its domestic functional organization, a company may establish an independent international functional unit to oversee the build up process. In moving to the contribution stage, the organizational focus shifts toward first *supporting* the upgrading of affiliate resources and activities, moving them toward levels found in the larger, experienced domestic units, and subsequently *coordinating* activities across national markets, standardizing worldwide systems and building linkages across domestic and international units to facilitate expanding exchanges. A company

Table 1. Eli Lilly and company development stages

Organizational Attribute	Appendage	Participation	Contribution	Integration
Roles:				
Headquarters	Dominant source of strategy, technology, products, resources	Dominant source of strategy technology, products, resources	Dominant source of strategy technology and resources; major supplier of products	Shared responsibility for strategy, technology, resources and products
Regional office	Monitor, control affiliates	Monitor, support affiliates	Coordination and control, supplement, support affiliates	
Affiliates	Local sales leveraging domestic products	Local sales with expanding local activities	Local sales, limited contribution to support outside requirements	Shared responsibility for strategy, technology, resources, and products
Structure:	Separate international and domestic units	Separate international and domestic units	Separate international and domestic units	Differentiated, interdependent global network
Affiliate systems:				
Affiliate authority	Local implementation of headquarter's strategy, programs			Global leadership for some tasks, supporting role in others
Affiliate resources, activities	Downstream activities in each function	Gradually expanding resources in selected upstream tasks	Expanding scale and sophistication in selected upstream tasks	Specialized resources in selected tasks
Affiliate measurement	Local profitability	Local profitability, subjective measures of build-up	Subjective measures of total activities, local profitability	Measures of global contribution in each function
Control mechanism	Centralized decision making, expatriate management	Centralization, formal systems	Centralization, formalization, socialization of key management	Centralization, formalization, socialization
Exchanges:				
Flows to affiliates	Products or other functional output (data, programs, etc.)	Products or other functional output, financial, technical, human resources	Products or other functional output, financial, technical, human resources	Products or other functional output, financial, technical, human resources
Flows from affiliates	Dividends, formal reports	Dividends, formal reports	Products or other functional output, dividends, formal reports	Products or other functional output, financial, technical, human resources

Table 2. Functional development processes: Eli Lilly and Company

Function	1980	1985	1990	1993
Research	Appendage 90% of basic R&D conducted in U.S.			Appendage 90% of basic R&D conducted in U.S.
Clinical	Appendage 95% of clinical trials conducted in U.S. for worldwide NDAs	Participation About 50% of trials conducted in local markets, with data used only in local NDAs	Contribution About 60% of trials conducted outside the U.S., with data used in one global NDA	Integration Single global clinical organization for planning and implementation
Marketing	Appendage Products marketed in every market based on U.S. programs, studies		Participation Local marketing unit plans, customizes programs for local market	Contribution Exchange information in developing local marketing programs
Manufacturing	Appendage Development and bulk manufacturing in U.S. or 'tax haven' locations, formulation, fill, and finish activities in local markets			Integration Global centers for development and production of compounds

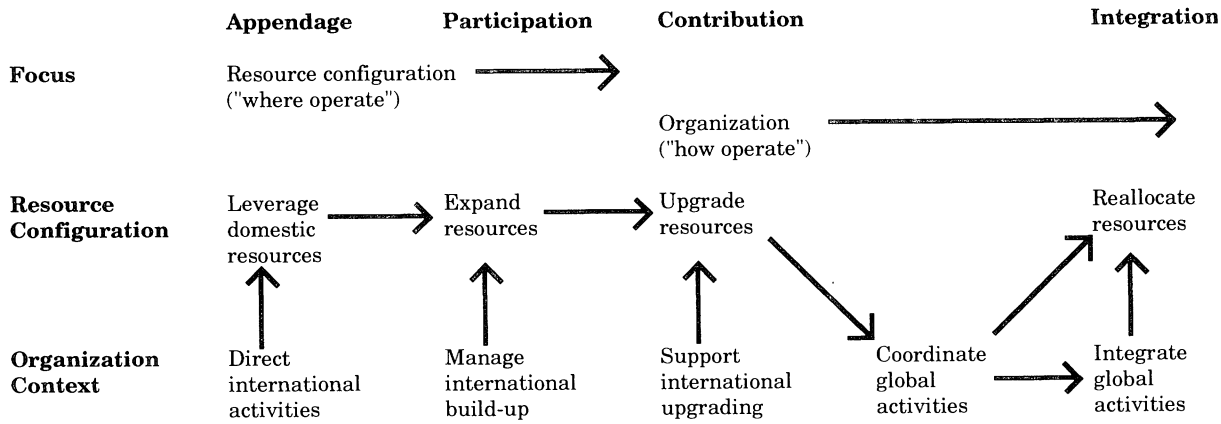


Figure 2. Resource configuration and organizational adjustments: Eli Lilly and Company

may expand the role of regional offices to support affiliates and facilitate growing exchanges. At this stage management systems may be altered to expand the direct involvement of international units in worldwide decisions,[23] standardizing operating procedures, policies, and systems to facilitate growing worldwide exchanges.[24] In moving to the integration stage, the organizational focus shifts toward facilitating the worldwide *integration* of activities. While this focus emphasizes reallocating and rationalizing resources and activities globally, pursuing it requires substantial changes in a firm's organization to create the mechanisms needed to move toward a global structure. In this context, integration involves moving beyond a reliance on formal reporting relationships and introducing a mix of centralization and decentralization to manage worldwide activities.

Overall, this model suggests that for ethnocentric firms, initially the globalization process is driven by adjusting resources configuration, emphasizing *where* a company performs various activities (specifically building the capacity to perform an increasing array of activities globally), with organizational adjustments made to support the build up of resources and activities at affiliates. Subsequently, the focus shifts toward adjusting a firm's organization, emphasizing *how* it operates globally, to increasingly link and integrate dispersed activities. These ensuing organizational adjustments are required to reallocate resources globally based on strategic, as opposed to historical, considerations, a goal of the process highlighted in the literature (e.g., Hedlund, 1986).

These findings suggest the potential for a growing degree of organizational complexity throughout the process. At any time, an organization may be comprised of a mix of centralized, decentralized, and network structures. As an example, in 1993 Lilly managed its worldwide activities using a mix of approaches. Its upstream activities (discovery research) continued to rely on centralized reporting relationships to direct largely centralized worldwide activities. Its midstream activities (clinical and bulk manufacturing) operated as networks, with worldwide activities integrated through a mix of centralized planning, policies, and standards with decentralized day-to-day operating decision making. Its downstream activities (final manufacturing, marketing, and sales) were largely decentralized, coordinated though centrally controlling those policies exhibiting interdependence in impact across national markets.

[23] Kim and Mauborgne (1993) have found a relationship between affiliate input to the strategy making process, and a firm's ability to meet subsequent strategic objectives.

[24] For example, Lilly altered its international business planning system to incorporate affiliates earlier in the new product planning process. A senior executive overseeing ELIC described the importance and difficulty of the change. '[The new] planning process has helped force each unit to work together and served to provide discipline to each affiliate. However, involving affiliates earlier in the process, when there is a high degree of uncertainty as to final product decisions, has led to disappointments when product assumptions change. This has required introducing greater flexibility to the affiliate planning and resource allocation processes.'

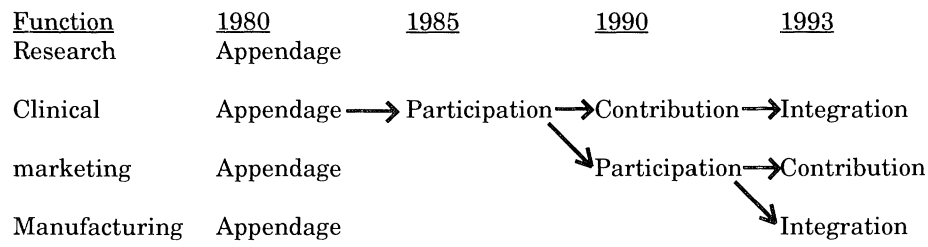


Figure 3. Interfunctional development patterns: Eli Lilly and Company

Interfunctional development patterns

The preceding analysis models the globalization process within individual functions. However, at Lilly these processes were not independent, but rather components of a total corporate globalization effort. As a result, an important aspect of understanding the globalization process is modeling the relationship among functional processes. Analysis of functional processes identified differences in the sequence of the processes across functions and an important issue is understanding the source of such differences, analyzing factors impacting the timing of changes within individual functions.[25]

Research at Lilly suggests important linkages between the functional processes. Analysis of these relationships involves moving from the functional to corporate level of analysis, associated with how developments within individual functions contribute to overall corporate objectives. Given the fundamental nature of changes throughout the process in terms of how a firm operates globally, coordination of development processes across functions is suggested as an important component of the overall globalization process. Figure 3 portrays interfunctional patterns at Lilly.

These patterns highlight both a *sequential* and *interdependent* relationship in the development processes across functions. Adjustments in one function may be required to create opportunities for global expansion in other functions, implying a sequential relationship. In addition, subsequent adjustments in multiple functions may be required to meet corporate objectives driving the entire process, implying interdependence. The patterns suggest that differences in the timing of functional processes may represent an important mechanism to enable the development of individual functions to continue relatively independently, at different speeds and toward different objectives, while simultaneously pursuing overall corporate objectives.

To illustrate these potential relationships, it is useful to review findings at Lilly. Between 1983 and 1986, the company focused on its clinical operations, building contacts with opinion leaders and conducting clinical trials within local markets. However, as the company built worldwide clinical resources and as new high-potential products neared launch time, a new opportunity emerged—that of augmenting marketing resources for an enlarged worldwide sales effort. A clear relationship existed between the development of these two functions. First, the company needed to initially concentrate on the clinical area to create opportunities in the marketing area. (Without both local contacts and high-potential new products, it would have been less effective to augment its marketing resources.) Second, adjustments in both functions were required to meet overall local goals.[26] Similarly, by the late

[25] The importance of this sequencing was indicated at Lilly by a senior official, who commented 'We had to invest money when we could expect an adequate return based on when it fit into our immediate opportunities. Timing of each move would be a critical, given the major changes we foresaw in the future.'

[26] At Lilly, one measure for evaluating the effectiveness of the changes across the two functions is to consider the speed at which it introduced and sold products to larger world markets, an objective driving the process. For one major product introduced in the early 1980s, 6 months after its first major OUS launch it was being sold in markets representing less than 25 percent of the total potential market. After 2 years, this percentage increased to only about 50 percent. For a product introduced in 1989, 6 months after its first major OUS launch, it was being sold in markets representing

1980s because of its growing market position in major world markets and the increasing interdependence of such markets, the need emerged for the company to manage its worldwide manufacturing investments as part of its total global strategy. The relationship between the manufacturing process and other efforts highlights a pattern similar to that between clinical and marketing. Until the company had established a significant local presence in major markets, it had limited opportunity to use manufacturing investments to enhance local and global objectives. It was also interdependent on the development of other functions as the primary benefit sought was to enhance the company's ability to leverage its local position through the increasing local investment.

Shifting corporate strategic objectives

As indicated earlier, interpreting interfunctional patterns involves relating the globalization process to changing corporate objectives, reflecting a firm's motivation for operating internationally. A clear distinction has to be made in the literature in this motivation between the ethnocentric and integrated network models. Lilly's motivation driving its worldwide activities evolved, responding to a changing mix of internal and external contingencies which emerged throughout the decade, resulting in a series of objectives over time which differed in their impact on various functions. These patterns are outlined in Figure 4.

In the early 1980s Lilly management described its objective for expanding internationally as increasing sales outside its domestic market. This objective led initial expansions in local clinical activities and subsequently in its marketing and sales forces. As industry pressures mounted (including the need for increasing numbers of clinical trials), a second objective emerged—using international clinical resources to access new clinical trial patients to speed product development. This objective, added on top of the objective of expanding international sales, led to further changes in the clinical unit. Finally as Lilly built stronger local positions and as the interdependence among markets increased, a third objective emerged—leveraging distributed resources and capabilities to improve the efficiency of worldwide operations. This objective drove management to move toward integrating its clinical and manufacturing organizations.

Overall, these findings suggest that several factors drive the globalization process. Mounting competitive pressures create a series of requirements over time that lead to a shifting mix of corporate objectives driving the process both within and across functions. At any point in time, a company is responding to a mix of objectives, leading one or more functions to move through one or more development stages. Thus, these shifting corporate objectives provide an important linkage to the intra- and interfunctional patterns modeled above. A company's ability to respond to emerging objectives is significantly affected by the stage of development of individual functions, and changes in one function created subsequent opportunities and requirements in other functions.

Understanding the impact of shifting motivations for a firm to operate internationally represents a final important component of modeling the globalization process. Two patterns are suggested by research at Lilly. First, initially these motivations are primarily locally focused within individual national markets, as firms seek to *exploit* domestic resources and capabilities. Over time as a firm builds local market positions—*and* as competitive challenges mount—its motivation for operating internationally shifts toward global factors as firms gradually seek to *expand* total corporate capabilities by building and tapping into their international operations.[27]

about 30 percent of the total potential market, a percentage that rose to about 60 percent after 1 year and expected to rise to about 90 percent within 2 years. For a third product, expected to be launched in 1991, plans called for having the product in markets representing more than 50 percent of the total market after 6 months, rising to more than 75 percent after 1 year and more than 90 percent after 2 years.

[27] These motivations can be directly related to foreign direct investment (FDI) theories. For example, *exploiting* existing capabilities can be related to monopolistic advantage FDI theories (e.g., Hymer, 1960; Kindleberger, 1969), which postulate that to expand into international markets, firms must possess monopolistic advantages that enable it to operate more profitably than local firms. *Expanding* capabilities can be directly related to eclectic FDI theories (e.g., Dunning, 1981), which stress tapping into and internalizing location-specific advantages as a factor explaining international expansion. FDI theories also suggest a third motivation for international expansion. Oligopolistic rivalry FDI theories (e.g., Knickerbocker) suggest *maintaining* existing firm-specific capabilities in response to growing international competition as a third potential motivation.

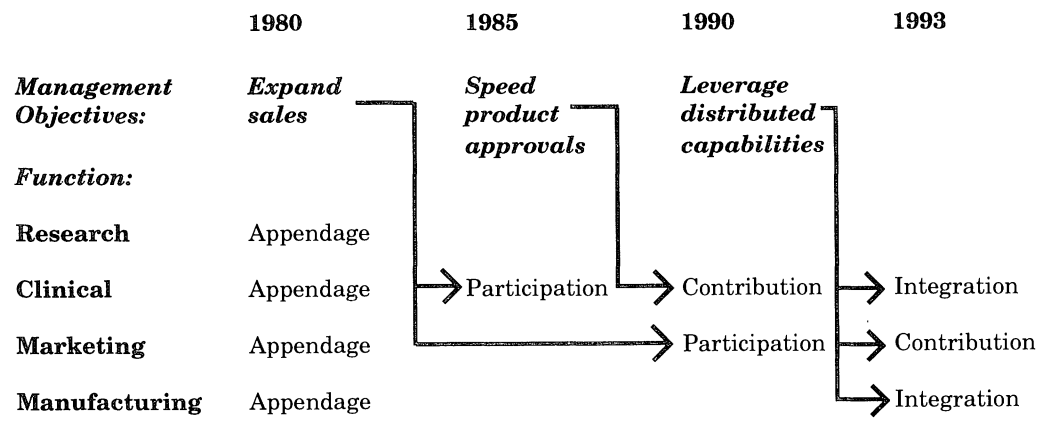


Figure 4. Changing management objectives: Eli Lilly and Company

Second, although the initial motivation for international expansion may impact multiple functions, its focus is largely within individual functions, emphasizing *building* functional capabilities. Subsequently, these motivations shift toward *utilizing* enhanced functional capabilities to respond to mounting competitive pressures.

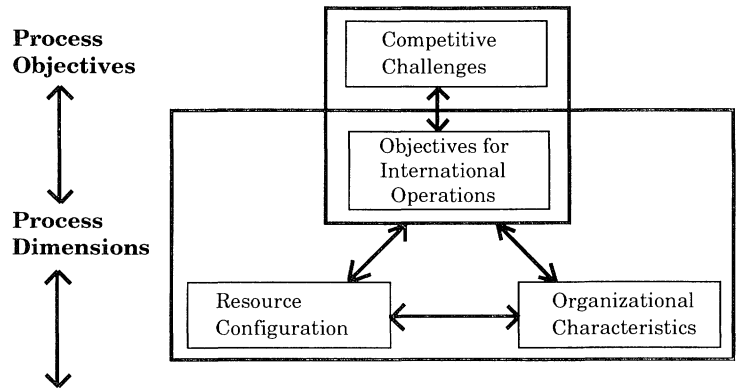
For both patterns, there is again a *sequential* and *interdependent* relationship in this evolutionary perspective. Exploiting domestic resources and capabilities leads ethnocentric firms to build international presences, which subsequently provide the opportunity for enhancing such presences to tap into location-specific resources to expand total firm capabilities. Likewise, enhancing functional capabilities through tapping into international resources is an important step in developing the opportunity for utilizing such capabilities in responding to mounting competitive challenges.

DISCUSSION

Research at Lilly suggests an evolutionary perspective of the globalization process for traditionally ethnocentric firms. Earlier studies developed the context for such a perspective, describing changes in the competitive environment in which MNCs operate, components of emerging global strategies, and traditional and emerging organizational models. An evolutionary perspective within dyadic models was developed by Stopford and Wells (1972), based on a firm responding to a primary strategic challenge as their international activities expanded, orienting the entire organization to respond to the challenge. Research at Lilly suggests a significantly different view of the process for MNCs moving toward integrated network models, with important components of the process highlighted in Figure 5. Overall, the model highlights three important aspects of the globalization process: process objectives (reflecting a shifting motivation for operating internationally), process dimensions (representing important dimensions of a firm's worldwide operations impacted by the process), and development stages within each dimension.

Research at Lilly suggests that the process is driven by the interaction of two factors over time: mounting competitive challenges and opportunities, and gradual adjustments in the firm's motivation or objectives for operating internationally. Globalization at Lilly involved reacting to mounting competitive pressures through a series of emerging short-term strategic objectives, which subsequently led it to alter how and where important functions were performed. There was no single objective of 'globalizing' the firm, and rather the cumulative result of a series of adjustments within and across individual functions was a fundamental adjustment of how it operated globally, or what has been defined as globalization.

A second important aspect of the globalization process suggested by research at Lilly corresponds to the organizational dimensions of the change process within the firm. At Lilly, the process



	Resource Focus	**Organizational Focus**
Appendage	Leverage domestic resources	Direct international activities
Participation	Expand international resources	Manage international expansion
Contribution	Upgrade international resources	Support international activities
		Coordinate worldwide activities
Integration	Reallocate worldwide resources	Integrate worldwide activities

Figure 5. Globalization process model

was shown to impact both the firm's resource configuration and its organization for managing worldwide operations. Each dimension underwent gradual, but interdependent adjustments over time as the firm first altered *where* its important tasks were performed globally and subsequently *how* these dispersed operations were coordinated and integrated into the company's global operations. At any time, the company was responding to a complex mix of pressures, each impacting different functions. Its ability to respond, pursuing the short-term strategic objectives, was impacted by the stage of development of individual functions, reflected in its ability to perform various activities globally.

This model suggests that understanding the globalization process requires identifying competitive pressures, a firm's response in terms of its strategic objectives, the impact of these objectives on individual functions, and the firm's ability to respond based on the stage of development of such functions, and how the firm gradually adjusts its resource configuration and organization. While supporting basic propositions found in earlier studies, this model both extends earlier research and contributes new insights into the globalization process itself. A number of studies have described mounting competitive challenges, associated with the globalization of industries and competition (e.g., Porter, 1986). A number of frameworks have also been used to analyze mounting competitive pressures, such as the global integration–local responsiveness framework referred to earlier. However at Lilly, it was not merely the existence of these pressures but rather their impact on altering the motivation or objectives for operating globally that were the critical drivers behind the process. While not previously found in globalization literature, this relationship has frequently been highlighted in change management literature (e.g., Kanter, 1983; Tichy, 1983).

In terms of defining the dimensions of the change process within firms, this research applied the two dimensions of an integrated network organization previously suggested in the literature (Kogut, 1983; Porter, 1986) to provide important insights into how a firm moves toward the integrated network models. Throughout the process, Lilly concentrated on overcoming the primary immediate limitation inherent in its structure, represented by one of the two dimensions, which changed throughout the process: initially lacking the worldwide resources necessary to increase global sales and subsequently lacking the operating structure and management systems

to exploit its new worldwide resources. While adjustments in both resource configuration and organization were required to build worldwide operations, the way a firm manages changes in these two dimensions may provide important insights into its strategy for managing the transition process.

In terms of process itself, a number of studies have developed characteristics of an integrated network MNC model, suggesting the movement toward a differentiated, interdependent global structure. Studies also highlighted the importance of understanding varying pressures impacting different functions within a firm. However, research at Lilly significantly extends these earlier studies, developing a dynamic perspective of the process. Supporting earlier research, this evolutionary view focused at the level of the function, and individual functions were moving toward different objectives. However, research at Lilly suggests that globalization of traditionally ethnocentric firms involves a complex building process both within and across functions. Within functions, the process involves moving from primarily leveraging domestic capabilities (appendage), to performing an increasing array of tasks within affiliates to expand local activities (participation), to upgrading affiliate capabilities to respond to global competitive challenges (contribution), to integrating domestic and international operations in a single global network structure. However understanding the transition process required moving beyond differences in targeted structures by function. Rather, differences in the transition process across functions also involved differences in the timing and sequence, and the overall globalization process involved both functional development stages as well as development patterns across functions, an additional important component of the transition not previously highlighted in the literature. These patterns were driven by the sequential and interdependent relations among the development processes within individual functions. Changes in one function were shown to create both opportunities or requirements in other functions and often were dependent on changes in these other areas of the company for changes in either function to be effective. Essentially, these functional and cross functional patterns provide an important foundation for analyzing over time the globalization process within a firm.

While the existence of development stages and a shifting process focus have not previously been developed in globalization literature, they have been a common topic in change management literature. For example, change management literature has emphasized how organizations pass through intermediate stages in moving from an existing to future stage (e.g., Beckhard and Harris, 1987; Tichy, 1983; Kanter, 1983).

In terms of the goals of the process, this study also suggests a more complex view of the process within firms. The integration stage at Lilly resembled network models found in the literature, while the appendage stage resembled the traditional ethnocentric model. However, Lilly's organization at any point in time varied significantly by function, representing a complex mix of centralized, decentralized, and network approaches. A general pattern suggested by this research was that upstream functions tended toward centralized structures while downstream functions tended toward decentralized structures. Midstream functions were the ones characterized by the integrated network structures.

This research and its findings suggest a number of potential topics for further research. First is a need to verify and extend these findings by replicating them at other sites. Important components of these findings that can be tested include the evolutionary nature of the process and the specific functional development stages identified for traditionally ethnocentric firms. A second topic for further study is extending the research to polycentric firms. Based on fundamental differences in their traditional structuring, it can reasonably be expected that there will be differences in the globalization process itself. A third topic for further study is to investigate the mechanisms that enable firms to move from one stage to the next. This study identified the importance of development patterns within and across functions, suggesting the need to embed knowledge gained in one function at one time to apply it at other functions subsequently facing similar challenges.

While the primary focus of this study was on contributing to literature on globalization, its findings can also be interpreted in terms of a host of other ongoing debates. One obvious possible application would be in ongoing strategy–structure research (Chandler, 1962). Hedlund and Rolander (1990) develop a dynamic

interpretation of the relationship between strategy and structure in the international environment, suggesting that MNCs introduce new action programs and alter their structures in more dynamic relationship with the environment, a view consistent with the perspective developed in this paper.

Another topic that the study could contribute to is the nature of the relationship between the MNC organization and its environment. Rosenzweig and Singh (1991) describe the pressures for MNCs to respond to dual pressures, seeking isomorphism with their local institutional environment and consistency within the organization. At Lilly, management first created an independent international unit that built local capabilities and compatibility, before gradually integrating them into the firm's worldwide network, especially its powerful domestic organization. Thus, this study indicates a possible gradual development process in responding to the competing pressures.

There are important limitations in generalizing or interpreting the findings of this research given its focus on a single traditionally ethnocentric firm. However, notwithstanding these limitations, the study highlights the need to pursue an important new research agenda in the globalization literature stream: building an understanding of how firms adjust how they conduct their operations around the world. As a number of writers have postulated that one of the primary challenges facing management is building the capability to compete in emerging competitive environments, it is important to expand understanding of this area. This paper developed a comprehensive model of the process based on research at Lilly. Through further testing of the model at other sites, it will be possible to develop more generalizable findings and move toward developing a dynamic theory of the globalization process.

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