Selecting the Appropriate Organizational Design
for the Modern Global Firm:
Interaction among Product Design,
Environment, and Technology

Eric K. Clemons
The Wharton School
clemons@wharton.upenn.edu

Brendan Carney
The Wharton School
brenda30@wharton.upenn.edu

Jason Dandridge
A. T. Kearney
Jason_Dandridge@ATKEARNEY.com

Deirdre Flynn
The Wharton School
deurdr31@equity.wharton.upenn.edu

Abstract

The structure of the global enterprise has altered dramatically over the past two decades, due to the changing balance among market conditions, product characteristics, and information technology. In consequence the location of control and the control structures adopted by global firms have changed as well. Firms must choose the appropriate set of organizational designs based upon these interactions, where designs will reflect choices on the allocation of decision rights, the design of incentive structures, and the information infrastructure needed to support them.

1. Introduction

Many senior executives now appreciate that they will need to redesign their firms to achieve an appropriate organizational design for the coming decade. Indeed, it is easy to get agreement within the firm for the need for redesign, but it is somewhat more difficult to obtain consensus on what design would be appropriate, or even upon the characteristics that combine to describe or specify organizational structure. The classic work defining the study is “A long-run Theory of the Multinational Enterprise, by Buckley and Casson [5]. This work begins, rightly, with an examination of unique industry-specific factors, nation-specific factors, region-specific factors, and firm specific factors; however, we argue that the factors that are causing such anxiety among senior management teams are not market specific or firm specific factors, which they understand relatively well, but rates of change in these factors and the use of information and information technology to respond to increasing and increasingly rapid change.

In this short paper, we argue that an organizational design can be defined by decision rights, incentives, monitoring, and information infrastructure, consistent with Meckling and Jensen [7]. Consistent with the factors that appear to be driving management teams to change the structure of their multinational firms, we therefore seek to answer the following questions:

- Decision Rights: We seek to understand the process by which the firm allocates decision rights, that is, how the firm determines job descriptions and the authority and responsibilities associated with each position. We are specifically concerned in this study with how the firm allocates responsibility among different locations, that is, which functions are to be controlled centrally and which are to have control devolve to local offices. We seek to understand how the decision rights are allocated across different regions and different functional areas, to what extent they are controlled centrally, and to what extent a central authority can
coordinate without exercising complete control.  

- **Incentives:** What incentives are provided to direct or influence the behavior of decision makers where decision rights are allocated to local offices in a global corporation?

- **Information:** What information is available to local decision makers to guide their actions? What controls are in place to limit the actions of local decision makers? What information is available to global staff either to facilitate their coordination or to enable their monitoring of the actions and the performance of their local agents?  

- **Information Infrastructure:** What information systems are available to support central coordination? How do accounting systems and other information systems provide the information needed to monitor behavior and support incentive structures?

In brief, infrastructure enables monitoring, which supports incentive systems, which are needed to back up allocation of decision rights.

### 1.1. Factors Driving Change

It is clear that the design of organizations has profoundly changed over time. During the American Revolution, Benjamin Franklin as Ambassador to France enjoyed a degree of freedom to make decisions that no modern ambassador would be allowed. The reason is, of course, quite simple: given the limitations on long distance communications imposed by the speed of wind-powered trans-Atlantic travel, almost all decisions were made by the ambassador within guidelines established by the government in Philadelphia or New York. Requesting more specific guidance or detailed instructions and waiting for a response would have resulting in missing all opportunities that might arise and then quickly vanish in a turbulent international environment. The powers vested in ambassadors have decreased and have continued to change over time, as communications capabilities and environmental turbulence continue to interact.

Preliminary analysis suggests that the structure of the global enterprise has altered dramatically over the past two decades, as the balance has shifted between the benefits of global control and efficiency and the benefits of local responsiveness and speed. This can also be seen as a trade-off between scale and speed: The need for scale drives towards a monolithic global firm, while the need for speed and responsiveness imply a structure with a high degree of local autonomy and control. This balance has been affected by changes in the following:

- **Environmental Factors:** A more turbulent environment requires faster response and a higher degree of local expertise, requiring that more control devolves to local subsidiaries or local offices. In contrast, greater consolidation among buyers or sellers may require tighter centralized coordination of negotiation, pricing, and distribution.

- **Product characteristics:** Some products have a fairly uniform design from market to market, while others need to respond to strong regional or national differences in preferences. The local market for detergent varies widely even within Europe, based on local preferences for water temperature, number of cycles, and other details of the design of washers. Some markets benefit from pronounced economies of scale while others do not. There are clearly opportunities to benefit from economies of scale in chip design and in the development of operating systems software for personal computers. Product characteristics that create or weaken opportunities for large markets and opportunities for economies of scale will affect the appropriate degree of centralization in design, production, distribution, and sales and marketing.

- **Information and Information Technology:** The more rapid availability of information has altered the appropriate organizational design. With very limited information transfer capability — as in the realm of

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1 A very specialized instance of this problem, allocation of the right to make investment decisions, is addressed by Nault [8].

2 It is this aspect of the design of organizations that has most captured the interest of the information systems research community. See Brynjolfsson [3] or Brynjolfsson and Mendelson [4] for general issues in the design of the firm, Malone [6] for an analysis of alternative cost structures associated with managing and coordinating activities in different structures, or Nault [7] for the more specialized problem of locating the authority over individual investments.
international diplomacy before trans-Atlantic telecommunications — local ambassadors had enormous authority and independence. With the introduction of secure telecommunications, a higher degree of centralization was supported. In times of turbulence, however, a considerable degree of authority and responsibility reverts back to the local resources in place, since the degree of local expertise required precludes central decision making; strategic objectives, guidance, and performance monitoring are still required.

1.2. Available Designs for International Organizations

As a result of changes in these factors, the location of control and the control structures adopted by global firms have changed as well. The following provides a short list of the types of organizational designs for international firms that have been described in the literature:

• **Monolithic Global**: At one extreme, a single centralized office controls the firm and rigidly pursues economies of scale. This model fits some functional areas within some global organizations especially well. For example, the design and manufacture of airframes (aircraft bodies) need not vary much from country to country. Similarly, the research function of a pharmaceutical company may be highly centralized, as the scientific and medical requirements for an effective ulcer drug or other medical treatment may not vary much from country to country, given the common biological needs of different populations.

• **Multidomestic**: At the other extreme, each country or region may have a high degree of local autonomy and may function with a high degree of freedom needed to respond to local conditions. The sales and marketing functions of aircraft manufacturers may differ across regions; the need to sell to local national health services will likewise argue that the sales arm of most pharmaceutical companies will be multidomestic. This structure will also be preferred when there are high degrees of local differences among countries, as in dealing with national health services or governmental approval bodies in pharmaceutical sales, or when dealing with food preferences in different national markets.

• **Transnational**: The transnational form is a hybrid, with many of the characteristics of the more traditional monolithic firm. However, central control with this organizational design is intended to achieve optimal efficiency not through fixed and rigid pursuit of economies of scale; rather, this design allows a reallocation of economic activities based on changing local conditions. Manufacturing may shift from region to region or country to country based on exchange rates and wages, or based upon shifting demand patterns, but the detailed design of local operations remains under local control. (The introduction of the term “transnational” is attributed to Bartlett [1], [2]. Bartlett’s work was intended to provide a framework that enabled balancing the forces requiring global coordination and integration with the forces requiring national (local) responsiveness and differentiation.)

Our study seeks to understand how firms choose the appropriate organizational design from the set of organizational designs available to them. Our expectation is that the firm’s product characteristics and market conditions will interact to determine the appropriate design, which may vary across functional areas within a single firm. This design will then be supported with information technology and telecommunications infrastructure.

Our preliminary analysis is informed by the study of two corporations, an international credit card association and an international producer of agricultural chemicals, especially fungicides and pesticides.

2. The Agricultural Chemical Producer:

The set of pest control products that can be offered is determined by the following factors:

• An agricultural **crop** (such as winter wheat)
• A local market or set of **farming practices**
• A disease or pest **problem**

Thus, the number of potential products is determined by multiplying the set of crops, the set of market conditions, and the set of diseases or pests to be controlled. This yields a very large set.
of potential opportunities; the set of opportunities that will actually be pursued is determined by choosing from among those potential opportunities that are large (the market is large or the crop is valuable) and for which the competition is limited (the quality of products already offered is not especially high, allowing room for significant improvement).

There are numerous areas in which global coordination is appropriate, and many others where local responsiveness is more important.

2.1. Global Coordination

Global coordination across different national markets is necessary or desirable in the following areas:

- Management of testing and of the process of gaining regulatory approval
- Management of research
- Management of strategic sourcing, that is, management of the decision of which products can be outsourced and which must be produced internally, and for those that are to be procured, managing the outsourcing of those that are deemed to be strategic
- Management of logistics, production, and distribution

We discuss each of these in turn.

**Coordination of testing and obtaining approval** is complex and vitally important. The cost of testing may be prohibitive for all products except those with the largest global markets, unless these costs are managed effectively. Likewise, the time required for testing and gaining approval may erode much of the limited term of patent protection if not managed well. Coordination of these processes includes setting priorities on which products to test, based in part on expected sales, determining where to obtain test data and how to share this data across different national markets, and setting priorities for getting approval in each of the local markets where the company hopes to sell its new product. Determining where to get local approval may itself be complicated: a fungicide to be used on wine grapes in Chile will be of only limited value if the grapes or the wine cannot be sold in the United States; thus, even if the fungicide itself is never expected to be sold in the U.S. it will still be necessary to get it approved for cross-tolerances, residual levels remaining on crops. However, the U.S. Department of Agriculture places a much lower priority upon completing testing for the safety of cross-tolerances; thus, it may be faster to get the product approved for use in the U.S. even though it will not actually be sold here than it would be to attempt to get approval for use on domestic agricultural crops. Moreover, once the product is approved in the U.S. it is frequently easier to get approval in many important markets. Thus, getting a promising new fungicide ready for sale in Latin America may first require getting it approved for use in countries where it will not be sold, and then carefully coordinating the sharing of data to expedite its approval for use in countries where it will be sold. This coordination seeks to reduce cost and time; that is, it is aimed at economic efficiency.

**Coordination of research** likewise is critical. The “idea guys” who perform research are in limited supply. This limited supply of global talent suggests that their allocation of effort should be controlled and directed at the set of problems with the greatest potential for profitable sales. This, in turn, requires the identification of problem diseases, affecting crops of considerable economic value, and with limited numbers of effective treatments currently competing to address this disease problem, for this crop, in these markets. While local experts may identify local opportunities, central coordination is needed to assure that the firm’s limited research resources are applied to problems with the greatest potential for economic benefits.

**Managing strategic sourcing** has its own challenges. There are strategic trade-offs between internal production and strategic procurement. The active molecule in any product can be made out of basic commodity reagents, can be made out of other complex chemicals available to the firm in the marketplace, or can be purchased from strategic suppliers. Often procurement can be less expensive, since suppliers often enjoy economies

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3 George Yip argues convincingly that the location of research should be in “globally strategic” countries [9]. While he does indeed capture the importance of locating creative activities where there is ready access to appropriate personnel and ready access to the latest sources of scientific information, he omits the need to locate research near demand in rapidly changing markets and the role of information technology in coordinating these research activities.
of scale. However, the higher the degree of outsourcing, the more proprietary information that is lost about the nature of the production process. The transfer of this information allows the more rapid production of the molecule by or for competitors when its patent protection expires. Thus, managing strategic sourcing requires balancing the economic savings available through outsourcing against the increased risk of losing control of proprietary process information that this may imply.

**Coordinating logistics** has become a more complex problem as the dropping of trade barriers increases the company’s freedom to choose between local production for local markets or global production and shipment; this requires balancing the production cost advantages from centralization and scale against the additional shipping costs this may create\(^4\). These higher shipping costs are mitigated somewhat for the agricultural chemical producer by the higher potency of new product molecules, which means that the pure form of the product may be needed only in limited quantities. Questions to be addressed include where to make the product, where to ship it, and in what form. For new products, where the active ingredient concentration may be only a few percent or less, economics increasingly dictates central production and cross-border shipment of the pure molecule, based upon production cost advantages, high value per unit weight of the pure product concentration, and high value per unit of volume; specific local product formulations can be created locally, just before sale in each market. Central production may also enable the company to control access to its proprietary information on its production processes more carefully.

### 2.2. Local Responsiveness

While the importance of controlling and coordinating testing, research, strategic sourcing, and logistics are all increasing, the company is still organized around LSCs or **Local Sales Companies**. This reflects the great historical importance of local responsiveness in the following areas:

- local expertise and experience with local crops, farming practices, and the economics of local agriculture, needed for an **effective sales** organization
- speed in the identification of **marketing opportunities for existing products**
- speed in the identification of **marketing opportunities for new products**, created by untreated diseases or pests afflicting high value crops
- need for local contacts, expertise, and sensitivity for the **management of testing and of the approval process**

### 2.3. Balancing the Needs

There is a high need for independence of local sales companies; there is a high and increasing need for coordination. The senior management of the company recognizes that the balance continues to change between local responsiveness and speed on the one hand, and central control for efficient allocation of resources on the other. The company increasingly seeks to allow its central corporate staff to perform the following:

- set priorities for research
- coordinate and set priorities testing and the approval process
- coordinate sourcing, manufacture, and logistics

It seeks to allow local sales companies to do the following:

- sell
- manage local aspects of testing and approval
- identify future opportunities

Clearly, the separation is less than complete and, indeed, communication both up and down must be constant and effective. Global production and distribution cannot be controlled without timely access to sales information in each local market. The approval process must be well managed if applications are to be cascaded in a pre-determined order and data are to be shared across markets.

And yet, in an organization that is only now becoming centralized, and which has a history of a high degree of local autonomy for its local sales

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4 Again, George Yip recommends locating manufacturing in "globally strategic countries. He identifies factors that would make a location globally strategic for manufacturing, but again omits the role of information technology in coordinating production, sourcing, and distribution in rapidly changing environments.
companies, the infrastructure, monitoring, and incentives are not yet in place for this coordination to be managed formally. Annual budgets are set centrally and local companies are given targets to achieve, but the bulk of the day-to-day coordination among the regions is accomplished through seat-net: at regular intervals, local managers put themselves in airplane seats and convene to share information.

3. The Credit Card Association

Clearly, a global financial association like MasterCard or Visa has both local and global requirements and both local and global opportunities. Equally clearly, as communications technology and consumer mobility have increased, and as financial products have become increasingly complex, the balance between local and global pressures within the association may have changed as well. We will therefore explore briefly the global and local structures selected by the association, and then explore recent changes.

3.1. Global Coordination

Global coordination across different national markets is necessary or desirable in the following areas:

- **standards to support the interoperability of systems** are vital, in that a charge by a card holder, anywhere in the world, must still result in a charge to his account, a payment to his merchant or service provider, and a transfer between their two banks.
- **Fraud control** must work seamlessly around the world, since a card forged or stolen in one market can now rapidly be flown to another market, or immediately used for tele-sales anywhere.
- **Customer service** must work seamlessly as customers require card replacement or other support; this has not been a priority for the associations, unlike American Express.
- **Brand management** must be effect for the customer to have a consistent image of the product, the service, and the experience; this, too, has been more of a priority for American Express than for the associations.

3.2. Local Responsiveness

While the importance of controlling and coordinating inter-operability, fraud control, service, and brand management are all increasing, the company is still organized around national and regional structures. This reflects the local nature of consumer banking historically in every market and the structure of the association as a membership organization of local banks. The association continues to provide the following services in local fashion, country by country, using a multi-domestic organization:

- **The brand and image** of the association are managed locally or regionally, with the association setting standards and coordinating some advertising; much of the advertising continues to be managed by individual banks pursuing their own objectives rather than those of the international association or even those of their local regions.
- All **sales and marketing** are done locally, with local banks selling their services to merchants and issuing their cards to consumers.
- **Product design** is increasingly local. Consumers in the U.S. may now want credit card purchases to include extended product warranties, air miles, or insurance coverage for automobile rentals; alternatively, they may want to replace some of their credit transactions with the use of debit cards. Consumers in emerging markets may be more concerned with credit terms for their charges. Merchants in markets with a high degree of transient consumer purchases and a high degree of local technological sophistication may be more concerned with fraud control.
- **Transaction processing, including billing consumers, paying merchants, and inter-bank settlement and clearing** are done locally, to the greatest extent possible. Merchants are paid by their acquiring banks, and consumers are billed by their issuers. Charges by U.S. card holders at U.S. merchants are settled and cleared among U.S. banks without the involvement of international associations, as are charges by U.K. card holders at U.K. merchants.

3.3. Balancing the Needs

International charge card associations have experienced an array of changes in their...
competitive environment, forcing them to change and to adapt:

- Where high systems development costs and small or technically unsophisticated member banks once led to the need for centralization of systems development, the increasing capabilities of members and the increasing diversity of local requirements now argues for less centralized development of products and of the systems to support them.
- Where product design was once simple and uniform — MasterCard and Visa offered credit cards — the need for product diversity in consumer finance continues to increase.
- Increasing consumer travel and geographic mobility, and the borderless commerce of tele-marketing and the internet require tightly coupled systems for transaction processing, authentication, and fraud control.

The financial exposure faced by the association’s member banks in the absence of global coordination, coupled with the need for effective local sales, marketing, product design, and transaction processing, has pushed simultaneously both towards local control and towards local control. The interaction of these forces has changed the structure of the association, and the resulting design has increasingly been a combination of multi-domestic sales, marketing, production design, and transaction processing, global standards and brand management, and trans-national technological inter-operability.

4. Factors that Will Drive Future Change

4.1. Historical Options

The survey of firms, including those not reported here, suggests that initially firms were driven to organize principally along only one of two dimensions, in response to their assessment of the balance among the environmental forces they faced:

- Firms could choose a global structure to exploit the opportunities for economies of scale or the need for tightly coupled operations.
- Firms could choose a multidomestic structure to exploit the different local product opportunities, in the absence of scale economies, and to allow speed and flexibility of response based on a high degree of local expertise.

4.2. Factors Driving Change

Although not highlighted in the brief case studies above, the survey also suggests that the following environmental forces have changed, and that they will continue to change:

- Decreasing restrictions on global trade, including regional trade agreements such as NAFTA or the EC’s economic and monetary union, have led to a decreasing number of regional markets, and to larger regions.
- The increasing globalization of consumers’ tastes and preferences, due to increased travel and exposure to global mass media, has likewise led to a decreasing number of markets, which are of increasing size.
- The consolidation of buyers and suppliers also has contributed to the consolidation of markets; moreover, it has increased the need for high levels of coordination among formerly independent operating units when negotiating with and serving big accounts.
- Environmental turbulence, and the rapid change of consumer tastes and preferences, may require a greater degree of response to local or national market forces, and a need to

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5 This phenomenon is sometimes called the coming of MacWorld, in which consumers everywhere stay in Marriotts and Forte Hotels, eat at McDonalds and Beni Hana, drive Volkswagens and Toyotas, and use Tide to do their laundry and Crest to brush their teeth.

6 When serving Wal-Mart’s emerging operations in Latin America local Unilever companies must remember that despite their dominant position in the local markets they must be very responsive to Wal-Mart’s needs, given the giant retailer’s power in the critical North American market. When selling to Carrefour in France, Unilever and Procter & Gamble must learn to coordinate their different national sales organizations, formerly separated both by country and by product line, in order to negotiate effectively. Similarly, Colgate must now control regional pricing differences when selling to Carrefour, to limit cross border arbitrage (diverting from one market to another).
be aware of leading indicators of market trends that may rapidly go global.

• **Improvements in the cost and capability of information technology** can change the balance between the costs and benefits of central coordination relative to complete local independence.

• Likewise, **improvements in the cost and capability of information technology** can increase the ability of the central organization to make decisions centrally, or to provide incentives, monitor performance, and delegate authority.

### 4.3. Likely Responses and Resulting Problems

In environments where scale-based competition and opportunities for coordination and mass production dominate, we believe that firms selected global and monolithic designs:

- They were strongly hierarchical and command driven.
- They required only limited communication infrastructure, as only limited communication was expected back from the regions.
- Monitoring was largely limited to enforcing compliance with hierarchical commands, and to achieving effectiveness in production performance.

Limited monitoring and the wrong incentives for a changing world led to poor corporate performance.

In environments where responsiveness was a critical competence and the basis of competition, national sales companies or other multi-domestic structures emerged to provide a high degree of autonomy, speed of response, and tailoring to local market conditions:

- There were only weak hierarchies, with only limited reporting mechanisms and even more rudimentary controls.

7 In the 1980s senior executives in two of the seven major oil companies confided to me that they could not estimate their companies’ global spending on information technology to the nearest billion dollars, but they knew that they, and their national organizations, were bitterly displeased with their results.

- There was limited central information infrastructure, reflecting the limited need for coordination, control, and information sharing.
- There was limited monitoring, other than to assure the meeting of profitability targets.
- There was limited coordination across regions.

Once again, limited monitoring and the wrong incentives for a changing world led to poor corporate performance.

The factors listed above — decreasing restrictions on global trade, the globalization of taste, the consolidation of buyers and suppliers, the rapid change of consumer tastes and preferences, and improvements in information technology — are driving both scale-based and responsiveness-based companies to a transnational design. Consequently, most companies will therefore have wrong information infrastructure, the wrong monitoring, the wrong incentives, and the wrong allocation of decision rights. Indeed, based on the limited sample of companies we have surveyed, it appears as if it is now clear to management teams that their firms must be restructured, jobs must be redefined, and the allocation of decision rights must change. However, it does not appear that the implications of these insights for incentives, monitoring, information, and information technology have been widely understood. In particular:

- The incentives needed to guide the delegation of local decisions will be lacking.
- The monitoring needed to guide and reward effective decision making and effective performance more generally will be lacking.
- The information needed for effective coordination of centralized decisions will be lacking.
- The information infrastructure needed for coordination and monitoring will be lacking.

It appears safe to predict that for the foreseeable future there will be a high and increasing reliance on seat-net.

### 5. References


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