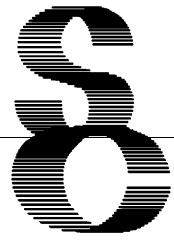
Strategic Change, Vol. 6, 345–355 (1997)



Allan Afuah
University of Michigan Business School,
701 Tappan, Ann Arbor,
Michigan 48109-1234, USA

Is *Ford 2000* the right strategy for innovation? A management theory perspective[1]

- *In consolidating its North American and European product development into five Vehicle Program Centers (VPCs) to develop cars for all markets, integrating its manufacturing, supply, marketing and sales into a worldwide operation, Ford is moving from a so-called* multi-domestic *strategy to a* global *one.*
- *The question is if this is the right strategy for an automobile company that wants to offer new low cost and/or differentiated products to its customers worldwide.*
- *This article advances three points:*
- *First, that although the strategic change is appropriate, it may not have gone far enough.*
- *Second, to get the best out of the strategy, in any case, Ford must implement it well, moulding the right organizational structure, systems/processes, and the right people in the right positions.*
- *Third, it must integrate into its systems, the right information and communications technologies. Optimal performance requires a fit between strategy, structure, systems/processes and people.*

[1]This article is adapted from the author's book, *Innovation Management: Strategies, Implementation and Profits*, published by Oxford University Press.

On April 21, 1994, Ford Motor Company announced that effective from January 1, 1995, it would merge its North American Automotive Operations, European Automatic Operations and Ford Automotive Operations (FAO). Product development, previously undertaken independently by each operation, would be integrated into five Vehicle Program Centers (VPCs) with each having worldwide responsibility for the design, development and engineering of any vehicle assigned to it. Manufacturing, production purchasing, marketing and sales operations would also be integrated worldwide. The firm was effectively moving from a *multidomestic* strategy in which each of its North American and European operations independently developed products to serve its own market, to a *global* strategy in which the company would have one operation that develops products for worldwide markets. The question is, will this strategic change allow Ford to better innovate — keep using new knowledge to offer low cost and/or differentiated cars that worldwide customers want? This paper argues that the new strategy should put Ford in a better position to innovate. But whether it pays dividends for Ford depends on how the company implements it. Optimal benefits from a strategic change only come with the appropriate changes in organizational structure, the systems/processes that support both the strategy and structure, and the people who must carry out the implementation.

The rest of the paper is organized as follows. First, I present the theoretical background that will allow us to evaluate Ford's new strategy. Next, I explore what *Ford 2000* is all about. Then I provide an analysis of the strategy and its implementation. Finally, I offer some conclusions.

Background

In order to analyse Ford's new strategy, it is important to understand, first, what strategic options are available to a multinational corporation (MNC) for exploiting innovation worldwide and, second, what it takes to successfully implement these strategies.

Generic strategies for worldwide innovation

For a firm to keep making profits, it must keep offering low cost and/or differentiated products (Porter, 1991). To do so, it must innovate; it must use new knowledge to offer new products that customers want. In positioning itself to innovate for worldwide markets, a multinational would like two things. First, it would like to be close to customers in each country so as to better discern and respond to changes in customer tastes, preferences, expectations, government policies and other local idiosyncrasies. On the other hand, since some nations provide a more conducive environment for developing certain products than others (Thomas, 1989; Porter, 1990), a firm would also like to take advantage of such environments. For example, a firm may want to locate in the US's Silicon Valley if it makes microchips. Thus, the strategies that a firm can use to exploit innovation worldwide can be classified as a function of two contingencies: how close a firm has to be to customers in order to better respond to local needs, and the extent to which it has to update the technological knowledge that underpins the innovation— the need to be near a Silicon Valley or close to a home country's endowments. These classifications are shown in Figure 1 with the contingencies labelled 'market information needs' and 'technological information needs', respectively (Afuah, 1997).

The *multidomestic* strategy is appropriate for innovations that depend a lot more on understanding local customer preferences, tastes, expectations, distribution channels and local government regulations than they do on the technological knowledge on which these innovations rest (Bartlett and Ghoshal, 1989). That is, as shown in Figure 1, this strategy is appropriate when the need for market information is high while that for technological information is low. Makers of packaged consumer goods (detergents and

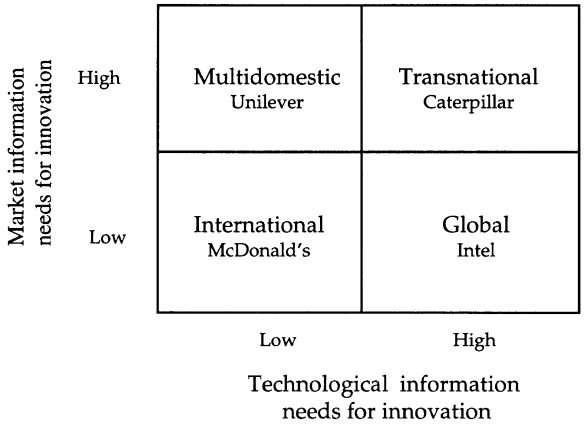


Figure 1. Strategies for innovating worldwide. Reprinted by permission of Oxford University Press.

cereals) such as Unilever have pursued this strategy (Bartlett and Ghoshal, 1989). Firms that pursue the *multidomestic* strategy have self-sufficient units in each country to better discern local customer preferences and tastes. On the other hand, if technological information requirements are high relative to market information requirements, a firm may want to pursue a *global* strategy.[2] Firms can locate their facilities where the environment is most suitable for technological innovations or at home where they have home endowments that give them some advantage. From there, they develop products for world markets. For example, Intel has located its plants in the US (especially in the Silicon Valley) and served the world from there with some peripheral help from overseas units such as a chip design centre in Israel. If both market and technological information demands are low, a firm can operate using the *international* strategy. It can take advantage of its home capabilities to develop products for its home market. Once the products are successful at home, it can then transfer the capabilities and innovation to overseas. McDonald's has used this strategy very successfully, moving into Europe and China only after 'perfecting' the hamburger at home. If both market and technological information needs are high, the *transnational* strategy is best. In this strategy, firms have access to the best sources of innovation, and the technological and market knowledge that underpins them, worldwide.

The choice of a globalization strategy is the first step in exploiting innovation worldwide

The choice of a globalization strategy is just the first step in exploiting innovation worldwide. The strategy must be implemented well. In particular, the firm needs an organizational structure, systems and the people that are appropriate for the strategic change (Figure 2). The structure of a firm tells us who is supposed to report to whom and who is responsible for what. Systems/processes provide management with a means to monitor performance, reward and punish individuals, functions, divisions and organizations in some agreed upon and understood way. They also provide a means whereby information will flow in the shortest possible time to the right targets for decision making (Hill and Jones, 1995, p 352). Whether the people who will

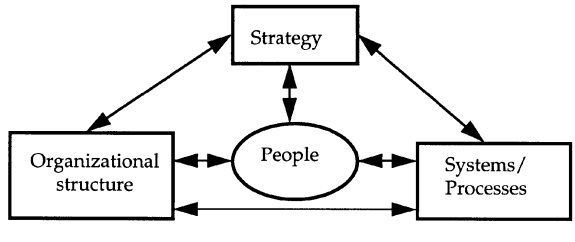


Figure 2. The strategy–structure–systems–people imperative.

[2]The words *global* and *international* as used in this categorization of different strategies can be confusing given the normal everyday uses. In this paper, they are used only in this context — as strategies.

carry out all the innovation tasks are motivated or not, or take the right decisions with the available information is also critical — it is a function of the type of people in the organization. It is a function of many questions: To what extent do employees share the same goals as their firm? Does the manufacturing group see R&D as a 'bunch of ivory tower, money-spending snobs' or colleagues with whom they can work to build the best products in the shortest possible time at the lowest cost? To what extent do the employees have the knowledge that underpins the various activities of the firm's value chain? And so on.

Before *Ford 2000*

In 1994 when the programme called *Ford 2000* was announced, Ford's financial position looked very strong. Its 1994 profits from its automotive operations were $3.8 billion. There are, however, two things wrong with the rosy picture that the figure paints. In the first place, the firm's automotive operations had *lost* $3.769 billion and $1.775 billion in 1991 and 1992, respectively. As Figure 3 shows, the automobile industry was in the upswing of one of its cycles and Chrysler performed better than Ford. Could this upswing in which everyone makes money

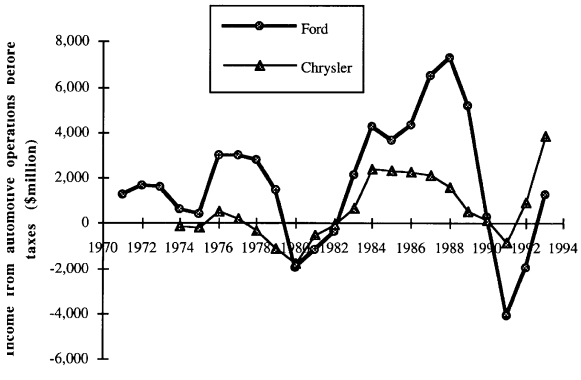


Figure 3. The cyclic automobile industry: automobile operating incomes for Ford and Chrysler from 1970 to 1993. Reprinted by permission of Oxford University Press.

be hiding a less than optimal strategy? Second, and most important, market performance measures like profits, ROI and stock prices can hide problems that are brewing in a company just waiting to surface later. Ford had its share of them. While Chrysler's pretax margins on automobiles were 11.6%, Ford's were 5.4% (Treece *et al.*, 1995). While it took Ford five years to redesign its Taurus, its Japanese competitors took less than two years to introduce competing models. Toyota made 37 cars a year per worker while Ford only made 20 (*The Economist*, 1996).[3] The company's recent model, called the Mondeo in Europe and the Contour/Mystique in North America had cost $6 billion to develop and launch. This cost was four times that of competitors.

Since the introduction of its Taurus in 1985, its first 'home run' since the Mustang and Thunderbird, there had been no other home runs, not even triples. The company's much-touted quality programmes may not have prevented it from becoming complacent following the Taurus. Ford's attempt to make its European-designed Escort a world car that used common parts but that could be assembled in different parts of the world failed. Each geographical region ended up redesigning the car, duplicating cost. In the United States, only six of the car's 5000 parts remained in common with the European Escort's; one of the six was the radiator cap (Pelofsky and Schleisinger, 1991).

Underlying these troubling signals was an innovation-stifling organization. Ford's operations in different parts of the world — Ford of Europe, North American Automotive Operations and Ford Asia Pacific Automotive Operations — all developed, manufactured and sold their products independently. Although this focus on regions allowed Ford to, theoretically, be more responsive to local customer needs, it deprived the company of the bargaining power over suppliers that only combined worldwide operations could provide. Such bargaining power would not only give a manufacturer some price advantages, it would give it first access to critical component innovations.

Perhaps the most innovation stifling were the hierarchical functional organizations within each regional operation that have been described as 'chimneys' for their hierarchical depth. Despite an abundance of evidence that product development and other innovative

Most innovation stifling were the hierarchical functional organizations

activities in the automotive industry are best undertaken with a lot of cooperation and interaction between functional groups or using project teams (Allen, 1984; Wheelwright and Clark, 1992), Ford's chimneys seemed designed to discourage any such cooperation. The organizational structure, incentives and systems/processes discouraged the kind of cooperation that innovation so deeply depends on. Each function had its own goals and perspective. Donald Peterson, a former Ford chief executive officer (CEO), put it best:

> . . . You dealt only with issues that the Statements of Authorities and Responsibilities said were yours. You learned real fast to stay inside your limits . . . there was little or no interaction and no problem solving. What's more, the financial rewards were geared to results in managing your own chimney. Top management knew this was a problem, but there were historical barriers in the way. An entire layer of people at the chimney tops — . . . — had come up through their respective chimneys and had enormous loyalty to their former colleagues. It was civil war at the top. The question was never, 'Are we winning against the Japanese?' but rather, 'Are we winning against each other?' You had to reach your objectives, even if they were in conflict with the other chimneys or in conflict with the broader objectives of the company. . . (Pelofsky M and L Schleisinger, p. 11).

What is Ford 2000*?—the Strategy*

With all of these problems hiding under an otherwise sound 1994 financial balance sheet, Ford's chairman and CEO, Alex Trotman, decided to pursue a different global strategy. He decided to integrate Ford's worldwide product development, manufacturing, supply, marketing and sales activities. The company's North American Automotive Operations, European Automotive Operations and the Automotive Components Group were merged into a single operating unit called Ford Automative Operations (FAO). Product development, previously undertaken independently by each operation was integrated into five VPCs with each VPC having worldwide responsibility for the design, development and engineering of new automobile models for a particular worldwide market segment. The VPCs included four in Detroit — large front wheel drive (FWD), rear wheel drive cars, light trucks and commercial trucks — and one in Europe split between the Ford research and engineering centres in Dunton (UK) and Merkenich (Germany) for small/medium FWD cars. Each VPC was made up of members from different functions giving it a project structure. Manufacturing, supply, marketing and sales operations now had a matrix structure as against the hierarchical functional structures that hindered innovative efforts before. In time, Ford Asia Pacific Automotive and other operations would follow the same consolidation.

Analysis

The question now was: would the change in strategy from *multidomestic* to *global*, and in organizational structure from the functional chimneys to a project orientation allow Ford to better innovate while keeping costs low.

The strategic change

The change from *multidomestic* to *global* offers several benefits. First, by eliminating the

duplication of value chain activities, the firm saves on product development, manufacturing and bureaucratic costs. Second, by producing a standard product for the world that uses standard parts, the firm can enjoy economies of scale. In particular, it can command more bargaining power over suppliers than before. Such bargaining power allows Ford to not only lower its cost of components, but also have earlier access to supplier innovations than competitors with less power. The new strategy also allows Ford to reduce the number of suppliers and increase their participation in engineering design of cars. Such cooperation not only reduces the cost of producing cars but also increases the quality of the resulting cars (Clark and Fujimoto, 1991). Ford estimated that it would be able to save as much as $3 billion in cost per year by 2000 with $11 billion between 1996 and 2000 (Naughton, 1996). With the automobile industry, like computers, depending more and more on supplier innovations, maintaining supplier relations that facilitate the flow of such innovations to manufacturers is critical. It was estimated that more than 50% of the content of cars would be electronic in the not too far future. Such dependence on components whose core concepts are fundamentally different from those that underpin the traditional internal combustion engine automobile underscore the importance of supplier relations and the need for a global strategy.

Finally, by consolidating its R&D, Ford stood to benefit from the economies of scale that can come from larger scale R&D. The question is if such cost savings and the potential increase in supplier-generated innovations are enough to overcome the main disadvantage of the *global* strategy — not being close enough to customers to quickly respond to their needs. By locating the VPCs in Detroit, will Ford not be too far from worldwide customers to incorporate their preferences and expectations in its new cars? The answer rests in how well the firm is able to exploit complementary innovations such as information and communications techno-logies (ITC) and computer-aided design tools.

Exploiting ITC

Without ITC, Ford is better able to respond to local customer needs using a *multidomestic* strategy as shown in Figure 4. With ITC, however, the range over which Ford can pursue a *global* strategy as against a *multidomestic* one increases. How? There are two ways this would happen. First, ITC help reduce the need to be physically present in a country in order to discern local customer needs and preferences. For example, marketers in Italy can look at the rotating image of a new car design, being developed in Detroit, on a computer work station in Milan and suggest changes by marking up parts of the car. These suggestions are instantaneously received and evaluated in Detroit. Customers all over the world can give Ford feedback on a new car design by viewing three-dimensional images of the car on the Web or test driving it via interactive virtual reality. Effectively, ITC reduce the need to be physically present in a country to respond to local needs. As shown in Figure 5, this is tantamount to shifting the line AB upwards and increasing the area over which the *Global* and *International* strategies can be pursued. But the use of ITC increases technological uncertainty since Ford now not only has to worry about the technological

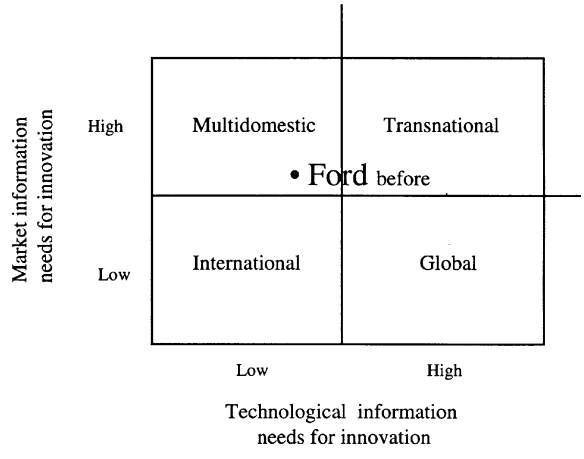


Figure 4. Ford Motor Company before *Ford 2000*. Reprinted by permission of Oxford University Press.

knowledge that underpins the product but also about ITC. This is reflected in Figure 5 by a shift in CD leftwards. The shifts in CD and AB amount to increasing the area over which Ford can pursue a *global* strategy as against a *multidomestic* one. That is, the proper use of ITC can allow Ford to take advantage of the cost benefits of a *global* strategy while not giving up local responsiveness.

ITC reduce the need to be physically present in a country to respond to local needs

The other way ITC helps increase the range over which the *global* strategy can be pursued is by influencing worldwide consumer tastes. With worldwide TV networks such as CNN, the World Wide Web and networks of travellers, multinationals can influence customer tastes, preferences and needs worldwide through advertising via these media (Levitt, 1983). By influencing what customers want, a firm is reducing the need to collect market information. This is tantamount to shifting AB in Figure 4 upwards, increasing the area over which the *global* and *international* strategies can be pursued. Again, by adding ITC to the equation, the net effect is to increase technological uncertainty effectively shifting CD to the left. The net effect again is to increase the area over which the *global* strategy can be pursued.

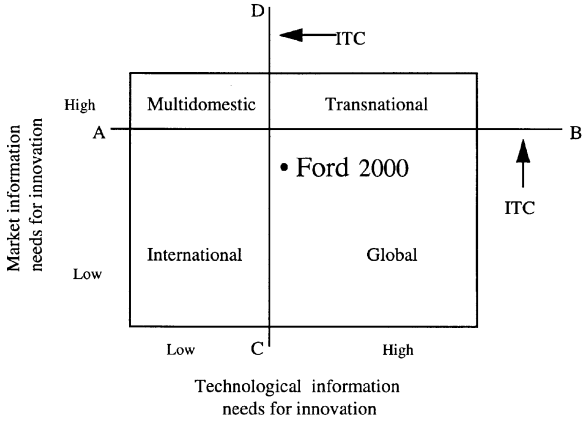


Figure 5. ITC allow Ford to have the benefits of a *global* strategy without sacrificing all the benefits of a *multidomestic* strategy. Reprinted by permission of Oxford University Press.

ITC can also play another role. They can allow engineers in Japan, Germany and the US to work on the same car, with each group handing over the job to the next group at the end of their work day, allowing work to be carried on almost round the clock, accelerating the time that it takes to develop and launch a car.

Finally, suppose, using ITC or otherwise, Ford were able to collect all the local market information it needed to offer just what customers want. The question still is how it would incorporate all of the information into a world car. Does the firm risk producing a McCar that customers all of the world do not want? Not necessarily. The firm can learn from what microchip makers have done so successfully in selling a type of chip called ASIC (applications-specific integrated circuits). The core product is the same for all customers. But the last stage of the manufacturing process allows the firm to tailor the product to specific needs of different customers. Ford can design cars that use the same standard components and features up to some level. Then through flexible manufacturing and improved design tools, customization can be achieved for each local country or region. The company can take it further; it can allow individuals to specify what they want in a car and Ford would build the car to individual tastes.

Organizational structure and systems

To support its global strategy, Ford is effectively moving from its very hierarchical functional structure to two types of structures: a project structure for product development and a matrix structure for the manufacturing, sales, supply and production supply.

Functional to project for product development

In the project structure of the VPCs, engineers with functional skills in design, engineering,

manufacturing and marketing are assigned permanently to a vehicle design centre and report to the head of the vehicle centre instead of the heads of their functional areas (Figure 6). The project structure allows for better interaction of team members, and has been shown to be most effective in product development (Wheelwright and Clark, 1992). With one executive responsible for concept, design, development and engineering, the company effectively has a so-called heavyweight project manager. And having a heavyweight project manager in automobile development can reduce lead times, total engineering hours (and therefore cost, all else equal) and improve design quality (Clark and Fujumoto, 1991). At Ford, it used to take 22 meetings and over two months to get a new-car project approved. With *2000*, it takes less than a month.

One disadvantage of the project structure is that by assigning employees from different functions to the project, their knowledge may become dated since they are not within their functional units where they are more likely to keep abreast of changes in the knowledge that underpins their functions. How dated a project member's knowledge becomes is a function of the project's duration and the rate of change of the knowledge that underpins the employee's area of expertise (Allen, 1984). Since the technological knowledge that underlies the internal combustion engine automobile does not change that much but customers' tastes change and do so often, a project structure would be better for car development than would the functional structure that Ford has used for decades.

Functional to matrix for manufacturing, marketing and sales and purchasing

Ford 2000 uses the matrix organizational structure for manufacturing, marketing and sales, and purchasing. In the matrix structure, managers have two bosses—one in a VPC and the other in a functional area (Figure 6). This structure has two primary advantages. The first is better skills upgradability. How? In innovative activities such as design, development, manufacturing and sale of automobiles, individuals need so-called T-skills (Iansiti, 1993), that is, deep expertise in one functional area combined with broad enough knowledge in others to see the linkages between them. A matrix organization allows individuals to maintain these skills by staying in their functional areas while actively participating in product development or other project activity. The second is the sharing of expertise. The functional expertise of a particularly good individual can be used on more than one project. One drawback of the matrix organization is the dual boss phenomenon. Not knowing who is responsible for evaluating and rewarding or punishing performance can be a problem especially when a firm's values and goals are not shared by all managers.

Discussion and conclusions

In moving from *multidomestic* to *global*, Ford is trying to follow a strategy that Honda and Toyota have pursued for years. While building cars with common platforms and peripheral local customization would be better than building an Escort whose European and American versions have completely different platforms, Ford's strategy would only amount to catching up to competitors. The question is, why stop at common platforms and local customization? Why end customization at the local level? Why not pursue individual customization? Rather than pre-customize cars for different regions, why not follow the semiconductor industry example and build cars up to some level (call it the platform) and then use vastly available ITC to customize cars according to individual customer tastes. A customer could place an order from her/his house and Ford would have the car ready in ten days. Such a system would also allow the company to collect useful information on customer tastes and preferences.

Whether Ford offers product customization at the individual or regional level, a critical component of the *multidomestic*-to-*global* change is the use of technology to better respond to local customer needs, harness

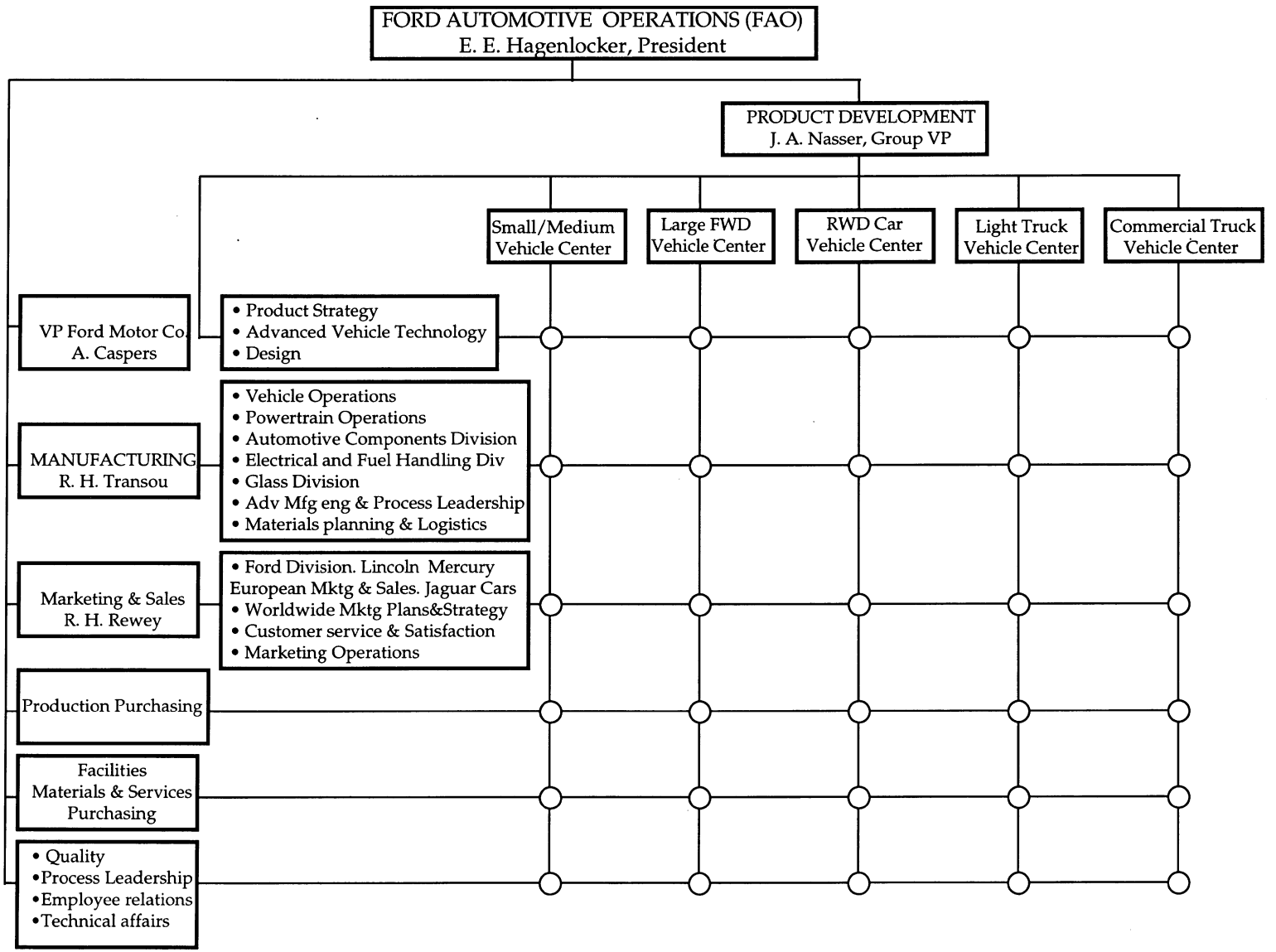


Figure 6. 1994 *Ford 2000* Organization

intellectual capability, and influence customer tastes and preferences. The assumption here is that Ford will be able to integrate these technologies with its other skills. This may prove to be a major hurdle in itself.

The change from a functional structure to a matrix one poses several potential problems for Ford. Many employees will have two bosses whose goals and self-interests may be vastly different, given the existence of the 'chimneys' discussed earlier. Which of these two bosses would the employee satisfy? How quickly do the employees pick up the T-skills that they need to function in these new capacities? What new reward systems encourage the building of T-skills that are now critical to major firm activities. How does the firm measure the performance of an employee in a matrix organization who must satisfy two bosses and contribute to both project and functional activities? What reward systems foster shared values as against empire building?

The firm's empowerment and diversity programmes, like its new strategy, have been adopted by other companies for years. Wal-Mart has been practising empowerment since the 1960s. If Ford really wants a competitive advantage, could it not pursue other organizational behaviour inventions?

In general, there are still many questions to be asked. How will political power be used in the firm? How does it deal with employee and union mental models of what it takes to thrive in the automobile business? Will it take another crisis such as those in 1972, 1980 and 1991 — when US automakers lost a lot of money — to rally everyone behind the new programme? Might such a crisis not, in fact, be an excuse for people to want to revert to the old *multidomestic* strategy? How does one change 320,000 people from different national cultures? What would it take to motivate all these people? What kinds of performance measures and reward systems are appropriate?

Although the strategic change from *multidomestic* to *global* is appropriate, it may not have gone far enough. In any case, to get the best out of the strategy, Ford must implement it well, moulding the right organizational structure, systems/processes, and the right people in the right positions. It must integrate into its systems, the right ITC. Optimal performance requires a fit between strategy, structure, systems/processes and people.

Autobiographical note

Professor Allan Afuah holds a PhD from the Massachusetts Institute of Technology, and teaches strategy and innovation management at the University of Michigan Business School. Prior to going into academia, Dr Afuah worked as an engineer and manager in the US's Silicon Valley and Route 128. His research focuses on using innovation to gain and maintain a competitive advantage.

References

Afuah, A. N. (1997). *Innovation Management: Strategies, Implementation and Profits*. Oxford University Press, Oxford.

Allen, T. (1984). *Managing the Flow of Technology*. MIT Press, Cambridge, MA.

Bartlett, C., and S. Ghoshal. *Managing Across Borders*. Boston, MA: Harvard Business School Press, 1989.

Clark, K. B., and T. Fujumoto. *Product Development Performance: Strategy, Organization, and Management in the World Automobile Industry*. Boston, MA: Harvard Business School Press, 1991.

Ford's Annual Financial Statements 1987–95.

Hill, C. W. L., and G. R. Jones. *Strategic Management: An Integrated Approach*. Boston, MA: Houghton Mifflin, 1995.

Iansiti, M. (1993). Real-world R&D. Jumping the product generation gap, *Harvard Business Review* May–June, pp. 138–47.

Levitt, T. The Globalization of Markets, *Harvard Business Review* May–June 1983.

Naughton, K. Trotman's trial, *Business Week*. April 8, 1996.

Pelofsky, M. and L. Schleisinger. *Transformation at Ford. HBS case No. 9-390-083*. Cambridge, MA: HBS Press. Revised Nov. 15, 1991.

Porter, M. E. *The Competitive Advantage of Nations*. New York: The Free Press, 1990.

Porter, M. E. Towards a dynamic theory of strategy. *Strategic Management Journal* **12**: 95–117, 1991.

The Economist. (1996). The world that changed the machine, March 30.

Thomas L. G. (1989). Spare the rod and spoil the industry: Vigorous competition and vigorous regulation promote global competitive advantage: A ten nation study of government industrial policies and corporate pharmaceutical advantage. Working Paper. Columbia Business School.

Treece, J. B., Kerwin, K. and H. Dawley Ford. *Business Week*, April 3, 1995.

Wheelwright, S. C., and K. B. Clark. *Revolutionizing Product Development*. New York: The Free Press, 1992.

CCC 1086–1718/97/060345–11$17.50