

**"DEFINING A MANUFACTURING STRATEGY –
A SURVEY OF EUROPEAN MANUFACTURERS"**

by

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INTRODUCTION

Until recently, corporate policy and strategic decisions in many industrial companies were often based on a financial and marketing analysis of the company's strengths weaknesses and competitive environment. The strategic guide-lines and policies derived from this exercise were then passed on to the production and operations department for comments and feasibility studies, eventually even as requirements. The original contribution of the operations function was therefore often limited to marginal adaptation of the course set by finance and marketing.

The wave of highly competitive and aggressive moves originating in the technological function, and in particular in the operation function is the striking event of the first half of this decade. Some of the world's competitors have developed an arsenal of strategic weapons which are derived from a better deployment of the physical assets and the operations systems of the company.

The significance of operations and manufacturing for the strategy of the company is in fact twofold. It relates to (1) how manufacturing processes provide a company with a distinctive advantage in the market place (through, for example, a shorter delivery time, a higher volume or design flexibility or a higher reliability etc.) and (2) how manufacturing processes allow a company to compete on a product with different performance characteristics. Hayes and Wheelwright (1984) define a manufacturing strategy as one of the equals among other functional strategies (marketing/sales, research and development, financial/control, etc.) which support, through a consistent and actual pattern of decisions, the competitive advantage sought by the overall business strategy. A manufacturing strategy is not necessarily one that promises maximum efficiency or engineering perfection, but one that fits the needs of the business - that strives for consistency of "structural" decision categories, (e.g. the determination of capacity levels, the type and location of facilities, the choice of process technology or the extent of vertical integration) and tactical decision categories (e.g. the characteristics of the workforce, the management of quality, the flow of materials and the manufacturing organisation) with the competitive position pursued by the business unit and the corporation. (Skinner, 1969)

The backbone of a manufacturing strategy lies in the determination of an appropriate portfolio of efficiency, quality, volume and design flexibility, and dependability objectives which the operations function has to strive for in order to support and stimulate the company's competitive position. A growing number of stimulating case- and experience- based papers and books have recently tried to illustrate this concept of manufacturing strategy (Skinner (1978), Hayes and Wheelwright (1979), Hill (1983), Gudnason en Riis (1984), Ferdows (1982),) but an analysis of this phenomenon based on larger volumes of empirical data is almost completely lacking. The European Manufacturing Futures Survey (Ferdows and De Meyer, 1984) and its North-American and Japanese counterparts (*) provide data to compensate for this. In this present contribution we will try, on the basis of the European data, to illustrate the portfolio of manufacturing strategies adopted by European industry; to show to what extent it differs from industry to industry and from country to country; and to indicate how this might have changed over the past two years.

THE SURVEY AND THE SAMPLE

Under the umbrella name of the European Manufacturing Futures Project a questionnaire is sent out each year to the large manufacturers in Europe. The goal of this questionnaire is to measure the strategic directions chosen by these large manufacturers, the difficulties and challenges facing them with respect to manufacturing, and the efforts they stress with regard to manufacturing systems and investments. In 1983 and 1984, the two campaign years on which this paper is based, 151 and 154 companies respectively participated in the survey. Of these two groups, 54 companies were identical, e.g. completed the questionnaire for two consecutive years. Although the sample is neither stratified nor large enough to enable us to see it as representative of the whole European industry, the variety of industries and countries represented (table 1a and 1b) seem to suggest that we at least have an interesting sample of what is going on in Europe's Manufacturing industry.

(*) Similar surveys are organised in Japan by Waseda University, and in North-America by Boston University.

Table 1a: sample by country in % of the total

Country	1983(n=151)	1984(n=154)
France	13.9	14.5
Sweden	0.6	2.0
Great Britain	15.9	15.1
Spain	9.3	5.3
Netherlands	6.6	13.8
Germany	14.6	13.2
Denmark	5.3	4.6
Norway	0.6	2.6
Switzerland	2.0	2.6
Belgium	11.9	11.8
Italy	10.6	9.9
Ireland	2.6	4.6

Table 1b: sample by industry

Industry	1983 (n=151)	1984 (n=154)
Food Products	9.3	10.5
Textile Mill Products	1.3	-
Apparel	0.7	1.3
Lumber/Wood	0.7	0.7
Furniture	-	0.7
Paper Products	2.7	1.3
Publishing	-	0.7
Chemicals	13.2	17.1
Petroleum	0.7	0.7
Rubber/Plastic	4.0	-
Stone/Clay/Glass	3.3	5.3
Primary Metals	6.6	-
Fabricated Metals	9.9	3.3
Machinery	12.0	20.4
Electrical Equipment	13.9	17.1
Transportation Equipment	10.6	9.2
Instruments	2.0	3.9
Misc. Manufacturing	1.3	6.6
Non Classified	7.8	1.3

COMPETITIVE PRIORITIES AND STRATEGIC DIRECTIONS IN 1984 IN EUROPE.

The senior managers who were asked to fill out the questionnaire were offered a choice of eight competitive priorities and eight strategic directions which they intended to emphasize for the next five years. The competitive priorities, or the basis on which they will try to compete, reflect efficiency (or the ability to offer low prices), flexibility, e.g. the ability to adapt quickly to design or volume changes; quality, or the ability to offer high quality or high performance products; the ability to provide fast and/or dependable deliveries; and finally the ability to offer an excellent after-sales service. The strategic directions focus on the medium-term evolution of the business unit. The questionnaire offered the respondents a choice between emphasizing the increase of their market share in existing markets; entering new markets with either existing or new products; developing new products for the existing market; growth by acquisition or the pursuit of a forward (i.e. closer to the customer), or of a backwards (i.e. closer to the supply of raw materials) integration.

In the results from the 1984 survey one can see that, regarding the competitive priorities, the ability to offer consistent quality is the top priority for the European manufacturers (Table 2, column 1). Statistically, it is not possible to distinguish between the ability to offer highly performing products and to provide dependable deliveries. The flexibility-related priorities (volume, design flexibility and fast deliveries) come into the second half of the priorities, while after-sales service is right at the bottom.

Measured on the basis of the 54 respondents who answered twice, the data for 1983 was not statistically different from that of 1984 on a 5% significance level (Table 2, column 3). This supports the robustness of the data and the validity of our research instrument. Indeed, it would have been amazing if we had found more than a marginal change from one year to another in the competitive priorities for the following five years. The basis of competition is not that easily changed in manufacturing!

Given this lack of difference between the two survey campaigns, it was decided to merge the two databases. In other words, to add the responses of those companies who answered our questionnaire in 1983 but not in 1984 to the 1984 database. The rank order of the competitive priorities does not of course, change. Moreover, on the basis of this database of 252 cases, the difference between the level of emphasis of the different competitive priorities is statistically different from each other, with the exception of the ability to provide highly performing products and to provide dependable deliveries.

Table 2 : Competitive Priorities and Strategic Directions

	Results for 1983 (n=151)	Results for 1984 (n=154)	Paired t-test of differences for the 54 double responses p	Results for 1983-1984 continued (n=252)
Competitive priorities (next 5 years)				
C1 Ability to offer low prices	4	4	25 %	4
C2 Ability to make rapid design changes	6	6	6	5
C3 Ability to make rapid volume changes	7	7	24	7
C4 Ability to offer consistent quality	1	1	51	1
C5 Ability to provide high performance products	3	2	82	2
C6 Ability to make fast deliveries	5	5	6	6
C7 Ability to provide dependable deliveries	2	3	54	3
C8 Ability to provide after-sales service	8	8	13	8
Strategic directions				
S1 Increasing market share in existing markets	2	2	42	2
S2 Entering new markets with existing products	3	3	23	3
S3 Withdrawing from certain businesses	6	6	78	6
S4 Developing new products for existing markets	1	1	78	1
S5 Developing new products for new markets	4	4	73	4
S6 Growing by acquisition	5	5	2	5
S7 Forward integration	7	7	11	7
S8 Backward integration	8	8	86	8

Note: The level of emphasis was measured on a scale of 0 to 55; in this table, only rank orders are shown.

The first three issues on the list each reflect an aspect of quality vis-a-vis the customer. European manufacturing managers emphasize good products of good quality which perform up to the customers' specifications. Efficiency, (low prices), comes second, while flexibility is not yet very high on the list. The reason for this profile is not obvious. Is it a true emphasis on quality as a competitive priority? Is it a delayed reaction to the threat of Japanese competition? Have European manufacturers given up hope of competing on price? And why does flexibility rank only in third place? Will this not put European Manufacturers in a bad position when it comes to compete in a global world with shortening product life-cycles, characterised by pressure to reduce buffer inventories (the so-called J.I.T. movement) etc.

When we turn to the strategic directions which will be pursued by European manufacturers, the picture is pretty clear. Again, the differences between the 1983 and 1984 data are, with one small exception, statistically not significant. As a consequence, for the determination of the strategic directions, the two databases were merged.

Our respondents are well focused on what they do well today, and are not interested in growing by acquisition or by integrating their suppliers or their customers. When one thinks in terms of a two-dimensional uncertainty approach, in which one dimension contrasts new with existing markets, while the second contrasts new with existing products, it becomes clear that European manufacturers prefer to reduce the uncertainty to one of these two dimensions. The most emphasized strategic direction is clearly the development of new products for the already existing markets. An increase in the market share in the existing markets, i.e. the strengthening of an already existing market position, comes second. Using the strength of the existing products in order to enter new markets is third; and fourth, just before the four far less important strategic directions, one can find the development of new products for new markets. Our respondents clearly prefer to rely on their existing strengths, and to reduce the competitive uncertainty either to the development of new products, or to an attack on a new market. Comparing these two dimensions of uncertainty, the European manufacturers prefer to keep the uncertainty low on the market side, and to venture on to the technological or the product side. It would be unfair, on the other hand to assess this ranking as an expression of industrial conservatism, since the development of new products clearly emerges as an important objective. On the whole, we could summarise this data as follows: European manufacturers want to stick to their business, and not diversify into unknown business areas (e.g. acquisition or vertical integration). If they depart from this position it will be a technical departure rather than a market one.

STRATIFYING THE DATA

To some readers, the category "European Manufacturers" might be too broad. Differences in the basis of competition or strategy might be influenced by local industrial policies, the competitive advantages of a specific country etc. To test this hypothesis, the combined data for 1983 and 1984 were split up into five groups: (1) France with 36 respondents; (2) Great Britain with 43 respondents; (3) the Federal Republic of Germany and Switzerland with 38 respondents; (4) Benelux with 54 respondents and (5) Scandinavia with 23 respondents.

Respondents of other nationalities e.g. Spain, Italy, Ireland etc. were not considered in this analysis. For each of these groups a similar analysis, as in the previous section was performed. As in the former analysis, the competitive priorities and strategic directions are given in order of importance in figures one and two. Each of these samples by country are, of course, too small to be representative. They can, however, provide some insight into and hypotheses for future research.

The most striking conclusion to be drawn from these figures is the similarity between the responses of these different countries. Quality is an important competitive priority for all of them. After-sales service is, in most cases, pretty unimportant, as are flexibility elements. One can, however, observe some specific distinctions:

- a. The french group is the only one where the ability to offer low prices is as important as the delivery of good quality products. Outstanding quality is, moreover, not equal to high performing products for the french respondents. Do they want to compete in the future on the basis of cheaper products, positioned at the lower end of the market, but of good quality?
- b. Out of a number of rather equally important competitive priorities, the British predominantly chose consistent quality and dependability as their main target. It is not clear whether this is an expression of the strengthening of traditional values, or the reaction to major weakness of British industry.
- c. German and Swiss manufacturers emphasize quality and rapid design changes. Is this a reflection of their intention to hit the market with innovative, high quality products, or do they primarily want to adjust to specific customer's needs? Volume changes, on the other hand, drop to the bottom end. Building up a volume-flexible production apparatus is clearly not their intention.

TOTAL	FRANCE	BRITAIN	GERMANY	BENELUX	SCANDINAVIA
Consistent quality	dep delivs	cons quality	cons quality	cons quality	cons quality
Dependable deliveries	low prices	dep delivs	hi perf prods	dep delivs	dep delivs
Highly performing products	cons quality	hi perf prods	rap des chngs	hi perf prods	hi perf prods
Low prices	rap des chngs	fast delivs	low prices	low prices	rap des chngs
Rapid design changes	rap vol chngs	low prices	dep delivs	rap des chngs	aft-sales serv
Fast deliveries	fast delivs	aft-sales serv	fast delivs	fast delivs	rap vol chngs
Rapid volume changes	hi perf prods	rap des chngs	aft-sales serv	rap vol chngs	fast delivs
After-sales service	aft-sales serv	rap vol chngs	rap vol chngs	aft-sales serv	low prices

Figure 1 : Competitive priorities in five European Regions

Note: Items given in order of importance, the first being the most important.

Levels of emphasis which were not different on a 5% significance level are bracketed.

TOTAL n=252	FRANCE n=36	BRITAIN n=43	GERMANY & SWITZERLAND	BENELUX	SCANDINAVIA
Develop new products for existing markets	dev new prods for exist mkts	inc mkt share with exist prods	dev new prods for exist mkts	inc mkt share with exist prods	dev new prods for exist mkts
Increase market share in existing markets	dev new prods for new mkts	dev new prods for exist mkts	inc mkt share with exist prods	dev new prods for exist mkts	enter new mkts with exist prods
Enter new markets with existing products	inc mkt share in exist mkts	enter new mkts with exist prods	enter new mkts with exist prods	enter new mkts with exist prods	inc mkt share with exist prods
Develop new products for new markets	enter new mkts with exist prods	dev new prods for new mkts	dev new prods for exist mkts	dev new prods for new mkts	dev new prods for new mkts
Acquisition	acquisition	acquisition	acquisition	acquisition	acquisition
Withdrawal	withdrawal	withdrawal	withdrawal	withdrawal	forward integ
Forward integration	backward integ	forward integ	forward integ	forward integ	withdrawal
Backward integration	forward integ	backward integ	backward integ	backward integ	backward integ

Figure 2 : Strategic directions in five European Regions

- d. The Benelux countries are themselves a sample that is close to the overall results. Does their position at the crossroads of the other countries make them behave in the same way as the average European manufacturer?
- e. The Scandinavian manufacturers catch one's attention with their lack of emphasis on low prices, and their comparatively greater emphasis on after-sales service

Again, the differences between the five regions are but slight nuances of the same picture. The interesting question which remains, but which we cannot answer, is whether these differences are reflections of either the strengths or weaknesses of these regions.

Turning to the strategic directions, the basic assertion that the results are strikingly similar remains true. With respect to acquisition, withdrawal, forward and backward integration, the positions do not differ from country to country. They remain the bottom four, and generally in the same order. With respect to the first four strategic directions, one can find some slight differences of 'shade' in the picture. France emphasizes the development of new products slightly more. Great Britain, Germany and the Benelux countries tend to be a little more 'conservative', and emphasize the existing markets. Scandinavia emphasizes the more adventurous way of seeking new markets. But once again, the overall picture is remarkably similar for the five regions.

A stratification of the results on the basis of regions or countries is, of course, not the only distinction one can make. Among the answers to the 1984 survey, one can find 22 companies active in electronics and instruments; 27 companies in the chemicals industry; 21 companies in machinery; 26 companies in electro-mechanical assembly and 17 companies in consumer non-durables. An analysis of the differences of strategic directions and competitive priorities strikes again by its similarity, rather than by its differences. With respect to the strategic directions, the only relevant distinction emphasized by companies in the consumer non-durables industries as the most important strategic direction is the increase of their market share in existing markets. Other groups, however, show a pattern where the development of new products for existing markets prevails. With respect to the competitive priorities, a few more distinctions appear:

- a. Low prices, the fourth or fifth priority for most of the industries, becomes their third priority (on the same level as quality) for electro-mechanical assembly.

b. For the consumer non-durables group, dependable deliveries clearly become priority number one, together with consistent quality. Rapid product design changes drop to a lower level of priority than for the other industries, and the possibility of fast deliveries becomes much more important here than for other industries.

c. The electronics and instruments group quite naturally emphasizes rapid product design and volume changes, (together with quality), but, amazingly enough, this group also emphasizes after-sales service as their fourth priority. It will be recollected that in all the previously mentioned analyses, this competitive priority usually dropped to eighth in rank order.

These three distinctive results show some face validity. They reflect what one would expect regarding the five industries. Electronics and instruments, for example, work with a rather young technology, ill-defined products and a lack of dominant design. Thus the need to cope with quick changes in volume and design is reflected in their competitive priorities. The electro-mechanical industry is built around a more mature technology, and in this case the need for low prices fits such an environment. Low prices, together with fast and dependable deliveries do indeed reflect the consumer relationship for the consumer non-durables group.

CONCLUSION

In this contribution, we hope to have provided some empirically based insights into the competitive priorities and strategic directions chosen by the large European manufacturers. Quality is clearly item number one on their agenda, and flexibility in its several forms is far less strongly emphasized. New developments tend to support existing markets rather than entry into, or creation of new markets.

Some differences between five geographically well-defined regions of Europe can be distinguished, but the overall picture is that European companies have conceived a rather similar approach to the competitive challenges created by global competition. Whether they are the right ones remains to be discussed!

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Biographical Note

Arnoud DE MEYER is a civil electrotechnical engineer (State University of Ghent, Belgium) and worked briefly in the petrochemical industry. During the preparation of his doctoral thesis he worked as a visiting fellow at the A.P. Sloan School (M.I.T.) in Cambridge, U.S.A. He graduated in 1983 on a thesis about Management of Information Flows in Industrial Research Departments. Since September 1983, Arnoud De Meyer has been assistant professor of Production and Operations Management at the European Institute for Business Administration (INSEAD) at Fontainebleau (France). He has published on the subject of Management of Technological Innovation, and has acted as consultant to a number of medium-sized high-tech companies.

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