C E Center for Effective Organizations

Competitive Advantage and the Basis of Competition

CEO Publication
G 87-20 (111)

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Paper presented to the Seventh Annual International Conference of the Strategic Management Society, Boston, MA, October 14-17, 1987.

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ABSTRACT

An exploratory analysis of the basis of competition was conducted in 13 specific industrial sectors. This was followed by a survey of firm specific competitive advantages in three of those sectors. The findings identified 24 bases of competition that differ in use by different industrial sectors depending upon their manufacturing process, growth of the market, and concentration level. The firm specific competitive advantages indicate support for a focused approach to the market and contradict previous findings on the advantages of economies of scale and first mover advantages.

COMPETITIVE ADVANTAGE AND THE BASIS OF COMPETITION

INTRODUCTION

Firm profitability is determined by the firm's competitive advantages in providing the goods and services of value to its customers. If two firms have exactly the same competitive advantages in providing the same product or service to the same market segment, both will become unprofitable. This important concept has been widely discussed as a key point of scholarly collaboration between strategic management and industrial organization economics (Caves, 1984), or as something that can be determined by analysis through the firm's value chain (Porter, 1985). However, despite the recognized importance of competitive advantage, little has been reported empirically on the actual unique competitive advantages successful and unsuccessful firms use or on their common actions that form barriers to new entrants (McGee and Thomas, 1986). In this paper we report some of our findings on both the competitive advantages specific firms use to compete and on those common actions that form the basis of competition that new entrants must match. These empirical findings are from a multi-year study of competition in U.S. industrial product markets between 1974-84.

Competitive Advantage

The previous work on competitive advantage has been both normative (cf. Lenz, 1980; Porter, 1985) and empirical (cf. Hitt and Ireland, 1985; Porter, 1979; Schmalensee, 1981, 1982; Snow and Hrebiniak, 1980). However, the empirical work so far has been limited to a researcher generated sub-set of competitive advantages that are easily measured at the firm level such as cost minimization (Schmalensee, 1981), differentiation measured as a function of advertising expense (Porter,

1979) which is largely applicable only to consumer products, or first mover advantages (Schmalensee, 1982). Ignored, empirically, has been any treatment of competitive advantage at the level of competition between products or services, alternative bases for competitive advantage beside those most easily measured at the firm level, and second mover advantages.

Competitive advantage is a concept that applies to the location where competition takes place between firms, the specific product or service. Firms or groups of firms do not compete, their products or services compete. In effect, the products or services are the soldiers in the battle, they are what succeed or lose, overrun the competitors' positions or are themselves overrun. The firm's structures, systems, and people are what determine the equipment their products or services carry into battle, how they are deployed, and how they are supported, but they remain in safe sanctuaries within their fences, parking lots, and guarded lobbies. If their product or service is successful these sanctuaries and the people within them eventually prosper. However, if the product or service loses and if there are not other competitive successes elsewhere to offset the loss, the sanctuaries are eventually abandoned and there are new economic refugees.

Therefore, we view competition as taking place between the specific products or services offered by firms to customers. The attributes of the product or service of value to the customers may be derived from the intrinsic nature of the product or service itself and from where and how the organization produced it. Commodity products from different suppliers, such as saline solutions, may all have the same intrinsic properties but may be differentiated by their producing organization.

Saline, for example, may be differentiated by price, replacement guarantees, delivery dates, or packaging.

In some industries certain competitive advantages may be transferable across product lines within a firm as some have argued (Hitt and Ireland, 1985; Snow and Hrebiniak, 1980). However, in other industries (e.g., pharmaceuticals), competitive advantages such as R&D and marketing are specific to particular products and have been unable to be transferred to other products. For example, Merck and Eli Lilly both offer patented drugs within both the antihypertensive and the antibiotic markets. However, Merck has historically dominated the antihypertensive market within the U.S. while Lilly has historically dominated antibiotics. The competitive advantages of each competitor differ within each ethical drug application and have so far not been transferable. The reason seems to lie in each firm's unique scientific understanding of the disease, their established relationships with key clinicians to run the clinical trials, and their marketing expertise within each different market.

Basis of Competition

There has increasingly been discussion of similarities between competing firms in the literature on "competitive groups" (Bain, 1972; Caves and Porter, 1977; Cool, 1985; Dess and Davis, 1984; Harrigan, 1985; Hatten and Hatten, 1987; Hatten and Schendel, 1977; McGee and Thomas, 1986; Newman, 1978; Porter, 1977). The competitive groups literature has so far focused on alternative attributes and methods for forming similar groups of competitors and on how these groupings change over time. The level of analysis, however, has tended to be the firm or

groups of firms without much attention to how sub-units of firms compete within specific industrial sectors.

Competitors attempting to meet the needs of their customers will, of necessity, have to perform certain functions in a manner indistinguishable from their competitors. That is, there will be a minimum base of expertise in the production, marketing, and servicing of the bundle of goods and services provided to the customer that will be relatively consistent among the competitors. In the case of ethical pharmaceuticals, for example, all drugs competing in the U.S. market must meet U.S. Food and Drug Administration (FDA) requirements for safety and efficacy before being introduced. Therefore, all drug companies who introduce a new drug must have a common expertise in producing and getting their drug successfully reviewed by the FDA. Once in the market, drug companies must all have the specialized salesforce to present scientific data to hospital and health maintenance organization formulary boards or to call on physicians' offices.

This base of common expertise among competitors varies over time as new knowledge is diffused throughout the group of competitors (Rogers, 1983). This is because in the earliest stage of a market's evolution, a single competitor introduces a unique product or service and hence there will be very little, if any, common attributes with the competition since there are virtually no competitors. However, as sales of the product or service begins to grow, new competitors enter the arena and in order to compete effectively with the first mover, the new competitors must approximate the first mover's activities in order to gain the confidence of uncertain consumers (Schmalensee, 1982) and they must also differentiate their product or service further in order to

compete successfully. The introduction of the Visicalc spreadsheet and the Kurzweil optical scanner are but two recent examples. In both cases these two products provided something unique to the customer and for a time had little if any competitors. As time passed, however, other firms such as Sorcim, Ashton-Tate, and Lotus entered the competition for spreadsheets while Kurzweil was followed by Canon, Hewlett-Packard, and IBM among others.

This diffusion, over time, of the first mover's expertise means that the number of common attributes in the competition increase over time. These common attributes are the threshold or barriers to entry that new entrants must overcome to compete within the marketplace. They also provide the base level upon which competition within the market segment takes place among competitors differentiated on still other attributes.

Therefore, we refer to these barriers to entry as the "basis of competition." The differences in how firms achieve profitability after meeting the required basis of competition we refer to as competitive advantage: nonreproducible, sustainable activities that add value and/or minimize cost of the product or service provided. To the extent that the activity is reproduced by competitors, it loses its ability to differentiate between the competitors, ceases being a competitive advantage, and becomes a basis for further competition.

In the present study, we empirically derive specific competitive actions used at the level of competition between products and services. Then we identify those actions common to all firms competing within the specific application and those actions that are unique to the outlying

firms who were the most and least successful in competing for market share.

METHOD

Sample

We constructed a judgmental sample in two stages. Based on the advice of key informants, we first selected industrial sectors that varied by rate of growth, concentration level, and manufacturing technology. Further, we intentionally limited our sample to industrial products in order to more clearly observe the effects of new product and process technology (the primary focus of our study) without the interference of advertising. In addition, we selected industrial sectors which had been in existence throughout the 1974-84 period, where competition was confined within a single industry, and where industry experts and archival data were available at the level of detail necessary to conduct a longitudinal analysis at the product level of competition. The second stage of the judgmental sample involved selecting specific firms which had at least 1% of the market share as of 1984. This criterion was necessary in order to obtain meaningful ratings of the firm's sector activities in 1984 from industry experts. The sectors, their growth rates, concentration levels, manufacturing type, and number of firms are listed in Table 1.

Insert Table 1 about here

Data Collection

Our approach to investigating competitive advantage relied on several data collection methods. First, we collected published information on each industrial sector and wrote industry histories

covering the 20 year period from 1964 to 1984 in order to understand each industrial sector and what had transpired during that period as reported in published sources. Second, we conducted semi-structured, but open-ended interviews lasting from one to three hours with knowledgeable experts in each of the 13 different industry sectors using an ethnographic approach developed in social anthropology (Werner et al., 1979). This approach focused on the activity under study as if it were a play and asked questions about who the actors were, when they moved on and off stage, what their script was, etc. (See Appendix A for the interview protocol.) Third, we constructed a cross-sectional survey questionnaire based on the histories and interviews to assess the competitive actions of each firm competing in each of the 13 sectors. Finally, we collected archival data on market shares, resource allocations, executive backgrounds, and publications of each competitor between 1974-84.

Interviews

The interviews sought to identify the specific actions/behaviors that firms competing within each of the 13 industrial sectors were taking to compete in 1984. Table 2 indicates the industries, the number of informants, and their affiliation.

Insert Table 2 about here

We were allowed to make audio tape recordings in 41 out of the 72 interviews (57%). The transcribed computer-readable answers to the interview questions were content analyzed using Logic-Line 2 (Thunderstone, 1985), to identify a dictionary of synonyms. Logic-Line 2 is an artificial intelligence expert system which enables a synonym

dictionary to be built up by using a key word and identifying words which are statistically related to it. This set of words, synonyms, and phrases identified through Logic-Line 2 were then analyzed for word and phrase frequencies using Textpack V (Mohler and Zuell, 1986). Textpack V is a program suitable for quantitative content analysis. The results of this analysis were then used to identify the proportion of respondents who discussed specific behaviors/actions that competitors took within each sector.

Cross-Sectional Survey Questionnaire

A cross-sectional questionnaire was developed which contained 111 specific actions that asked expert raters to indicate whether each action either accurately described the company (3), described the company to some extent (2), or did not describe the company (1), indicated that the statement was not relevant to the sector, or that the rater did not know how appropriate the action was to the firm. The items were randomly ordered and reversed to prevent response bias. The items developed were extensively pre-tested to help insure their relevance across the whole range of industrial sectors being assessed. Appendix B contains a sample of the items.

Each rater was promised anonymity and was asked to rate up to five specific firms in a particular industrial sector as of 1984. In addition, the end of the questionnaires asked the respondent to list the 10 issues they felt were most critical for competitive success in this product market and for their general comments. Rater responses were averaged after insuring within-group homogeneity of variance (Roberts, Hulin, and Rousseau, 1978). The agreed upon competitive actions were then analyzed to identify those actions common to all competitors (bases

of competition) and those that differed between competitors (competitive advantages), and which of these were related to market share performance.

RESULTS

The 24 competitive activities identified by our informants are described below. The codes and numbers in parentheses indicate the codes used in Table 3 as well as their order of mention for large and then small batch manufacturing sectors.

Manufacturing costs (MfgCst:1,22): Control over costs of design, fabrication, assembly.

Frequency of new product introductions (FNewProd:2,20): The rate at which new products or product modifications are introduced into the market.

Product price (Price:3,12): Absolute price of the product in comparison to the competitor's price.

The cost/performance ratio of the product (Cost/Perf:4,18): The relationship between the product's price to the customer and the effectiveness of the product in reducing the customer's costs. Very expensive products that substantially reduce the customer's expenses is an example.

Integration between sales and R&D (SalxRD:5,6): Close working relationships between sales and R&D. Salesforce is able to help R&D solve the customer's problem through creating a new solution.

Integration between sales and manufacturing (SalxMfg:6,7): Close working relationships between sales and manufacturing. Salesforce is able to help manufacturing solve the customer's problem through producing off-the-shelf items.

Integration between design and manufacturing (DesxMfg:7,4): Close working relationships between design and manufacturing. Designers working with customers are able to translate customers' needs into manufactured solutions.

Effectiveness of the product in solving the customer's need (ProdEff:8,2): The product by itself solves the customer's need. For example, a new pharmaceutical drug that is faster acting with fewer side-effects than existing products on the market.

Service (Service:9,3): Ability to provide tangible and intangible products to meet customer requirements. It includes help in designing

the product needed as well as helping to train and maintain the product once delivered.

Patenting (Patent:10,13): The ability to protect the product and/or the process of producing the product from duplication for a significant period of time.

Reputation (Rep:11,11): Firm reputation that is transferable to specific products and between products.

Vertical integration (VerInt:12,8): Ability to control inputs through ownership. (Note: Some competitors vertically integrate to maintain full employment and this was not included as part of this definition.)

Breadth of the product line (PLBreadth:13,5): The number of products offered by a competitor within a line of products. In pharmaceuticals, this means having a range of products applicable to specific markets such as hospitals or private M.D.'s offices since without a complete line it is uneconomical to maintain a large sales or detail force.

Government relations (GovRel:14,10): Ability to anticipate government actions within own and customer's industry. Ability to receive favorable treatment by government in product reviews (e.g., FDA) and or contracts (e.g., diesel engines).

Product safety (Safety:15,19): Dangers in using the product are less than the competitor's. In pharmaceuticals this refers to fewer side effects.

Control over raw materials (ConRawMat:16,23): Control over critical sources of raw materials (e.g., high concentration bromine wells in fire retardant chemicals).

Product quality (ProdQual:17,17): Products that are pure (e.g., pharmaceuticals) have low mean time between repair (e.g., robots), are durable, etc.

Delivery as requested by customer (Delivery:18,21): Self explanatory.

Skills of workers (WrkSkl:19,9): Direct, indirect, line, and staff employees of high skill. Skills could be achieved either through selection from a trained labor pool or by in-house training.

Expertise of the salesmen (Salesman:20,1): Salespeople who are expert in the customer's business and are able to translate the customer's needs into a product or service that his/her firm can provide.

Control over suppliers of components (ConSuppl:21,24): Ability to have suppliers provide unique components, have suppliers carry inventory, ability to have suppliers provide very rapid delivery.

Being able to demonstrate a solution to the customer's problem in house (SolDemo:22,16): Being able to demonstrate to a customer that the firm has already solved that problem. For example, an electronic assembly robot manufacturer that uses its own robots to assemble electronic components for another of its businesses can demonstrate its electronic assembly robots to customers.

Software to access the product (Software:23,15): Software programs that are easy for the customer to use in instructing the equipment. It also includes software that automatically runs fault checks to help ensure reliable performance.

Systems integration of the product (Systems:24,14): Ability to provide a system solution rather than a component solution. For example, solving the manufacturing customer's problem through an appropriate combination of dedicated and flexible automation rather than just selling a robot.

After identifying these 24 competitive actions, we compared their frequency of mention across the industrial sectors. We ordered the sectors by concentration level, growth stage, and the form of manufacturing used. This matrix is presented in Table 3.

Insert Table 3 about here

Informants described competition in large batch manufacturing sectors as being based on manufacturing cost, new product introductions, price, and the ratio between price and performance in the early stages of market growth. These same actions were still important as the market matured, but in addition, product effectiveness, service, patents, vertical integration, product line breadth, and others became important as well.

In small batch manufacturing the competitive actions mentioned as important in competition were dramatically different. In the early stages of growth and continuing throughout, salesperson expertise, product effectiveness, and service were seen as important. However, delivery, manufacturing cost, control over raw materials, and control

over suppliers were never mentioned as important competitive actions. Further, there appeared to be substantial differences between pharmaceuticals and other small batch sectors. For the non-pharmaceutical sectors (i.e., other than antihypertensive and antibiotics), service was frequently mentioned as important for competition. However, for pharmaceuticals, service was not mentioned but instead product safety was described as important.

Basis of Competition and Competitive Advantage Basis of Competition

Sufficient expert ratings have been received in three sectors to allow meaningful identification of the bases of competition and competitive advantages. Table 4 indicates the response rates to the questionnaire.

Insert Table 4 about here

Table 5 indicates the basis of competition of all 20 firms and the competitive advantages of three outlying firms in the 8-bit microprocessor segment. This segment represents a large batch, low concentration, high growth sector of competition characteristic of markets early in their development.

Insert Table 5 about here

Consistent with the content analysis of the interview data, the survey questionnaire results indicate only four competitive actions that form the basis of competition. Three of the four areas identified in the interviews were found to be generally supported in the survey questionnaire: manufacturing cost, prices, and the price performance

relationship. Manufacturing costs were important for both Intel, in product design, and for Nippon Electric Company (NEC), in sharing costs with other products. Stable prices were important actions for Intel, NEC, and TI although NEC had consistently lower prices. Cost performance concerns were indicated by quality reputation all competitors were known for and by their concern for stable prices. The only area that differed between the interviews and the survey questionnaire was the importance of frequent new product introductions. Frequent new product introductions were not identified in the questionnaire as forming a basis of competition or as a competitive advantage of the three outlying firms focused on here.

The results presented in Table 5 for the microprocessor sector are quite different from the results presented in Table 6 for the class-8 diesel truck engine sector, which is characteristic of large batch, highly concentrated, low growth sectors.

The results from both the interviews and survey questionnaire were very similar for class-8 diesel trucks. Many of the issues identified in the interviews such as manufacturing cost, service, patents, product quality, delivery, worker skill, and control over suppliers were also found to be generally used by all competitors from the responses to the survey questionnaire. There were some exceptions, however, and these included prices and product effectiveness.

Insert Table 6 about here

Table 6 presents the basis to competition within the sector, characteristic of all four competitors and the specific competitive advantages of three outliers. The number of common actions that forms

the basis of competition in class-8 diesel engines is not only greater than that in 8-bit microprocessors, but there is greater control over inputs (i.e., supplier deliveries), human resource practices, manufacturing, products, and service.

Insert Table 7 about here

The results from water treatment chemicals, a small batch manufacturing sector that is highly concentrated with lower growth, is similar in pattern to class-8 diesel truck engines. The results from the survey questionnaire were consistent with the interview results. The importance of a skilled sales force, product effectiveness, and service were found to be important in both the interviews and the questionnaire survey. The results in Table 7 are similar to those in Tables 5 and 6 in presenting the basis of competition for all eight competitors and the specific competitive advantages of three firms that are outliers. As the results presented in Table 7 indicate, all 8 firms in the industry share a great many common competitive actions from input control, financing, human resource management, manufacturing, product characteristics, service, and delivery.

Competitive Advantage

After identifying the bases of competition within each competitive sector, we turned to the specific competitive actions that distinguished the competitors with the largest market share and the fastest growing shares from each other and from the competitors who had the smallest shares and who were growing in share the least (i.e., the outliers).

Within our sample of 8-bit microprocessor manufacturers (Table 5), the market share leader and fastest growing firm has been NEC. However,

up until 1983 Intel was the market share leader. The firm with the smallest share as of 1984 was Texas Instruments (TI), while the slowest growing firm was Intel.

NEC's competitive advantages were not only more numerous than either TI or Intel, but they were concentrated at the points of attack with a more focused product line, financial help for distributors and customers, a flexible manufacturing strategy, a greater variety of products within more narrow product lines, focused distribution, higher quality, and lower price, coupled with customer training, and lower personnel turnover.

Within class-8 diesel engine manufacturers (Table 6), the market share leader was Cummins Engine Co., the fastest growing firm was Caterpillar (Cat), and the smallest market share holder and slowest growing firm was Detroit Diesel Allison (DDA), a division of General Motors.

Cummins, the market leader, had unique competitive advantages in their control over suppliers and inventory costs. Caterpillar had advantages over Cummins in the area of flexible manufacturing technology, product quality, product focus, reduced marketing costs, and the breadth of their product line. Detroit Diesel Allison had the same number of competitive advantages as Cummins and had more in the areas of service, manufacturing and marketing cost control. Cummins, however, had more advantages in the area of control over suppliers and inventories along with more product focus and a greater number of new product introductions.

The market leader in water treatment chemicals (Table 7) was Nalco, the smallest market share holder, but the fastest growing competitor was

Chemlink which, at the time, was a subsidiary of Atlantic Richfield Oil Co., while the slowest grower was Drew, a subsidiary of Ashland Oil.

Nalco's competitive advantages were concentrated in their narrow focus on a few basic product lines. Chemlink, the fastest growing firm, but with the smallest overall market share, had been concentrating their attack through a low price, cost minimization approach with nationwide distribution. Chemlink had concentrated on the low priced end of the market and offered financial help to distributors and customers and rapid introduction of new products. Ashland, the slowest grower, but with a larger overall share than Chemlink, had concentrated on providing a narrow product range to a narrow group of customers through low cost manufacturing.

DISCUSSION AND CONCLUSIONS

We have empirically identified 24 bases of competition that differ in use by different industrial sectors depending upon the manufacturing process used, the growth of the market, and the concentration level of the sector. Further, there appears to be an identifiable pattern in the competitive advantages used by leading firms in very different sectors and the creation of new bases of competition.

The number of common competitive actions appear to increase over the life cycle of the industrial sector. The competitive advantages of the market leaders seem to be copied quickly by new entrants and new competitive actions are taken which are themselves eventually diffused.

The direction the competitive advantages seem to move depends on the manufacturing process. In large batch manufacturing sectors, the direction of competitive advantage appears to move from product technology to manufacturing technology to a focus on a particular group

of customers and service (e.g., NEC, Cat). In small batch manufacturing, the direction of competitive advantage does not appear to include manufacturing technology but does appear to include focusing on a particular group of customers and service. In the case of water treatment chemicals, for example, the market leader (e.g., Nalco) focused very narrowly on the largest customers while the fastest growing competitor (e.g., Chemlink) focused on smaller customers who were the most price sensitive.

It is important to also note that in the three industries intensively studied so far, a low cost strategy, by itself, was generally ineffective in achieving either market dominance or rapid growth. This is an important finding that deserves further study since it directly contradicts the prevailing arguments concerning benefits from economies of scale and first mover advantages.

The first mover in 8-bit microprocessors, Intel, was unsuccessful in maintaining a dominant position despite economies of scale and first mover advantages. In class-8 diesel truck engines, Cummins, the market leader, has held onto its lead, but not through the use of first mover advantages of economies of scale. Nalco was a similar story. It was the market leader in water treatment chemicals, but not because it was the first mover or achieved economies of scale in comparison to its competitors. In all of the sectors we have intensely studied so far, market share leadership was achieved by focusing on a particular group of customers and providing them with a product or service that was nonreproducible by the competition. This seems to require a thorough understanding of the customer and their needs and the ability to

translate that understanding into coherent action through internal coordination between functional areas in a timely manner.

These findings will need to be investigated further in the remaining industrial sectors we are studying as well as in other sectors. Further, the actions of each competitor within these sectors will need to be analyzed within the context of the total firm's strategy to more fully understand how the strategic actions taken in one industrial sector relate to the firm's overall corporate strategy.

Table 1. Industrial Sectors

Industrial Sector	Compound Annual Growth Rate (CAGR) 1974-84	4-Firm Concentration Level	Manufacturing Type	Number of Firms
8-Bit Microprocessor	94.60%	41%	Large Batch	20
Bipolar PROM's	37.14%	62%	Large Batch	12
Plain Paper Copiers	82.37%	60%	Large Batch	17
Fire Retardant Chemicals	49.81%	98%	Large Batch	5
Class-8 Diesel Truck Engines	9.21%	95%	Large Batch	4
Crawler Tractor Diesel Engines	4.35%	90%	Large Batch	9
Machining Centers	29.00%	46%	Large Batch	22
Bipolar Gate Arrays	149.03%	23%	Small Batch	8
Spot-welding Robots	53.04%	29%	Small Batch	9
Material Handling, Machine Loading Robots	56.44%	34%	Small Batch	13
Water Treatment Chemicals	11.91%	55%	Small Batch	8
Antihypertensive Drugs	-4.87%	76%	Small Batch	11
Broad & Medium Spectrum Antibiotic Drugs	34.29%	49%	Small Batch	20

Table 2. Content Analyzed Key Informants

Industrial Sector	Number of Informants	Informant Affiliation
8-Bit Microprocessor	1	Consultant
Bipolar PROM's	3	Consultant
Plain Paper Copiers	2	Consultant
Fire Retardant Chemicals	3	Firm/Indus. Analyst
Class-8 Diesel Truck Engines	10	Firm/Consultant/ Indus. Analyst
Crawler Tractor Diesel Engines	2	Consultant
Machining Centers	4	Firm/Indus. Analyst/Trade Assoc.
Bipolar Gate Arrays	2	Consultant
Spot-welding Robots	5	Firm/Indus. Analyst/Consultant
Material Handling, Machine Loading Robots	5	Firm/Indus. Analyst/Consultant
Water Treatment Chemicals	2	Indus. Analyst/ Consultant
Antihypertensive Drugs	3	Firm/Indus. Analyst/ Consultant
Broad & Medium Spectrum Antibiotic Drugs	2	Firm/Indus. Analyst

*Note: Only 44 interviews out of the 95 total interviews were analyzed because they dealt with specific industrial sectors. The 51 other interviews not analyzed were more general and concerned the industry in general, which sectors would be most appropriate to analyze, and who would be other key informants.

Table 3. Content Analysis of Interviews for Basis of Competition (% of Key Informants Who Mention Each Action)

LARGE BATCH

GROWTH STAGE	CONCEN	GROW	SECTOR	1 MFG CST	2 FNEW PROD	3 PRICE	4 COST/ PERF	5 SALx RD	6 SALx MFG	7 DESx MFG	8 PROD EFF	9 SERV -ICE	10 PATENT	11 REP	12 VER INT	13 PL BREADT	14 GOV REL	15 SAF -TY	16 CON RAW MAT	17 PROD QUAL	18 DELIVE	19 WRK SKL	20 SALES MEN	21 CON SUPPL	22 SOL DEMO	23 SOFT WARE	24 SYSTEMS
EMERGING	LOW	HIGH	MICROPROCESS	100%	100%	100%	100%																				
GROWTH	HIGH	HIGH	PROM	100%	100%	33%		67%	67%	67%																	
GROWTH	HIGH	HIGH	PPC	100%	100%	100%					100%	100%	100%	100%													
MATURE	HIGH	HIGH	FIRE RETARDA	100%	33%	33%					67%	33%	33%		33%	33%	33%	33%	33%								
MATURE	HIGH	LOW	DTRUCKS	80%	40%	10%	10%				60%	60%	30%		30%	20%	50%			40%	40%	40%	20%	20%			
MATURE	HIGH	LOW	DTRACTORS	50%	50%	50%	50%				50%	100%			50%	50%				50%	50%						
DECLINE	LOW	LOW	MACH CENTERS	25%	25%	25%	25%				25%				25%					25%					25%	25%	

SMALL BATCH

GROWTH STAGE	CONCEN	GROW	SECTOR	1 SALES MEN	2 PROD EFF	3 SERV -ICE	4 DESx MFG	5 PL BREADT	6 SALx RD	7 SALx MFG	8 VER INT	9 WRK SKL	10 GOV REL	11 REP	12 PRICE	13 PATENT	14 SYSTEM	15 SOFT WARE	16 SOL DEMO	17 PROD QUAL	18 COST/ PERF	19 SAF -TY	20 FNEW PROD	21 DELIVE	22 MFG CST	23 CON RAW MAT	24 CON SUPPL
EMERGING	LOW	HIGH	GATE ARRAYS	100%	50%	50%	100%	50%	50%	50%	50%	50%															
EMERGING	LOW	HIGH	ROBOTS (SPOT (WELDING + MH/ML)	60%	20%	60%	40%						40%	40%	20%	20%	100%	80%	60%	40%								
GROWTH	HIGH	HIGH	ANTIBIOTICS	100%	100%								100%	50%	50%	50%						50%	50%					
MATURE	HIGH	LOW	ANTIHYPERTEN	33%	100%			33%					100%	33%		67%					33%	67%					

Table 4. Three Sector Response Rates

	Questionnaires			Response Rate	
	Out	In	Usable	Total	Usable
8-Bit Microprocessors	95	69	45	72.6%	47.4%
Class-8 Truck Diesel Engines	44	25	21	56.8%	47.7%
Water Treatment Chemicals	69	44	44	63.8%	63.8%
Overall	208	138	110	66.0%	53.0%

*Note: Only response rates for the data reported are included here.

Table 5. Basis of Competition and Competitive Advantages for 8-Bit Microprocessors

CATEGORY CODE	COMPETITIVE ADVANTAGE QUESTIONNAIRE ITEM	Barriers to Entry	Competitive Advantages NEC	TI	Intel	SUM
CONSUP	The company uses the same or similar inputs in different products	X				1
						0
						0
PRODQUAL	The products the company sells have a good reputation within the industry	X				1
						0
						0
CUSTOMER	The company's customers are confident the company will remain in the business	X				1
						0
						0
						0
SERVICE	Routine service and maintenance is included in the cost of the product	X				1
						0
						0
STABPRICE	The company had been able to keep the prices of its products stable		X	X	X	3
						0
						0
SERVICE	The company provides specialized or customized products or services for its customers		X	X	X	3
						0
						0
						0
DISFOCUS	The company had focused its distribution system on a specific group of customers		X	X	X	3
						0
						0
						0
SYSTEMS	The company offers integrated, systems-level applications to the customer				X	1
						0
						0
						0
MFGCOST	The company's products have been designed to minimize labor costs in producing them				X	1
						0
						0
						0
PRODUCT	The company had licenced product technology from outside sources				X	1
						0
						0
PRODUCT	The company had good working relationships with outside sources of product technology				X	1
						0
						0
						0
PRODUCT	The company had worked with other companies or the government on product development		X	X		2
						0
						0
						0
PRODFOCUS	The company had tied its products or services to a specific group of costumers or applications		X	X		2
						0
						0
						0
PRODFOCUS	The company had targeted its		X	X		2

	products for specialized sub-markets.			0 0 0
PRODFOCUS	The company had focused on a few basic product lines or applications in this business	X		1 0 0 0
PRODFOCUS	The company offers a narrow range of product lines within the application.	X		1 0 0 0
PRODFOCUS	The company designs products to meet the specific performance standards of specific customers	X		1 0 0 0
PLBREADTH	The company sells a variety of products within each basic product line it offers	X		1 0 0 0
SERVICE	The company provides strong education and training programs for potential customers	X	X	2 0 0 0
TURNOVER	The company's research/engineering/ development personnel tend to stay with the company for most of their careers.	X		1 0 0 0 0
TURNOVER	Line managers tend to stay with the company for their entire careers	X		1 0 0 0
TURNOVER	The compnay's sales managers tended to stay with the company for their entire careers	X		1 0 0 0
TURNOVER	The turnover among the company's salesmen was relatively low for this business	X		1 0 0 0
TURNOVER	Research/Development/engineering managers tend to stay with the company for their entire career	X		1 0 0 0
TURNOVER	The sales personnel who work for the company for most of their careers.	X		1 0 0 0
TURNOVER	Turnover of the production workers is low in the company's operations in this business.	X		1 0 0 0
LOWPRICE	The company's prices are consistently lower than its direct competitors	X		1 0 0

FINANCE	The company provides financial help to its distributors	X				1
						0
						0
FINANCE	The company provides financing for its customer's purchases of its products	X				1
						0
						0
						0
MFG COST	The company shared its manufacturing costs in this product market with other divisions	X				1
						0
						0
						0
MFG	The company had licenced the technology it uses in manufacturing from other companies	X				1
						0
						0
						0
MFG	The company uses manufacturing processes or equipment that can produce a variety of products	X				1
						0
						0
						0
DISTRIB	The company does not make use of independent distributors	X				1
						0
						0
LABPROD	The productivity of the company's indirect labor force is high		X			1
						0
SUM OF ACTIONS =		4	25	8	7	44

SUMMARY OF COMPETITIVE ADVANTAGE FREQUENCIES			DIFFERENCE		DIFFERENCE
COMPETITIVE ADVANTAGE CATEGORY CODES	Intel	NEC	(Int-NEC)	TI	(Int-TI)
SERVICE	2	3	-1	3	-1
PRODUCT	2	1	1	1	1
CONSUP	1	1	0	1	0
STABPRICE	1	1	0	1	0
CUSTOMER	1	1	0	1	0
DISFOCUS	1	1	0	1	0
MFGCOST	1	1	0		1
SYSTEMS	1		1		1
TURNOVER		7	-7		0
PRODFOCUS		5	-5	2	-2
FINANCE		2	-2		0
MANUFACT.		2	-2		0
PLBREADTH		1	-1		0
DISTRIB		1	-1		0
PRODQUAL		1	-1		0
LOWPRICE		1	-1		0
LABPROD			0	1	-1
SUM OF ACTIONS (INCLUDES BARRIERS TO ENTRY) =	10	29	-19	11	-1

Table 6. Basis of Competition and Competitive Advantages for Class-8 Diesel Truck Engines

CATEGORY CODE	COMPETITIVE ADVANTAGE QUESTIONNAIRE ITEM	Barriers to Entry	Competitive Advantages Cummins	CAT	DDA	SUM
SUPPLCONT	The company uses the same or similar inputs in different products	X				1
						0
						0
SUPPLCONT	The company's suppliers provide it with flexible delivery schedules	X				1
						0
						0
TURNOVER	The turnover among the company's salesmen was relatively low for this business	X				1
						0
						0
						0
TURNOVER	The sales personnel who work for the company for most of their careers.	X				1
						0
						0
						0
TURNOVER	Turnover of the production workers is low in the company's operations in this business.	X				1
						0
						0
						0
TURNOVER	Research/Development/engineering managers tend to stay with the company for their entire career	X				1
						0
						0
						0
TURNOVER	The company's research/engineering/ development personnel tend to stay with the company for most of their careers.	X				1
						0
						0
						0
						0
TURNOVER	The compnay's sales managers tended to stay with the company for their entire careers	X				1
						0
						0
						0
LABOR	The company was able to hire its saleforce from a stable labor market	X				1
						0
						0
						0
LABOR	The company is on good terms with its work force	X				1
						0
						0
LABSKL	Research/Development/engineering managers are drawn from within the industry	X				1
						0
						0
						0
LABSKL	The company had extensive training programs for its sales force	X				1
						0
						0
LABSKL	Line managers in the company are drawn from within the industry	X				1
						0
						0

LABSKL	The company had hired and/or trained a highly skilled labor force	X			1 0 0
LABSKL	The company's sales managers have had direct sales experience in this industry	X			1 0 0 0
LABSKL	The company's sales managers were drawn from within the industry	X			1 0 0
FINANCE	The company uses internal sources of capital to finance operations in this business	X			1 0 0 0
MFG COST	The company shared its manufacturing costs in this product market with other divisions	X			1 0 0 0
MFG COST	The company was able to minimize its direct labor costs in its production activities in this business	X			1 0 0 0
PRODQUAL	The company had the capability to adhere to strict quality control limits.	X			1 0 0 0
PRODUCT	The company's product technologies are proprietary	X			1 0 0 0
PRODUCT	The company had good working relationships with outside sources of product technology	X			1 0 0 0
DISTFOCUS	The company had different specialized distribution systems for different groups of customers	X			1 0 0 0
SERVICE	Service for the company's products is provided by third parties	X			1 0 0
SERVICE	The company provides strong education and training programs for potential customers	X			1 0 0 0
SERVICE	The company's initial response to a service call is quicker than the industry average	X			1 0 0 0
CUSTOMERS	The company's customers are confident the company will remain in the business	X			1 0 0 0
SUPCONT	The company is able to obtain specialized, non-standard inputs		X	X	2 0

	from its suppliers				0
					0
SUPCONT	The company receives preferential	X		X	2
	treatment from equipment manufacturers				0
					0
FINANCE	The company had a reputation for paying	X	X	X	3
	its suppliers on time				0
					0
PRODFOCUS	The company had focused on a few	X	X		2
	basic product lines or applications				0
	in this business				0
					0
FNEWPROD	The company had introduced new	X	X		2
	products more quickly than average				0
	in the industry as a whole				0
					0
INVENTORY	The company is able to keep work in	X		X	2
	process inventories small				0
					0
INVENTORY	The company had effectively controlled	X			1
	the costs of inventory				0
					0
SERVICE	The company offers service beyond	X	X	X	3
	warranties only on a contract basis				0
					0
MFG COST	The company had access to low cost	X	X		2
	direct labor for its production activities				0
					0
MFG	The company uses special purpose	X	X	X	3
	manufacturing equipment/processes				0
					0
MFG	The company had proprietary		X	X	2
	manufacturing equipment/				0
	processes.				0
					0
MFG FLEX	The company uses manufacturing processes		X		1
	or equipment that can produce a variety				0
	of products				0
					0
MFG COST	The company designs it products			X	1
	to use low cost materials				0
	or components				0
					0
PLBREADTH	The company sells a variety of		X		1
	products within each basic product				0
	line it offers				0
					0
PRODQUAL	The products the company sells have a		X		1
	good reputation within the industry				0
					0
PROD FOCUS	The company offers a narrow range		X		1
	of product lines within the				0
	application.				0
					0
MARK COSTS	The company had been able to spread		X	X	2

	its marketing costs across different				0
	products				0
					0
SERVICE	The company provides specialized			X	1
	or customized products or services				0
	for its customers				0
SUM OF ACTIONS =		27	10	12	9	58

SUMMARY OF COMPETITIVE ADVANTAGE FREQUENCIES			DIFFERENCE		DIFFERENCE
COMPETITIVE ADVANTAGE CATEGORY CODES	Cummins	CAT	(Cum-CAT)	DDA	(Cum-DDA)
LABSKL	6	6	0	6	0
TURNOVER	6	6	0	6	0
SERVICE	4	4	0	5	-1
SUPCONT	4	2	2	2	2
MFG COST	3	3	0	3	0
LABOR	2	2	0	2	0
PRODUCT	2	2	0	2	0
FINANCE	2	2	0	2	0
INVENTORY	2		2	1	1
MFG	1	2	-1	2	-1
PRODQUAL	1	2	-1	1	0
PRODFOCUS	1	2	-1		1
DISTFOCUS	1	1	0	1	0
CUSTOMERS	1	1	0	1	0
FNEWPROD	1	1	0		1
MARK COSTS		1	-1	1	-1
MFG FLEX		1	-1		0
PLBREADTH		1	-1		0
SUPPLCONT			0	2	-2
SUM OF ACTIONS (INCLUDES BARRIERS TO ENTRY) =	37	39	-2	37	0

Table 7. Basis of Competition and Competitive Advantages for Water Treatment Chemicals

CATEGORY CODE	COMPETITIVE ADVANTAGE QUESTIONNAIRE ITEM	Barriers to Entry	Competitive Advantages Nalco	ChemLink	Drew	SUM
CONSUP	The company uses the same or similar inputs in different products	X				1
						0
						0
CONSUP	Purchasing and negotiations with suppliers are handled centrally within the company	X				1
						0
						0
						0
FINANCE	The company uses internal sources of capital to finance operations in this business	X				1
						0
						0
						0
FINANCE	The company could acquire capital at favorable terms	X				1
						0
						0
LABORSKL	The company was able to hire its saleforce from a stable labor market	X				1
						0
						0
						0
LABORSKL	The comany's sales managers have had direct sales experience in this industry	X				1
						0
						0
						0
LABORSKL	The company's service personnel have high levels of expertise	X				1
						0
						0
MFG COST	The company shared its manufacturing costs in this product market with other divisions	X				1
						0
						0
						0
MFG FLEX	The company uses manufacturing processes or equipment that can produce a variety of products	X				1
						0
						0
						0
PRODQUAL	The company had the capability to adhere to strict quality control limits.	X				1
						0
						0
						0
INVENCOST	The company had effectively controlled the costs of inventory	X				1
						0
						0
INVENTORY	The company maintains minimal levels of safety stock in finished product/replacement parts inventories	X				1
						0
						0
						0
						0
SYSTEMS	The company offers integrated, systems-level applications to the customer	X				1
						0
						0

						0
PRODUCT	The company's overall reputation extends to the specific products it offers	X				1
						0
						0
						0
PRODUCT	The company's product technologies are proprietary	X				1
						0
						0
PRODQUAL	The products the company sells have a good reputation within the industry	X				1
						0
						0
DELIVERY	The company is able to make fast deliveries to its customers	X				1
						0
						0
DELIVERY	The company is good at making deliveries when the customer requests them	X				1
						0
						0
						0
DELIVERY	The company avoided stock outs and maintained a stable flow of goods to customers	X				1
						0
						0
						0
DISTCOSTS	The company had been able to shift costs of distribution to distributors or customers	X				1
						0
						0
						0
SERVICE	Service for the company's products is provided by third parties	X				1
						0
						0
SERVICE	Routine service and maintenance is included in the cost of the product	X				1
						0
						0
SERVICE	The speed with which customer problems are solved is faster than industry averages	X				1
						0
						0
						0
FINANCE	The company had a reputation for paying its suppliers on time		X	X		2
						0
						0
PRODFOCUS	The company offers a narrow range of product lines within the application.		X		X	2
						0
						0
						0
PRODFOCUS	The company had focused on a few basic product lines or applications in this business		X			1
						0
						0
						0
LOWPRICES	The company's prices are consistently lower than its direct competitors			X	X	2
						0
						0
MFG COST	The company's products have been designed to minimize labor costs in producing them			X	X	2
						0
						0
						0
PRODUCT	The company had worked with other			X	X	2

	companies or the government on product development			0 0 0
MFG	The company involved with other firms or the government in developing process technology	X	X	2 0 0 0
MFG COST	The company had access to low cost direct labor for its production activities	X	X	2 0 0
SUPPCONTROL	The company had stable access to acceptable inputs for its manufacturing process	X	X	2 0 0 0
DISTRIB	The company does not make use of independent distributors	X	X	2 0 0
DISTRFOCUS	The company had different specialized distribution systems for different groups of customers	X	X	2 0 0 0
DISTFOCUS	The company had focused its distribution system on a specific group of customers	X	X	2 0 0 0
TURNOVER	The turnover among the company's salesmen was relatively low for this business	X	X	2 0 0 0
TURNOVER	The compnay's sales managers tended to stay with the company for their entire careers	X		1 0 0 0
FNEWPROD	The company had introduced new products more quickly than average in the industry as a whole	X		1 0 0 0
FINANCE	The company provides financing for its customer's purchases of its products	X		1 0 0 0
FINANCE	The company provides financial help to its distributors	X		1 0 0
DISTRFOCUS	The company uses different channels of distribution for different products or services	X		1 0 0 0
DISTRIB	The company's distribution system covers the entire United States	X		1 0 0
LABORSKL	The company's production workers were highly skilled		X	1 0 0
SUPPCONTROL	The company had been able to control		X	1

	costs of the materials/components it					0
	uses as inputs					0
						0
SUPPCONTR	The inputs the company uses must meet			X		1
	tight specifications					0
						0
PRODFOCUS	The company had tied its products			X		1
	or services to a specific group of					0
	costumers or applications					0
						0
PRODFOCUS	The company had targeted its			X		1
	products for specialized					0
	sub-markets.					0
						0
MFG COSTS	The company's overhead was low			X		1
	relative to the other companies					0
	that compete in this product					0
	market.					0
						0
SERVICE	The company offers service beyond			X		1
	warranties only on a contract basis					0
SUM OF ACTIONS =		23	3	17	18	61

	SUMMARY OF COMPETITIVE ADVANTAGE FREQUENCIES			DIFFERENCE		DIFFERENCE
	COMPETITIVE ADVANTAGE CATEGORY CODES	Nalco	ChemLink	(Na-CL)	Drew	(Na-Dr)
	FINANCE	3	5	-2		3
	SUPPCONTROL	3	4	-1	6	-3
	LABORSKL	3	3	0	4	-1
	DELIVERY	3	3	0	3	0
	PRODUCT	2	3	-1	3	-1
	CONSUP	2	2	0	2	0
	PRODFOCUS	2		2	3	-1
	MFG COST	1	2	-1	4	-3
	MFG FLEX	1	1	0	1	0
	INVENTORY	1	1	0	1	0
	INVENCOST	1	1	0	1	0
	SYSTEMS	1	1	0	1	0
	PRODQUAL	1	1	0	1	0
	DISTCOSTS	1	1	0	1	0
	DISTFOCUS		3	-3	2	-2
	TURNOVER		2	-2	1	-1
	DISTRIB		2	-2	1	-1
	LOWPRICES		1	-1	1	-1
	MFG		1	-1	1	-1
	FNEWPROD		1	-1		0
	SERVICE			0	1	-1
SUM OF ACTIONS (INCLUDING BARRIERS TO ENTRY) =		25	38	-13	38	-13

APPENDIX A: INTERVIEW PROTOCOL

1. Define the sector.

2. Identify the companies that do business in the sector.

3. Estimates of market shares of competitors

   (a) % Market currently

   (b) # of competitors that account for 50%

   (c) # of competitors that account for 75%

   (d) Changes in shares or position of firms with largest shares over the past 10 years (1974-84)

4. Nature of competition

   (a) How do firms compete?

   (b) What are the things that a firm has to do well just to be a serious competitor?

      (1) Prompt list if needed

   (c) What are the things that the market leaders have done to distinguish themselves from the other companies?

      (1) Prompt list if needed

   (d) What are the things that it would be useful to be able to do but which are not necessary for effective competition?

      (1) Prompt list if needed

APPENDIX B: SAMPLE QUESTIONNAIRE ITEMS

The Strategic Management of Industrial Technology Study

Please indicate the extent to which the statements *accurately describe* each company's activities *AS OF 1984* in the specific product market indicated. If the statement is not applicable in this product market, indicate NA. If you do not know the degree of the statement's accuracy, indicate DK.

	1 The Statement Accurately Describes The Company	2 The Statement Describes the Company To Some Extent	3 The Statement Does Not Accurately Describe The Company	NA The Statement Is Not Applicable In The Industry	DK Do Not Know If The Statement Applies To The Company
					Product Market
1. The company's deliveries to its customers were unreliable	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
2. The company shared its manufacturing costs in this product market with other divisions	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
3. The company had stable access to acceptable inputs for its manufacturing process	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
4. The productivity of the company's salesforce was generally high	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
5. The company had difficulty acquiring adequate capital in this business	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
6. The company used the same or similar inputs in different products	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
7. The company had hired and/or trained a highly skilled labor force in its operations in this business	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
8. The productivity of the production workers was high in the company's operations in this business	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
9. The company had to acquire capital at unfavorable terms	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
10. Service for the company's products was provided by third parties	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
11. The company used distributors that carried other companies products for the same applications	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
12. The company had not concentrated on specific applications/areas	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
13. The sales personnel who work for the company tend to stay with the company for most of their careers	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
14. The company had minimized its indirect labor costs in this business	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
15. Research/development/engineering managers were drawn from within the industry	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
16. The company had been able to shift costs of distribution to distributors or customers	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
17. The company had been able to control costs of the materials/components it used as inputs	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
18. The company provided financing for its customers' purchases of its products	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
19. The company was good at making deliveries when the customer requested them	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
20. Turn over of the production workers was low in the company's operations in this business	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
21. The company trained its customers to service the products it sold them	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
22. The company's suppliers provided it with flexible delivery schedules	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
23. The turnover among the company's salemen was relatively low for this business	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
24. The company's overhead was high relative to the other companies that compete in this product market	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
25. Line managers in the company were drawn from within the industry	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
26. The company's products had been designed for easy servicing/minimum maintenance costs	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
27. The company had proprietary manufacturing equipment/processes	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK
28. The company had more frequent work stoppages, strikes, etc than was normal in the industry	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK	1 2 3 NA DK

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