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AUTOMOTIVE MARKETING METHODS AND PRACTICE

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Robert P. Whorf

GILBERT R. GREEN & COMPANY, INC.
Natick Office Park
Natick MA 01760



SEPTEMBER 1979

FINAL REPORT

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*Transportation
3 Systems Center*

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16. Abstract This report is a comprehensive examination of the current marketing practices, marketing methodologies, and decision-making processes utilized by the domestic automotive industry. The various marketing elements, such as products, consumer behavior, sales, promotion, distribution, advertising, and regulatory constraints are reviewed as they pertain to the automotive industry. Specifically, the report's seven chapters include (1) a review of industry competitive relationships, (2) practical constraints on automotive decision-making, (3) corporate organization for decision-making, (4) understanding the consumer, (5) marketing decision-making, (6) assessment of current problems and issues, and (7) state-of-the-art summary. Four appendices focus on (1) the organization of General Motors Corporation, (2) the organization of Ford Motor Company, (3) the product and market planning process graphics, and (4) an example of a forward product strategy document. Where appropriate, the report highlights the differences in marketing approaches employed by the four automotive manufacturers and some of the adjustments and problems faced by these manufacturers in their marketing pursuits.					
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PREFACE

The present report was prepared in support of the Department of Transportation's (DOT) need, under the Energy Policy and Conservation Act, to implement average fuel economy standards for passenger automobiles. An important ingredient of DOT's Automotive Fuel Economy Research (AFER) analysis program is the development of a better understanding of current automotive marketing methods and, in particular, of the potential impacts of the standards on the marketing and marketability of passenger cars. The present report represents a "first step" toward DOT's goal. The subject report was prepared in 1977 by three consultants to the Gilbert R. Green & Company: Dr. Seymour Marshak, Dr. Patricia L. Braden and Mr. Robert P. Whorf.

Dr. Marshak, now Dean of the School of Business, California State University-Long Beach, was recently Professor of marketing at New Mexico State University, Las Cruces. Dr. Marshak has a long and distinguished career in automotive marketing, his most recent positions being Director, Marketing Plans and Analysis at the Chrysler Corporation, Marketing Research Manager, Marketing Staff, Ford Motor Company, and Advertising and Distribution Research Manager, Ford Motor Company.

Dr. Braden is a member of the Division of research and Professor of Marketing, Graduate School of Business Administration at the University of Michigan. For 10 years, Dr. Braden has conducted research on consumer behavior and a wide range of marketing problems. She has also undertaken major research and consulting assignments for automobile manufacturers and the Motor Vehicle Manufacturers Association.

Mr. Whorf heads his own consulting firm, concentrating on policy research and analysis in transportation and energy sectors. For eight years he was with the Ford Motor Company, principally in the Transportation Research and Planning Office where he concentrated on the analysis and modeling of changes in use, ownership, and sales of automobiles. For more than 12 years prior, Mr. Whorf was consultant in product and marketing planning, much of which was for automotive and allied industries.

The three authors worked closely on all aspects of the preparation and writing of this report and share responsibility for all views and opinions presented herein.

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures				Approximate Conversions from Metric Measures			
Symbol	When You Know	Multiply by	To Find	Symbol	When You Know	Multiply by	To Find
LENGTH							
in	inches	2.5	centimeters	mm	millimeters	0.04	inches
ft	feet	30	centimeters	cm	centimeters	0.4	inches
yd	yards	0.9	meters	m	meters	3.3	feet
mi	miles	1.6	kilometers	km	kilometers	0.6	miles
AREA							
in ²	square inches	6.5	square centimeters	cm ²	square centimeters	0.16	square inches
ft ²	square feet	0.09	square meters	m ²	square meters	1.2	square yards
yd ²	square yards	0.8	square meters	km ²	square kilometers	0.4	square miles
mi ²	square miles	2.6	square kilometers	ha	hectares (10,000 m ²)	2.5	acres
MASS (weight)							
oz	ounces	28	grams	g	grams	0.035	ounces
lb	pounds	0.45	kilograms	kg	kilograms	2.2	pounds
	short tons (2000 lb)	0.9	tonnes	t	tonnes (1000 kg)	1.1	short tons
VOLUME							
teaspoon	teaspoons	5	milliliters	ml	milliliters	0.03	fluid ounces
tablespoon	tablespoons	15	milliliters	l	liters	2.1	pints
fluid ounce	fluid ounces	30	milliliters	l	liters	1.06	quarts
c	cups	0.24	liters	l	liters	0.26	gallons
pt	pints	0.47	liters	m ³	cubic meters	36	cubic feet
qt	quarts	0.95	liters	m ³	cubic meters	1.3	cubic yards
gal	gallons	3.8	cubic meters				
ft ³	cubic feet	0.03	cubic meters				
yd ³	cubic yards	0.76	cubic meters				
TEMPERATURE (exact)							
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature

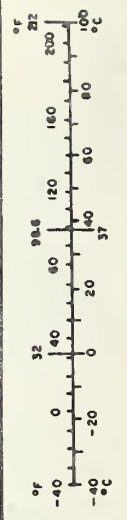
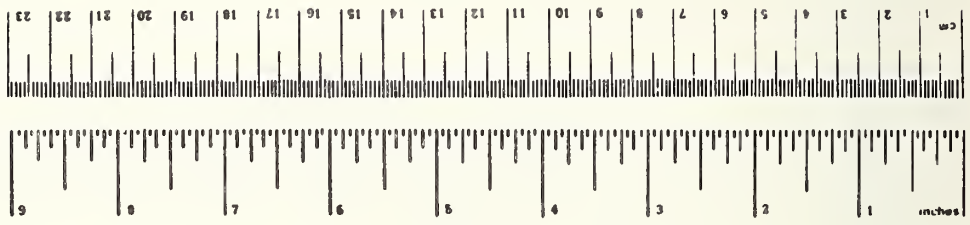


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1. REVIEW OF INDUSTRY COMPETITIVE RELATIONSHIPS

1.1 GENERAL

The considerable attention focused recently upon the domestic automobile manufacturers is well-deserved and understandable in light of their structure, sheer magnitude and importance in the economy. Such emphasis, however, tends to lead even the trained observer to ignore the nature of the marketplace and the multiplicity of industries which constitute the competitive environment for passenger vehicles. The discussion of automotive marketing methods and practices begins, therefore, with a brief review of the market and the industries which serve the elements of this market. An overview of the vertical relationships among the industries which serve the new car segment of passenger vehicle markets follows. Chapter 1 closes with a brief discussion of the nature of competition among new car manufacturers.

While most of the present report is concerned with a characterization of historical relationships and current practice in automotive marketing, it is important to recognize that the automobile industry is ever changing in response to changing market conditions and changes in constraints placed upon one or another aspect of the environment within which the industry must operate. A number of critical marketing issues and uncertainties relating to current and prospective federal regulations, including possible changing competitive relationships, are discussed in Chapter 6.

1.2 THE MARKET VS. THE INDUSTRY

While the total volume of new car sales in the United States is impressive,(1)* they have consistently comprised less than half of the total passenger car sales in the U.S. in recent history(2). The relationships between new and used cars as consumer alternatives is complex, varying jointly with the general economic climate, the rate of inflation and the associated value of real personal income, as well as such intrinsic factors as styling changes, the economy of operating new versus used vehicles, and the personal taste of the consumer. Although the dynamics of the relationships between new and used cars in the passenger vehicle market is not currently well understood, the linkage is far more real than apparent, as evidenced in part by the strong resale market for used cars(3).

The 1976 sales of new cars in the United States also include 1,446,637 vehicles of foreign manufacture imported for sale, representing 14.8 percent of total new car sales(4). The percentage of the total market for passenger vehicles captured by foreign manufacturers varies from year-to-year, but it comprises a significant proportion of the new car segment of the market. It is worthy of note that since 1971, the number of import new car registrations has varied within a fairly narrow range, from 1.4 to 1.7 million units with the 1973 value of 1.7 million being the only year in which the number exceeded 1.5 million(5).

Additionally, and in so far as they satisfy the need for personal transportation, alternative vehicles (such as vans and light trucks) and

*Numbers in () refer to references at the end of each chapter.

other modes of transportation (in particular, motorcycles and mass transit) directly and indirectly siphon buyers from the total market for passenger vehicles. Changing buyer tastes (as evidenced by the current popularity of light duty trucks, vans, and mini-motorhomes) have an impact upon the products competing in the new car market segment. In 1974, 20.1 percent of all households in the U.S. were estimated to own one or more pickup trucks, vans, or recreational vehicles(6). Similarly, alternative transport modes, including motorcycles and mass transit, are most likely to affect the used car and small new car market segments where they represent substitutes for automobiles in a marginal buying unit (e.g., second-car substitutes or primary vehicle substitutes where transportation requirements are minimal).

The "Big Four" represent a significant industry, both as producers of new automobiles and as producers of new trucks and chassis, as well as other automotive and non-automotive products and services. However, the primary market segment which they serve--buyers of new automobiles--though sizeable, does not dominate the marketplace when viewed in proper terms as the total market for passenger vehicles.

It is within this framework that each new market entry (model or series) is introduced as a consumer alternative that embodies not only characteristics of engineering, design, price, and performance, but also the perceptual values required to meet the changing tastes of the consuming public. The consumers in this new car market segment, while paying a premium to satisfy their particular taste in personal transportation, subsidize the total market for passenger vehicles by absorbing the depreciation loss (which represents, alternately, the utility of a new car in use or the cost of delivering a new

car and its associated values), enabling the remainder of passenger vehicle buyers to purchase personal transportation at a lower cost.

As industry members, the "Big Four" must seek to maximize the profits, subject to reasonable risk, of their total operations. Although each of the automobile manufacturers has substantial investments in non-passenger car businesses, the greatest proportion of their capital resources are committed to servicing the new car market. These resources are, in most cases, fixed and are not highly flexible for meeting rapid shifts in overall product mix. This relative rigidity in the industry is accounted for, in large part, by two factors: 1) the lead time associated with product planning and development (forecasting trends in demand, conceptualizing design changes to meet demand requirements, and engineering and producing to meet new product specifications), and 2) the capital intensiveness needed to realize the economies of scale in the mass production of a major consumer durable good.

1.3 THE VERTICAL STRUCTURE OF THE INDUSTRY

1.3.1 The Dynamics of Supply

The vertical structure required to service the demand for new cars engages a large number of supplier industries, their resources, and employees, and includes an impressive distribution network. Estimates of the motor Vehicle Manufacturers Association (based upon 1972 Census of Manufacturers data for only those industries reporting automotive parts sales) place 1976 sales of chemical, plastic, rubber and allied products to the automotive industry at \$5,969.8 million, auto-related sales of fabricated metal products at \$1,810.0 million, machinery and electrical equipment at \$5,441.8 million, and textile, paper, glass, and other products at

\$2,862.2 million(7). This accounting (totaling in excess of \$16 billion) does not include estimates of the value of the sales of primary metals, other fabricated products, or wholesale exchanges stimulated by new car demand.

The very heterogeneity of the supplier networks which contribute substantially to domestic production represents a critical operating constraint for the manufacturers themselves. In their efforts to reduce lead times or to achieve a desired level of control required for economic production scheduling, the various members of the "Big Four" have (to a greater or lesser extent depending upon their resources) vertically integrated fabricating activities. Limitations exist nevertheless which restrict their responsiveness to changes in demand which may be evidenced in the marketplace or to constraints imposed through federal regulation. Chapter 2 provides further discussion of product planning and development time frames. Suffice it to say here that economically-feasible changes during any given model year are generally limited to adjustments in the volume of production of current models within series and/or shifts in production between makes. Flexibility increases earlier in the planning framework, more rapidly for the larger firms which have extensively-integrated production facilities.

The dynamics of supplier relationships place the burden of meeting demand with appropriate vehicle constellations directly upon the manufacturers themselves, who assume the risk of forecasting demand and designing and engineering new products to meet that demand. The proportion of total resources which any manufacturer devotes to one make or series is directly related to the market risk assumed by the firm. If the firm is small and demand forecasts prove to be inaccurate with respect to either the direction or

character of demand, that firm may suffer severe sales and profit declines (or losses) while being forced to wait through expiration of the planning lead (e.g., AMC's Pacer commitment). Such demand forecasts may or may not be accurate in the long run, but the short term inability to adjust for error escalates the burden of risk to firms with limited entries in the marketplace and, consequently, their cost of doing business.

1.3.2 The Distribution Network

Although the manufacturer of new cars must be responsive to demand in the marketplace, factory sales of the manufacturer are normally channeled through franchised dealer outlets. In 1975, approximately 100,000 car dealers were operating in the United States. Of these, about one-fourth (24,000 dealers adjusted for duals and multiples) sold to the new car market segment. Generally, these dealers place orders for inventory and to buyer specifications with the manufacturers either through credit/wholesale subsidiaries of the manufacturers or directly to the factory. As in many durable goods selling situations, negotiation takes place between the buyer (dealer) and the seller (factory) with respect to the quantity, availability, delivery time, accessories, and price of series and models throughout the model year. While the relationship between manufacturer and dealer is one of mutual dependence, there is little doubt that the manufacturer exercises considerable power over its dealers through its franchise agreements, establishment of quotas, control of delivery and availability, hold-backs, and service and warranty requirements(8).

Total dealer orders constitute the major production requirements of the manufacturer over the model year. Fleet and lease sales while important are small in relation to total sales. The manufacturer relies primarily upon

the stability of orders in the aggregate to maintain production schedules. Based upon anticipated sales, combinations of options (including color) are speculatively produced for inventory within each make, series, and model. OVERRUNS and inventory buildups are accommodated on a line-by-line basis. Temporary layoffs, line shutdowns or extra shifts are evidence of the inaccuracies of production scheduling based upon demand forecasting. Although far from perfect, forecasting techniques are necessary tools to approach optimal capacity utilization in the industry.

Certainly, in a product as complex as an automobile, other techniques such as parts-sharing (i.e., the production of parts common to several or all makes and/or series) are necessary to achieve added economies of scale. To the extent that a firm can interchange parts, it reduces the risk associated with errors in forecasting, design, and styling for individual series. Thus, manufacturers produce compatible chassis, body panels, engines, and accessories according to type (usually wheelbase determined) to allow inventory stability among operations.

In sum, orders are placed against an inventory and delivered from the factory or from central distribution points to the dealer, who presumably understands the demand in his given sales area. Typically, manufacturer-recommended product mixes are used or imposed as is common in retail franchise organizations--allowing optional restocking as inventory turns during the model year. The dealer has few resources available for sales forecasting. Dealer service organizations (such as the National Automobile Dealers Association) and dealer training programs offered by manufacturers' subsidiaries do provide tools for using available historical sales data.

As the point of contact for retail sales, the dealers, along with their sales and service staffs, are critically important in the shopping and purchasing process. Generally make-oriented, they aspire to build their repurchase rate and reduce their cost of sales by developing a clientele which returns to trade-in their used cars on new vehicles. These used vehicles are offered for sale on the same or adjacent lots, which include other domestic and foreign make trade-ins, are wholesaled through local or regional auction markets, or are scrapped.

The ability of the manufacturers to favorably "position" or characterize the attributes of their new entries to meet the perceived needs of new car buyers assumes great importance in the competition among model years, makes, and series. These elements of horizontal (or intra-industry) competition produce the most visible marketing efforts of the manufacturers.

1.4 INTRA-INDUSTRY COMPETITION

The basis for intra-industry competition among new car manufacturers has changed over the course of time as new technologies have been developed and assimilated. The salience of variables such as price, quality, dependability, economy, size and styling, and options as competitive tools tends to be lessened as the industry acquires a common technology. To the extent that firms within the industry share a common technology, they must rely upon product differentiation by refining and concentrating on aesthetic properties.

In recent years, the consuming public has become accustomed to a selection among a large variety of vehicles to satisfy their personal needs. This

variety, in and of itself, has come to represent an expression of life style, personal taste, and status. The values of the consumers and their willingness to pay for the opportunity for personal expression in vehicle choice, has encouraged the firms to expand the variety of series and models available in the marketplace. The consumers reward those manufacturers who respond with satisfying vehicle constellations in the right place at the right time by providing a profitable volume of sales.

However, the definition of a "satisfactory" vehicle constellation changes over time. The weight (or contribution) of each of the competitive variables in the product mix reflect the social values of the day (remember the "fins" of the fifties, the "muscle cars," subcompacts, hatchbacks, and sunroofs?). The failures (such as the Edsel) were little different than the successes in terms of the planning, implementation, and marketing efforts invested. They represented simply the wrong combination of attributes (including visual attributes) at a given time in the marketplace, and were rejected by consumers. While there may be many different reasons underlying individual product failures, perhaps the most pervasive has been a failure to adequately test consumer perceptions and reactions to the products' image.

The financial risk entailed by consumer rejection has discouraged the "blind" introduction of new vehicle concepts that was prevalent in the earlier years of the industry. Most manufacturers seek to introduce styling, size, options, price, and other changes gradually by "phasing in." When feasible, a new concept is introduced as an option to obtain consumer feedback prior to integrating the change in all series or models. Basic alterations may be introduced in a new series to isolate its impact, then incorporated in other

series and models directly or by series phase-outs and new introductions. Series phase-out has become a standard practice in the industry because the consuming public identifies the vehicle's constellation of attributes with its name. Reflect upon the mental images of "Maverick," "Mustang," and "Pinto." Each represents a vehicle with individual styling, size, and character. The essential renaming of the Torino as the LTD II is an attempt to transfer those values attributed to a successful full-size car to a less-successful intermediate vehicle--with some success. Additional examples can be readily cited; the Fury II represents the moving down of the Fury name; the Ford Thunderbird image has moved through several transformations and car designs, but most recently from a successful large personal luxury car to an intermediate-sized luxury car with very positive sales results for Ford.

The extent to which a manufacturer trades attributes by renaming or phasing out series and introducing new series, and the extent to which changes are made by introducing at the bottom versus the top of the line has very little effect on the range and number of products offered at any point in time. However, it may well affect the consumers' perceptions of any given series.

Although the manufacturers differ with respect to the autonomy allowed divisions (or makes) to elect their strategy for converting existing series and introducing new series within makes, in general, the autonomous divisions compete--both between and within companies--for market share and financial resources. Far from being dysfunctional, divisional competition increases the opportunity to maximize sales by positioning a variety of products with somewhat different attributes in specialized market segments. In much the

same manner that some household goods manufacturers profitably offer multiple products in a single market by managing brands as independent "profit centers," the automobile manufacturers manage makes as profit centers. Although there are intra- and inter-company sales of parts (and, in permitted circumstances, technology), the design and marketing functions are in most cases divisionally autonomous, and the different makes constitute for the consumer real alternatives in the marketplace. It is within this competitive environment that the companies face resource and regulatory constraints, organize for market planning, and implement those plans to generate sales. The existence for a manufacture of more than one car line or make is of vital importance in that it provides for averaging the financial results of successful and unsuccessful results of different models. White(9) argues that a manufacturer needs at least two makes in order to survive.

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2. PRACTICAL CONSTRAINTS ON AUTOMOTIVE MARKETING DECISION MAKING

2.1 GENERAL

Marketing decision making, in very general terms, encompasses the entire range of concerns involving the manufacturer's communication with and responses to the marketplace, including product definition, market segmentation, pricing, sales, advertising, distribution, and certain aspects of after sale activities. Each company's marketing decisions, however, are made within the context of a set of practical constraints, and the present chapter discusses a number of the factors which tend to constrain choice.

In a very real sense, everything that a company does is limited by its resources, its competitive position and its perceptions and attitudes about the risks associated with pursuing one course of action or another. While there is an effective total resource constraint, the manufacturer generally is confronted with a complex of trade-off decisions, in which the shifting of one parameter or boundary value generally tends to force either a compromise or permit a relaxation of some other parameter or limiting condition. In order to provide an overview of the way in which marketing (and other) decisions are constrained, it is appropriate to examine first what might be characterized as the "normal" conduct of business in the automotive industry and then consider the role of federal regulation as a series of additional constraints that must be accommodated.

Decision-making in the automotive industry, as in all other industries, must be made with consideration of all things that can precipitate change, and yet be made within a number of constraints. The number of constraints

have been growing and the nature of the constraints have been adding to the complexity of long and short term decisions as well as to the costs of doing business.

These elements that precipitate change are interactive with each other; some have greater weights than others, and some are even counter-directional. For example, legislation on car safety, pollution, and miles-per-gallon may actually be at loggerheads; to accomplish one, may be going against the others.

Meeting the challenges of changes requires careful consideration of the following:

- Technological progress made and pending.
- Political/legal changes made or pending.
- Economic changes that have taken place or that are anticipated.
- Demographic changes that have and will affect the market.
- Changes in social values that have taken place and underlying precipitates of future value changes.

All of this must be considered within the constraints of the:

- Time period to get the job done which may sometimes be unreasonable.
- Nature of product and normal gestation period.
- Money available to do the job--where does it come from? What is the cost? How amortized?
- Potential return on investment.

Industry must be able to see long and short-term implications to all cells of society, citizens-at-large, consumers, employees, suppliers, stockholders, etc., and must be able to weigh costs versus benefits in arriving at their decisions. The costs of all programs will, inevitably, be borne by someone, usually the ultimate consumer, and mistakes or over-reactions can be, and oft-times, are, costly. They are sometimes devastating to a particular company, to a whole industry, as well as to related industries or even the economy in total.

Marketing decisions, for the most part, in the automotive industry are made after much thought and deliberation. Most of the decision-makers are academically trained, with technical and business degrees, and well-experienced in their respective fields. Research inputs, both internal data and external data, are widely used as are modelling techniques and sophisticated analytical tools. Experimental designs are usually employed when the nature of the problem and time permits.

All decisions have an heirarchy of approval within divisions, for those companies having a divisional setup, and final review and approval by corporate staffs prior to top management's endorsements.

Based upon the nature of the decision, be it oriented in the direction of product, pricing, promotion or distribution, approvals must be obtained from all groups who may be concerned, either directly or indirectly. Such groups are those as:

Marketing

Sales

Product Development

Engineering

Production

Service

Legal

Finance

Etc.

The approval procedure may be time-consuming due to the complexities and the need for additional inputs. Nevertheless, all decisions must, and should be, and usually are, reviewed for all of their short-term and long-term implications.

Granted, not every company within the industry has the necessary resources to do the job as effectively as each of the others, and hence, may face decision-making from a slightly different perspective. The calibre of management talent, the number of executives, the nature and size of the organization structure, the size of research budgets (market, product, etc.) and the degree of research expertise, may force smaller companies to rely more on secondary data than on primary data, more on outside consultants than on internal expertise; more on intuition, "gut-feel" and "flying-by-the-seat-of-the-pants," and probably, due to their uneasiness, to be "followers" rather than "leaders," and much more conservative in their approaches to decision-making.

2.2 BUSINESS AS USUAL CONSTRAINTS

As suggested above, most constraints do not function as immutable or fixed points but more as obstacles that become increasingly more costly or

risky to try to move or ignore. It is useful to distinguish between internal and external factors (excluding governmental regulations) in view of the differences in management control and accountability.

Among internal constraints, the most important is the product planning and development cycle and the lead times that it entails for decision-making. The product development cycle represents the industry's accommodation to the complex of factors, many unique to automotive manufacturing, relating to the technology, engineering, procurement and manufacturing lead times. The JPL study(1) shows for one manufacturer the production engineering schedule involved in a major product change.

TABLE 1. PRODUCTION ENGINEERING SCHEDULE

Time to first automobile produced	Activity
42 months	Definition of program objectives
37 months	Advanced product design details finished
34 months	Manufacturing sourcing, plant layout, automation
32 months	Engine design manufacturing engineering (details of cost available accurately for first time)
30 months	Long-lead-time plant engineering funds made available
28 months	Final program and finance approval
27 months	Start facilities
25 months	Mechanical prototype available on production tooling
23 months	Vendor selection on long-lead facilities

TABLE 1. (Cont'd.)

Time to first automobile produced	Activity
18 months	Final product description and manufacturability feasibility
14-15 months	Production engineering cutoff freeze date
10-12 months	Purchases parts approved drawing
7-8 months	Signoff of production tooling
4-5 months	Emissions signoff, EPA certification
14 weeks	Full production
0 weeks	Job 1

An even longer cycle is relevant from the point of view of marketing input to forward product planning. The following, Table 2, represents the forward product planning timetable of the Ford Motor Company.

TABLE 2. APPROVAL TIMETABLE FOR FORD MOTOR CO. NEW PRODUCT PLANNING PROCEDURE

Time to Job 1	Event	Action
50 months	Dissemination of pre-program information to Staffs and Vehicle divisions	Review of advance information by Staffs and Vehicle divisions
46 months	1st discussion of MY program alternatives and strategies with product planning comm.	Information and discussion of general concepts and directions

TABLE 2. (Cont'd.)

Time to Job 1	Event	Action
43 months	2nd discussion of MY program, preferred program directions, preliminary hardpoints and alternative clay themes	Request concurrence in principle (but not specifics) in preferred program direction and present preliminary package and hardpoint info.
41 months	Hardpoint, styling themes and program approval meeting with product planning committee	Approval of Chairman of the Board of product planning committee recommendation

The series of meetings noted above involve participation of senior executives of Marketing, Finance, Engineering, Design and Product Planning Staffs, the Vehicle Divisions and line Product Development organizations. Many of these discussions will involve the review of clay models, seating bucks, prototypes and other physical representations of alternative vehicle concepts. Each of these meetings will, therefore, be preceded by staff studies and analyses of alternative concepts and strategies.

It will thus be seen that major marketing input to the product development and design processes occurs three to four years (and even longer) before production of job 1. As the process moves forward and key decisions are made, the amount of planning flexibility is reduced and it becomes increasingly more difficult or costly to make changes, short of such drastic measures as program termination or slippage to a mid-year or next-year model introduction. It should be noted, of course, that there are always several model year cycles in process in different stages of the planning cycle, such that at any

one time different types of decisions must be made with regard to three or four different model-year car lines. Decisions made about one car line may affect other car lines.

It is important to note, however, that product planning three or four more years in advance of production involves many uncertainties and is subject to substantial changes along the way. This problem was emphasized by Sidney Terry, Vice President of Public Responsibility and Consumer Affairs, Chrysler Corporation in sworn testimony at the Public Hearings on Automotive Fuel Economy Standards 1981-1984(2). Quoting from the transcript:

SECRETARY ADAMS: Thank you very much. I have a question that really deals with the interrelation between the three agencies [DOT, EPA, FEA] that are receiving testimony here today, and that is we are talking about really a seven-year period here, 1977 to 1985, which is almost the same period of time, if you take World War II of when we entered the war, went through a massive change in production, went back out of the war and started back into producing things for civilian goods again. So I am concerned when you say that there isn't enough time here.

I agree with your contention that the government must be involved with this as well as industry.

Do you have a timetable for how, for example, we would be phasing in gasoline prices and fuel economy to meet this problem you highlight, that you can produce it technologically and so on, but you are afraid you can't sell it? Do you have a feeling or a time frame for the interaction of these two?

MR. TERRY: Let me explain if I can, Mr. Secretary, that we never before tried to plan our products any further out ahead than about three years, which is about what it takes us to produce them. We are thinking about what might go beyond that, but to actually try to make any firm product we found was not fruitful because we found that what happens next month and six months from now and a year from now would change those plans and throw them all in the wastebasket.

So we basically have never tried to plan products any further ahead than the time it took us to produce them.

Even then we found that after we got them planned and already together, and even tooling made, that for marketing reasons we wanted to change these, and we made changes right up to the end, even though it was very costly, and in many cases added a lot to our manufacturing costs. We made them because we thought we had not judged correctly and we still didn't have the right thing for the market.

So when we talk about what is going to happen in '80, '81 and '85, we don't know what we are talking about; we don't know what the market is going to be like. All we know is that it is going to be different; we know there is going to be change.

And I think if there is anything we can try to bring to these hearings, it is a realization that this whole planning period that we are talking about is really beyond what we normally even attempt to predict, and that we just don't know the answers.

In addition to the specific model year planning cycle outlined above, there are, however, even longer planning, engineering and product development cycles represented by seven to ten year planning horizons. These longer time frames, typically, focus on a series of "want lists," e.g., in climate control & ventilation, brakes, speed-related controls & indicators, suspension & steering, noise-vibration-harshness reduction, operator controls & indicators, entertainment devices, plastics & materials substitutions. Such engineering and development work is not at this stage vested in any specific product plans or designs. Advanced engineering relating to possible major alternative propulsion system developments may be on ten year or longer time tables, with critical decisions waiting on the uncertain results of such advanced technology research and development work. The manufacturers thus attempt to build a pool of technical developments that can be drawn upon, but decisions to use or not use any of these in given car models are made on the basis of marketing, competitive, and financial assessments that are made in response to their own

time pressures. It is appropriate to note that both Ford and General Motors have corporate research laboratories that pursue a wide variety of pure and applied research and technology developments. The GM Research Laboratories, in 1976, with about 1450 people (500 professionals and more than 200 PhD's) and 1.1 million square feet of laboratory facilities at the GM Technical Center has research programs in the following areas:

- Chemistry and Chemical Engineering

- Environmental Sciences

- Atmospheric Sampling and Analysis
 - Atmospheric Modeling
 - Atmospheric Chemistry
 - Emissions Characterization

- Physical Chemistry

- Surface Chemistry
 - Heterogeneous Catalysis
 - Gas Phase Kinetics
 - Corrosion

- Electrochemistry

- Battery Technology
 - Fuel Cell Technology
 - Electrochemical Surface Processes
 - Materials Recovery and Recycling

- Fuels and Lubricants

- Basic Lubricant Studies
 - Synthetic Lubricants
 - Future Fuels
 - Combustion
 - Fuels and Emissions

- Analytical Chemistry

- Organic and Inorganic
 - Polymer Characterization
 - Micromethods
 - Radiochemical Techniques
 - Glass Technology

- Materials: Metals, Ceramics, Polymers

- Metals

- Heat Resistant Alloys

Friction Materials
Fractography
Heat Treatment
Reclamation
Joining
Melting and Solidification

Ceramics

Fabrication
High Temperature Durability
Glass
Refractories
Composites

Polymers

Synthesis
Polymer Alloys
Processing
Radiation Curing
Surface Coatings
Recycling and Disposal
Elastomers
Adhesives

◦ Electronics and Electrical Engineering

Circuit and System Design

Automotive Electronics
Powerplant Simulation
Communications and Electromagnetic Compatibility
Programmable Electronic Ignition

Electromagnetics

Electromagnetic Devices
Superconducting Magnets
High-Power-Density Machines

Advanced Transportation

Linear Motors
Electromagnetic Suspension

Materials and Devices

Semiconductors
Electronic Ceramics
Ferrites and Ferroelectrics
Sensor, Transducer, and Actuator Fabrication

Data Processing and Instrumentation

Instrument Design
Signal Conditioning
Data Acquisition
Computer Technology

- Power-conditioning
 - Choppers
 - Inverters
 - Cycloconverters
 - Control Electronics

- Biomedical Research and Societal Analysis

- Biomedical Research
 - Trauma Mechanisms
 - Human Impact Tolerances
 - Anthropomorphic Dummies
 - Health Effect Studies
 - Toxicity Studies
 - Medical Engineering
 - Biological Effects of Electromagnetic Fields

- Societal Analysis
 - Quantifying Social Costs
 - Benefit-Cost Analysis
 - Assessing Public Interests
 - Socioeconomic Modeling

- Mathematics and Computer Sciences

- Applied Mathematics
 - Statistics
 - Numerical Analysis
 - "Large Systems" Modeling
 - Information Modeling
 - Stochastic Variation Analysis
 - Optimization Techniques

- Computer Science
 - Extensible Languages
 - Operating Systems
 - Interactive Graphics
 - Computer Networks
 - Information Management
 - Computer Vision

- Engineering Research

- Powerplant Research
 - Intermittant Combustion
 - Continuous Combustion
 - Gas Turbines
 - Heat Transfer
 - Thermodynamic Analysis
 - Computer Simulation

Emissions Research
Advanced Fuels Systems
New Engine Configurations
Exhaust Treatment Devices
Analytic System Modeling

Vehicle Research
Structural Analysis
Collision Simulation
Injury Hazard Analysis
Control Optimization

Engineering Mechanics
Friction, Lubrication, and Wear
Surface Characterization
Solid and Fluid Mechanics

Fluid Dynamics
Vehicle Aerodynamics
Noise Research
Gas Flow
Engine Gas Dynamics

◦ Physics

Surface Physics
Electro-optics
Laser Spectroscopy
Laser Materials
Mathematical Physics
Metal Deformation
Metal Fatigue
Plasma-Surface Interactions
Superconductivity
Liquid Crystals
Atmospheric Physics
Contour Holography
Traffic Science
Optical Pattern Recognition
Magnetic Alloys

◦ Transportation and Urban Analysis and Traffic Science

Transportation and Urban Analysis
Travel Demand Estimation
Automobiles and Cities
Special Purpose Urban Vehicles
Urban Growth and Structure

Traffic Science
Traffic Flow
Driver Characteristics and Performance

Ford Motor Company's research labs while organized along similar lines is at a substantially lower (although respectable) level of effort. In 1974, however, Ford terminated all work in Transportation Research and Planning. The 1974 organization of Ford's Scientific Research Staff had the following laboratories and departments:

Scientific Research Staff

- Research Planning
- Technical Services and Administration Department
- Physical Sciences Laboratory
 - Physics Department
 - Physical Electronics Department
 - Metallurgy Department
- Chemical Sciences Laboratory
 - Fuel Sciences Department
 - Chemical Engineering Department
 - Polymer Science Department
- Manufacturing Research Laboratory
 - Process Research Department
 - Mechanical Research Department
 - Glass Research Department
- Systems Research Laboratory
 - Electronic Systems Department
 - Control Systems Department
 - Vehicle Control Department

The magnitude and extent of the manufacturers' internal programs and their time budgeting all depend upon, and are controlled by, the manufacturer's financial resources--whether generated internally through retained earnings or externally through equity and bond markets. Financial, economic and market forecasts and assessments play a crucial role in determining both the magnitude and allocation of budgets for research, forward product planning and development, engineering, manufacturing and

facilities construction, real estate acquisition and myriad other programs. More will be said concerning industry organization and procedure for the relevant decision making in Chapters 3 and 5.

We turn now to a brief consideration of external factors other than those related to government regulation. Since the marketing function is basically concerned with the analysis and interpretation of such external factors, Chapter 4 examines in much greater detail how marketing intelligence is obtained and analyzed. In view of the lead time required for marketing input to product planning, the aspect of the external environment that is of paramount concern is the assessment of the ways in which things are changing or are expected to change. External constraints then are not a set of existing conditions to be recognized but a set of ever changing interactive conditions to be anticipated and understood. Some components of change in the external arena are relatively slow in changing or are relatively predictable, as follows:

- Demographic characteristics of the population. Changes in the age and sex distribution of the population are highly predictable in the near to mid-term but are important as reflecting changes in demand for different classes of cars.
- Number, size and makeup of households, like the demographic characteristics are important correlates of demand.
- Composition of the housing stock. The type (e.g., single, and various classes of multiples), location and ownership of the housing stock are extremely important indicators of car ownership rates as well as of demand for public transportation.

- Social and societal values. While there is increasing recognition of the importance of understanding changing values, there is still considerable uncertainty about what to measure, how to measure it, and what to do with the data.

Other components of change, of equal or greater importance as constraints on demand, may be relatively less stable or subject to large cyclical variation:

- The economic climate as it affects disposable income, inflation, employment.
- The competitive environment.
- Collective bargaining and certain aspects of labor relations.
- The insurance industry's policy concerning differential risks and premiums.

Each of these factors are outside the direct sphere of control of the auto manufacturers; they nevertheless serve to qualify and limit choice concerning what and how much is marketable.

2.3 GOVERNMENT REGULATORY CONSTRAINTS

It is not appropriate within the present context to attempt a complete review of the ways in which federal, state, and local government actions impinge upon auto industry decision making. A few observations, however, are in order concerning the effects of federal motor vehicle regulations on marketing decision making.

Prior to enactment of the Energy Policy and Conservation Act, federal motor vehicle regulations, principally in safety and emissions areas, while having the effect of adding a number of constraints have had relatively little competitive impact. Certainly the potential for competitive impact was present, for example, if one company could meet the standards while others failed, or even if one company could meet the standards at significantly lower cost than others. The safety, emissions and damage-ability standards, notwithstanding their societal value, were significant in terms of their altering, in different ways, several components of manufacturer risk. With regard to marketing risk, the following effects are relevant:

- ° The across-the-board mandating of such standards removed one element of marketing risk that each manufacturer would face if it were to consider a unilateral action to introduce product changes of uncertain and possibly negative consumer acceptance.
- ° The imposition of additional product costs and altered characteristics, that may be perceived as either positive or negative, can affect total industry volume and hence profitability. It may also tend to shift market mix, but this effect is probably small--we are not here considering the effect of fuel economy standards in which this impact, by intention, may be large.
- ° The extent to which one manufacturer, for any of a number of reasons relating to its product, engineering, financial resources, good luck or whatever, is able to meet the

standards at lower cost or with other positive product attributes, its market share and competitive position will be enhanced.

Concerning issues of technological and other risks, the following effects are observable:

- The imposition of standards applicable to all products and producers on a forcing time table alters and significantly increases the technological risk. The normal innovative process in which the manufacturer seeks to limit both technological and market risk in new product offerings by selectively introducing such changes either as options or in limited segments of the market (generally, the least price sensitive) is subverted.
- Investment in tooling and manufacturing facilities, which normally can be held at relatively low levels, or shifted to suppliers, and then gradually expanded as market acceptance of the innovation warrants larger scale production, is also overturned and the financial risk increased when changes are mandated over all products.
- When changes are not mandated by federal regulation, the pace of technological innovation and engineering development is set by competitive conditions. The competitive environment of the automobile industry tends to encourage very conservative approaches to engineering and new product innovations. The principal reason is that the potential

loss in sales and profits from a poor product innovation is perceived to be much greater than the potential gain from being first with a successful innovation. Sales lost to competition resulting from an unsatisfactory product experience are regainable only with difficulty and often depend upon the other manufacturer having product difficulties of his own.

While the legislation of average fuel economy standards might be viewed as simply the imposition of another constraint, the way in which this constraint has been imposed has extremely far reaching significance-- particularly from marketing and competitive points of view. The principal marketing and competitive issues stem from the circumstance that the criterion of compliance is applied after the fact of the vehicles being produced, entered into commerce, and the consumer having rendered his verdict. A number of special implications deriving from the form of the fuel economy regulations will be discussed more fully in Chapters 3 and 6. Briefly, among the issues to be discussed in relation to organization and marketing functions are the following:

- ° Centralized management controls and the establishment of divisional requirements for assuring corporate compliance, which will have the effect of reducing the marketing autonomy and competitive relations of separate car divisions.
- ° The importance of the forecasting of consumer and market responses and particularly the questions of shifts in product mix associated with product changes introduced to improve fuel economy.

- Pricing and marketing strategies for current model year cars. Of particular relevance and cogency is the question of whether or the extent to which some manufacturers will feel compelled to internally cross-subsidize across car lines in order to achieve a compliant mix as well as to maximize sales and revenues. The complementary, and equally cogent, question is that of the probable competitive affects or dislocations that would occur if certain manufacturers did in fact engage in price subsidization.
- The effect of other government policy actions. Closely related to the above issue are questions of other government actions, and particularly the form and extent to which the Congress acts on the Carter administration's energy policy program proposals for a schedule of new car excise taxes and rebates in relation to fuel economy (in effect, a pre-emption of manufacturer subsidies) and a schedule of gasoline taxes. Clearly the intent of the proposed legislation is to force the market in the same direction as the Energy Policy and Conservation Act of 1975 was intended to force the automobile manufacturers.

References for Chapter 2

1. Jet Propulsion Laboratory, Should We Have a New Engine? An Automobile Power Systems Evaluation, Volume II, Technical Reports, California Institute of Technology, August 1975. Table 15-2 reproduced here as Table 1.
2. United States Department of Transportation National Highway Traffic Safety Administration, Public Hearings on Automobile Fuel Economy Standards 1981-1984, Transcript of Proceedings, Tuesday, 22 March 1977, pp. 107-8.

3. CORPORATE ORGANIZATION FOR DECISION MAKING

3.1 GENERAL

The multiplicity and complexity of issues and decisions to be confronted by management in the automobile industry has led to an organization of planning and decision-making functions in a hierarchical structure that divides staff and line responsibilities and vests a number of corporate-level committees with responsibility for policy and major decisions and delegates to line organization general managers responsibility for implementation of established policy and decisions. The present organizational philosophy and structure has evolved over many years with most of the credit for leadership due General Motors(1). While numerous changes in detail occur almost continually in response to changing conditions and needs, the general pattern and principles established by GM during the 1920's still characterize the basic management philosophy of the industry. The salient general features of automobile industry organization and management practice include the following:

- The centralization of policy, financial controls and major product decisions.
- Delegation of authority and responsibility to line organization general managers for implementation of adopted policy and product decisions within prescribed financial controls and budgetary authorizations.
- Major reliance on high-level standing committees, reporting either to the Board of Directors or chief executive officer,

for policy analyses and recommendations relating to all major areas of concern to the corporation.

- Reliance on ad hoc Task Forces, generally chaired by an executive vice president or staff vice president, to deliberate and recommend policy or company positions on special topics that arise, e.g., pending or anticipated legislation or federal regulation or other special problem areas.
- Organization of corporate or central staffs along conventional functional lines with broad responsibility to coordinate, pursue advanced planning and research, and generally support the cognate activities within the line organizations.
- There have been wide swings in the size and power of central staffs with shifts of emphasis and of personnel between line and staff groups, but the general reliance on staff planning and coordination remains intact.
- Major components within the line organizations, e.g., those having a general manager or equivalent head, are treated as separate profit centers accountable for their own P/L performance and their contribution toward corporate goals and objectives.
- The car divisions function and are organized as competitive marketing and merchandising companies that must rely in major degree upon other line and staff organizations for product planning, design, engineering, manufacturing, procurement, etc., in short, for the products which they sell.

3.2 DIVISION OF MARKETING AND PRODUCT PLANNING RESPONSIBILITIES

The complexity and diversity of inputs required for marketing and related product decisions are such that numerous organizational components are routinely involved in the decision-making process. As can be seen from the planning cycles discussed in Chapter 2, the various organizational involvements must be coordinated over the appropriate time periods. Generally, for each category of decision making the component that has primary responsibility initiates and carries through the entire process with supporting data, analyses and review and concurrence functions provided by others at appropriate times along the way. Table 3 presents a generalized characterization of the division of responsibilities among various staff and line functions. The characterization is intended to be generally representative of the industry and not specific to any one company. It also is characteristic of industry practice prior to enactment of the Energy Policy and Conservation Act of 1975. The organizational implications of EPCA's setting of average fuel economy standards is discussed separately. Where the Figure entry is "S/RC" it is generally the case that the organizational component provides supporting data and analyses at early stages of the process and also has a review and concurrence responsibility at later stages. Depending on the magnitude or importance of the decisions at issue there may be several iterations of the process and greater or less involvement of various staffs and line organizations.

TABLE 3. GENERAL DIVISION OF RESPONSIBILITIES AMONG MARKETING AND OTHER FUNCTIONS.

Item	Marketing Staff	Finance Staff	Product Planning Staff	Design Staff	Engineering Staff	Manufactur'g & Car Engineering	Supply & Logistics	Legal Staff	Car Divisions	Car Line Management	Top Managm't
<u>Product Planning</u>											
F'wd product plan'g	S/RC	S/RC	P		S/RC				S/RC	S/RC	FD
Styling themes	S/RC			P					S/RC	S/RC	FD
Car designs	S/RC		S/RC	P	S	S/RC			S/RC	S/RC	FD
Deletions/additions to car lines	S/RC	S/RC	P		RC	RC			S/RC	S/RC	FD
<u>Manufacturing</u>											
F'wd plan'g & capacity volumes	S/RC	P			S	S/RC	S		S/RC	S/RC	FD
Manufacturing		S/RC				P	S		S		FD
Sourcing						S	P	RC			RC
Production sched'g	S/RC	S				P	S		S/RC		FD
<u>Marketing & Sales</u>											
Product naming	S/RC		S/RC	S				RC	P	S/RC	FD
Market research	P		S	S					S		RC
Pricing	S/RC	S/RC	S			S	S	RC	P	S/RC	FD
Sales promotion & merchandiz'g aids	S/RC	RC						RC	P	S/RC	RC
Advertising	S/RC	RC			S			RC	P	S/RC	RC
<u>Distribution</u>											
No. & loc. deal'rs	S/RC	RC						RC	P		FD
Dealer affairs	S/RC	RC						RC	P		RC
Warranty & service	S/RC	S/RC			S	S/RC	S	RC	P	S	RC

Legend

- P - Primary responsibility
- S - Provides supporting data & analyses
- RC - Review & concur
- FD - Final decision

3.3 ORGANIZATIONAL IMPLICATIONS OF THE ENERGY POLICY AND CONSERVATION ACT OF 1975

The Motor Vehicle Information and Cost Savings Act, as amended by the Energy Policy and Conservation Act of 1975 (P.L. 94-163), establishes requirements for average fuel economy standards(2) applicable to each automobile manufacturer on the basis of its total passenger cars for a given model year manufactured in the U.S. After 1979, domestic auto manufacturers will not be able to include any contribution made by their "captive" imports toward meeting the standards. The requirement for corporate compliance on the basis of total performance will tend to shift some of the organizational responsibilities outlined in Figure 1 and impose new demands as follows:

- ° Increase the extent of centralized control over marketing, pricing, product planning, production scheduling and possible need for allocation of Divisional quotas to achieve compliance.
- ° Marketing staff, or Vice President Marketing, will have primary responsibility for pricing, production scheduling, special promotions (concerned with achieving a compliant mix).
- ° Finance and/or marketing staffs will be required to establish continuous performance monitoring systems on fuel economy averages throughout the model year.
- ° There will be increased emphasis and importance attached to forecasting the effects of product changes, price changes,

competitive actions, and consumer reactions as these all bear upon meeting average fuel economy requirements. Particular attention must be given to accounting for seasonal variations and other short term fluctuations on product mix and the assessment of whether "corrective" measures are required.

Additional issues relating to the EPCA fuel economy standards and particularly the implications and issues relating to the Administration's legislative proposals for new car excise taxes and rebates and gasoline taxes are discussed in Chapter 6.

3.4 ORGANIZATION CHARTS

The organizations of General Motors and Ford are presented as Appendices A and B. The GM organization is shown to the Vice President and General Manager level; for Ford there is shown, in addition, the organization in 1974 to the department level for selected components. While there are numerous changes, shiftings around and redesignations that occur almost daily, the principal features of corporate organizations will be evident.

References for Chapter 3

1. See Alfred P. Sloan, My Years with General Motors, Doubleday, 1964, for an account of the genesis and development of GM organization and operating principles.
2. The "average" standards as defined by Sec 503(a) (15 USC 2003) are calculated as a harmonic mean rather than as a simple arithmetic mean. This has the effect of providing higher weights to the lower fuel economy vehicles.

4. UNDERSTANDING THE CONSUMER

4.1 GENERAL

The automobile manufacturers direct their considerable resources toward the development, manufacture, and sale of new products to meet personal transportation needs. They are subject to the effects of variations in the general economy, shifts in total demand for personal transportation, and the changing tastes of consumers, as well as their own capacity to manage and control the efficient use of corporate resources. Dependent as they are upon the final sale of their products to end users, the manufacturers support extensive efforts to understand and monitor various factors influencing individual consumer behavior and consumer behavior in the aggregate.

Aggregate consumer behavior is often expressed in terms of total demand for passenger vehicles and the market share held by a particular class of product offering. As changing economic conditions affect total demand, the manufacturers frequently observe shifts in market share for particular products resulting from the movement of large, relatively homogeneous groups of potential new car buyers into, or out of, the marketplace. Total demand, generally agreed to be influenced in a major degree by the larger economic forces of changes in disposable personal income, the inflation rate, the interest rate, prospects for stable employment, etc., both responds to and itself impacts the general economic climate of the nation.

Although, in a very real way, the market share obtained by particular entries in the passenger vehicle market is influenced by

the total demand for passenger vehicles in absolute terms, its use as a monitor of change in the marketplace is largely relative. That is, the performance of any entry in the marketplace is considered relative to that of its nearest competitors. Evaluation in relative terms recognizes explicitly that large, homogeneous subgroups, or market segments, differentially value product attributes and that individual members of these market segments consider limited sets of alternative vehicles when they enter the marketplace to consummate a purchase.

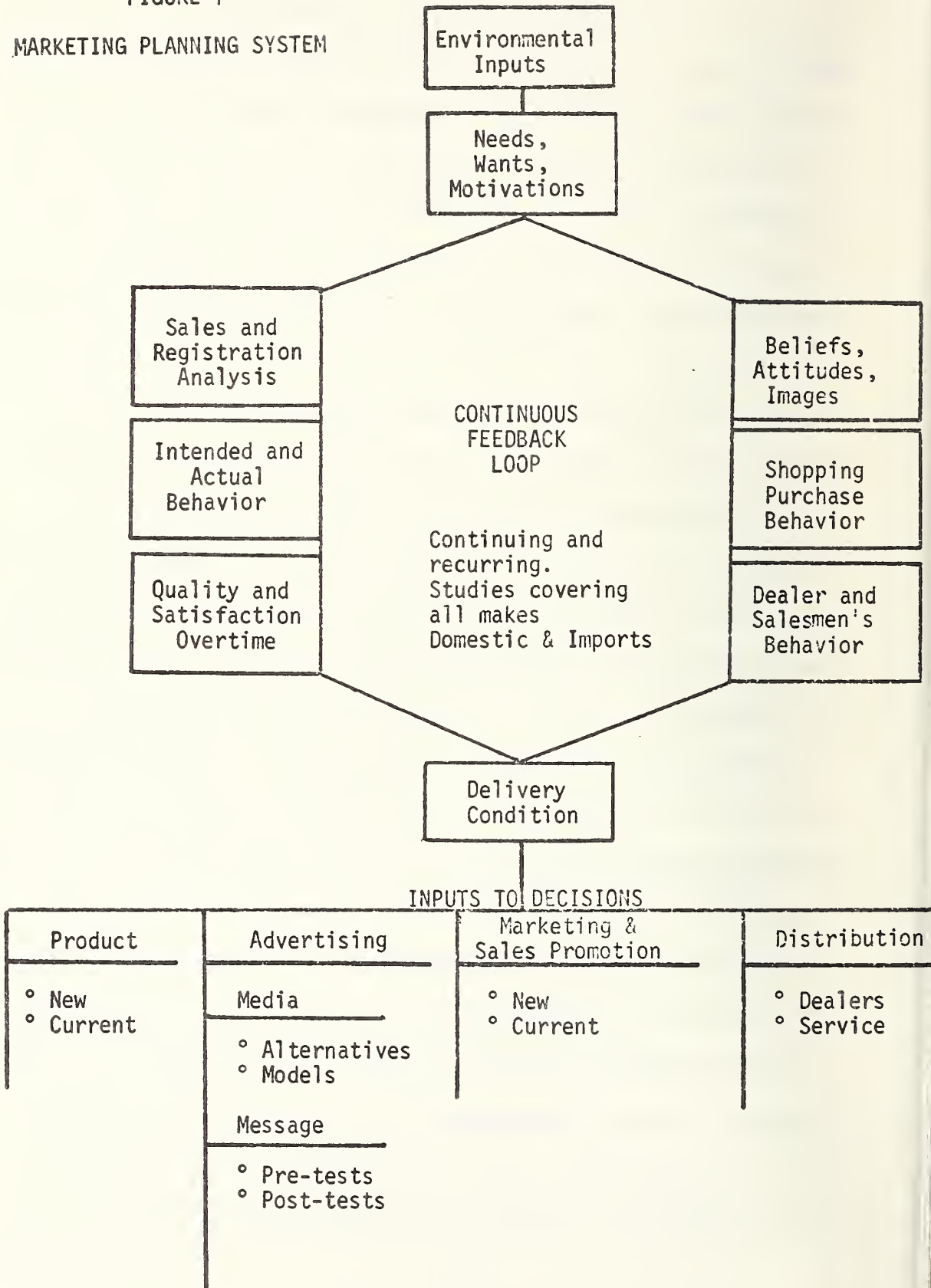
A virtual plethora of buyer behavior models has been developed to explain individual differences in purchasing patterns (c.f., Howard and Sheth (1); Katona and Mueller (2)), but few have achieved sufficient precision or predictive power to allow general application in business decision making. However, such models have encouraged the manufacturers to examine such tangible evidence as can be retrieved from secondary data sources, internal records, and independent study of the marketplace for guidance in formulating both short- and long-term market plans and strategy.

Since, in broad terms, the general concepts of consumer behavior provide the foundation for the collection of market information used as input into the decision-making process, it is important to identify those elements sufficiently well-established in the literature and practice of marketing to be integrated into the activities of automobile manufacturers. Figure 1 describes a systematic approach used by the two largest manufacturers in planning for product, advertising, sales promotion, and distribution, all elements of the "Marketing Mix."

The conceptualization in Figure 1 acknowledges that the environment impinges upon the individual and affects, to a greater or lesser degree, the form of the individual consumer's needs, wants, and motivations. The environment of the individual, including such conditions as culture, social class, organizational setting (role and peer status), financial status, and the time pressure for decision all affect the motives for purchasing personal transportation and, consequently, the criteria used to select an appropriate vehicle and the selection of suitable alternatives from which to choose. Jointly, these factors affect the individual's attitudes toward cars in general (new vs. used vehicles, large vs. small vehicles, luxury vs. economy vehicles, etc.), as well as his attitude toward specific elements of the product offering, such as styling, power, options, etc., and other choices the individual must make to determine a relevant set of alternatives in the marketplace.

Overt search behavior (shopping behavior) is usually undertaken only after the individual has reduced the set of alternatives to a manageable number, or that number of alternatives which the individual is willing to devote time and effort to personally examine. Preliminary search behavior to reduce the consideration set may take the form of increased attention to advertising, perusing the classified section of the local newspaper, etc., while overt search behavior (such as visiting dealers or test driving) is frequently undertaken only in the very late stages of the purchase decision process because it is costly in terms of time and effort.

FIGURE 1
MARKETING PLANNING SYSTEM



Because active shoppers seem to be generally predisposed to buy, the interface between the dealer, the salesman, and the customer often represents the only opportunity to reinforce positive attitudes about the vehicle, its quality, and its suitability to meet the buyer's needs. The advertising and promotional support received by the consumer during the relatively brief period in which he actively shops (often only a matter of days) must appeal sufficiently to the prospective buyer to stimulate the consideration of a purchase.

Although the manufacturer's objective may be met at the time the sale is made, the consumer's direct contact, or past contacts, with the firm's product tends to influence his attitudes about the manufacturer, the dealer, the salesman, and the car, itself. The delivery condition of the vehicle, the availability of satisfactory service, and the car's performance over time may reinforce positive attitudes toward all involved or, alternatively, may reduce the likelihood that the individual consumer will repurchase the same make from the same dealer at a future point in time. It is this positive association, known as brand and/or dealer loyalty, that gives rise to increasing concerns about post-purchase satisfaction.

Within this framework, then, the manufacturers accumulate internal and external data and conduct buyer studies. These data, whether developed for use in explaining or forecasting shifts in total demand, market share, or individual buyer behavior are highly integrated in the market planning process and the formulation of marketing strategy.

4.2 INTERNAL SOURCES OF DATA

The internal sources are many, varied and usually highly detailed, and in this age of computers, are often quickly retrievable in whatever form desired

through the use of computer generated displays. The internal sources include:

- Sales data
- Warranty data
- Service data
- Complaint letters
- Financial data
- Technological data
- Marketing and advertising cost data
- Distribution data
- Engineering reports
- Production data

Sales data can be obtained on a daily basis within each of the companies, although it is normally reported only on a ten day basis through the year. It can be compiled nationally, regionally, by state, by county, by city, by zip code and by dealer. It can be broken down by company, division, car line, body type, engine size, transmission, options, accessories, etc. and any combinations thereof. This data, however, is not regularly available for competitive corporations in much detail, except for that which is reported in the press.

Warranty data is available that provides inputs to the number, nature and costs of the warranty claims as well as their final disposition and degree of satisfactory resolution. This data too, can be analyzed and cross-analyzed by geography, dealer type, dealer size, specific dealer, car make and car characteristics.

Service data similar to warranty data, can provide information on nature, frequency and cost of service when taken to a dealer establishment as well as degree of satisfaction.

Complaint letters will generally indicate the nature of problem cars, dealers, services, costs, etc. so that management can weigh alternative actions, costs, policy adjustment and potential effects on sales.

Financial data is available by company, divisions, car lines, programs, individual departments so that costs, revenues, profits and alternative uses of money can be quickly and easily computed and can be used as inputs to the decision process. Comptrollers are on the management team of each division and the corporate staffs and play an important role in all decisions.

Technological data is internally available from internal library sources, engineering reports and scientific laboratories. The scientific laboratories of General Motors and Ford Motor Company are considered by many to be among the best industrial labs in the world. Employed within them are scientists of international repute, and they have available some of the most sophisticated equipment. Much of their research is directed toward anticipation of longer term future needs and problems.

Marketing, Advertising Cost Data is available by total corporation, divisions, car lines, geographical segments, media, seasonal distribution, etc. or any combination thereof. Similar data for competitors is monitored through the trade press as well as directly and used to make competitive major media analyses of corporate advertising expenditures.

Distribution data is available by total dealer, size of dealers, location of dealers (geographically), by city type and size, age of dealership, by sales growth patterns, by size of service establishment, by multi-point vs. single-point dealers, duals vs. single make dealers, etc.

Engineering Reports provide information on future cars, as well as current cars, including the tear-down analyses of competitive vehicles, which provide information on costs, materials, potential strengths and weaknesses, new ideas of value, etc.

The test tracks maintained by the various manufacturers allow for the testing of their own cars and competitive cars under controlled conditions

and at various mileage bands. This provides information on ride, handling, operating costs, maintenance costs, durability, "things gone wrong," parts and materials break-downs, etc. This kind of data inputs to a variety of decisions.

Production data provides information on a plant by plant basis, by total company, by division, by car lines, by body style, options and accessories and is used when contrasted with sales to determine "days supply" and availability.

Much, if not all, of the internal data is available on computer tape and hence, can be retrieved in any amount of detail and cross-tabulated and analyzed.

All vehicles, when produced, are entered into a computer program known at Ford Motor Co. as the NAVIS file (North American Vehicle Identification System). When the vehicle is sold, the name and address of the buyer is added. This enables the company to trace any vehicle for such uses as vehicle recall, service, special follow up studies, etc.

4.3 EXTERNAL SOURCES OF DATA

A substantial proportion of the data used in marketing decision-making is obtained externally. Some of it is specifically generated for the requesting activity, some of it generally available, and others are available on a subscription or participation basis. In many instances, data on a given subject, may come from more than one source, particularly when the data may be subject to numerous interpretations and a consensus is needed.

Some of the forms of externally sourced data include:

- Economic data
- Competitive production data
- Competitive sales data
- Registration data
- Competitive product data
- Competitive marketing data
- Demographic data
- Social value data
- Political/legal data
- Technological data
- Survey research data

Economic data is collected for the purpose of economic analysis and forecasting. These forecasts are the basis for understanding what may be happening in the economy in terms of consumer expenditures behavior, and hence for determining corporate needs in terms of financing, manufacturing, raw materials, marketing strategies, etc.

The raw data collected for analysis for the most part, come from government sources and academic institutions. Various interpretations of consumer economic behavior are often derived from various models and surveys prepared by such companies and institutions as:

Chase Econometrics

Data Resources, Inc.

McKay-Shield & Co.

Lionel D. Edie & Co.

Wharton Econometric Forecasting Associates

University of Michigan Survey Research Center

Sindlinger Associates

American Management Association

The Conference Board

These reports, in the cases of General Motors and Ford Motor Company, are fed to the economics group within the company, who analyze them, employ the data in their own economic models and arrive at independent forecasts. The economic departments, in both of these companies, are manned by some of the best economic talent in the United States. Economic forecasting is a vital ingredient in the planning of marketing strategy.

Competitive Production data normally comes to the company by way of public relation releases, which are published in the "Wall Street Journal," "Automotive News," "Wards Automotive Reports" and other trade and "car buff" magazines.

Competitive Sales data is necessary to determine measures of success by corporation, division, car line, etc. This data is normally released in ten-day reports to the press which then are re-computed to determine penetration numbers. These, in turn, measure degrees of success or failure in maintaining relative sales position. It is recognized that sales figures generated by a corporation for the public's view may be subject to some inflation, such that other checks are needed.

Registration data is available from R. L. Polk. This data gives a count on all new and used cars registered in the United States for licensing. Unfortunately, not all states permit registration data to be disseminated; however, the coverage is more than adequate for analysis.

This data provides information by state, city, county, zip code for all cars and trucks registered, new and used, and contains data on make, body style, engine, transmission. As a result, one can determine the aging of the car and truck fleet, relative penetration as well as switching and loyalty positions by owners.

Also available from R. L. Polk, are lists of owners, within geographic areas, of specific makes of cars, with certain characteristics and within certain model years. These car lists may provide a universe to be sampled in the conduct of specific surveys of owners, principal drivers and other drivers within households, as well as owner groups to be contacted for additional sales efforts.

In the case of specific promotional and advertising test programs, sales searches by way of computer name matching can give measures of sales effectiveness.

Competitive Product data are available externally as well as internally. Numerous sources of such data are provided by the various motor car magazines, "Automotive News," "Ward's Automotive Reports," "Consumer Reports," etc., all of whom make analyses of competitive products for dissemination to the public-at-large. Many of these studies are of a superficial nature; however, some are conducted under tightly controlled conditions by respected technically-oriented companies. Peterson, Howell & Heather, advisors to fleet buyers, provides fleet mileage band reports for each make of car to each of the manufacturers.

Competitive Marketing data reaches the corporation by way of the advertising agencies, public utterances and speeches by key executives, magazines and newspaper articles published in the general press, as well as the specific magazines devoted to marketing, such as "Sales Management Magazine," "Advertising Age," "Automotive News," "Ward's Automotive Reports," "Journal of Marketing," "Journal of Marketing Research," "Journal of Advertising Research." Additionally, many marketing articles appear in "Fortune Magazine," "Forbes," "Time," "Newsweek," "Business Week" and "U.S. News and World Reports."

From time to time, additional data may be secured through the process of hiring "key" individuals from other organizations.

In an effort to benefit from the plethora of published information, libraries are maintained within the major corporations to collect, review and disseminate pertinent information.

Demographic data deal with the composition of the United States population in terms of size, age, sex, education, income, geographical dispersion, nature of community, housing type and ownership, family size, etc. This data, for the most part, comes from the Bureau of Census, and is used as one of the inputs in efforts to determine the potential size of the automotive market and the nature of the cars, accessories, options that will be purchased.

Social Value data are collected because it is increasingly recognized that people change more than just demographically. Due to numerous influences upon the individual, from school, church, government, family, peers, the press and the like, people's values change, and these changes in values could and usually do affect their needs, wants, motives and behavior in the marketplace.

One of the primary sources of such data, is a recurring study by Dr. Daniel Yankelovich of Yankelovich, Skelly and White. This study is titled "A Monitor of Social Trends." By conducting it on a regularly recurring basis, one can determine trends that are taking place. The analysis of such trends can aid in forecasting the future direction of these influences on the market. There are other such studies, but this is the most widely used.

Political/Legal data are obtained from numerous sources, both internal and external. The corporate legal staffs are constantly appraising what is going on, and each of the companies maintains a Washington office whose functions are to apprise the company of the status of certain legislation and to lobby or present corporate viewpoints.

Subscriptions are sometimes taken to studies conducted among political leaders to determine attitudes, perceptions and positions on proposed and existing legislation, so that management can input this into their decisions.

Technological data is available externally to the corporation as well as internally. Private technical research organizations like U.S. Testing Laboratories, Southwest Testing, etc., are used from time to time to conduct research on competitive vehicles. These tests are usually unbiased and may be used for promotional purposes.

Survey Research is conducted either internally by the corporation's own research staffs or externally by outside research consultants. Both General Motors and Ford Motor Company have large, highly trained research staffs and multi-million dollar budgets for research projects. Chrysler Corporation is severely limited in terms of personnel and budget and American Motors even more so.

The studies conducted may be ad hoc and related to one-time problems, or the studies may be of a recurring type and conducted on a regular or a somewhat regular schedule such that comparisons over time may be made. These surveys may be conducted among buyers, owners, principal drivers, prospects, other drivers and may encompass products, past, present and future and may deal with needs, wants, motives, perceptions, images,

attitudes, shopping behavior, reasons for buying, product usage, things gone wrong, how, when and where serviced, satisfaction and dissatisfaction, intended and actual behavior, loyalty and switching patterns within and among car lines, divisions and corporations. The studies may also be conducted among owners of different time periods, such as one-year owners, two-year owners, three years, etc. These studies also cover all important competitive vehicles.

In terms of new product designs, ideas, concepts and prototypes are measured for their communications and "cues," as well as their acceptance and opportunities for incremental sales.

Name research is also conducted so that the name will further reinforce the imagery that the product was designed to communicate. What is measured is the name's communications as well as its suitability. A successful name should communicate well, be easy to pronounce, be euphonious, not have any negative connotation, be easy to remember and fit in well with other product names.

Surveys are also conducted in the advertising and sales promotion area and encompass media weights, media effectiveness, message communication. They are conducted during various stages of development from concept testing to pre-testing and finally to post-testing. Measurements of attention getting powers, communication, interest, effects on beliefs and attitudes, recall, intended purchase, actual purchase are all collected and acted upon.

Surveys of Sales Efforts in the form of price shopping studies are also undertaken. These studies measure the presence or absence of certain

sales efforts, such as the salesman's approach and greeting, sales points made, ability to meet objections, prices quoted and manner of follow-up, if any. Although these studies are conducted on a national basis and at varying frequencies, there are times when individual dealers may conduct their own so as to compare with national or regional norms.

Many ad hoc studies are conducted during the course of a year that deal with specific issues and problems. These studies are conducted to provide a better understanding of the situation so that more meaningful alternatives can be developed for further consideration and perhaps even further research. Some examples of such studies would be:

- Purchase Motivations Among Negro Households
- Purchase Motivations Among Women Drivers of Small Foreign Cars
- Ford Attitude Survey of New York Ethnic Groups
- Chrysler Texas Penetration Study
- Dealer Attitudes Toward Various Dealer Incentive Methods
- Dealer Attitude Study
- Consumers' Attitudes Toward The Rebate Plan and Other Potential Consumer Incentives
- Employee Attitudes Toward Car Pooling and Van Pooling

During the course of a year, it is not unusual for Ford and General Motors to conduct and report on about 250 studies encompassing a wide range of subjects. Chrysler and AMC are forced to a much lower level of effort.

Additional studies conducted on an ad hoc or "as needed" basis

during the decision making process provide:

- Additional specific inputs.
- Early evaluation of ideas and concepts.
- Later evaluation of more refined concepts and prototypes.
- Measurements of market success or failure on a limited market or full-scale marketing effort.

4.4 SPECIAL PLANNING STUDIES

This type of study is done every few years to project the impact of the 1980 (or some future) environment on transportation and on the car business. The objectives are to identify new product and business opportunities, anticipate future problems, and recommend appropriate company actions and responses.

An illustrative project was that conducted in 1970 by Ford Motor Company, called Project '80. It was a joint effort of the Advanced Projects Department of Car Product Planning, the Economics Department, the Market Research Activity, the Operations Research Department, the Washington Public Affairs Staff, the Corporate Planning Office and the Ford and Lincoln-Mercury Divisions.

Assistance was also rendered by many Federal and State agencies, the U.A.W., the Ford Foundation, the Hudson Institute and the Stanford Research Institute. Similar studies have been conducted by G.M. and to a lesser degree by Chrysler.

The steps in the conduct of the study were as follows:

- 1) Assembly of trend data and projections of demographic, social, economic, and transportation factors, including

the company's "consensus forecast" of the 1980 New Car Market.

- 2) Development of a computer model using the demographic characteristics and behavior of households to project the 1980 new car market by segment. The Ford study was disaggregated by age and income of head of household.
- 3) Development of a "benchmark" or "business as usual" projection of the 1980 new car market by comparing the consensus projection with the demographic projections.
- 4) Examination of five areas of change--that could affect transportation, automobiles and the car market in 1980.
 - Opinions and attitudes of experts, government officials and the public.
 - Governmental actions and policies.
 - Technological change.
 - Land use, growth, and development.
 - Transportation demand and travel behavior.
- 5) Projection and analysis of the impact of the market modifiers on transportation, cars and the car market in 1980.

This approach to long range automotive forecasting combined a diverse range of talents, inputs and techniques and resulted in a study that provided additional insights in terms of its forecasts and recommendations.

4.5 BUYER STUDIES

Large scale studies are conducted among car buyers of each make, within each of the project classes: imports, sub-compacts, compacts, intermediates, standards, medium-priced, luxury, and sports cars. These studies evaluate approximately 50 makes and models and have sufficient sample sizes to be analyzed by body styles.

The Motivations by Car Class Study is conducted on an irregular schedule, perhaps every three years, since motivations change in an evolutionary rather than revolutionary way. The purpose of this study is to provide input to styling so that visual cues can be incorporated in the planning of the car; to dealers so that salesmen can better understand and appeal to their prospects; to advertising so that messages, appeals, pictorial elements, etc. can be properly planned.

These studies utilize both the qualitative ("focus group interviews") and the quantitative techniques of clinical psychologists, as well as some of the specialized attitude measurement tools that have been developed (such as depth interviews, projective techniques, thematic apperception tests, cartoons, caption and balloon techniques, etc.).

Because of the specific nature of the studies and the relatively high costs of specially trained researchers, strict probability samples are not used; however, the respondents to these studies often come from broadly dispersed geographic regions.

Early Buyer Studies conducted by mail among one-month owners provide information from early registration data on shopping behavior, purchase, price and terms, reasons for buying, delivery conditions, things gone

wrong, early satisfaction and dissatisfaction. Recognizing that early buyers are not typical of buyers throughout the model year and that start-up quality is also not typical of the model year, this study has value only in its trend data and its ability to recognize early problems so that running changes can be made.

National New Car Buyers Study is a nationally syndicated study conducted by mail with a sample of about 38,000 and a response rate of about 57% or 21,000. This study has been conducted since 1960 as a syndicated study by Rogers National Research and was initiated by the Ford Motor Company in the early 1950's.

This study is conducted among January buyers who have owned their cars for a period of at least three months. It provides the companies with their only source of national data for all makes and all series. Since it is conducted annually, it also allows long-term trend analysis.

The data collected provides information on:

- Owner loyalty, switching and buying rates
- Source of sales
- Multiple car ownership
- Degree of satisfaction
- Feature ratings of new car for 10 different features
- Factors influencing make purchased
- Disposition of previous car
- Psychographics
- Usage pattern of car
- Influence of advertising, opinions, and recommendations of family and friends on purchase decision.

- Favorite television programs by type
- Demographics of new car buyer
- Other:
 - New Make Purchased
 - Body style
 - Number of cylinders
 - Transmission type
 - Expected mileage
 - Previous Make
 - Model year
 - Purchased new or used
 - Number of cylinders
 - Transmission type
 - Total mileage

Quality Audit Study, a syndicated study by Rogers National Research, is conducted by mail among car owners of all makes and series covering an ownership period of from one to three years. Its objective is to determine the owner's perceptions of quality over time with respect to competitive vehicles.

The owners rate the car on a large number of items indicating any area or areas that have given problems. The data indicates the nature and number of things gone wrong, where the car was taken for service, the final disposition of the problem, satisfaction with the car and the re-purchase intentions of the owner. The results of this study are weighed heavily in future product planning, manufacturing, and engineering decisions.

The study was originated in the early 1960's at the Ford Motor Company and was later syndicated by Rogers National Research.

4.6 STUDIES AMONG PROSPECTS

The Feature Rating Study is the "moment of truth." After gestating for three years, the new product is introduced with much fanfare and high expectations. The immediate concern of all the executives involved is to determine how the prospects for each of the new cars within a given class react to the product and its competitors.

The cars for the Feature Rating Study (which is also syndicated) are collected from dealers of the various makes who have arranged to purchase specified makes controlling series, body style, color, options, and accessories. These cars are then displayed at one location for the prospects, who appraise and rate each car on a large number of features. These ratings are based primarily on perceptions "cued" by various elements of the vehicle.

The prospects chosen are screened according to their expressed intentions to buy a new car within the year and within the product class being evaluated. Their reactions are early indications of the perceptual strengths and weaknesses of each make and are used to modify current product and advertising programs, as well as help direct future product plans.

The Continuing Attitude Studies are conducted in recognition of the fact that many a sales battle is "Won" or "Lost" in the "Mental Market Place." The objective of this study is to determine how the company and its various products are perceived by people who are in the market.

Corporations and products like people have personalities. Sometimes the consumers' beliefs and the images underlying the attitude are based on fact and other times on fiction. "The perception is the reality"; however, and one behaves accordingly.

This study is conducted about three times a year and serves to provide communications objectives as well as a basis for measuring or evaluating degrees of success in achieving objectives.

The results of this study over the years have pointed out General Motors leadership with variety of vehicles, perceived quality of vehicles and as a "good company" to deal with. Ford is perceived as being a style leader, selling to younger buyers, but having a poor quality image. Chrysler is perceived as being a stodgy company dealing with older, blue collar types, lacking sharp styling; however, its long term image for engineering innovation still persists. American Motors makes small, inexpensive cars. Foreign cars are perceived to be better engineered and manufactured; whereas, domestic cars are perceived as "Detroit Iron."

4.7 STUDIES AMONG DEALERS

These studies take the form of measurements of dealer attitudes as well as dealer behavior. Although each of the manufacturers has a dealer council that meets quarterly with the corporate management to discuss matters of mutual interests, studies of this nature are still conducted.

The dealer attitude studies reflect the dealer's views on product, service and warranty policies, corporate positions, corporate representatives,

advertising, the franchise agreements, product availability, etc.

The price shopping studies are measurements of dealer and salesmen's behavior. These studies consist of disguised shopping situations by trained marketing researchers under controlled conditions. They seek to determine how the sales situation is conducted and the prices being quoted.

All of the above mentioned continuing and special studies provide vital input to decision-making, and great care is normally taken to assure that the studies are well designed, are properly carried out, are well analyzed, are compatible with other studies, are communicated honestly and promptly to all who should receive them. It must be recognized, however, that in spite of the care expended, there are many imperfections and compromises forced either by limitations of time, money, or the complexity of the behavior under investigation.

4.8 MARKETING INFORMATION SYSTEMS

Not too many years ago, all of the studies conducted were kept on file for a period of about ten years. This was a cumbersome, costly and time-consuming method that was wholly unsatisfactory when it came to preparing time series data or of analyzing changes over time. The analytical problems were astronomical.

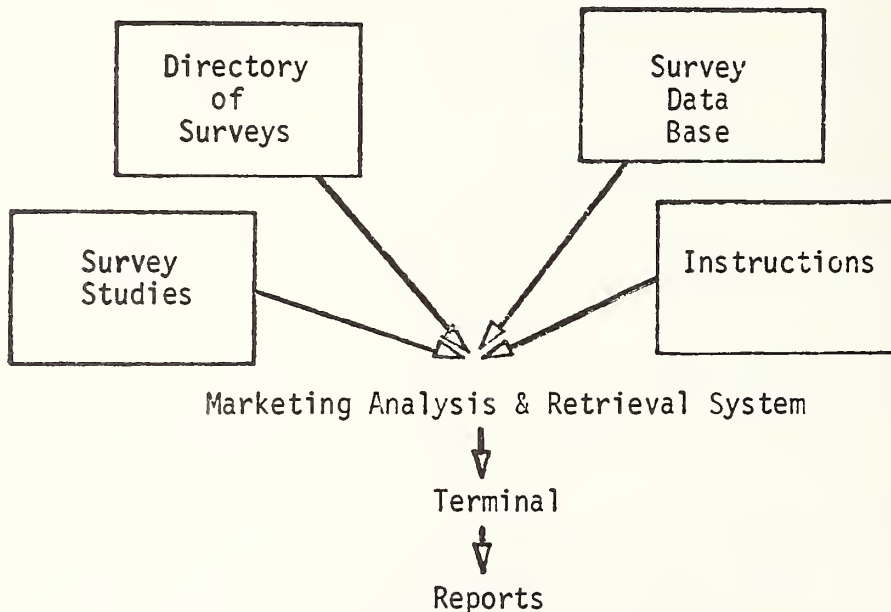
As a first step, all of the studies were put on microfilm which reduced storage costs, made retrieval a bit easier, but still could not provide rapid retrieval in desired formats, could not provide low cost and speedy special tabs, nor enable fast application of mathematical and analytical techniques (such as decision tree analysis, multiple correlations, regression analysis, cluster analysis, factor analysis, Automatic

Interaction Detector (AID) techniques and multi-dimensional scaling). The system that was then in process was manual and as such was cumbersome, time-consuming and costly.

In recent years, Ford, G.M. and Chrysler have installed computer-based time-shared Marketing Analysis and Retrieval Systems (Figure 2). These systems provide:

- 1) Larger data bases for current and historical information.
- 2) Sophisticated mathematical analysis routines.
- 3) Reports prepared directly and quickly by computer.
- 4) Capability for further expansion and improvement.

FIGURE 2. MARKETING ANALYSIS AND RETRIEVAL SYSTEM



The quantity and nature of the research data coupled with the Marketing Analysis & Retrieval System provides a significant aid for the improvement of market planning and product planning effectiveness.

4.9 SYSTEMS APPROACH TO MARKETING DECISION MAKING

While marketing is an Art and not a Science, it clearly does not preclude the application of scientific method nor the use of systematic approaches to marketing planning and decision making.

Dr. Thomas Staudt, Director of Marketing for Chevrolet Division and former Professor of Marketing at Michigan State University, at a recent (1977) talk, to the Cincinnati Chapter of the American Marketing Association, outlined the following Marketing guidelines for developing Chevrolet's Marketing strategy:

- 1) Design an organizational structure that is suitable for all departments working with the basic marketing strategy.
- 2) Obtain accurate research information.
- 3) Carefully assess competitive strategy.
- 4) Before advertising and merchandising set a concise marketing plan that goes well beyond the introductory stage and sets long term goals.
- 5) Sell the plan within the organization to stimulate a "team approach" to the campaign.
- 6) Prepare people for competitive retaliation and be prepared for problems that will arise after product launch.
- 7) Carefully track, monitor, and time key events.

Mr. R. D. Lund, Vice President and General Manager of the Chevrolet Division in a recent talk (1977) to the Detroit Chapter of the American Marketing Association stated:

"Our strategies of marketing must put a tremendous emphasis on both integrity and innovation. People today are demanding more of their institutions.

"In the case of the automobiles, they're evaluating the total market-place proposition, the product and the dealership and the salesmanship and the service and how we reach them-- and what we tell them.

"We have to be better articulators, longer-run planners and more dedicated builders of loyal constituencies."

This dedication to better and more responsible marketing has been stated even by the very top management. The late Edward Cole, former President of General Motors, stated:

"The traditional concepts of what the consumer is, what he wants and what he will accept in terms of a product must undergo continuing analysis and modification. This is not necessarily what he buys; but what he might have bought had it been available. In other words are we marketing products which really meet the complete needs and desires of the American Public? Our products must satisfy the customer not the ego of the stylist, engineer or company executive."

Mr. Henry Ford II, Chairman of the Board, Ford Motor Company said:

"We should start thinking about Changes in public values-- as opportunities to profit by servicing new demands."

Mr. Lee Iacocca, while President of Ford Motor Company, was quoted as saying:

"Market research is a curious thing...without it salesmen would have to rely on perceptive judgment, manufacturers would have to read the enthusiasts' magazines, and an entire specialized profession might well wither and die...The saga of the Mustang is intimately intertwined with market research. Essentially the Mustang is a car that was designed for a market looking for a car. We have market research going all of the time, full blast. We have experts who watch for every change in the customers pulse beat, who keep tabs on every statistic from high school enrollments, to the number of repossessions by the automobile finance companies."

What all of these quotes seem to be saying is a reaffirmation of the old Marketing Slogans:

- The Consumer is King.
- Get the right products, to the right people at the right time.
- Sell products that won't come back to people who will.

And underlying these are the needs to know:

- Who the consumers are?
- Why they buy?
- How they buy?
- When they buy?
- Where they buy?
- What they buy?
- What they really want?
- How will their needs and wants be changing?

The consumer in the final analysis determines the success or failure of a company.

References for Chapter 4

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5. MARKETING DECISION MAKING

5.1 GENERAL

In the regular course of business, numerous decisions must be made as to objectives, policies to follow, concepts and prototypes to be developed, be they product, advertising or otherwise, executions to be carried forth and decisions as to "go," "no go," or modify.

These decisions cover a multitude of areas. In terms of the market, one must estimate the size, the location, the specific characteristics and who the "target markets" will be. Whether a company pursues all market segments (GM and Ford), most of the market segments (Chrysler) or relatively few segments (American Motors), there are similar questions to be addressed.

In terms of product and product mix, each company seeks to understand what it is the customer needs and wants, what he is willing to pay, and how he orders his needs and wants. Marketing's job is to assure that the market is provided with what is wanted, while minimizing competition with one's own products, i.e., "cannibalization," and to determine what will lead to incremental sales and profit maximization.

Decisions on pricing are made at the beginning of the model year but may be modified as the year progresses. Pricing is a complex task that really determines the firm's revenues and eventual profits. The pricing of each car line is considered in relation to its own costs but also in reference to other car lines within the company, as well as to competition--both domestic and foreign. Along with the pricing of the cars, consideration is also given to the pricing of options, accessories, repair parts

and services, since these prices may also affect new car purchase behavior. Sales promotion and incentives for salesmen are additional tools to be used to either "pull" or "push" the products through the channels.

Since consumers, when they buy a car, buy a complex "bundle of attributes," as well as services, great care must be taken in decisions as to types of service policies and warranties, how they are to be administered, and the length of coverage as well as the types of warranty coverage. This requires knowledge as to people's perceptions, "expectation levels" and "toleration levels" so that proper weight can be given to these issues in the decision process.

Advertising works with the market's needs, wants and motives and seeks to reinforce the product's communication. Decisions have to be made on whom to reach, nature of media to be used, media mix, messages to be communicated and frequency of coverage. Reach and frequency are designed to get the desired messages to the proper target markets with sufficient frequency to create strong and favorable mental "sets."

In terms of distribution, decisions must be made as to the types of franchises, nature of franchise agreement, the number, location and size of facilities, service bays, car and truck sales quotas, parts and accessories inventory, etc. Distribution planning is an integral part of the automotive marketing scene.

All of these decisions must be made and all are interrelated. The decision-making apparatus in the automotive industry is extremely complex and the risks are high. Mistakes and over-reactions can be costly; hence

the need for quantities of good data, systematically and continuously collected, quickly retrievable, accurately analyzed, carefully reviewed, and judiciously acted upon.

The present chapter reviews, in turn, the nature of the decision making and its current practice in the following five areas:

- 1) Forecasting and the Development of Planning Volumes.
- 2) New Product Marketing Research.
- 3) Pricing.
- 4) Advertising.
- 5) Distribution.

A graphic representation of the product and marketing planning process is presented as Appendix C in the form of eleven Figures.

5.2 FORECASTING AND THE DEVELOPMENT OF PLANNING VOLUME

Planning is clearly one of the basic management functions of all businesses and at all levels. In the highly competitive automobile industry, with its long lead times and large capital investments, sound long-range planning is an essential element in a company's success.

The Chrysler Corporation's policy towards long-range planning is as follows:

- 1) To develop and utilize a comprehensive long-range plan for the corporation based on well-conceived marketing, product, manufacturing, financial and general management plans.
- 2) To use modern management techniques of forecasting and planning and the best available sources of information and assistance in all phases of long-range planning.
- 3) To ensure that the corporation's long-range plan is developed with the active participation and support of the Operating Groups and Corporate Staffs concerned.
- 4) To hold designated line and staff management accountable for carrying out appropriate portions of the long-range plan.
- 5) To use the long-range plan as the basis for reviewing and evaluating proposed programs and for evaluating progress towards established corporate objectives.
- 6) To review the long-range plan periodically and to revise it as required to reflect changes in the economy and the industry, technological advancements, shifts in marketing forecasts and other relevant factors.

Similar policy statements are made by General Motors, Ford and American Motors, and although they promise much, in all cases the performance often leaves much to be desired. Use of marketing models, simulations and other such techniques, are more talked about than used, and when used, cannot be given very high scores for validity. Long range for the auto industry turns out, as noted by S. Terry at Chrysler, to be about the time it takes to produce a car.

One of the primary planning functions has to do with the market forecast, and the volume planning for the corporation. Volume planning must consider more than total corporate volume; it must be broken down by Divisions, car lines, body styles, etc.

In developing estimates of industry car volumes, the companies look at:

- Measures of the size of the consuming public,
- Measures of the public's needs for cars and its willingness to spend for them,
- Measures of the public's ability to spend.

The total number of cars in use (the car park) that will be required at future time periods to support the public's need for cars is a function of demands for mobility, the nature and distribution of land use and the desires for personal transportation. Variables of importance include the following:

- Population changes.
- Numbers of licensed drivers.
- Suburbanization and land use changes.
- Changing recreational, cultural and leisure activities.

- Growth of multiple car families.
- Concerns for privacy and security.
- Changes in individual and family life styles.
- Changing expectations.
- Changes in disposable income.

The annual demand for production of passenger cars required to supply this growing car park--and replace the cars that are scrapped each year--constitutes the economic life of the automobile industry. Within recent years, the industry has experienced a trend towards greater varieties of product offerings, and a significant increase in small car demand, notwithstanding the current surge in demand for larger cars.

Government mandated standards in the areas of safety and air-pollution represent additional costs to the consumer which may or may not be perceived as providing compensating values. The emerging areas of fuel economy regulation will have the effect of further constraining consumer choice. On the other hand, positive valuation of safety improvements, cleaner air, improved fuel economy, larger personal incomes and changing consumer values, could offset, at least in part, the price impact of government standards. Inflationary pressures within the economy tend, however, to erode the consumer's transportation dollars. Consumers, of course, have the choice of lengthening their trading cycle or down-grading in product size and content if they do not choose to spend a greater proportion of their incomes for personal transportation.

Corporate sales trend volumes as developed by Chrysler, for example, represent an assessment of the size and segment composition of the demand for new cars as a function of known factors which influence the corporation's potentials within each product area of the overall market.

As illustrated in Figure 3, factors affecting overall demand are categorized as:

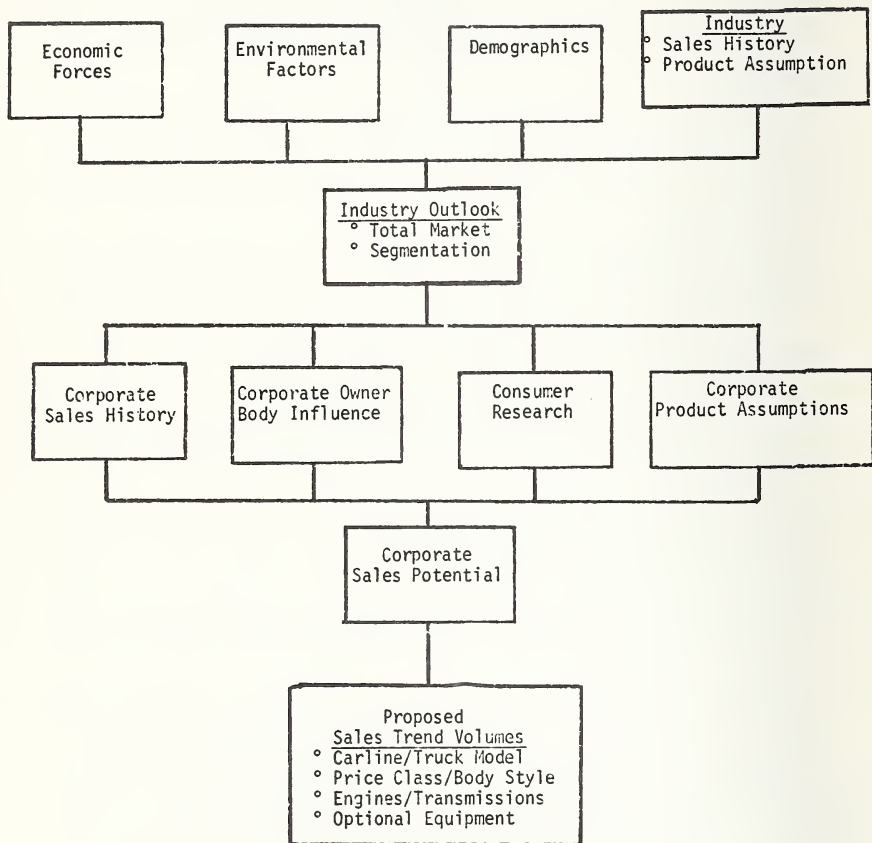
- Economic factors (GNP, employment, incomes, etc.)
- Environmental factors (Gov't. Standards, consumer values, etc.)
- Demographic influences - population size and composition
- Industry data (sales history, scrappage, product actions)

Corporate potentials are principally affected by:

- Corporate Sales and Penetration history
- Corporate owner body size, re-entry and loyalty characteristics
- Corporate product plans
- Sales support strategies
- Consumer research findings (product/market strengths and weaknesses)
- Competitive influences (market performance, product actions)

In the early and mid-seventies, Chrysler's Sales Volume Planning Department worked with a number of different mathematical models in an attempt to augment both internal departmental forecasts, and those provided by various consulting agencies. Reviewed below are the principal modeling and forecasting methods used by the industry.

FIGURE 3
SALES TREND VOLUME DEVELOPMENT



5.2.1 Trend Analysis - Annual Forecasts

A simple least squares fitting of the "best" straight line to a series of annual points, this method ignores seasonal and cyclical patterns. It provides a crude but useful estimate of total requirements for vehicles.

5.2.2 Source of Sales Model - Annual Segment Forecasting - 10 Years Out

This model relies heavily on the Rogers "New Car Buyers Survey" data both for the re-entry rates of various carlines and the loyalties or switching rates between carlines. The model estimates carline and segment sales for each of the next ten years, based on the continuation of a fixed re-entry rate for each carline and a fixed scrappage rate. The model does not account for changing corporate or competitive product plans unless loyalty and re-entry rates were adjusted specifically for this purpose. Although attempts to include a "best guess" of what the effects of new products would be on these rates, the subjectiveness of this approach, coupled with the relatively small sample provided by the Rogers survey, reduces confidence in this method as a forecasting tool for anything but the most general segment forecasts.

5.2.3 Age Segment Purchase Rate Model - Annual Segment Forecasting - 10 Years Out

This model is based on purchase rates of various age cohorts as obtained from the Rogers "New Car Buyers Survey." The purchase rates are influenced by the Bureau of Census forecast for the future sizes of various age groups, and Sales Volume Planning's forecast of total industry sales. With the inclusion of assumptions of how purchase rates would change in the future, the model would, under these assumptions, produce a segment pattern for each future year.

Along with these in-house models, the Marketing Department of Chrysler Corporation, currently obtains long range forecasts from Lionel D. Edie, Chase Econometrics and G. E. Mapcast. Each of these approaches differs slightly. The comparison of their results with internal modeling results and judgment allows the company to produce a forecast with a reasonably high level of confidence. Each of these consultants has staffs of economists and econometricians whose interpretations of macroeconomic variables provide a useful complement to analyses generated within the Corporation.

In addition to the above consulting agencies, Wharton Econometric Forecasting Associates supplies short-term forecasts of the car industry. In addition to this input, the following in-house models have been used for forecasting over the short-term.

5.2.4 Wharton Model Translator - Quarterly Forecasts Two Years Out

Wharton forecasts the dollars that will be spent for cars and parts. A "translator" model was developed which changes the dollar forecast to a unit forecast. Although this model provided useful forecasts up to two quarters out; beyond that point it showed very little effect from changing economic variables, producing essentially a straight line for the entire forecast horizon.

5.2.5 Small Car Model - Quarterly Forecast Two Years Out For Small Cars

This model forecasts sales of small cars as a percent of total industry sales, and is "driven" by the Wharton dollar forecast on the DRI system. The major variables that affect the forecast are the ratio of small cars to large cars and the purchase price ratio of small to large cars. This model appeared to produce reasonable results.

5.2.6 Leading Indicator Model - Monthly Annual Rates for Six Months

This model includes the latest available actual values of such economic variables as used car prices, new car prices, unemployment rates, Standard and Poors Stock Market Index and average wages of hourly workers. It forecasts total industry sales volume for the combined next six months. The model appeared to track actuals reasonably well until the structure of the economy changed due to falling stock prices, the gasoline shortage and corresponding higher gasoline prices. Subsequent attempts to include a variable for the gasoline price increase provided a temporary fix which then resulted in unacceptable forecasts when the gasoline shortage eased.

5.2.7 Box-Jenkins Estimation - Monthly Forecasting - Six Months Out

A mathematical technique that highlights trends, seasonal variations and certain recurring cyclical variations. This method, like the two described above, relies only on past history of car sales, and does not deal directly with such economic influences as prices, inflation, interest rates or other macroeconomic variables on car purchases.

5.2.8 Exponential Smoothing - Monthly Forecasting - Three Months Out

A technique for forecasting car sales based only on sales during the previous periods, with the most recent data given the heaviest weighting. This method is generally satisfactory only for very short-term forecasting, two or three months out. Although it can highlight both trend and seasonal patterns, it is useless in trying to predict any cyclical variations that would represent a major change in the state of the economy or auto industry.

As mentioned, the consulting agencies make use of a variety of econometric models for analyzing and projecting the state of the economy.

The highlights of these models which contribute to car sales forecasts are attached. Each agency's models reflect differing perceptions of the factors that are important for understanding the behavior of the economy. These different approaches, coupled with the information from internal models, result in forecasts which it is hoped will capture all important effects on the future of car sales.

Figures 4 through 8 provide schematic representations of the principal models provided by the referenced consultants to the auto industry.

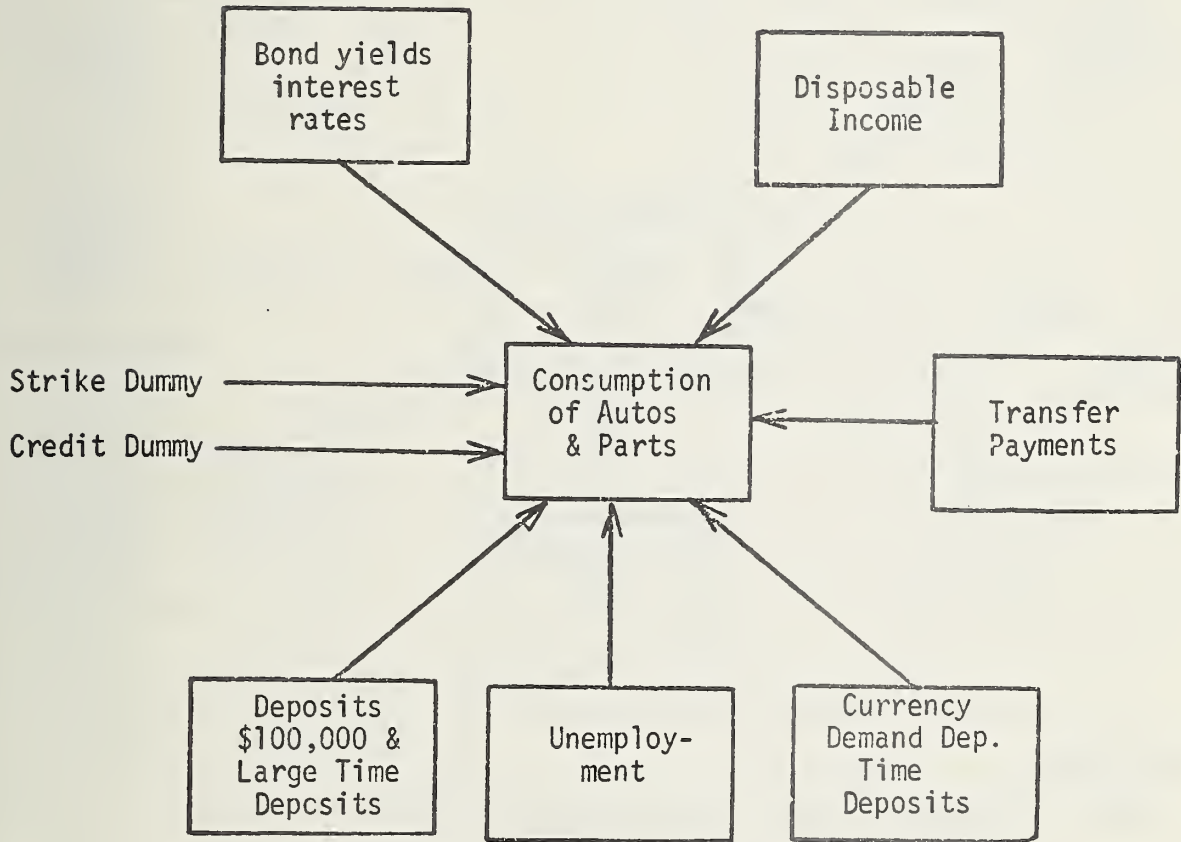
Once the forecast has been arrived at, an extensive review and approval procedure is followed so that the forecast and the resulting corporate volume plan are understood and acceptable to all concerned. This process as used by Chrysler is depicted in Figure 9.

The systematic approach to research provides current information that flows to Product Development, Advertising and Market Planning; the objectives are to lead to a well-coordinated and integrated product, promotion and distribution system, all geared to reinforce one another and to achieve common corporate goals.

5.3 NEW PRODUCT MARKETING RESEARCH

New products are the hope and despair of corporate management. The Ford Motor Company's Edsel, a rather dismal failure, was followed eight years later by the Mustang, a rousing success. The losses on the former were in the hundreds of millions and probably would have bankrupt a lesser corporation; whereas, in the latter case, the incremental sales, penetration and profit made this new product development an extremely worthwhile activity.

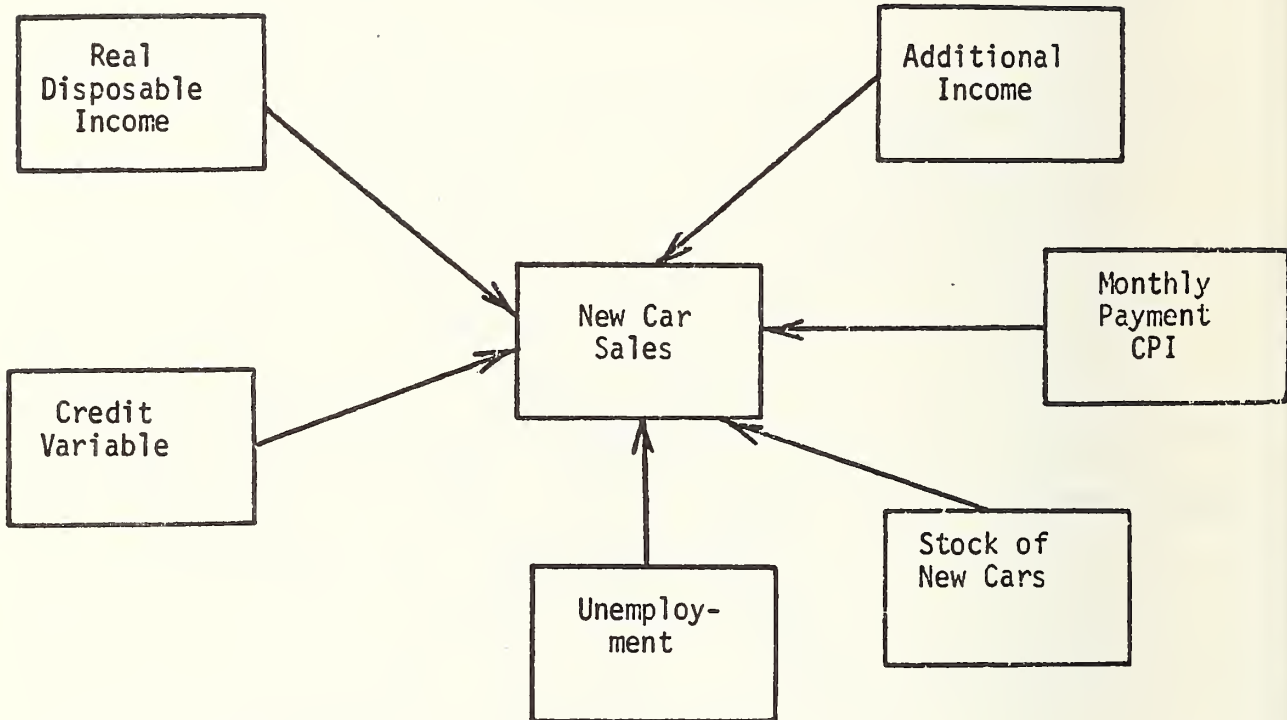
FIGURE 4
WHARTON FORECAST FOR AUTO CONSUMPTION



Variables

1. Disposable income
2. Transfer payments
3. Unemployment
4. Bond yields & interest rates
5. Currency + demand deposits + time deposits

FIGURE 5
CHASE NEW CAR SALES FORECAST



Variables

1. Real disposable income less transfers
2. Additional income: Business + professional + farm + rental + dividend income/wages
3. Credit variable - measures the availability of credit (money supply + interest rates, etc.)
4. Average monthly new car payment/CPI
5. Unemployment rate
6. Strike dummy
7. Stock of new cars (a measure of car equivalents - includes depreciation)

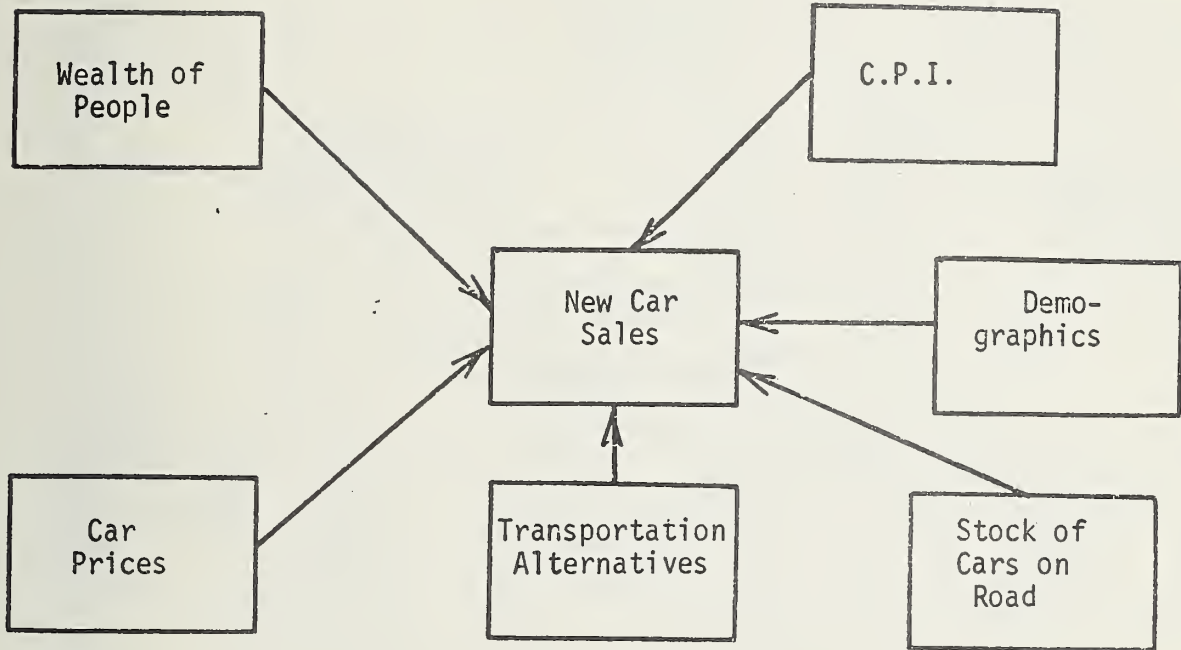
Most Important Items

Credit variable & monthly payment variable

Business + professional + farm + rent + dividend income/wages

FIGURE 6

D.R.I. FORECAST FOR CAR SALES



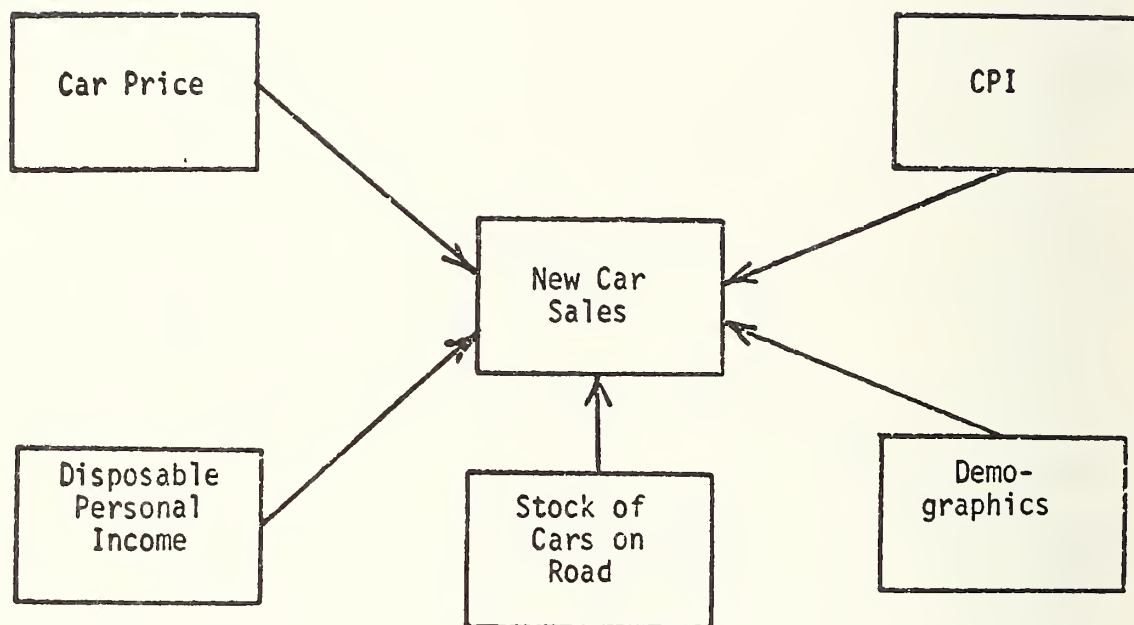
1. Demographics of people driving age (16-65 compared to the current stock of automobiles)
2. The wealth of the people - total stock of their real assets. Not only the real disposable income
3. Relative prices of cars to goods in general, and within transportation, the amount of transportation dollars that can be allocated to cars

In the shorter term, the following variables contribute

- Disposable income
- Unemployment rate
- Common stock price index - proxy for a measure of wealth of households
- Credit availability

FIGURE 7

G.E. MAPCAST FORECAST FOR CAR SALES



Variables

70%

1. Car price as a percent of income-disposable income in current dollar
2. Available income left for car after meeting more essential expenses
3. Demographics - number of people in different age categories
4. Stock of cars on road

FIGURE 8

EDIE ECONOMICS
AUTOMOBILE FORECASTING MODEL

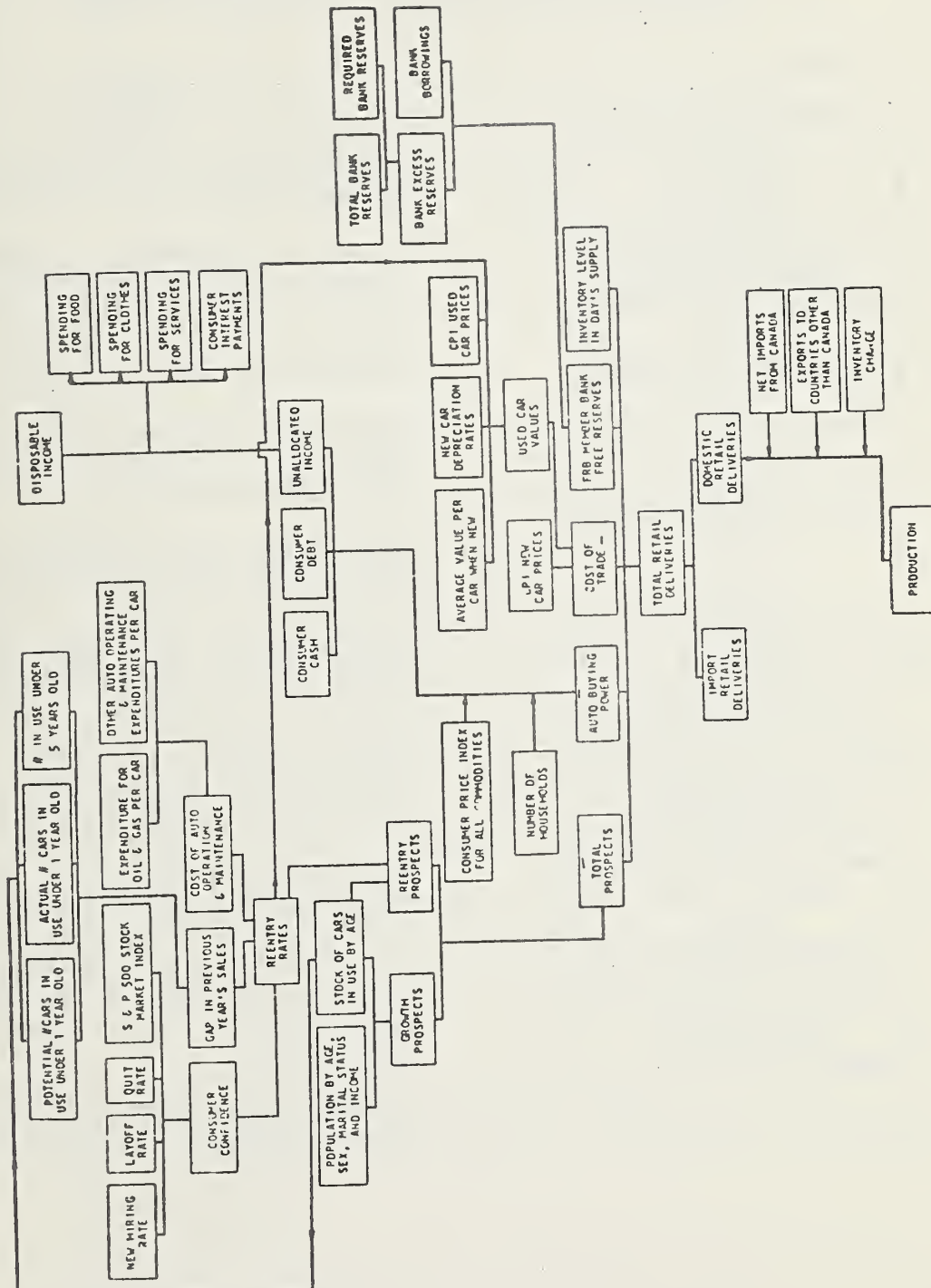
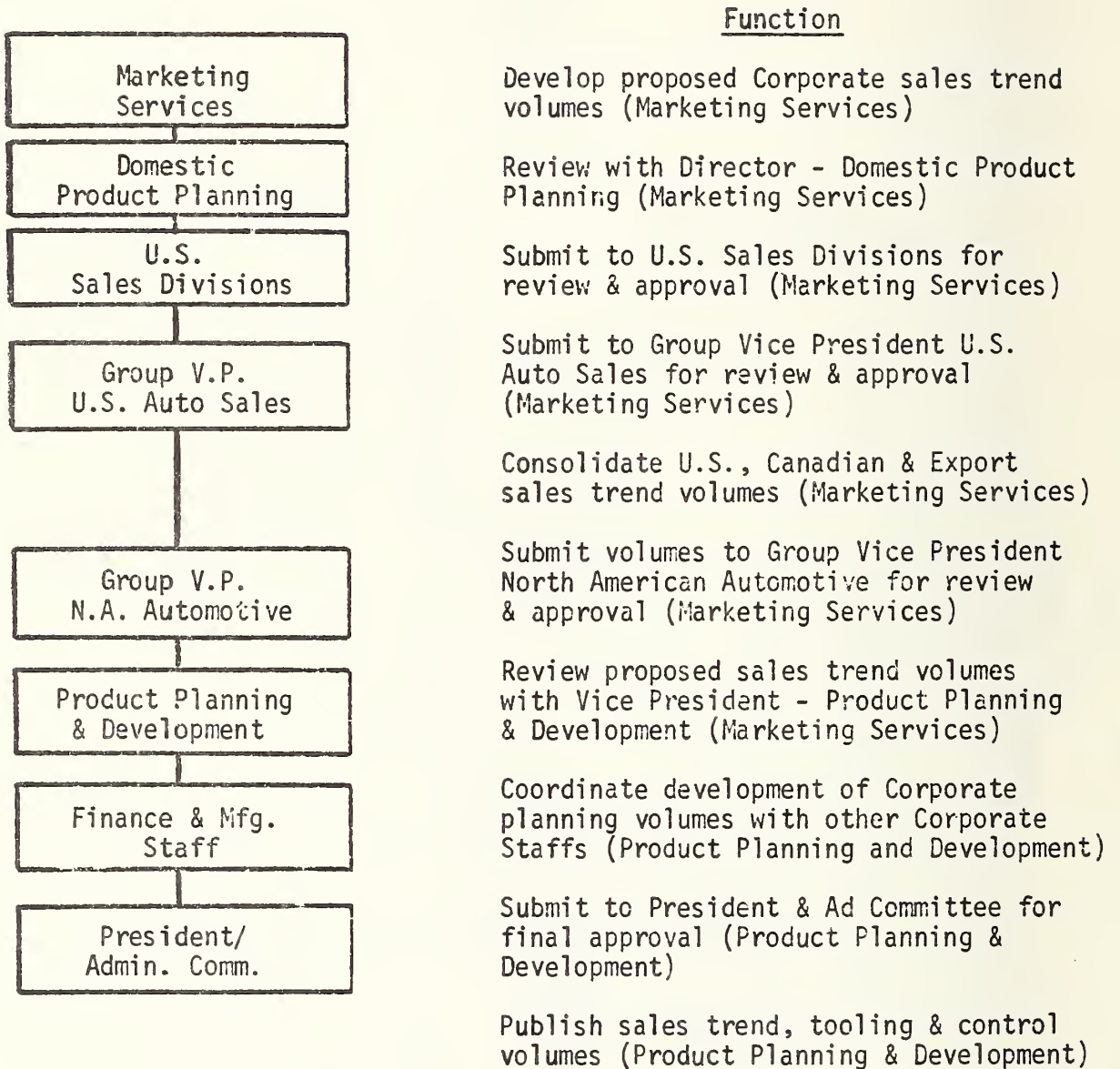


FIGURE 9

CORPORATE VOLUME PLANNING & APPROVAL PROCEDURE



Notwithstanding the risks, new products are essential for protecting existing markets and as a source of diversification and growth. The process is costly and not without serious risk, but risk can be reduced through careful planning and purposeful direction of new-product efforts. Marketing research plays a key role in this process.

Marketing considerations are some of the principal elements in determining new product success or failure, and hence, require soundly conceived and timely inputs to decision making. The marketing research capabilities at both General Motors and Ford, are large and sophisticated and report directly to a top management executive. The functions at both Chrysler and American Motors are small and leave much to be desired. The role of marketing research at General Motors and Ford is more than that of a narrow fact-gathering activity and more like that of a skilled consultant. They assist management in defining marketing issues and determining how research can contribute to their solution. They plan and execute research, present research results and how they relate to the issues at hand, and assist in planning and organizing the action programs.

This capability is very important in the planning of new products since those involved in new product planning and development are likely to be far less informed about marketing considerations. Marketing research plays a vital role in each of the various stages of new-product development:

- Idea generation
- Screening of ideas
- Product development
 - Concept testing
 - Prototype testing

- Product testing
- Market testing
- Commercialization

Each represents a major decision point for management.

Figure 10 represents a P.E.R.T. chart for the styling development of a new model car from inception to job #1 with research points indicated. An entirely new car being engineered from the ground up, would have an even longer gestation period and would require more research contact points along the way.

Idea Generation. Ideas for new products come from many sources, both internal and external. As a rule, they are triggered by what is happening in the various environmental areas, previously indicated:

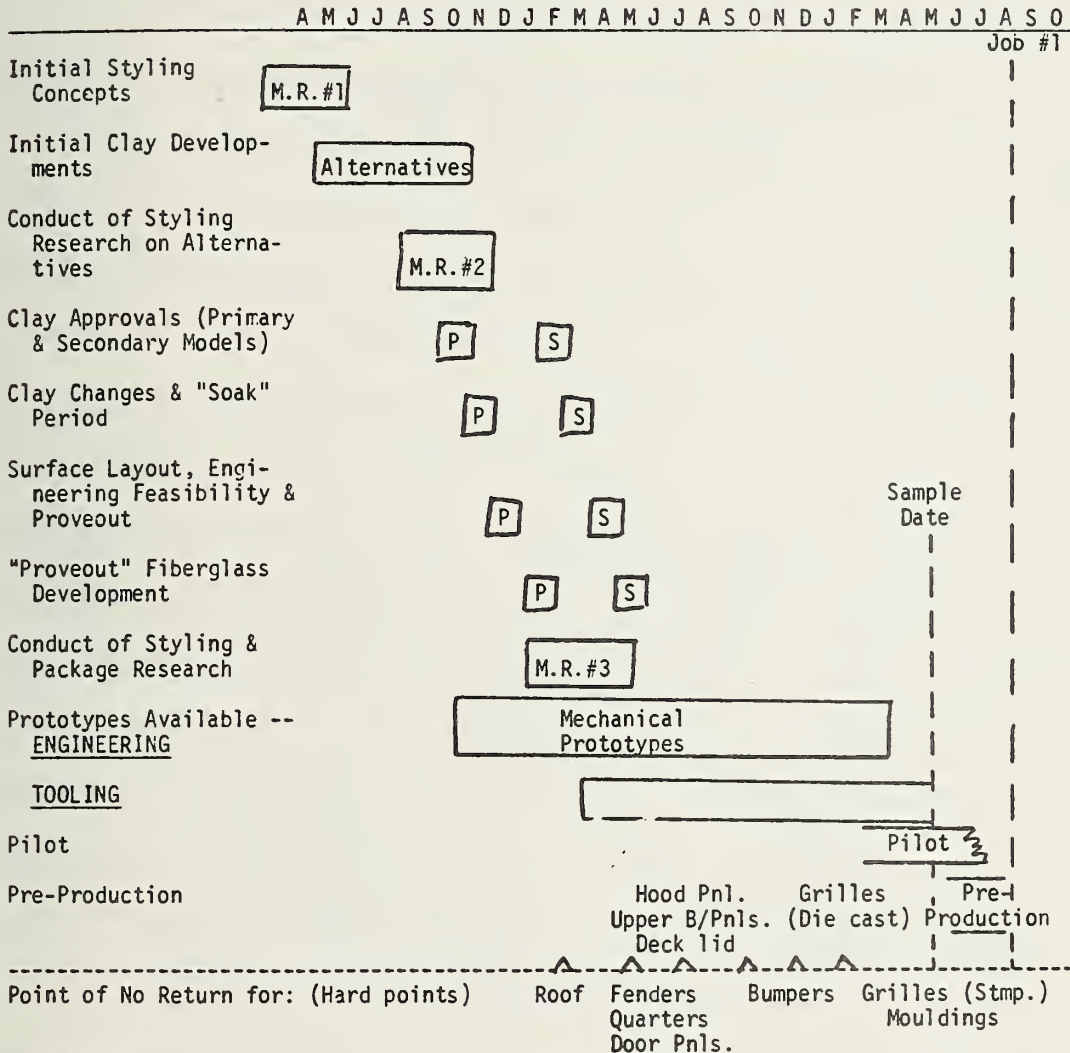
- Economics
- Demographics
- Social Values
- Competition
- Political/legal
- Technological

Ideas also arise as a result of playback from the market place on a company's current products and competitive products. An analysis of sales, sales trends, penetration changes resulting from current products, may well give indications of strengths and weaknesses that can be capitalized upon.

Analysis of buyer motivation changes, owner car usage, early reactions to current products through Introductory Day Studies, Feature Ratings by

FIGURE 10

SIMPLIFIED P.E.R.T. CHART ON STYLING DEVELOPMENT
(Showing Single Year Model - Based on Typical Timing Schedule)



Marketing Research

M.R.#1
"Generic" Research, using renderings, sketches, etc. to:
 ◦ obtain reactions to new overall styling themes, alternative roofs, grilles, etc.
 ◦ Establish trends in consumer tastes in automotive designs.

M.R.#2
Evaluation of clay alternatives, using colored photos of dimocked clays to:
 ◦ Evaluate alternatives for weaknesses and strengths as well as communications

M.R.#3
Specific styling research, using full size fiberglass models to:
 ◦ To obtain reactions to "approved" and modified styling for advanced models.

NOTE: 1. This chart shows only the development of one model year; other model years are running at the same time but at different levels of development.

prospects, owner reactions from buyers of various time periods, points of satisfaction or dissatisfaction, may all provide suggestions for new ideas. From time to time, Idea Generation Studies, which are consumer brainstorming sessions, using focus group techniques, may be conducted.

It is recognized that consumers may not have new ideas, but that they can register fears, frustrations, needs, and dissatisfactions when put into "situational contexts." These fears, frustrations, needs, dissatisfactions, when presented to marketers, engineers, product planners, may provide the "fodder" from which new ideas may generate.

These studies are normally geographically dispersed "focus group" sessions, containing about 10 people each. They are only used to generate new ideas. The nature of the "situational context" may be to take people through all the details of taking a trip, for example, starting with the loading of the car and ending with the return home one week later. Sometimes, the participants are given the idea of a completely gutted car, and their job is to assemble it and make it especially suitable for their private purposes. The main concern is not with what they do, but why they do it. Another valuable scene-setter in this kind of a project is to show slides portraying new ideas which had been prepared in advance of the sessions. The people selected for these sessions normally constitute "target market" types for the specific vehicle types in mind.

Reports of such sessions are then distributed to various members of management (marketers, engineers, product planners, etc.) who digest their contents and perhaps can see some "new ideas" that will be worthy of further evaluation.

Idea Screening. Not all ideas are sound, and management obviously cannot spend time and money "chasing" each and every one of them. In some of the corporations, these ideas are carefully screened by a committee to determine if they appear to be feasible in terms of marketing, sales, engineering, manufacturing, servicing, as well as financially.

In effect, management seeks to determine whether the proposal is within the scope and goals of the company, and if so, whether it is worth pursuing. Much of the information sought may come from marketing research. Given time and money constraints, marketing research often draws heavily on secondary sources and analytical and interpretive skills based on extensive observation of consumer behavior.

Sequential Concept-testing. As a result of the prior phase, those ideas that are still retained, are more finely tuned or conceptualized. These concepts may be described by written word, by graphic illustration, by physical model, etc. These are then taken to the marketplace for evaluation. These studies, most often, are conducted as group interviews; although, they are sometimes done on a personal interview basis.

The objective of these studies is to assess consumer reactions to each of these concepts in an effort to determine whether to "Go," "No go" or "Modify."

If the decision is to "modify," the concept is then reworked and subjected to another concept test. This process is continued until the concept is ready to go on to the next phase or is tabled or discarded.

Design and Package Testing. Assuming the product in this case to be a new car, or a new model, it will go through various stages of prototype

development. A clay model, full-size, is developed, often remodelled and researched, by bringing selected consumer types "in" for evaluation. After much remodelling, a few "acceptable to management" designs are then converted to fiberglass models. These are fully trimmed on the exterior and are capable of providing the visual cues of a completed car.

Since there are no interiors at this point, interior seating bucks are prepared so that management can evaluate both exterior designs and interior package. When management thinks it has a few highly acceptable alternatives, Car Appraisal Clinics are set up to evaluate consumer reactions. The Car Appraisal Clinic, at this point, puts its major emphasis on styling factors and interior package features, although it can also develop responses on price perceptions.

These prototype clinics are conducted in central locations, usually large enough to provide room for real vehicles, simulated vehicles, interior seating bucks, plus a sufficiently large number of respondents who represent the intended buyers of the particular car class. There may also be displayed large-scale illustrations and other vehicle configurations.

These studies are designed to provide flexibility so that any combination of self-administered, personal, group and depth interviews may be administered. The clinics also provide control, since interviewer bias can be eliminated and the entire study observed by the researcher. Considerable attention is given to assuring security at this stage of development. Extensive measures are taken to protect the properties from damage, theft or copying. Design properties are under constant surveillance by security guards. Security measures are also taken to screen respondents

and to make certain that only those respondents who were properly screened are in attendance. No cameras or sketchpads are allowed in the viewing room.

These clinics typically cost from \$25,000 to \$50,000 depending upon the location, number of respondents and nature of interviews. Occasionally, such clinics use only colored photographs; however, the risks of the properties getting into competitive hands and the fact that pictures are not in-the-round, poses problems far greater than the cost savings and the better sampling that could be obtained.

Working Prototypes are sometimes required when the nature of the new product is radically different, e.g., if it affects ride characteristics, noise, performance, driving requirements. Working prototypes are extremely costly as they are virtually entirely hand made. Prototypes, however, must be made for engineering tests and sometimes for consumer testing. Some examples that may be noted are as follows:

- Turbine cars
- Electric cars
- Various types of passive and non-passive restraint systems
- Front wheel drive vehicles
- Automatic transmissions (when first introduced)
- Rotary engines and other engine types.

In the case of consumer testing, these vehicles may be put in the hands of a controlled sample for a period of time so that a learning or adjustment period takes place, after which they may be questioned on use and satisfaction/dissatisfaction.

Market Testing or test marketing is not common practice within the automobile industry for entire vehicles. The costs of tools and dies to produce test vehicles are viewed as prohibitive as are the cost of custom building the number of vehicles that would be required.

There are times, however, when the nature of the automotive product is such that market testing is possible prior to commercialization. For example, a few years back General Motors developed an emissions control device that was reasonable to buy and to install on older cars not having catalytic converters. Rather than go to mass production and a large scale marketing effort, this product was test marketed in Phoenix, Arizona, where it was believed there should be a receptive market. As a result of this test, the program was not continued. Many other such tests, usually having to do with options, accessories, special colors and packages, etc., have been conducted.

The test market represents the application of a full-scale program to a limited market which is treated as a microcosm of the total universe. The value of the test results must be weighed against the risk of informing competition as to potential future actions.

Naming the Product is an integral part of the product development process. The name represents a vital means for communicating what the product is, what it does, and perhaps, its characteristics. A name must be suitable for the product specifically and for the product class. It should communicate well and have the ability to reinforce the historical imagery of the corporation and its product or the imagery desired for the product, corporation or program.

In short, it is desired that the name --

- Be easy to read
- Be easy to pronounce
- Be euphonius - pleasant to the ear
- Be able to blend with other identifications-- Dodge_____, Chrysler_____, Plymouth_____
- Have no confusion as to meaning
- Have no controversy associated with it
- Convey the appropriate image
- Appeal to proper market segments

A name is an identification that can serve to conjure up visions. It can provide an early assist to a product. However, a name can, in time, be made by the product and substantial investment in advertising.

Names come from many sources and can be identified with --

- People - Ford, Chevrolet, Oldsmobile, Chrysler, Dodge, Cadillac
- Places - Monaco, Newport, Sebring, Bonneville, Catalina, Torino, Seville, Granada, Versailles, etc.
- Animals - Mustang, Barracuda, Roadrunner, Pinto, Maverick, Cougar
- Mythology - Phoenix
- Qualities or Objects with certain qualities -- Imperial, Dart, Duster, Demon, Challenger, Valiant, Charger, Fury, Satellite, Polara, Pacer, Gremlin, Monarch, Rocket, etc.
- Made-up words - not often used in cars - e.g., Exxon, Kodak.

Although there are exceptions, such as Edsel, most names are arrived at through a research process that includes:

- Name generation
- Name screening
- Name testing - qualitative techniques
- Name testing - quantitative techniques

The naming of a product is normally a joint effort of Marketing, Product Planning, Design and Car Division Managements, and it goes through a heirarchy of approvals to the very top management of the corporation. Research is a vital part of the process.

Commercialization is the final step for product studies. When a company is almost ready for commercialization, additional assistance is required from Marketing and Marketing Research. Research contributes to development of the marketing plan, including action programs for commercialization, and finally sets up by way of the "Continuous Feedback loop" for the monitoring of progress.

In order to illustrate the nature, format and level of detail represented in a typical forward product planning document, a copy of one manufacturer's product strategy analysis is presented as Appendix D. The example while typical, is not for a current model or current situation. All references to corporate, make and model names and model year designations, however, have been replaced by arbitrary symbols.

5.4 PRICING

The pricing of automobiles is a highly judgmental process, and it involves consideration of many factors in addition to cost. While much has been said and written about the industry's, and particularly GM's, use of standard volume pricing(1), it is probably fair to say that such cost- and return-on-investment-based pricing applies only in a general or average sense or as a basis for setting initial target prices. General Motors, itself, has recently testified(2) that in making pricing decisions it considers "product costs, product attributes, demand & competitive market conditions and used car prices." The way in which each of these considerations is "weighed and balanced" is anything but an open book. There is reason to believe that even those in the industry charged with pricing responsibility have, at best, a relatively weak grasp of the complex interplay of all the factors at issue. It should be noted, for example, that what GM refers to as "product attributes" subsumes a multitude of values including corporate, division, car-line names, reputations and images, design and aesthetic features, expected resale values, as well as the bundle of physical and performance attributes that normally fill the "specification sheets." The following account, then, attempts to capture some of the complexity and subtlety of "normal" car pricing; Chapter 6 introduces additional pricing issues that relate specifically to the mandating of Average Fuel Economy Regulations.

Automotive pricing is constantly under both government and consumer scrutiny: The government constantly watching for excessive profits and monopolistic tendencies, and the consumer watching prices often in relation

to the last time he bought a car on average, about 3-1/2 years back. The manufacturer must keep his eyes focused in both directions.

The auto industry is an oligopoly having few producers who supply the market, such that there is an implied mutual dependency. The largest and most efficient producer could easily establish prices at a lower level than the less efficient producers. This however, would tend to drive the marginal producers out of business and would invite government "scrutiny." The objective then is to seek to maximize profits within the constraints of the antitrust legislation and other possible government interventions.

The usual procedure is for one of the producers to float a "trial balloon" as to size of increase. This is usually done by Chrysler or Ford and is finally responded to by the most efficient producer, who must then consider the effects upon his profits and how these profits will be responded to by consumers, consumer advocates, anti-big business groups and the government. In recent years, this has led to price "rollbacks" being forced by General Motors, as GM is effectively constrained by the extent of its penetration and the magnitude of its profits. The "signals" conveyed by the "trial balloons," it must also be assumed, serve to give notice to the industry "leader" of what kind of prices the smaller companies can "live with" and as a "plea for consideration."

For the consumer the purchase of a new automobile is a major outlay of capital and a long-time commitment, and buyers need to feel secure in their purchase. In recent years, automotive prices were held back due to price controls, while federally mandated equipment was added. This condition led to the automotive companies not being able to recoup all of

their costs, and hence, profits were squeezed. Not only were costs increasing due to changes and additions, but inflation was also eating into profits. Longer life components were being added to the cars, such as steel-belted radial tires, longer life batteries, alternators, electronic ignitions, etc. More options and accessories were being included as standard equipment.

Although the companies regularly compare annual prices on comparably-equipped vehicles, the consumer does not usually make such comparisons and tends to see only the sticker prices, and if he actively shops, perhaps the final price based on his trade-in or a cash deal. A car's price is a symbol of value to the consumer, but it may also determine whether one buys a new car or a used car, a large car or a small car, an upper series or a lower series a heavily optioned car or basic transportation, or even no car at all.

The corporation, in arriving at its target prices, then attempts to consider all of its costs and modifies this with image and "other" considerations. A highly-reputed brand can command a higher price than a lower-reputed brand, since reputation has a value in the marketplace and the consumer willingly pays for it.

The pricing of an individual brand must be viewed relative to competition so that its price is competitive; relative to other corporate brands so as not to "cannibalize" and thereby threaten profits, and relative to options, accessories, parts and service, since there is always an alternative to new car purchase, e.g., to repair, rehabilitate and keep the old car or buy a used car.

Pricing is particularly sensitive for Chrysler and American Motors, whose buyers, based on "Buyer Studies," more often buy for "price or deal," and hence, are more aware of price changes. These two companies also "enjoy" less pricing flexibility in view of their relatively higher unit costs. The resulting profit squeeze for Chrysler and AMC can be particularly acute even with relatively mild downturns in the economy.

Prices can be raised either by direct price increases or by adding optional equipment and making it standard, or by hidden means, such as keeping prices firm but taking something away from the product, e.g., cheaper tires, eliminating vent windows, arm-rests, installing cheaper carpeting, using inferior fabrics, etc. or by holding the price of the base vehicle, but raising option prices which is a "quieter" or less visible price increase.

Although each of the companies has a computer pricing model, there is substantial doubt concerning validity. Executives in each of the companies have been quoted as saying that they really are not sure of the effects of pricing.

Pricing has often been used as a marketing tool in special promotions to gain increased penetration or to achieve inventory balancing. Such things as giving "free air-conditioners" or "free AM/FM stereo radios," etc. are typical price concessions which leave the sticker price unaffected. The recent rebate programs were really a "survival" measure using a promotional "pull" strategy to reduce the high inventories which resulted from poor demand for small cars and to generate needed cash flow. There is considerable concern and doubt within the industry about whether, or

the extent to which, such price concessions (including the rebates) have the effect of shifting demand or of "accelerating" demand, i.e., of moving sales ahead in time but not significantly changing the mix.

In an effort to offset consumers' perceptions of higher prices and to keep monthly payments within reason, credit terms have been lengthened from 36 months to 42 and even 48 months. There is concern, however, that this will tend to increase the repurchase cycle and adversely affect aggregate sales.

An added complexity in the market is the "trading gap" between the price of a new car and the value of the trade-in. Historical data on new and used car prices seems to indicate that new and used-car prices fairly well parallel one another, hence, the "trading gap" has been relatively constant. The relationship, however, is not well-understood.

As a matter of sober fact, and for complex reasons, price elasticity studies for the auto industry have been notorious failures. This has been true for studies done by the government, independent researchers, and the industry itself. The best consensus is that auto price elasticity probably has a value between $-.5$ and -1.0 ; however, some put the value even lower, e.g., about $-.2$. Given this assumption, an increase of \$400 or 10% on a \$4,000 car could result in a 5 to 10% reduction in the level of sales. While there is a great deal of academic and government interest in determining price elasticities, the industry itself does not appear to rely on such estimates in pricing or planning decisions. General Motors asserted(3) that estimates of price elasticity are not used in its program planning. Chrysler in its response to the Fuel Economy Questionnaire(4) stated:

"Chrysler Marketing has not conducted any studies or surveys in the past ten years regarding price elasticities, or cross price elasticities of autos and gasoline for either a particular category of vehicles, or all vehicles as a whole." Although the industry, over the past few years, has had "technical room" to raise prices because of a good Consumer Price Index "track record," there was also awareness that consumers were buying "more car" (premium models, more optional equipment) with resulting larger expenditures. Studies undertaken by the various industry marketing groups in the past have indicated that given higher prices which offer little perceived consumer benefit, consumers will either re-enter the market less frequently or move down. This results in lower industry sales, but the primary impact may be a continued leaning of the mix in terms of type and size of car purchased. With the exception of the late '76 and early '77 period, this appears to have been the case.

Notwithstanding the vital nature of pricing to the industry, the complexity of the interplay between prices and all of the other considerations that affect the consumer's choice of automobiles (and whether now or later, or large or small, or new or used) is such that there is clearly more Art than Science and substantial uncertainty about the probable effects of alternative pricing actions.

5.5 ADVERTISING

In simplest terms, advertising represents any paid for communication about a product, service or institution which is intended to inform or encourage the purchase and use of the supplier's products or services. Corporate or institutional advertising seeks to communicate certain attributes of the institution or a family of products; whereas, product advertising seeks to communicate the attributes of selected products. Product advertising provides consumers with information that either reinforces beliefs, attitudes and predispositions already held, or provides further inputs that serve to modify consumers' mental positions.

Since there are many alternatives available to the consuming public, which itself represents many differing market segments, the object is to differentiate the various products in a meaningful way that will enhance consideration and eventual purchase. Advertising becomes increasingly important as a technology matures and is shared by all manufacturers and the tangible or physical differences between alternative products becomes more difficult to distinguish.

If consumers had only one product alternative to satisfy their transportation needs, no product advertising would be necessary, except that required to notify consumers of the product's availability. As competitive products are developed and technology is transferred to the marketplace, product differentiation is established for satisfying selective wants and needs of different groups of consumers, and advertising provides the critical means for communicating such differences.

Advertising in the automotive industry is conducted by the manufacturers, dealer associations, and by individual dealers, with each of these groups having its own specific objectives. The specifics of advertising budgets and breakdowns however, are treated as confidential information.

For 1975, the four domestic manufacturers spent \$465,438,700 (Table 3) for media advertising exclusive of dealer advertising. Network T.V. was by far the major medium used, \$139,285,900; spot T.V., \$85,574,600; Newspaper, \$64,287,880; Magazine \$60,082,500; spot radio \$33,181,000 and the rest spread over the remaining media. General Motors spent \$225,000,000; Ford \$109,323,500; Chrysler \$98,200,000 and American Motors \$32,915,200. This money is spent on corporate advertising, divisional advertising and car-line advertising. The corporation and each of its divisions has an advertising manager responsible for advertising planning, strategy, media selection and message content. These advertising managers use outside advertising agencies who provide special expertise in each of the areas in which decisions have to be made:

- market planning
- media planning
- market research
- ad and commercial production.

As shown in Table 4, each of the companies has different media budgets and different media weights. Each company differs in terms of its "target" markets (demographically and psychographically), number and nature of car and truck lines carried, access to advertising funds,

TABLE 4

FACTORY MEDIA SPENDING--1975

	<u>AMC</u>	<u>Chrysler</u>	<u>Ford</u>	<u>G.M.</u>	<u>Total</u>
Network T.V.	\$13,273,100	\$25,600,000	\$ 45,623,200	\$ 54,789,600	\$139,285,900
Spot T.V.	9,437,900	13,000,000	20,372,200	38,764,500	81,574,600
Network Radio	-	3,200,000	1,956,400	1,165,000	6,321,400
Spot Radio	958,000	6,000,000	11,574,000	14,649,000	33,181,000
Magazine	4,439,800	10,200,000	14,554,300	30,888,400	60,082,500
Newspaper	4,775,200	5,200,000	14,063,900	40,248,780	64,287,880
Outdoor	31,200	100,000	1,179,500	5,466,100	6,776,800
Other*	-	34,900,000	-	11,751,460	46,651,460
Unmeasured Media	-	-	-	27,277,160	27,277,160
Total	\$32,915,200	\$98,200,000	\$109,323,500	\$225,000,000	\$465,438,700

*Direct Mail and Special Programs

Source: Advertising Age

corporate imagery, car line imagery, competitive car lines and imagery and hence face different challenges, both in terms of strengths and weaknesses and require different strategies. As a result of the feedback of research information on motivations, attitudes, beliefs, etc. marketing objectives are determined and advertising objectives set in terms of the marketing objectives.

Although much has been written on the establishment of advertising budgets and the relative merits of different methods --% of sales past year or anticipated sales, marginal analysis, advertising dollars per unit, task and objective method--advertising budgets are usually based on task and objective methods but constrained by forecast of sales and profit goals, as well as previous year expenditures.

The procedure for approvals starts with the advertising manager and the advertising agency who determine tentative objectives, strategies, and needed budget. This is presented up the line to the marketing manager for his approval or modification, then to the Sales Manager, the Divisional Vice President, the Vice President - Marketing Staff, and eventually to top corporate management. If approvals are secured, the steps are then repeated for major media and message alternatives.

Each of the companies has its own way of conducting its advertising program. In some instances there is very little in the way of systematic analysis and hence "gut feel" or "fly-by-the-seat-of-the-pants" is the way of life. Both General Motors and Ford Motor Company, however, have systematic approaches to the development of advertising campaigns and specific ads and commercials. Their systems are not always followed due

to lack of time, lack of budget or management's "gut-feel" that "this one is right." Quite often "management style" stands in the way of a complete acceptance of a total systematic approach.

Increasing the efficiency of advertising in terms of both media and messages has been sought for a number of years, particularly at Ford Motor Company, and to a somewhat lesser extent at General Motors. Mr. Robert J. Eggert and Dr. George Hay Brown (former Marketing Professor at the University of Chicago) both Market Research Directors at Ford Motor Company in the mid-1950's undertook large scale experimental designs using computer name matching techniques (developed for magazine subscription fulfillment) to determine the sales effectiveness of advertising based on media weights use of specific media, message frequency, and use of certain sales promotions, such as Punt, Pass and Kick, Soap Box Derby, California Special Programs, New York Market Special Promotions and the various types of racing programs.

These studies for the most part were interesting but inconsistent when repeated. They, nevertheless, gave some "clues" to aid decision making.

As time progressed and Dr. Seymour Marshak joined the Ford staff, the studies were broadened beyond sales to include:

- Awareness
- Beliefs
- Attitudes
- Intended Behavior

This was done to recognize that much happens between the time a promotion takes place and the time of sale.

After much experimentation these studies were reduced in number and scope in the mid-1960's because of their extremely high costs, the long-time periods involved, the fact that the "noise" in the system was often greater than what was being measured, and there was no assurance that the conclusion drawn in one time period were still valid some further time period out.

5.5.1 Media Data

The questions of which media to use and in what combinations have always been difficult to answer. In the early '50's and '60's media data was collected by each of the specific radio networks, magazines, newspapers, T.V. etc., in their own manner and freely dispensed. This data was more often than not poorly collected, biased in interpretation, non-compatible with other data collected and incomplete since not every-one selling media had data to present.

Large syndicated services collected multi-media data that allowed for compatible analysis. These studies still had their flaws, but eventually through the assistance of such groups as the Advertising Research Foundation and the Audit Bureau of Circulation, the studies and the numbers were refined and greater reliability could be placed on their use.

Some of the major media services were:

- ° Nielsen T.V. Ratings - used to determine amount of viewing by program and type of audience.

- W. R. Simmons - Multi-media Study - gives newspaper readership, magazine readership, radio listening, T.V. viewing, by frequency, time of day, day of week, by type of newspaper, magazine, radio show, T.V. programs and provides demographic data, psychographic data, and ownership of certain "key" products.
- Axion Media Study - very similar to the W.R. Simmons Study.

These media studies provide the input to the advertising agencies computer media models which generate media schedules using Linear Programming, incremental analysis and related techniques. These models were highly touted about 7-8 years ago by the advertising agencies, but as is so often the case, the "expectations" were much greater than the "performance." The data still left much to be desired and the technology was still sorely lacking.

The object still is to get good valid data that would allow the application of scientific method to the selection of the proper media schedules and combinations so as to get desired reach and frequency of bona-fide prospects and increase the efficiency of dollars spent in advertising.

5.5.2 Advertising Research

The auto industry is unique in that its products are the largest, most costly purchases made by consumer on a recurring basis. The product, each year, is transformed into new series, new models, new looks, new attributes and often new personalities. During the period between

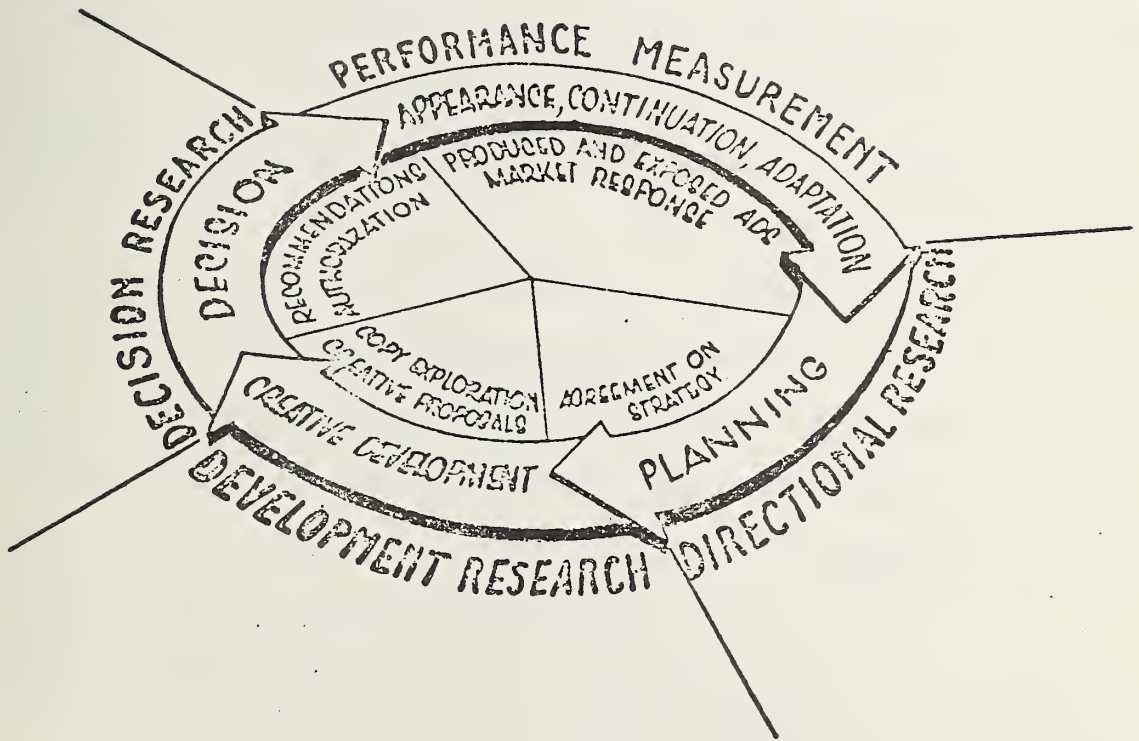
purchases, the consumer can witness two, three, or four such annual transformations. Different models in a line may use different themes and formats, and it is not uncommon for one model to use different advertising approaches through the model year.

As a result, there are limited opportunities to test and continue finished advertising, or to make adaptations in presentation as a result of advertising research. The desirability of secrecy for new cars and new advertising themes acts as a further restraint on pre-testing.

Nevertheless, systematic procedures have been developed over the last 10 years and have been installed at both Ford Motor Co. and General Motors for use whenever and wherever time and money permit and management needs guidance. It is an available system rather than a required system. An example is shown in Figure 11. The approach encompasses a four stage cycle:

- Directional Research - Planning leads to an Agreement on Strategy
- Developmental Research - Creative Development leads to Copy Explorations and Creative Proposals
- Decision Research - Decisions lead to Recommendations by the Advertising Agency and Authorization by Client Management
- Performance Measurement - Appearance Continuation, Adaptation Lead to Produced and Exposed Ads and a Response from the market.

FIGURE 11
THE CYCLE OF RESEARCH



Source: J. Walter Thompson

5.5.3 Directional Research

What is done in the auto industry ranges from a few simple consumer interviews or a partial review of survey information, to the orderly conduct of a comprehensive marketing and Advertising Planning procedure. More often than not what is prepared is an "Appraisal of Advertising Opportunities." This is usually based on the feedback, overtime, of the many continuing and recurring studies conducted by and for each of the companies. What usually develops is a marketing data book that covers all information by company and by car-line to show how consumers behave, how and why they behave as they do, corporate and product strengths and weaknesses, facts about the market--who the customers are, where they are, how they live, and what their needs and wants are.

This information helps management decide what advertising should be designed to accomplish:

- Build awareness of new models,
- Convert awareness into favorable dispositions,
- Qualify "Brand X" for serious consideration,
- Build a continuing brand personality for certain prospect groups,
- Select the most significant and persuasive product attribute and use message, media and mood to register it deeply and broadly,
- Stimulate dealer traffic,
- Stimulate test drives,
- Reinforce purchasers in the "rightness" of their decisions.

This Directional Research is an outgrowth of the annual information summary, the conduct of additional group interviews and it leads to an "Appraisal of Advertising Opportunities," and objectives.

5.5.4 Developments Research

In this phase of the process ideas are tested to provide guidance for creative developments. Research is conducted using storyboards, prototype comprehensives, sound tracks, soundtracks with animated storyboards, etc. These are exposed to people who represent the market the manufacturer is trying to reach. These are small scale studies which attempt to measure comprehension, meaning, and persuasiveness. These studies are sometimes participated in by the agency creative people. The techniques vary from simple, direct conversations with prospects to structured group interviews.

The purpose is to help the creative people preparing the campaign or ad to get a better understanding of how their output reaches and affects people. It further encourages creative thinking, and provides copywriters with suggestions on words, ideas or devices for the advertising.

This research is not objective or projectable. It is simply an informal way of establishing contact between creative people and their public.

5.5.5 Decision Research

This area of research affects decisions to be made by the Advertising Agency and the management of the auto company. The Agency decisions are whether or not to recommend a particular advertisement, advertising approach or advertising campaign. The Corporate decisions are whether

to accept, reject, or modify the Agency's creative endeavors.

These tests are known as pre-tests and often makes use of forced exposure techniques

- Theater tests - where prospects are brought in to view commercials
- Home Projector Tests - where ads and commercials are shown on projectors
- Portfolio or Direct Exposure Tests - for magazine and newspaper ads.

The research methods vary widely both in the testing situation, and in the kind of performance the tests measure. Some tests reflect immediate recall, delayed recall, relative sales convictions, changes in specific attitudes, gain in attitude, change in awareness, gain in make or model predisposition.

These tests are conducted with samples of about 250-300 and are geographically dispersed, although not necessarily a projectable sample. In effect these are controlled exposure communications tests designed to measure what is communicated by the ads, singly or in a series.

5.5.6 Performance Measurements

Over the years this has gone from Starch scores (recognition) to Gallup-Robinson (recall). More recently it has become popular to think of Performance Measurement in terms of progress toward pre-determined brand or advertising awareness and even in terms of sales.

Continuing Altitude studies are used to check for progress toward strategic advertising objectives, although it is recognized that changes

in awareness, beliefs, attitude, attribute association, and shopping behavior may reflect the operation of many other factors than just advertising.

5.6 DISTRIBUTION

Earlier, it was noted that marketing in the automotive as in any industry is concerned with getting the right product, at the right place at the right time, and for the right price. Distribution is concerned with providing the time and place utility. It has long been recognized that one of the last frontiers of marketing is distribution and if one is to get a "leg up" on competition one must be able to increase distribution efficiency in terms of "availability" and at lower costs.

A review of the marketing organizations of each of the automotive producers indicates that there are numerous specialists assigned to this area to plan and facilitate distribution as well as subsidiaries designed to facilitate transfer. At Ford, for example, there is a:

- Dealer Policy Board (reporting to the Board of Directors)
- Distribution Planning Function
- Dealer Relations Function
- Dealer Development, Director
 - Retail Operations Manager
 - Controller, Dealer Development
 - Minority Dealer Operations and Training Manager
 - Dealer Investment Services Manager
 - Leasing Operations Manager
 - Branch Operations Managers

- Ford Marketing Institute
- Marketing Representation Office
 - Marketing Representation Manager
 - Dealer Franchising Manager
 - Business Management Department
 - Representation Planning Department
 - Dealer Contracts and Identification Manager
 - National Dealer Placement Manager

These specialists are constantly observing internal computerized sales forecasts and sales data as well as reviewing dealer records and meeting with individual dealers, the dealer councils and various other dealer groups in an effort to improve relationships and the logistics of moving goods, services and parts profitably from supply points to the dealers.

There is no doubt that the prime concern in the distribution process is with the number, type and caliber of the dealerships. These dealerships represent the final link with the marketplace, and the success or failure of the manufactures to a great extent rests with the dealers. It is in management's interest to see that a good and fair relationship exists and that the dealers are well prepared to do a profitable job for both parties.

The contract under which both parties exist and operate is known as a Dealer Franchise Agreement. This may be modified from time to time to meet changing conditions. Often dealers may feel that they are being treated unfairly under the agreements and may individually or in group register their grievances for consideration.

One of the areas of dealer concern may be the use of company stores. As a rule, these are dealerships that came into existence because the manufacturer wants representation for some reason in an area that may be unprofitable or too risky for an independent dealer, e.g., Manhattan, or it may be a point where some dealer failed and management wants to keep its representation. This is usually maintained with a paid manager with a "buy out" provision.

To facilitate distribution there are also a variety of subsidiary operations whose function is to render services:

- Car Leasing Subsidiaries
- Car Rental Subsidiaries
- Real Estate Subsidiaries-operate land bank speculations to assure future dealership site selection
- Corporate owned and managed finance companies, e.g., FMCC, GMAC, etc.
- Corporate owned and managed insurance companies
- Service Research Centers and Diagnostic Centers

A major input to the manufacturers' success is how the dealers perform their jobs. To this extent the various dealer training groups such as the Ford Marketing Institute prepare programs and Seminars to improve dealer performance and profitability. These take the form of class lectures, discussions and case histories. A sampling of topics will illustrate something of the variety of subjects addressed:

- Managing management time
 - Responsibilities and functions of all members of Sales Department

- Financial Sales Management
 - Profit management for the Sales Manager
 - Dealer Financial Statements
 - Management by Objectives For The Sales Manager
- Managing Your Market
 - Recreational Vehicle Marketing--New Opportunities
- Finance and Insurance Sales
- Patterns of Management
- Recruiting and Selection of Salesmen
- Compensation
 - Salary vs. Incentive
 - Putting together Effective Sales Incentive Programs
- Direction of Salesmen
- Direction of Solicitation
 - Prospecting
 - Showroom Traffic Control
 - How to Close
- Motivation
- Designing Effective Sales Meetings
- Training of Salesmen
- Advertising and Promotion
 - Planning Promotions that Pay
 - 100 Successful Promotional Ideas
 - Budgets, Media and Messages
- Running an Effective Parts and Service Operation

All of these distribution specialists and subsidiaries are constantly observing the changing environments, internal computerized sales forecasts as well as sales data in an effort to improve the logistics of moving goods, services and parts. Constantly under review are the order processing procedures, inventory control procedures, mix determination procedures, inventories, mix and transportation availability and costs. The objectives are to increase efficiency, speed, to reduce costs of over and under inventory, reduce risk and encourage profitability for both the manufacturer and the dealers.

During the last two decades there has been increasing recognition that the distribution of products and parts must be viewed as a total logistic system with the overall objective of minimizing total, corporate-wide costs consistent with the constraints of meeting customer service and delivery needs. Within this context extensive use has been made of linear programming and other models in which parts production, assembly plants, warehousing and major distribution points, transport modal costs and time delays, ordering requirements and inventory levels are all given explicit consideration. Decisions concerning optimal distribution policy can even work their way back into product design and engineering, involving decisions on sourcing, the use of common parts, materials handling, packaging, relationships with suppliers, and a host of other matters. The dealer and dealer affairs, as important as they are, are just one set of links in a complex chain or network of interrelated distribution, logistics and financial management concerns. Marketing's stake in the whole distribution process is, naturally, on the interface

with and effects upon the consumer and his perceptions and disposition to purchase the company's products and return for service--in short, in his perception of the dealership as a good place to do business. In this regard there is close attention to all matters that affect the consumers contact with the dealer organizations as these relate ultimately with satisfaction with the product and its servicing.

The terms of research inputs to distribution decision making, all pertinent marketing research data is made available to all concerned with the various phases of distribution. A number of the special recurring studies which are undertaken provide clues to distribution problems:

- Buyer Shopping Behavior Studies
- Car Leaser and Renter Studies
- New Car Service Behavior Studies
- Dealer Image Studies
- Price Shopping or Dealer Behavior Studies
- Individual Dealer Image Studies

From time to time, ad hoc studies are conducted on specific areas of concern, such as:

- Central vs. Sattelite service
- Good Dealers vs. Poor Dealers
- Characteristics of a Good Dealer Location
- Dealer Sales, Service and Profitability
- Specific Location Studies based on population growth and migration, traffic patterns, consumer behavior and competition.

- Costs of shipments to various points by air, rail, truck, or such combinations as piggyback (truck-train), birdy-back (truck-plane) or fishyback (truck-boat) vs. trade-offs in other costs, horizontal pack vs. verti-pack.
- Assembly plant location studies so as to maximize efficiency.

References for Chapter 5

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3. Ibid.
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6. ASSESSMENT OF CURRENT PROBLEMS AND ISSUES

The present section focuses on current issues and problems facing the automobile manufacturers as a consequence of the legislation of average fuel economy standards. In the cases of safety and emissions regulations, marketing was at most only marginally involved. While there was obviously concern about consumer acceptance and reactions to the costs and/or performance implications of mandated safety, damageability and emissions regulations, it was not the case that there was very much that marketing could do about the situation nor were there any serious competitive implications to the regulations. All manufacturers were in the soup together. American Motors because of its very limited resources was forced to seek technical support outside and was granted permission to contract for emissions control development with General Motors. In the present case, however, marketing has a direct and critical role to play with regard to compliance with the passenger automobile average fuel economy standards. It should be noted that the intent of the present discussion is to highlight some of the issues and problems, it is not to offer solutions nor to suggest what the individual manufacturers will or will not do in response to these regulations.

The reason that the marketing function assumes a position of critical importance is a direct consequence of the fact that each manufacturer's compliance, or noncompliance, with the standards depends on its ability to produce and market a mix of passenger vehicles whose harmonic mean

fuel economy (in miles per gallon) does not exceed the applicable standard for each succeeding model year. In order to appreciate the context for the manufacturers' decision making with respect to both marketing and other functional areas, it is appropriate to consider separately the time period in advance of any given model year in which decisions and commitments must be made and the time period that begins with the introduction of that model year's vehicles into commerce and the decisions and measures appropriate thereto. It should be noted, however, that during the anticipatory or planning phase the manufacturer must consider and weigh alternative actions (both its own and those of its competitors) that may be taken both before and during each succeeding model year.

We consider first the task and issues facing marketing and allied functions in the planning phase for a given future model year, whose average fuel economy standards may or may not be fixed at the present time. The critical task is that of forecasting as best one can the probable industry mix by size class (both domestic and import) and the manufacturer's own probable sales mix as a function of alternative product and marketing actions under consideration and of all of the other factors that can affect consumer choice and behavior. Such forecasting and the coping with its inherent uncertainties is normally a shared responsibility of marketing (and marketing research), economics (usually a part of finance staffs), car division and other staff and line management executives. Such forecasting, while always important, gains new importance since compliance (and possible civil penalties for

non-compliance) and possible competitive shifts or dislocations are now at issue.

The most direct marketing responsibility at this stage will be to gauge as accurately as possible the probable consumer and market response to the new menu of choices stemming from the fuel economy regulation and, in particular, the consumer's acceptance of the company's own contemplated product changes. It may be fairly assumed that each of the manufacturers is or will be conducting one or more of the customary or ad hoc studies of the type described in the preceding chapter. Similarly, it may be assumed that the economics departments will be seeking to fathom probable economic developments, and future gasoline prices (with and without the President's proposed energy legislation) and other macroeconomic factors that affect the automobile market using all the data and techniques to which they have access. It is perhaps appropriate to note in passing, that given the normal 3- to 4-year product planning cycle each of the companies has well-advanced, if not completed, its product planning programs for the 1980 and 1981 model years; whereas, subsequent model year plans are at best in very preliminary stages. NHTSA on the other hand has been pressing the companies for very detailed program plans and market assessments out to the 1985 model year. In the same vein, the manufacturers are now essentially locked-in on their 1978 and 1979 model year product offerings and have already made substantial commitments for 1980, most of which decisions and commitments were made in relation to an assumed voluntary fuel economy improvement program and assessments of a market-driven shift in demand for smaller and more fuel efficient vehicles.

What may be reasonably concluded at this point in time is that each of the manufacturers on the basis of its perceptions and assessments, analytical or otherwise, of what is likely to happen will seek to produce a marketable and compliant mix of vehicles while preserving as much flexibility as possible to accommodate for uncertainty and the impossibility of knowing precisely what is going to happen. All additions to, deletions from and modifications of the manufacturer's product offerings must include consideration of the potential impact of the change on the corporate fleet average fuel economy. The same holds true for contemplated changes in manufacturing plants and productive capacities. An interesting, but perhaps unintended, side effect of regulating each manufacturer on the basis of its fleet average fuel economy is the incentive provided all manufacturers, domestic and foreign, to move in the direction of an "averaged" or full line of vehicles, for under the regulation it will become less feasible for any manufacturer, of more than 10,000 vehicles, to concentrate on any one segment of the market, particularly one at the extremes.

We turn now to a consideration of marketing's role and potential problems as the manufacturer embarks upon the production and sale of its automobiles in some future model year with a requirement to meet some specified fleet average fuel economy. All of the major product and productive capacity decisions would have been made three or more years prior to this time on the basis of the manufacturer's then best guesses of what this "future" environment would hold. It will be marketing's job to assure the sale of a compliant mix. Toward the beginning of the

model year a number of initial decisions will be made on product pricing and production scheduling which will be based on the then current economic, market and regulatory environment and which it is expected would lead to a compliant sales mix. Incidentally and depending upon the course of events up to that time, these pricing decisions may be either ordinary or extraordinary in terms of today's practice. If, for example, gasoline prices had been held at a relatively stable level, in real terms, and the demand for larger size cars was running high, then the initial pricing decisions of certain manufacturers may involve a cross-subsidy intended to "move" the market toward compliance. In this case, other manufacturers would face the possible need to make appropriate price adjustments to remain competitive. As the model year progresses and depending upon the sufficiency of the initial pricing decisions, the manufacturer will observe whether the balance of inventories, say in terms of the days supply of each make and model, is within "acceptable" limits. If so, then its business as "usual"; if not, then marketing must assess what "corrective" measures would be effective and appropriate under the circumstances. Among the repertoire of potential choices are such items as further price adjustments (including dealer incentive programs, rebates and direct price changes), production scheduling changes (with risk of noncompliance), advertising and public information campaigns (which might be directed toward either changing consumer behavior or the regulatory environment), or some combination of these or other items. It is certainly conceivable that one or more of the manufacturers would have available at that time an elegant linear

(or non-linear) programming model or other optimization techniques that could balance all elements of cost and risk to facilitate the successive "fine tuning" of pricing and other marketing actions to achieve compliance within a set of corporate financial objectives. While this may appear overly "futuristic," there is little doubt that there is now a strong incentive to attempt to move in that direction.

The pricing issues raised above are both complex and important, and the possibility, even if remote, of deliberate internal cross-subsidies by the full-line manufacturers has important competitive implications and raises the further issue of possible structural change in the automobile industry (including, of course, the market shares of the manufacturers of imported vehicles). It should be noted that the President's legislative proposal for a system of excise taxes and rebates (whether the rebates are enacted or not) represents in effect a federal presumption of the need for a cross-subsidy, i.e., of increased price differentials to move the market toward a compliant mix. Any arbitrary schedule of taxes and rebates leaves then to the manufacturer merely the additional task of fine-tuning.

Each manufacturer, however, faces a different set of pricing problems which are a function of its historical market segmentation and customer loyalties, what it can achieve through its technology and product improvement programs, how far it must move year-to-year to remain in compliance, as well as the usual matters of its manufacturing costs and scale economies. It may be presumed that there are sets of average prices by car-size class that would lead the market as a whole to purchase

a compliant mix of vehicles, but what is not known with any certainty or precision are the demand elasticities by size class either for the market as a whole or for each manufacturer's separate product lines. Theoretically, prices will tend to be set by the manufacturer with the least flexibility, i.e., the manufacturer whose own demand function is on or closest to the industry demand function. Unfortunately, not enough is known to specify or forecast what these demand functions will be. Similarly, a company's ability to cross-subsidize without sacrifice of profits depends on where it stands vis a vis the industry demand curve. The prospect then is for a period of considerable confusion and uncertainty as each manufacturer, in effect, experiments with its own pricing while keeping a close eye on what the others are doing.

While there is considerable doubt and confusion in the pricing arena, there is probably even more doubt and confusion with regard to the efficacy of advertising to influence or shift demand toward a compliant mix. Advertising can be extremely effective when it is in "tune" with, reinforces or is consistent with the consumer's set of beliefs, attitudes, and expectations or aspirations. When it runs counter to any of these deeply rooted mental sets, it tends to pass unheard and unheeded. Messages extolling the virtues of energy conservation or exhorting sacrifice in the same cause are likely to be "unseen" and "unheard" in the absence of a strong and shared conviction that there "really" is an energy crisis, and even then these are the kind of messages people don't want to hear, prefer to disbelieve and will try to find ways to discredit and disallow--until or unless the evidence becomes overwhelming.

We return to the current context of manufacturer planning in response to the fuel economy standards and the critical role of marketing's input to such deliberations. First, and perhaps surprising, is the need for a marketing assessment (if not recently undertaken) of current downsizing and other fuel economy improvement programs that were conceived or launched prior to the mandating of the average fuel economy standards. Such assessment should address the specific issue of the probable impact of these programs and product changes on the sales mix in the light of current anticipations of the range of exogenous factors (including economic conditions) affecting consumer demand, target pricing alternatives, and consumer perceptions of the "altered" products. The critical question is how, or the extent to which, different consumer groups or market segments will weigh the presumably unchanged functional attributes of interior passenger/baggage volumes and acceleration performance in relation to other tangible and intangible attributes that may have been altered in the process. It's the age old question of how consumer tastes, preferences, attitudes and perceived needs are reflected in their purchase decisions.

Second, marketing in concert with economics and governmental affairs staffs must, as already noted, attempt to unravel the complexities, uncertainties and the what-might-happens as they relate to probable changes and shifts in consumer demand for automobiles. Clearly, then, management must develop a strategy for coping with uncertainty which minimizes the risks of economic loss to the corporation. Part of this strategy, in all likelihood, will be an effort to weigh current product decisions

and capital investment decisions in relation to possible hedges and future marketing, lobbying or other actions that might be taken as corrective measures should the current assessments and decisions prove to be insufficient. The touchstone of this strategy, we assume, will be to preserve as much flexibility as possible in product offerings and manufacturing and production capability (signalling increased automation with computer controls, multi-purpose facilities, component/sub-system rationalization, and quick-change programs and tooling). In support of this strategy we expect both increased efforts to "bank" research and technology developments and increased efforts to further refine and enlarge the data bases and analytical techniques used for modeling and forecasting the total environment within which the industry operates.

While the "going-in" advantage of the largest firm is formidable simply because of the magnitude of its resources and market strength, it is by no means clear that "traditional" leader-follower relationship will prevail. It should be noted, apropos of this, that there are many dimensions of leadership involving all aspects of innovation and the issue is not confined to a pricing advantage conferred by manufacturing or other economies of scale. A critical issue under the average fuel economy regulation is the question of the relative pricing flexibility each company has in relation to its product line and market position and the overall industry demand function.

7. STATE OF ART SUMMARY

The primary objective of the present study has been to present a fair and reasonably comprehensive characterization of current marketing practice, methods and context of decision making in the automobile industry. This concluding section attempts to distill in highly summary form the essence of the preceding account.

The primary function of marketing, as distinct from sales, advertising, distribution or any of its other components, is understanding the consumer and consumer behavior in all of its complexity, richness, subtlety and nuance, and the translation of this understanding into a set of products or product lines whose attributes match to as high a degree as possible meaningful groupings of consumer needs, preferences and expectations. Marketing can thus be viewed as a two-way communication process--from the consumer to the manufacturer for product and marketing planning and to the consumer with products, services and informational support. The consumers, the buyers and users of automobiles, it must be emphasized, have at any given time and in relation to their incomes a rich repertoire of choices for satisfying their needs and desires for personal mobility that is not limited to the menu of choice of new passenger cars that happen to be offered by the manufacturers of domestic and imported automobiles in any given year. The U.S. market for automobiles is large, complex, highly competitive and ever changing, an extremely important characteristic of which is the fact that the millions of new car sales

each year are the result of millions of individual households making their separate and individual purchase decisions.

The marketing function is of necessity tightly integrated or inter-related with virtually all other functional areas of the business, and marketing inputs, assessments and decisions flow to and from these other functional areas, including product planning, product design, financial and economic analysis, engineering and manufacturing, legal affairs, and public and governmental affairs and relations. There is thus hardly any area of business decision making, including even what might appear to be trivial product changes, that doesn't have marketing implications.

The marketing organizations of the domestic automobile companies, roughly in proportion to their relative sizes, have developed and apply elaborate procedures for collecting, analyzing and interpreting information about consumer needs, desires, perceptions and expectations, i.e., for keeping their corporate fingers on the pulse of the marketplace. Vast amounts of data and information are systematically collected, processed, and evaluated from a rich array of internal and external sources. During the last two decades in particular, increasing use has been made of increasingly sophisticated analytical and modeling techniques in an effort to both better understand what is happening and to better forecast what will happen in the automobile market. Notwithstanding the considerable amount of science and technology brought to bear upon the collection and analysis of relevant data, it must be concluded that marketing is and probably must remain an art that is largely infused with the judgments, styles and creative insights of its practitioners

and that must even cope with a large and irreducible element of risk and uncertainty.

To appreciate the context of marketing decision making in the automobile business, it is appropriate to distinguish between the prospective phase of product planning and corporate strategy and the active phase of current model year marketing consisting of sales, advertising, promotion and distribution. One of the most sobering facts of the automobile business is the three to four-year new product development cycle and the even longer lead times represented in the bringing of new technology into the marketplace. A corollary and similarly sobering fact is represented by the magnitude of the capital investment represented by the major manufacturing facilities required for the mass production of automobiles. Marketing, albeit in concert with other corporate functions, is thus always faced with the need to make assessments and judgments about changing consumer behavior and market conditions on an approximately three-year leading edge. There is a rapidly decreasing range of choice and flexibility as one moves from the early stages of a new car's planning and design to the production of Job 1 and as critical decisions are made on the long lead-time procurement items. As the pace of change quickens, as it has largely due to the imposition of federal regulations affecting automobile characteristics, there is an even higher premium placed on the ability to forecast with reasonable confidence the consequences and market implications of these changing conditions. It is appropriate to note with particular force that the legislation of average fuel economy standards, in which the criterion of compliance is assessed after

the fact of the consumers having rendered their votes in the marketplace, imposes an even more stringent requirement for clear vision into the future, i.e., of accurately gaging probable consumer responses to the product changes introduced to improve fuel economy.

After all the myriad financial product, tooling, and facilities trade-offs, allocations and decisions have been made and implemented, the manufacturers come to the moment of truth when the several Job 1's roll off the assembly lines. If all the right guesses and decisions have been made, the model year's marketing is straightforward utilizing well-established and known techniques for the sale and merchandising of automobiles, and the profits roll in. If, however, there were miscalculations or misallocations and some car lines or models sell well and others poorly, then inventories move out of balance and corrective actions are required. In the past the manufacturers would seek to restore a reasonable degree of balance by initiating either production scheduling changes, including temporary plant shut-downs or extra shifts, or marketing incentive programs, usually dealer incentives or special "package deals" for combinations of options or as in a recent extreme case, a system of customer rebates for the slow moving small cars. In principle at least, the selection of appropriate corrective measures is a straight-forward exercise in profit-maximization; however, considerable doubt has been expressed concerning whether the rebates or other price concessions shift the market mix or merely pull sales ahead in time or whether there is some combination of these effects. Under the mandating of average fuel economy standards, the option of adjusting production

schedules to balance inventories also carries the risk of noncompliance and imposition of civil penalties on the manufacturer's total output. The potential then for the use of pricing as a principal means for a manufacturer seeking to maintain a compliant sales mix must be reckoned as a serious issue for marketing decision making as well as a serious issue for an assessment of the potential impacts of the fuel economy legislation and its implementation.

A further implication of the fuel economy legislation stems from the criterion of corporate compliance. In the multi-divisional companies, primary responsibility for marketing decision making must shift from Car Division Marketing to a Corporate-wide staff or operations level. Car Division product plans and marketing goals must be consistent with a corporate goal of compliance with the law. During a regulated model year, furthermore, the sales performance of each division must be balanced and made conformant with the requirements for the corporate fleet average fuel economy.

Judged on the basis of overall growth and performance of the domestic automobile industry, one can reasonably conclude that marketing well-understands the tastes, preferences and car needs of the majority of the American public. The wide cyclical variations in the industry, exclusive of those related to the UAW bargaining cycle, are certainly in large part a function of economic changes beyond the industry's control but may in part signal a lack in responsiveness to changing consumer needs and preferences. The dramatic failure or early deaths of certain car models certainly attests to the fallibility of marketing and related

management judgment. The point here is neither to blame nor excuse but rather to underscore the complexity and uncertainty of the environment within which marketing and other management decisions must be made. The dynamics of the automobile market are understood, and probably only understandable, to a limited degree. The data and tools with which marketing must work are clearly imperfect. That through the application of continuing efforts to further refine and enlarge these resources, it is also clear that substantial gains have been made and probably will continue to be made.

APPENDIX A

ORGANIZATION OF GENERAL MOTORS CORPORATION (To the Vice President and General Manager Level, 1975)

Stockholders

Board of Directors

- Audit Committee
- Bonus and Salary Committee
- Nominating Committee
- Public Policy Committee
- Executive Committee
 - Policy Groups
 - Product
 - Industrial Relations & Public Relations
 - Marketing
 - Personnel Administration & Development
 - Procurement Production Control & Logistics
 - Research
 - Power and Appliance
 - Overseas
 - Safety Administrative Committee
- Finance Committee

Chairman of Board of Directors

- President
- Vice Chairman
- Legal Staff, Vice President & General Counsel
 - Vice President & Associate General Counsel
 - Secretary
- Executive Vice President

President

- Administration Committee
- Executive Vice President
 - Car and Truck Group, Vice President
 - Buick Motor Division, General Manager
 - Cadillac Motor Car Division, General Manager
 - Chevrolet Motor Division, General Manager
 - Oldsmobile Division, General Manager
 - Pontiac Motor Division, General Manager
 - GMC Truck & Coach Division, General Manager
 - General Motors of Canada Ltd, President & General Manager
 - Body and Assembly Divisions Group, Vice President
 - Fisher Body Division, General Manager
 - GM Assembly Division, General Manager
 - Guide Division, General Manager

President (Cont'd.)

- Electrical Components Group, Vice President
 - AC Spark Plug Division, General Manager
 - Delco Electronics Division, General Manager
 - Delco Products Division, General Manager
 - Delco-Remy Division, General Manager
 - Packard Electronics Division, General Manager
 - Rochester Products Division, General Manager
- Service Parts Divisions, Executive in charge
 - AC-Delco Division, General Manager
 - General Motors Parts Division, General Manager
- Mechanical Components Group, Vice President
 - Central Foundry Division, General Manager
 - Delco Air Conditioning Division, General Manager
 - Delco Moraine Division, General Manager
 - Harrison Radiator Division, General Manager
 - Hydra-Matic Division, General Manager
 - Inland Division, General Manager
 - New Departure-Hyatt Bearings Division, General Manager
 - Saginaw Steering Division, General Manager

Executive Vice President

- GM Overseas Operations Division, General Manager
- Power and Appliance Group, Vice President
 - Detroit Diesel Allison Division, General Manager
 - Diesel Equipment Division, General Manager
 - Electro-Motive Division, General Manager
 - Frigidaire Division, General Manager
 - GM Transportation Systems Division, General Manager
 - Terex Division, General Manager
 - Diesel Division General Motors of Canada Ltd., General Manager

Vice Chairman

- Marketing, Vice President
 - Vice President-Sales
 - Motors Holding Division, General Manager
- Industrial Relations, Vice President
- Personnel Administration & Development, Vice President
- Procurement Production Control & Logistics, Vice President
- Executive Vice President
 - Design, Vice President
 - Engineering Vice President
 - Environmental Activities, Vice President
 - Manufacturing, Vice President
 - Research, Vice President
 - Energy Management Section, Director
 - Patent Section, Director
 - Corporate Product Planning Group, Director

Executive Vice President

Finance and Insurance Group

General Motors Acceptance Corp., President

Motors Insurance Corporation, Chairman-President

Pension Fund Investment Coordinator, Vice President

Finance Staff, Vice President

Treasurer

Vice President & Chief Economist

Comptroller

General Auditor

Industry-Government Relations, Vice President

Public Relations Staff, Vice President

APPENDIX B

ORGANIZATION OF FORD MOTOR COMPANY

(With Selected Staff and Line Organizations--to Department Manager Level, 1974)

Stockholders

Board of Directors

Committees of the Board of Directors
Dealer Policy Board

Chairman of the Board of Directors

Advisory Committees

Design Committee
Engineering and Research Committee
Finance Committee
Operating Policy Committee
Product Planning Committee

Executive Vice President

Finance and Insurance Subsidiaries, Chairman of the
Board and President
Ford Motor Credit Company
Ford Motor Land Development Company

Finance Staff

Finance Office, Vice President-Finance
Treasurer's Office, Vice President-Treasurer

Office of the General Counsel, Vice President

Personnel and Organization Staff, Vice President

Public Affairs, Vice President

Government Affairs and Planning Staff, Vice President

Washington Staff, Vice President

Public Relations Staff, Executive Director

President

Product Design Staff, Vice President

Design Center, Vice President

Operations Staffs, Executive Vice President

Environmental and Safety Engineering Staff, Vice President

Marketing Staff, Vice President

Labor Relations Staff, Vice President

Product Planning and Research, Vice President

Technical Affairs, Vice President

Manufacturing Staff, Executive Director

Scientific Research Staff, Executive Director

Supply Staff, Executive Director

Ford International Automotive Operations, Executive Vice President

Ford Diversified Products Operations, Executive Vice President

Ford North American Automotive Operations, Executive Vice President

Chairman of the Board of Directors

President (Cont'd.)

Ford International Automotive Operations

Asia-Pacific and Latin American Automotive Operations, Vice President

Ford Asia-Pacific, Inc. President

Latin American Group, Vice President

Ford Export Corporation, General Manager

Ford of Europe, Inc., Chairman of the Board

Product Development, Vice President

Manufacturing, Vice President

Sales, Vice President

Special Product and Manufacturing Programs, Vice President

Ford Diversified Products Operations

Ford Tractor Operations, Vice President-General Manager

Glass Division, General Manager

Philco-Ford Corp.

Consumer Products Operations

Aerospace and Communications Operations

Steel Division, General Manager

Ford North American Automotive Operations

North American Public Relations, Executive Director

Truck and Recreation Products Operations, Vice President-General Manager

Product Development Group, Vice President

Car Engineering, Chief Car Engineer

Car Planning and Research, Chief Car Planning and Research Engineer

Manufacturing Group, Vice President

Automotive Components Operations, Vice President

Chassis Division, General Manager

General Products Division, General Manager

Industrial and Chemical Products Division, General Manager

General Services, Director

Body and Assembly Operations, Vice President

Automotive Assembly Division, General Manager

Metal Stamping Division, General Manager

Body Engineering Office, Chief Body Engineer

Powertrain Operations, Vice President

Casting Division, General Manager

Engine Division, General Manager

Industrial Engine and Turbine Division, General Manager

Transmission Division, General Manager

Sales Group, Vice President

Ford Marketing Corporation, President

Ford Division, Vice President-General Manager

Lincoln-Mercury Division, Vice President-General Manager

Ford Customer Service Division, Vice President-General Manager

Ford Parts Division, Vice President-General Manager

Ford Motor Company of Canada, Ltd., President

Product Design Staff, Vice President-Product Design
 Executive Assistant
Ghia Operations, General Manager
Design Center, Vice President Designs
 Personnel and Organization Department, Manager
 Ford Design Office, Director
 Ford Car, Thunderbird and Torino, Design Executive
 Ford Car and Thunderbird Design, Design Manager
 Torino Design, Design Manager
 Mustang, Maverick and Pinto, Design Executive
 Mustang and Pinto Design, Design Manager
 Maverick Design, Design Manager
Lincoln-Mercury Design Office, Director
 Mark IV, Lincoln Continental & Mercury, Design Executive
 Mark IV and Lincoln Continental Design, Design Manager
 Mercury Design, Design Manager
 Cougar, Montego and Comet, Design Executive
 Cougar, Montego and Comet Design, Design Manager
Administration and Planning Office, Director
 Public Relations Manager
 Design Controller
 Fabricating Services Department, Manager
 Purchasing, Facility and Staff Services Dept., Manager
 Planning and Programming Department, Manager
 Design Modeling Department, Manager
Interior, Truck, Tractor, and Recreation Vehicles, Industrial Design,
Executive Director
 Interior Design Office, Director
 Ford Interiors, Design Executive
 Ford Car, Thunderbird and Torino Interior Design, Design Manager
 Mustang, Maverick & Pinto Interior Design, Design Manager
 Truck and International Interior Design, Design Manager
 Lincoln-Mercury Interiors, Design Executive
 Cougar, Montego & Comet Interior Design, Design Manager
 Mark IV, Lincoln Continental & Mercury Interior Design, Design
 Manager
 Trim, Color and Advanced Interiors, Design Executive
 Advanced Interior Design, Design Manager
 Material Development and Mastering, Design Manager
 Color Development & Coordination, Design Manager
Industrial Design Office, Director
 Industrial Design, Design Executive
 Environmental Design, Design Manager
 Product Design, Design Manager
 Transit Systems Design, Design Manager
Truck, Tractor and Recreation Vehicles Design Office, Director
 Truck, Tractor and Recreation Vehicles, Design Executive
 Truck Design, Manager
 Tractor Design, Design Manager
 Recreation Vehicles Design, Design Manager

Product Design Staff (Cont'd.)

Advanced Vehicles, Safety Design, and Engineering, Executive Director

Advanced Vehicles Design Office, Director

Advanced Ford Vehicles, Design Executive

Ford Car and Thunderbird Advanced Design, Design Manager

Torino, Mustang, Maverick and Pinto

Advanced Design, Design Manager

Advanced Lincoln-Mercury Vehicles, Design Executive

Mark IV, Lincoln Continental and Mercury Advanced Design,
Design Manager

Cougar, Montego and Comet Advanced Design, Design Manager

Safety Design and Special Vehicles Office, Director

Vehicle Safety Design, Design Executive

Exterior Vehicle Safety Design, Design Manager

International, Advanced Concepts, Exhibit and Special Vehicles,
Design Executive

Exterior International, Advanced Concepts, Exhibit & Special
Vehicle Design, Design Manager

Interior International, Advanced Concepts, Exhibit & Special
Vehicle Design, Design Manager

Chief Engineer, Design

Executive Designer

Design Feasibility, Manager

Systems and Appearance Surveillance Department, Manager

Advanced Engineering Department, Manager

Package Engineering, Executive Engineer

Custom Vehicle Package Design Department, Manager

Light Vehicle Package Design Department, Manager

Design Engineering, Executive Engineer

Exterior Resident Engineering Department, Manager

Interior Resident Engineering Department, Manager

Numerical Control Systems Department, Manager

Vehicle Safety Design Engineering, Manager

Marketing Staff, Vice President-Marketing
Organization and Personnel Planning Manager
Special Marketing Projects Manager
Executive Director, Operation Planning
Marketing Operations Office, Director
Market Representation Planning Manager
Dealer Operations Analysis Manager
Parts and Service Operations Analysis Manager
Sales Planning Office, Director
Sales Programming and Distribution Manager
Product and Marketing Plans Manager
Nonautomotive Marketing Office, Director
Consumer Products Marketing Manager
Industrial and Commercial Products Marketing Manager
Executive Director, Advertising and Research
Advertising and Marketing Programs Office, Director
Advertising and Merchandising Plans Manager
Corporate Advertising and Sales Promotion Department, Manager
Dealership Identification Manager
Marketing Research Office, Director
Car Product and Buyer Research Department, Manager
Truck Product and Buyer Research Department, Manager
Advertising and Distribution Research Manager
Overseas Marketing Research Manager

Product Planning and Research, Vice President-Product Planning and Research
 Financial Analysis and Control Manager
 Personnel and Organization Manager
 Executive Director, Product Planning
 Car Strategy Office, Director
 North American Product Programs Manager
 International Product Programs Manager
 Truck Strategy Office, Director
 North American/European Truck Product Programs Manager
 Asia-Pacific and Latin American Truck Product Programs Manager
 Component and Diversified Products Office, Director
 Industrial and Commercial Product Programs Manager
 Consumer Product Programs Manager
 New Concepts Product Planning Office
 Advanced Pre-Program Planning Manager
 Advanced Pre-Program Powertrain Planning Manager
 Advanced Pre-Program Concepts Planning Manager
 Advanced Pre-Program Business and Sourcing Planning Manager
 Advanced Pre-Program Business Planning Manager
 Advanced Pre-Program Sourcing Planning Manager
 Executive Director, Engineering
 Engineering Evaluation and Materials Office, Director
 Product Evaluation, Executive Engineer
 Vehicle Evaluation Manager
 Systems Evaluation Manager
 Materials Engineering Manager
 Engineering Methods and Applications Department, Manager
 New Concept Engineering Office, Director
 Vehicle Engineering Manager
 Body Engineering Manager
 Chassis Engineering Manager
 Powertrain Engineering Manager
 Electrical and Climate Control Engineering Manager
 Technical Planning Office, Director
 Long Range Vehicles Technical Planning Manager
 Components, Options and Major Systems Technical Planning Manager
 Metrication Planning Office, Director
 Executive Director, Engine Research
 Technical Consultant
 New Technology Development Manager
 Rotary Engine Research Office, Director
 Manufacturing Development Manager
 Basic Engine Research, Executive Engineer
 Engine Engineering Manager
 Design Service and Analysis Manager
 Materials, Engines and Emissions Development Engineering, Executive
 Engineer
 Materials Development Manager
 Development Engineering Manager

Reciprocating Engines and Emissions Research Office, Director
Component and Emissions Research
Induction, Emissions and Combustion Research Department, Manager
Technical Services Department, Manager
Reciprocating Engines Research
Stratified Charge Engineering Department, Manager
Advanced Concepts and Engineering Department, Manager
New Powertrain Concepts Research Office, Executive Engineer
Alternate Engines, Powertrain and New Concepts Research,
Executive Engineer
Alternate Engines Research Department, New Concepts Research
Manager
Turbine Engine Research, Executive Engineer
Ceramic Turbine Development Department, Manager
Turbine Engineering Department, Manager

Car Planning and Research, Chief Car Planning and Research Engineer
 Car Product Planning Office, Car Product Planning Manager
 Styling Liaison Manager
 Simplification Planning Manager
 Ford Car Product Planning Manager
 Light Car Planning Manager
 Mustang Planning Manager
 Maverick Planning Manager
 Pinto Planning Manager
 Custom Car Planning Manager
 Ford Car Planning Manager
 Thunderbird Planning Manager
 Torino Planning Manager
 Marketing Analysis Manager
 Lincoln-Mercury Product Planning Manager
 Light Car Planning Manager
 Cougar-Montego Planning Manager
 Comet-Import Car Planning Manager
 Custom Car Planning Manager
 Mercury Planning Manager
 Lincoln-Mark IV Planning Manager
 Marketing Analysis Manager
 Advanced Car Product Planning Manager
 Pre-Program Planning Manager
 Pre-Program Business Planning Manager
 Pre-Program Concepts Planning Manager
 Advanced Pre-Program Planning Manager
 Advanced Business Planning Manager
 Advanced Concepts Planning Manager
 Special Product and Market Studies Manager
 Planning Research Manager
 Emissions and Powertrain Product Planning Manager
 Emissions Planning Manager
 Emissions Pre-Program Planning Manager
 Emissions Program Planning Manager
 Powertrain Planning Manager
 Safety Product Planning Manager
 Safety Pre-Program Planning Manager
 Safety Program Planning Manager
 Car Research Office, Chief Research Engineer
 Technical Planning Manager, NAAO
 Technical Planning Manager, Vehicle, Body and Components
 Features and Supplier Research Manager
 Assistant to the Chief Research Engineer
 Advanced Features and Vehicle Engineering, Executive Engineer
 Concepts and Features Manager
 Advanced Vehicle Department
 Special Vehicles Department
 Advanced Pre-Program Engineering, Executive Engineer
 Advanced Safety Car Department, Manager
 Advanced Custom Car Department, Manager
 Advanced Light Car Department, Manager
 Advanced Compact Car Department, Manager

Ford Marketing Corporation, President
Personnel and Organization Manager
Marketing Services, Director and Treasurer
Financial Analysis and Control Manager
Accounting and Banking Manager
Purchasing Manager
Dealership Real Estate Manager
Western U.S. and Canadian Region, Manager
Eastern U.S. and Special Facilities Region, Manager
Real Estate Planning Manager
Marketing Institutes Manager
Curriculum Development Manager
Marketing Institutes:
Atlanta - Manager
Chicago - Manager
Dallas - Manager
Detroit - Manager
New York - Manager
San Francisco - Manager
Dealer Development, Director
Retail Operations Manager
Controller, Dealer Development
Minority Dealer Operations and Training Manager
Dealer Investment Services Manager
Leasing Operations Manager
Branch Operations Manager - East
Branch Operations Manager - West

Ford Division

Ford Marketing Corporation, Vice President - General Manager

Division Staff

Executive Assistant - Dealer Affairs
Administrative Assistant to the General Manager - TBA
Public Relations Manager
Personnel and Organization Office, Personnel and Organization Manager
Personnel Planning Manager
Salaried Personnel and Training Department, Manager
Organization and Salary Administration Department, Manager
Administrative Services Department, Manager
Controller's Office, Divisional Controller
Financial Studies Manager
Cost Analysis Department, Manager
Market and Price Analysis Department, Manager
Accounting Department, Manager
Marketing Systems Manager
Operating Systems Manager
Special Operations Department, Manager
Telecommunications Processing Department, Manager
Vehicle Information Systems Department, Manager
Financial Systems Department, Manager

Ford Division

Ford Marketing Corporation, Vice President - General Manager (Cont'd.)

Division Staff (Cont'd.)

Dealership Computer Services Manager, Manager
Dealer Computer Services Sales and Marketing Department, Manager
Systems Development and Control Department, Manager
Systems Planning and Development Department, Manager
Operations Research Manager

Operations

General Marketing Manager

Custom Car/Light Truck and Recreation Marketing Plans Manager

Light Car Marketing Plans Manager

Advertising Office, Advertising Manager

Television/Radio Advertising Manager

Newspaper/Magazine Advertising Manager

Budget, Media Analysis and Dealer Advertising Manager

Truck Advertising Manager

Merchandising Office, Merchandising Manager

Display and Exhibit Manager

Car Merchandising Department, Manager

Truck and Recreation Merchandising Department, Manager

Used Vehicle Department, Manager

Fleet and Leasing Office, General Fleet and Leasing Manager

Government Sales Manager

Fleet, Leasing and Finance Planning Manager

Finance Plans Manager

Fleet and Leasing Sales Manager

Major Accounts Manager

Hertz Account Manager

Dealer Leasing and Rental Sales Manager

National FALS Manager

Rent-A-Car Manager

Heavy Truck Sales and Marketing Office, Truck Sales and Marketing Manager

Heavy Truck Order Department, Manager

Heavy Truck Sales Department, Manager

Truck Retail Operations Department, Manager

Heavy Truck Field Operations Department, Manager

General Sales Manager

Northeastern Regional Sales Office, Regional Sales Manager

Southeastern Regional Sales Office, Regional Sales Manager

Great Lakes Regional Sales Office, Regional Sales Manager

Central Regional Sales Office, Regional Sales Manager

Western Regional Sales Office, Regional Sales Manager

Executive Assistant to the General Sales Manager

Sales Programs Manager

Sales Programs Manager

Option Programs Manager

Ford Division

Ford Marketing Corporation, Vice President - General Manager (Cont'd.)
Operations (Cont'd.)

Recreation Products Sales Manager

Recreation Center Project Manager

Recreation Vehicle Sales Manager

Light Truck Sales Manager

Programming and Distribution Office, Programming and District Manager

Sales Planning and Analysis Manager

Capacity Planning Manager

Sales Management Data Department

Sales Forecasting Manager

Car and Truck Sales Programming Department, Manager

Distribution Department, Manager

Car and Light Truck Special Order Department, Manager

Traffic Department, Manager

Market Representation Office, Market Representation Manager

Dealer Franchising Manager (East)

Dealer Franchising Manager (West)

Business Management Department, Manager

Representation Planning Department, Manager

Dealer Contracts and Identification Department, Manager (Acting)

National Dealer Placement Manager

FIGURE C-2

PRODUCT & MARKET PLANNING PROCESS--
ENVIRONMENTAL FACTORS

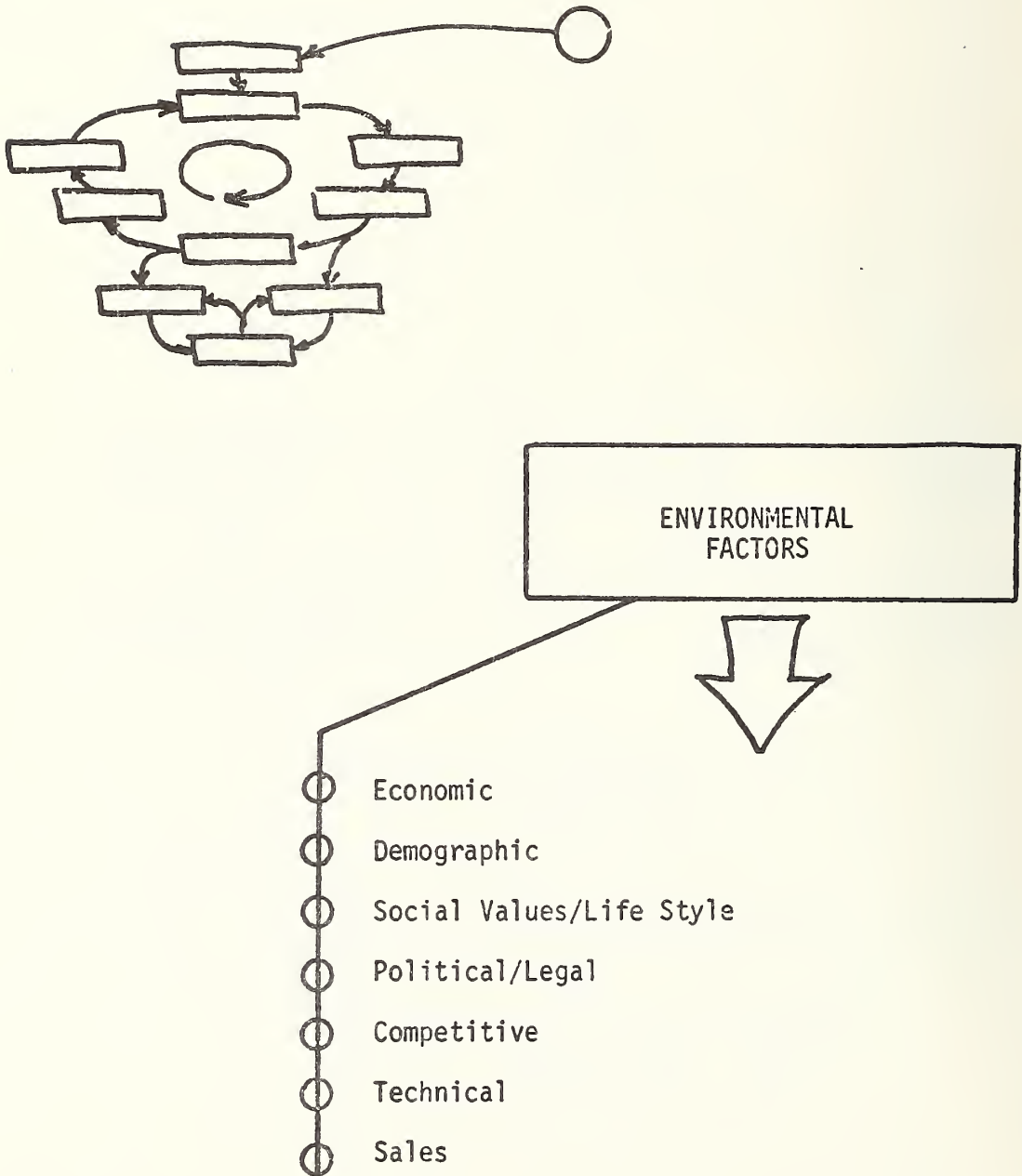


FIGURE C-3
PRODUCT & MARKET PLANNING PROCESS--
MOTIVATIONS & NEED

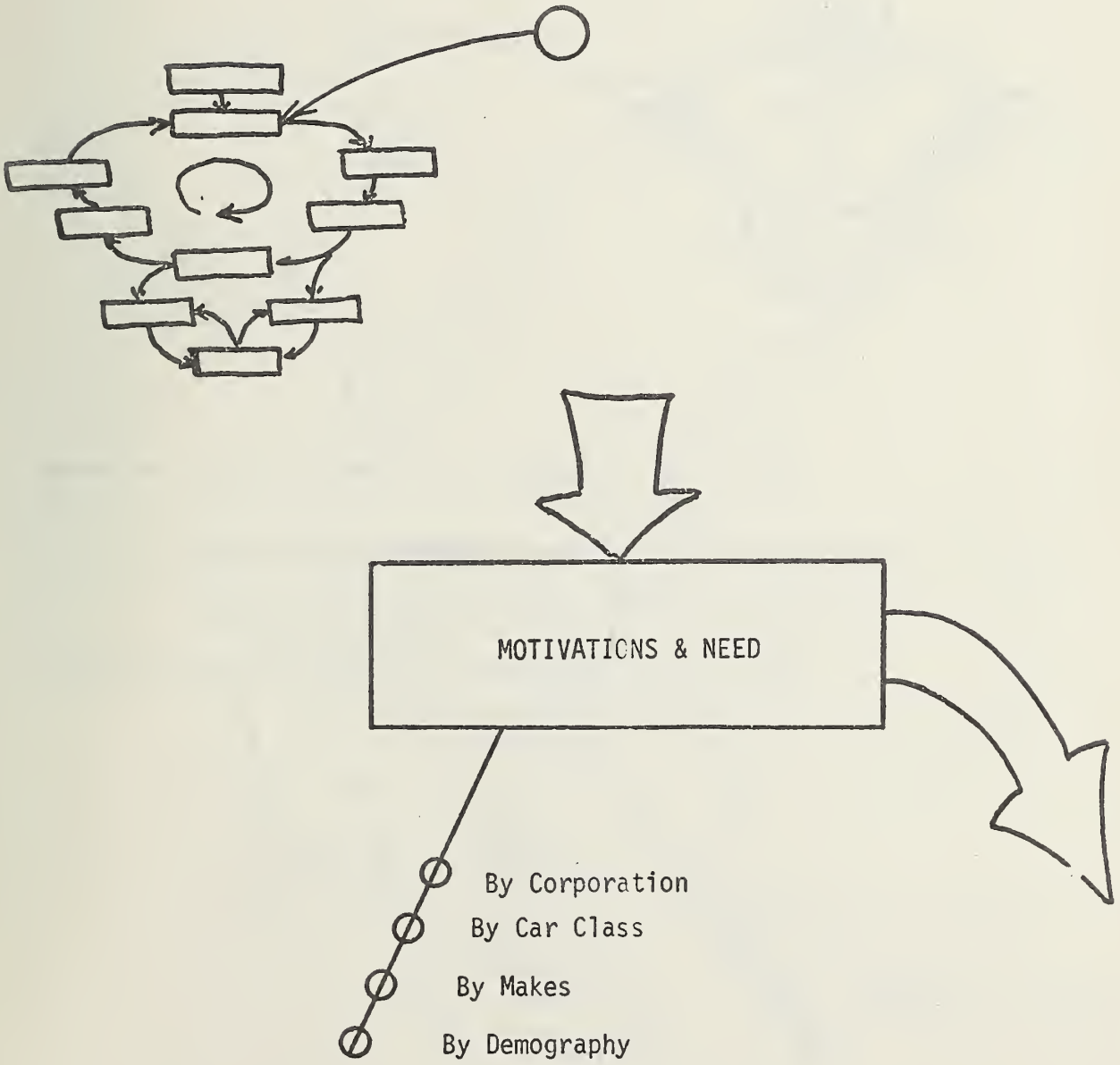


FIGURE C-4
PRODUCT & MARKET PLANNING PROCESS--
MENTAL MARKET PLACE

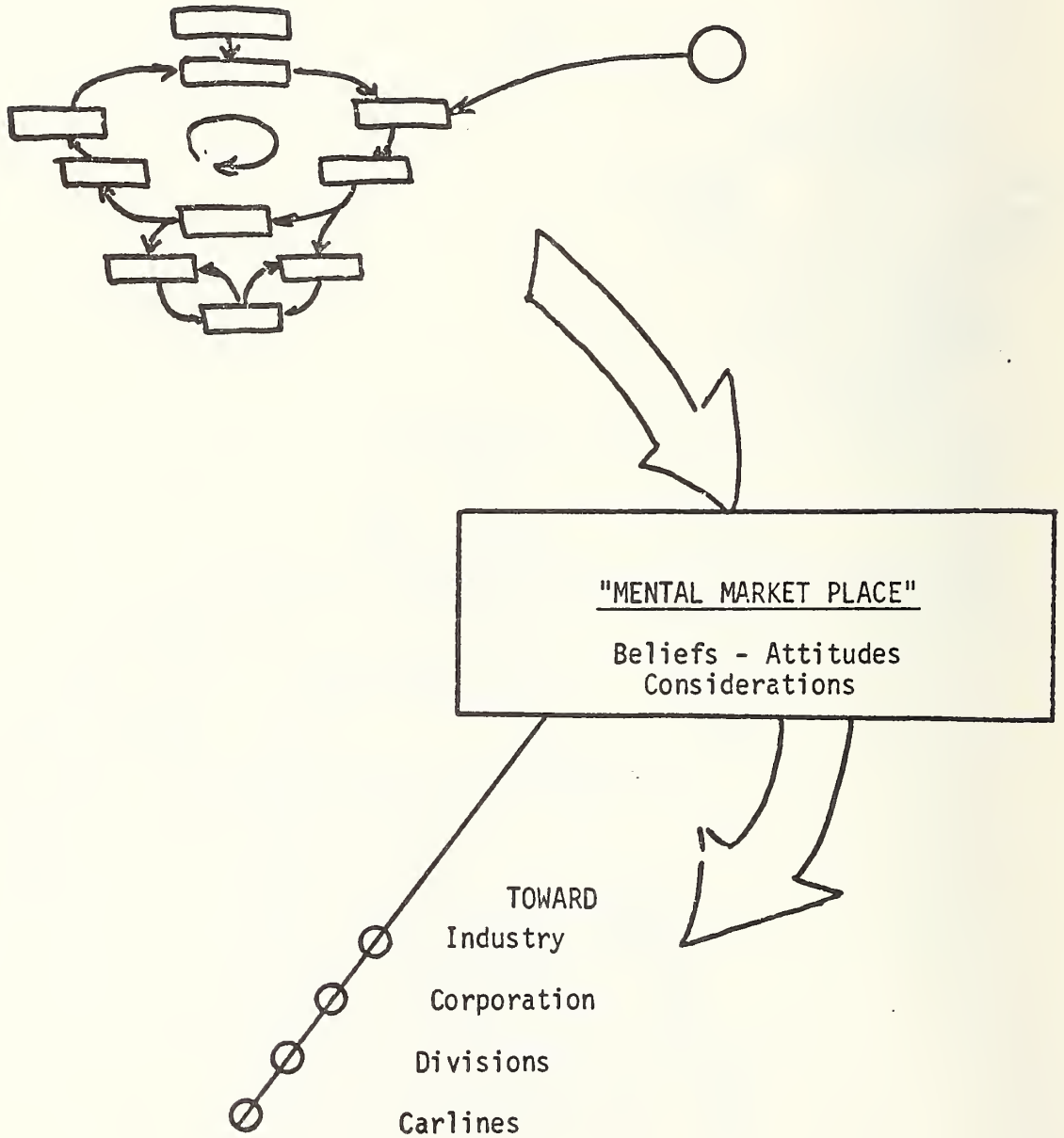


FIGURE C-5

PRODUCT & MARKET PLANNING PROCESS--
EARLY PRODUCT EVALUATIONS

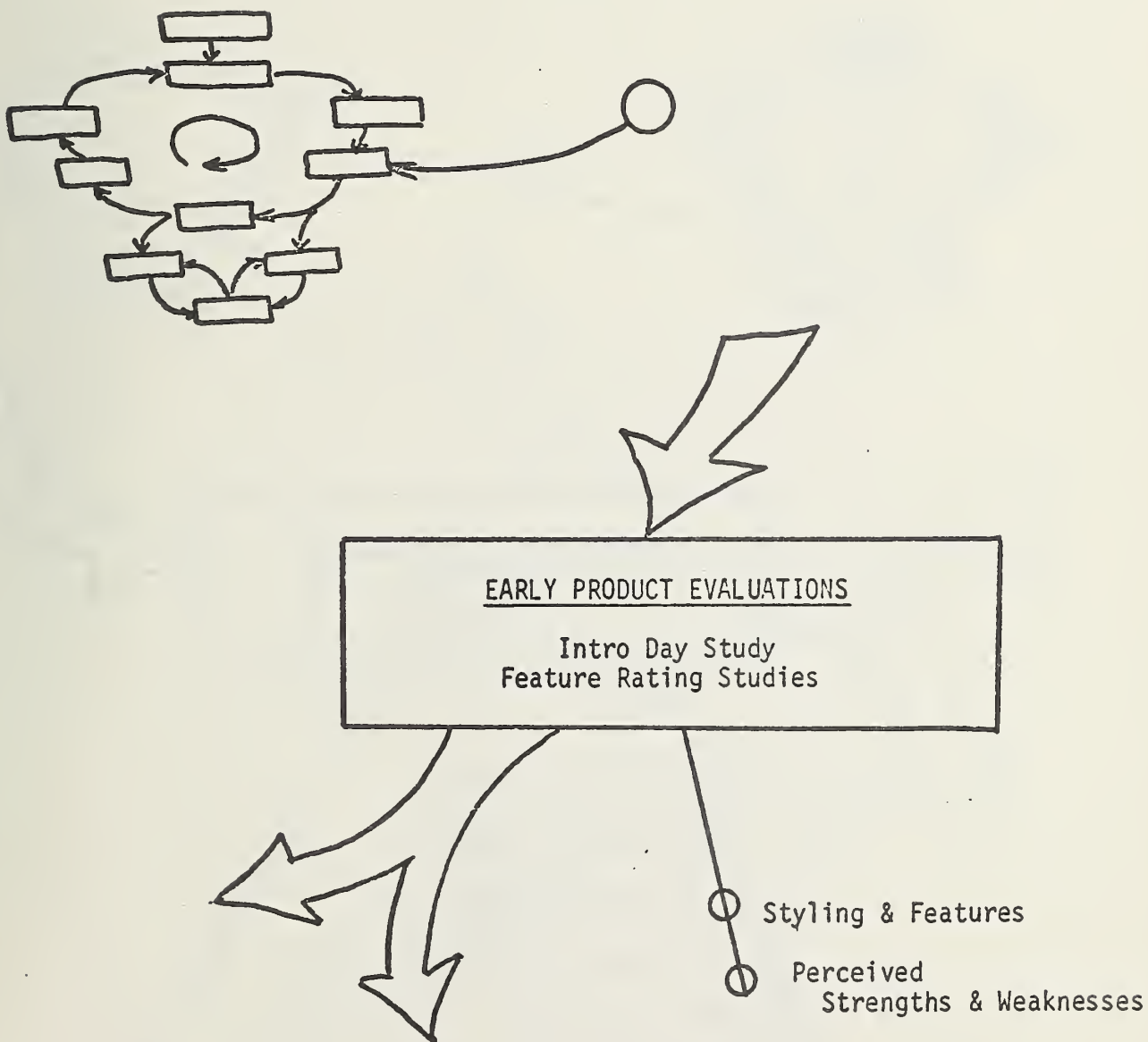


FIGURE C-6

PRODUCT & MARKET PLANNING PROCESS--
EARLY BUYER EVALUATIONS

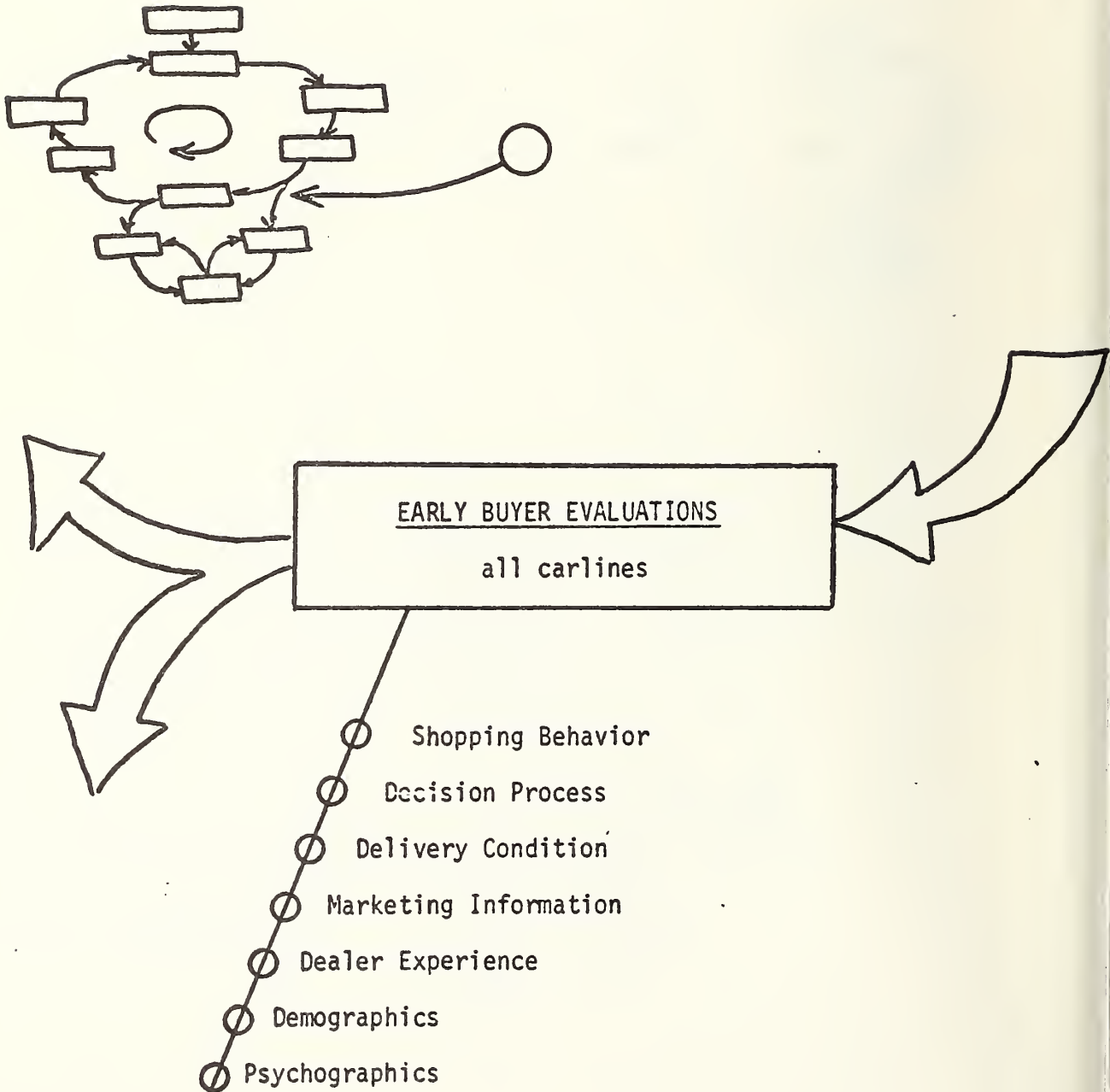


FIGURE C-7

PRODUCT & MARKET PLANNING PROCESS--
CAR USE & SATISFACTION

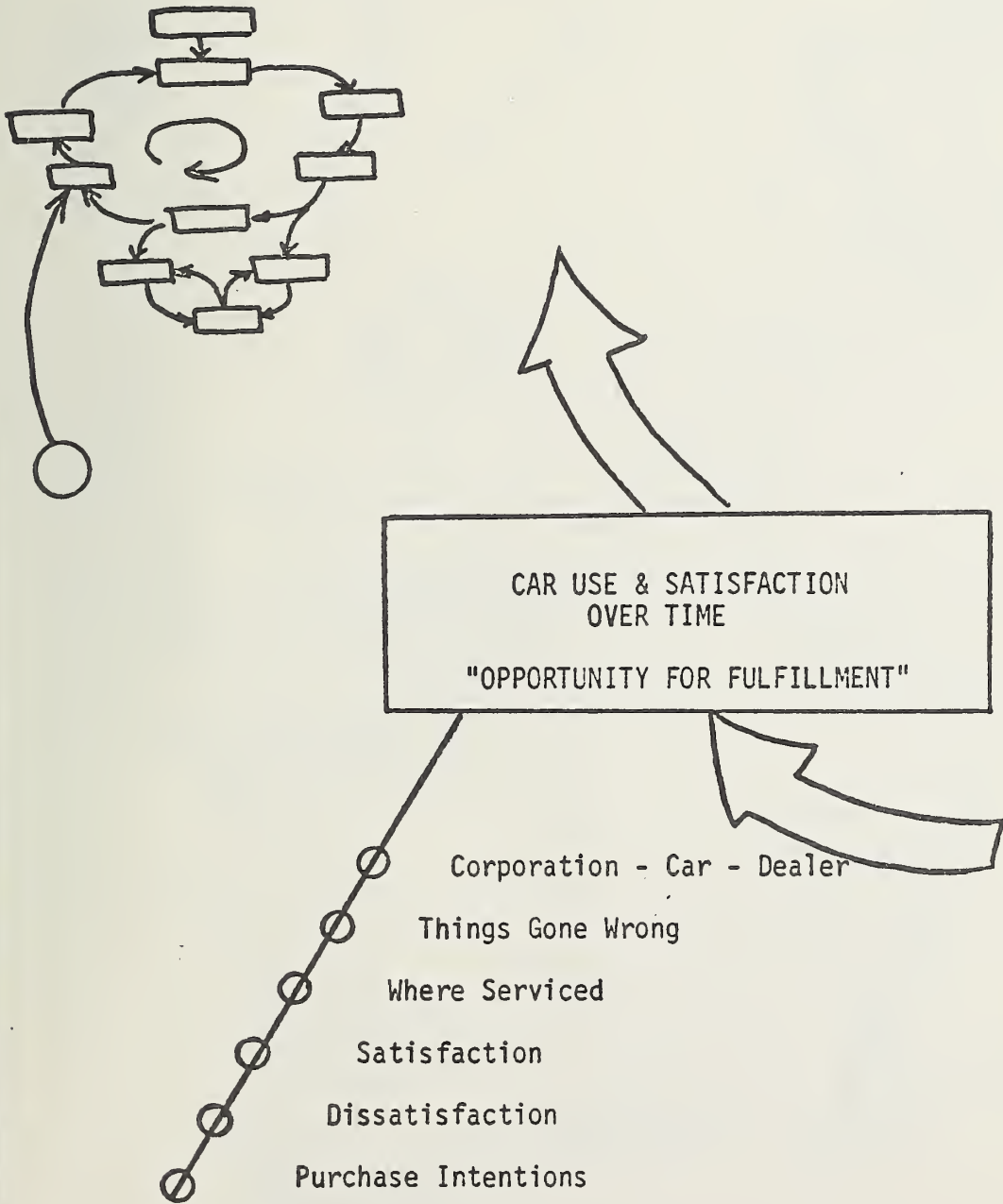


FIGURE C-8

PRODUCT & MARKET PLANNING PROCESS--
LOYALTY & SOURCE OF SALES

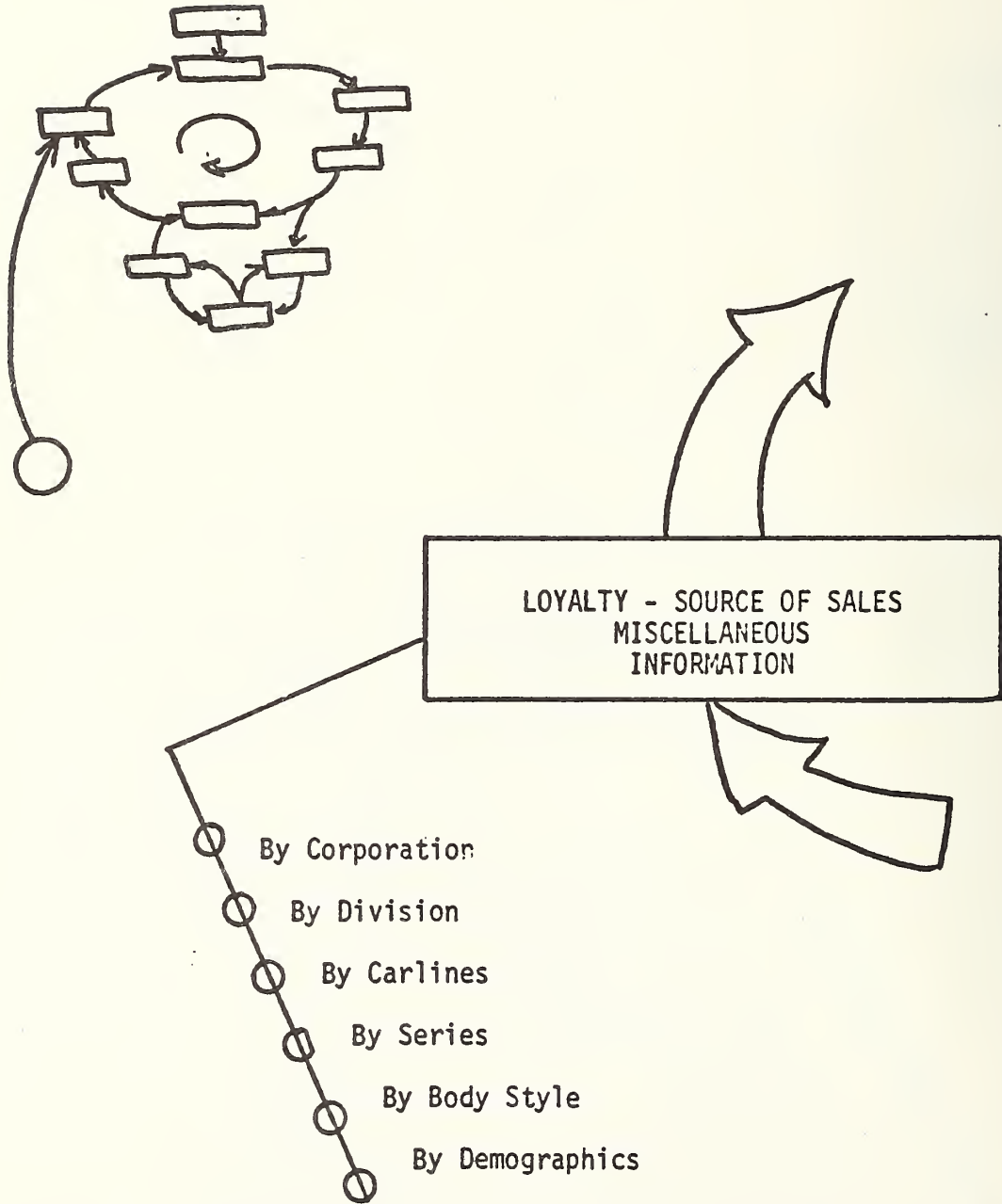
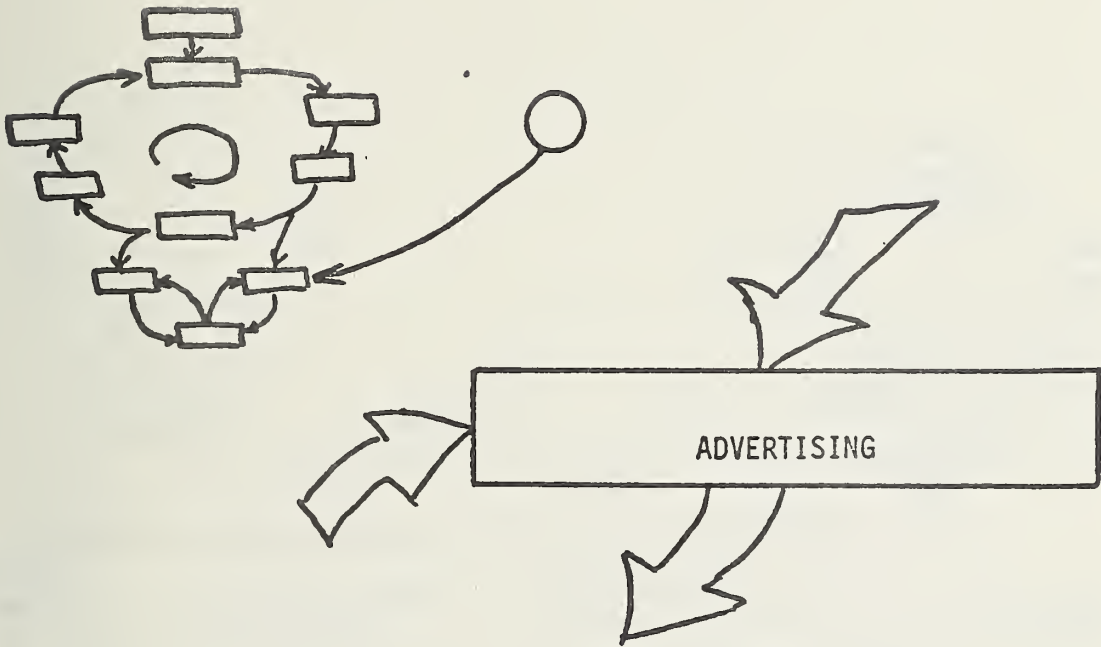


FIGURE C-9

PRODUCT & MARKET PLANNING PROCESS--
ADVERTISING



- ESTABLISH OBJECTIVES
- ESTABLISH BUDGETS
- DETERMINE HOW RESULTS WILL BE MEASURED (ACCOUNTABILITY)

- DETERMINE MEDIA & MIX
 - Who to reach
 - How often
 - Maximum efficiency (computer?)

○ COMMUNICATIONS

○ MEASUREMENT

Creative Input

Effectiveness Results

- Idea testing
- Concept testing
- Execution testing (pre-tests)
- Attention
- Recall
- Communications
- Attitude Change
- Potential Behavior

- Attention
- Recall
- Communications
- Beliefs & Attitudes
- Potential behavior
- Sales

FIGURE C-10

PRODUCT & MARKET PLANNING PROCESS--
MARKET PLANNING

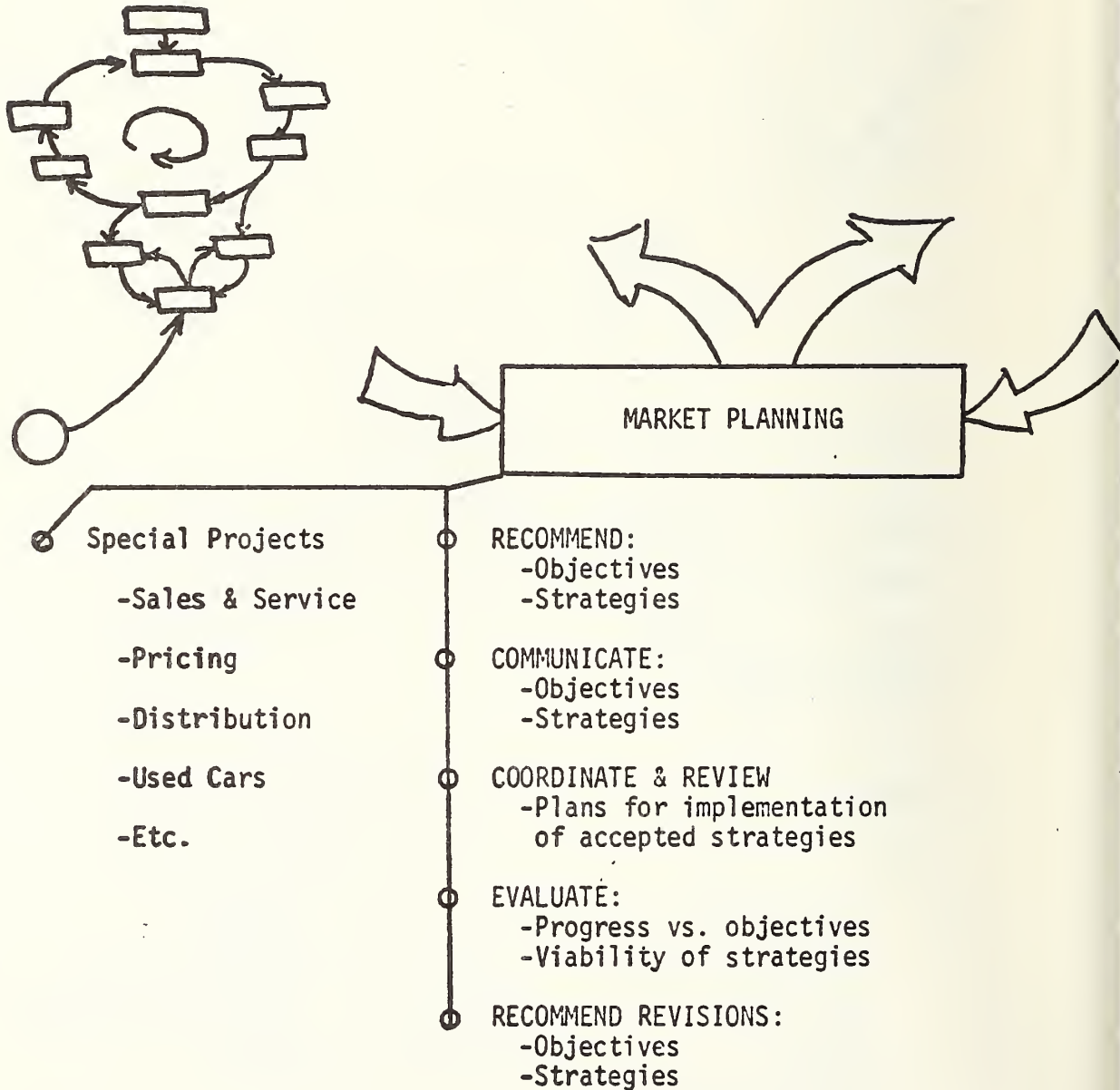
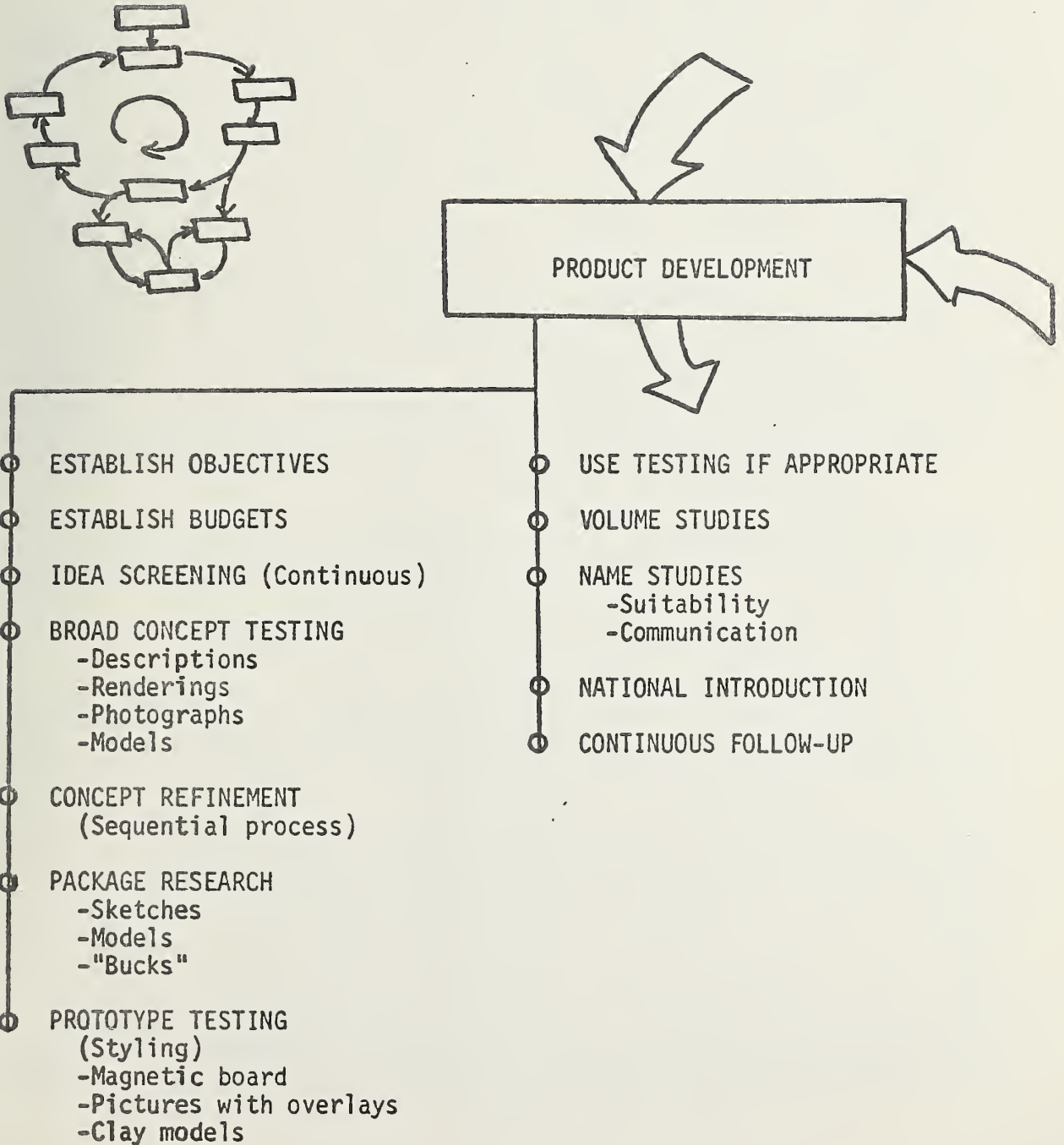


FIGURE C-11

PRODUCT & MARKET PLANNING PROCESS--
PRODUCT DEVELOPMENT



APPENDIX D

EXAMPLE OF FORWARD PRODUCT STRATEGY DOCUMENT

ABC DIVISION

FORWARD PRODUCT STRATEGY

The future model plans of the ABC Division have as their objective the development of the products required for the attainment of market leadership. The Division recognizes that the attainment of market leadership will require strengthening of its marketing, selling, dealer development and service activities. It is convinced, however, that product superiority must be the primary factor in efforts directed at the conquest of large numbers of competitive owners -- an essential portion of any program aimed at the attainment of leadership. The Division also recognizes that product programs developed to provide the basis for market leadership in the long term must also provide profits adequate to meet dividend and reinvestment requirements in the short term, while volumes are significantly below the levels that would be attained with market leadership. The Division believes, however, that optimum profits can not be earned by the ABC Division, in an industry characterized by high fixed costs, so long as the Division's major competitor enjoys a sizable volume advantage. Product investment risks designed to assist in the attainment of market leadership are, in the Division's view, an essential element of a program aimed at the ultimate attainment of profit leadership.

In general terms, the Division believes that its future product programs must combine three elements if the objectives of long term market and profit leadership are to be attained.

Competitive or Better Than Competitive Value

In value, whether measured in terms of visual appeal, mechanical operation or quality and durability, ABC products must equal or exceed competition. Product programs must both attract and hold new owners; to accomplish this, "value equal to or better than competition" is essential.

While inherent value is an essential of long term success and growth, it is unlikely to provide the significant competitive advantage required to wrestle market leadership from an effective competitor. The difficulty lies in the fact that consumers are normally unable to measure the value of new products in objective terms and tend, therefore, to rely on reputation. The common technology that applies across the industry makes major advantages in fundamentals unlikely except at cost and/or price premiums that equate the relative values; the common technology also normally permits a competitor to match an advantage in fundamentals before the advantage is identified, acknowledged and translated into product reputation.

For these reasons, the Division believes its long term programs must be based on the element of competitive value, but be supplemented by better than competitive product and feature innovations. The term "product innovation" is used to define the expansion of product offerings to meet new market needs or compete in market segments not previously covered by ABC Division. The term "feature innovation" is used to define those special elements of a continuing product line that add to its appeal relative to counterpart competitive offerings.

Product Innovation

The D, E and F provide important ABC Division examples of the effectiveness of product innovation in breaking down corporate buying loyalties and producing a high level of conquest sales. The ABC Division has, since 19XX, been particularly successful in product innovation, whether the measurement is absolute D, E and F sales or the success of ABC Division innovations relative to those of competitors.

The case for product innovation as a continuing part of ABC Division product plans is not limited to past success; product innovation provides the answer to two of the Division's most serious competitive problems in the future.

Reputation and Resale Value

Relative to GHI, ABC is at a significant disadvantage in size of owner body and loyalty of owners. All available evidence suggests that these disadvantages cannot be offset in the immediate future except through GHI mistakes of major importance or the offerings of ABC products with values (and presumably costs) far above GHI's that do not result in GHI counteraction. Neither possibility provides a basis for future model planning.

Experience with the E in the economy market, the D in the luxury market and the F in the heart of the market demonstrates that major product innovations reduce or eliminate reputational disadvantages for large numbers of competitive owners. They offer, therefore, a major opportunity for the ABC Division in a market that is characterized by changing values resulting from population growth, an exploding youth market, rising incomes and rapid increases in multiple car families.

Marketing Vulnerability

With the introduction of JKL "A" shell vehicles, ABC Division now faces the brand name and dealer strength of the

JKL Divisions in what has heretofore been a market segment in which only ABC, GHI and MNO saw fit to compete. The JKL entry, combined with a resurgence of PQR strength, suggests that even very effective ABC and S programs may do well if they preserve the Division's historic market share in the low price field.

The need for product innovation as a stimulus to market share improvement requires that ABC plan to depart from established GHI product concepts whenever such departures offer market opportunities. A product policy designed simply to meet GHI offerings will not be adequate.

The Division believes it must assume that every successful ABC innovation will be followed by a strong competitive reaction. In the recent past, the market advantage obtained by ABC with the 19XX E was lost when ABC failed to follow up with E's that would be sufficiently strong to match TUV's reaction with the X; similarly, there is reason to believe that success with the Y will be more than offset by failure to retain a Y program of sufficient strength to offset ABC's F reaction. To consolidate the gains of initial innovation, therefore, forward product plans must plan aggressive follow-up to avoid loss to competitive counter-action. For this reason, the Division believes it is essential that future product programs concentrate as much on the follow-up of advantages obtained through innovation as on the correction of deficiencies in more traditional products. The principal opportunities for product innovation are detailed in the material to follow.

Feature Innovation

While it is improbable that any group of features in E's, S's, or ABC's would provide conquest inducements equal to those of the F and D products for buyers seeking distinctive products, the majority of persons entering the market is more likely to purchase conventional cars than to switch to new vehicle concepts. To attract these buyers, the Division believes that a heavy weight must be placed on feature innovations in conventional vehicles.

The need for completely competitive products in styling, function, and quality has been reviewed earlier; these attributes supplemented by the appeal of such items as swingaway steering columns, safety convenience panels, side-by-side station wagon seats, and dual action tailgates provide the most encouraging basis for market improvement in conventional product lines, as well as representing an important profit opportunity.

* * * * *

The material to follow will summarize the product images and strategies, the approved programs and the advanced development activity that has been developed for each of the Division's existing products; it will also summarize the strategy and action planned to assure the timely development of new products.

ABC

PRODUCT IMAGE AND STRATEGY

Image Objective

The ABC car is the Division's entry in the high volume, full-sized conventional car market. The Division believes the ABC must provide a better-than-GHI value in styling, function, and innovation and must be available in a wide range of body styles, trim levels, and powertrain offerings to permit effective competition, wherever advantageous to the Company, in the broad, full-sized car market ranging from the S to the D.

Relative to GHI and lower priced ABC Division offerings, the ABC car's image must emphasize the achievement of luxury and quality in a spacious package providing optimum passenger comfort and superior NVH levels. The attributes of spaciousness, silence and smoothness should characterize each of the series and body styles.

Discussion

Historically, ABC and GHI car lines have been direct competitors in the market, and it has been the ABC's role to provide the strongest possible competition for GHI. Since 19XX, however, when unique long, low ABC styling proportions led to outstanding sales achievement versus GHI, the market performance of the ABC car has steadily declined. Serious quality deficiencies and a de-emphasis on performance and sporty hardtops and convertibles in the 19XX through 19XX period caused this decline. Although the ABC's competitive product position relative to GHI has been significantly improved through 19XX, 19XX, and particularly, 19XX product actions, the ABC car now faces major marketing and reputational deficiencies that are reflected in relatively low owner loyalty and used car values as well as a relatively small owner body. It is believed that ABC cars in the foreseeable future must be designed with more-than-competitive product value and appeal to offset these deficiencies and permit market gain.

In addition to the problems faced by the ABC car in the traditional low-priced market versus GHI, the Division faces a major challenge from the JKL Division's intermediate car lines. The JJ, the JK, and the JL increased their penetration of the industry to 8.0% in 19XX from 5.3% in 19XX, and are likely to make further gains in the future as they offer through strong dealer organization, attractively priced products with excellent reputations and close to ABC/GHI functional value. The JKL actions, however, also give the ABC Division the opportunity and the incentive to participate more strongly in the medium-priced field both to offset losses to JKL and to take advantage of any possible erosion of JKL reputation resulting from look-alike intermediate products. By the development of improved base car styling and even higher levels of "silence and smoothness," it is believed the long term JKL advantage can be even further reduced.

The Division believes that the approved 19XX, 19XX and 19XX product programs are consistent with the image objective outlined above as they provide for competitive or better-than-competitive basic functional levels, an aggressive rate of styling change to sustain interest, and important innovations ranging from stereo tape and the tailgate/door feature to the AAA and 7 Litre models.

The next all-new ABC car, tentatively planned for 19XX, should be designed to provide another major step forward in establishing ABC car styling, product and innovation leadership.

19XX ABC

PROJECT IMAGE OBJECTIVES

Memo: 19XX
ABC as % of
19XX GHI

OPERATIONAL CHARACTERISTICS

1. RIDE

Equal to 100% of 19XX ABC 110

2. HANDLING AND STEERING

Manual Steering:

- Highway Efforts - equal to 19XX ABC 95
- Parking Efforts - equal to 19XX ABC 105
- Cornering Ability - equal to 19XX ABC 100
- Highway Stability - equal to 19XX ABC 105
- Crosswind Stability - equal to 19XX ABC 105

Power Steering:

- Highway Efforts - equal to 19XX ABC 100
- Parking Efforts - equal to 19XX ABC 100
- Cornering Ability - equal to 19XX ABC 100
- Highway Stability - equal to 19XX ABC 105
- Crosswind Stability - equal to 19XX ABC 105

3. PERFORMANCE (With all Transmission) (0-10)

6-Cylinder - equal to 19XX ABC 105

Standard V-8 - equal to 19XX ABC 110

Optional V-8's - equal to 19XX ABC

4. BRAKING

Brake Fade, roughness and uniformity of operation 105
equal to 19XX ABC

Lining Life - objective of 30,000 miles of test 95
track miles

Manual Brake:

° Effort and Modulation - equal to 19XX ABC 100

° Pedal Height - equal to 19XX ABC 100

Power Brake:

° Effort and Modulation - equal to 19XX ABC 105

° Pedal Height versus Accelerator Height - 100
equal to 19XX ABC

5. STARTING

Objective is for hot and cold starting, equal to 100
the 19XX ABC

6. HEATING, VENTILATION AND AIR CONDITIONING

Heating - Appearance - equal to 19XX ABC 95
- Function - equal to 19XX ABC 105
- Noise - equal to 19XX ABC 95

Ventilation - equal to the 19XX ABC 100

Air Conditioning

Distribution - equal to 19XX ABC 110
Capacity and Cool Down - equal to 19XX ABC 105
Noise - equal to 19XX ABC 95
Appearance - Full integrated - equal to 19XX ABC 100
Temperature - Modulation - equal to 19XX ABC 90
Humidity Control 85

7. CONTROL OPERATION AND EFFORT

Parking Brake - Foot operated, equal to the 19XX ABC Hand release (tip- down type) equal to 19XX ABC	100
Clutch - equal to 19XX ABC	100
Accelerator Pedal Effort - equal to 19XX ABC	105
Manual Transmission Shift Control:	
◦ Shift Efforts - equal to 19XX ABC	90
◦ Shift Lever Travel - equal to 19XX ABC	100
Automatic Transmission Shift Control - Better than 19XX ABC due to "GTA" shift pattern	110
Door Opening and Closing Efforts and Locks - equal to 19XX ABC in effort, feel and sound	100
Tailgate Opening and Closing - Counterbalanced; equal to the 19XX ABC wagon (Dual-Hinged Design)	115
Hood Opening - Lifting effort - equal to 19XX ABC	100
- Latch efforts - equal to 19XX ABC	105
- Latch operation - equal to 19XX ABC	110
Deck Lid Opening and Closing - equal to 19XX ABC	100
Station Wagon Second Seat Convertibility:	
◦ 6 & 9 Passenger - objective to maintain an advantage in ease of operation. (Equal to 19XX ABC 6-passenger.)	100
Window Regulators	
◦ Manual - equal to 19XX ABC in effort, number of turns required backlash and smoothness	105
◦ Power - equal to the 19XX ABC	100

		Memo: 19XX ABC as % of <u>19XX GHI</u>
7.	<u>CONTROL OPERATION AND EFFORT (Cont'd.)</u>	
	Vent Window - equal to 19XX ABC	110
	Seat Tracks - equal to 19XX ABC	105
	Instrument Panel Controls - equal to 19XX ABC with smooth, easy operating efforts and quality feel	100
8.	<u>COMFORT AND CONVENIENCE</u>	
	Instrument Control Identification - Illumination equal to 19XX ABC with reduced illumination of control identification	100
	Arm Rests - Better than 19XX ABC in feel and less than 19XX ABC in appearance due to design changes necessary to meet safety requirements.	100
	Seating - except Station Wagon	
	◦ Front and Rear - equal to 19XX ABC for over-all comfort on comparable models	100
	Seating - Station Wagon (2nd and 3rd seats)	
	◦ 6-Passenger - equal to 19XX ABC station wagon	100
	◦ 9-Passenger 3rd Seat - equal to 19XX ABC station wagon	
9.	<u>WINDSHIELD REFLECTIONS</u>	
	Nighttime - No noticeable reflection from instrument panel lights within the vision range as defined in the windshield reflection standard over full range of driver seating positions.	100
	Day Time - Elimination of noticeable midday sunlight reflection from the top of the instrument panel	100
10.	<u>EXTERIOR PAINT</u>	
	Equal to the 19XX ABC in appearance and durability (M-32-J)	100

11. REAR DOOR AND QUARTER WINDOW DROP
- | | |
|--|-----|
| 2 & 4 Door Sedans - equal to 19XX ABC | 100 |
| Hardtop and Convertible - fully retracting,
equal to 19XX ABC | 100 |

12. WINDSHIELD WIPER
- | | |
|--|-----|
| System Noise Level - equal to 19XX ABC | 100 |
|--|-----|

NOISE, VIBRATION AND HARSHNESS CHARACTERISTICS

1. WIND NOISE
- | | |
|--|-----|
| Equal to 110% of 19XX GHI models of equivalent
body style | 110 |
|--|-----|

2. SQUEAKS AND RATTLES
- | | |
|--|-----|
| Over-all level equal to 19XX ABC for comparable
body styles | 105 |
| Door closing sound and rattles equal to 19XX ABC | 100 |

3. ROAD NOISE, VIBRATION AND HARSHNESS
- | | |
|---|-----|
| Equal to 19XX ABC car for road noise | 105 |
| Equal to 110% of 19XX ABC for vibration and harshness | 105 |

4. ENGINE AND ENGINE ACCESSORY NOISE AND SMOOTHNESS
- | | |
|---|-----|
| With 2XX-1V engine and standard transmission.
Equal to 19XX ABC | 110 |
| With 2XX-2V engine and 3-speed automatic
transmission - equal to 19XX ABC | 100 |
| With 3XX-2V, 3XX-4V or 4XX-4V engine and Automatic
transmission, equal to 19XX ABC | 100 |
| Engine Starting Noise - equal to 19XX ABC | 105 |

5. TRANSMISSION NOISE AND SMOOTHNESS

Standard Transmission - equal to 19XX ABC	105
3-Speed Automatic Transmission - equal to 19XX ABC for comparable engines	100

6. AXLE NOISE

Equal to 19XX ABC - no recognizable axle noise to the average owner	145
---	-----

7. VEHICLE SHAKE

Sedans - equal to 19XX ABC	120
Wagons - equal to 19XX ABC	110
Convertible - equal to 19XX ABC	110

8. EXHAUST NOISE

Equal to 19XX ABC with comparable engine	105
--	-----

DURABILITY AND RELIABILITY CHARACTERISTICS

1. TEST TRACK DURABILITY AND RELIABILITY

General

All vehicle components (except safety items) shall 100 be designed to permit operation for 50,000 customer miles (20,000 test track miles) without maintenance, except for specified routine service operations. Components which are critical to safety shall be designed to permit operation for 100,000 customer miles (40,000 test track miles) without maintenance except for specified routine service operations. Brake linings should be designed for at least 30,000 test track miles.

NOTE: The test track durability standard for all components will be 100,000 customer miles (\$40,000 test track miles). Specific design action indicated as a result of failures of non-safety components beyond 50,000 customer miles (20,000 test track miles) will be considered on an individual basis.

Rough Road

All vehicle safety items shall be designed for 1,000 cycles of rough road durability. All other components shall be designed for 500 cycles of rough road durability. Specific design action indicated as a result of failures of non-safety components beyond 500 cycles will be reviewed on an individual basis. 100

Special Requirements

Suspensions

All suspension components shall be designed for 10,000 miles of simulated XXX field durability. All steering gear components shall be designed for 1,000 cycles of the steering gear durability test. -

2. CUSTOMER DURABILITY

On certain components, because of the effect of time and driver abuse not present on the test track, actual field durability experience correlates poorly with test track results. On major components of this nature, the following standards are proposed:

- ° Bumper dent resistance, and resistance to corrosion equal to the 19XX ABC impact bar 105
- ° Body and exterior ornamentation corrosion resistance equal to the 19XX ABC 100
- ° Seat Fabrics - equal to the 19XX ABC 100
- ° Floor Covering - equal to 19XX ABC 105
- ° Scuff Plate - equal to 19XX ABC 100

3. ROUTINE MAINTENANCE

Provide twice-a-year maintenance (6,000 mile interval) equivalent to maintenance interval and costs of the 19XX ABC

-

4. INCIDENCE OF REPAIR, ROUTINE AND NON-ROUTINE

The objectives for total repair frequency, for the first 12,000 and 36,000 miles, based on the Peterson, Howell and Heather fleet, except specified lubrication is:

Routine and Non-Routine Maintenance per 100 Vehicles

	<u>0-12,000 Miles</u>	<u>0-36,000 Miles</u>
19X1	318	1,546
19X2	280	1,343
19X3	270	1,256
19X4	237	1,102
19X5	<u>a/</u>	<u>a/</u>

a/ to be established

5. COST OF OWNERSHIP STANDARDS

Fuel Economy (All transmission types)

- ° 6 Cylinder - equal to 19XX ABC 100
- ° Standard V-8 - equal to 19XX ABC 100
- ° Option V-8's equal to 19XX ABC 105

Oil Economy

- ° 6 Cylinder - equal to 19XX ABC 105
- ° Standard V-8 - equal to 19XX ABC 133
- ° Optional V-8's equal to 19XX -

ABC CAR

ADVANCED DEVELOPMENT OBJECTIVES

As presently planned, the 19XX ABC chassis/underbody will carry over through 19XX. This plan is based on the assumption that no major market or competitive dislocation requiring a major ABC car product realignment will occur prior to 19XX. Accordingly, advanced development efforts for the ABC car should be directed toward two major objectives:

- A. The development of product improvements and features that will provide sufficient customer awareness of change to permit continuation of the present product concept while retaining a better-than competitive position.
- B. The development of new design concepts for the next cycle that will provide the necessary product improvement and marketing stimulus to keep the ABC car in front of competition.

The following page contains a comprehensive listing of concepts with significant marketing potential which the Division believes should be supported for the next-generation vehicle. The Appendix lists these projects in more detail.



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