

A STUDY OF MODEL USE FOR DETERMINING POTENTIAL
COMPANY SALES AND COMPANY DECISION BEHAVIOR
FOR MAZDA OF STILLWATER AS VIEWED FROM
A MARKETING RESEARCH PERSPECTIVE

By

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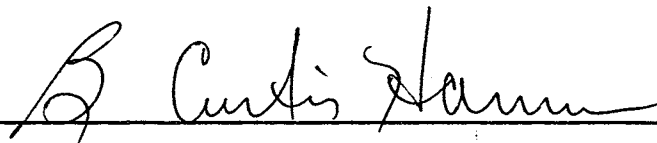
Major Field: Business Administration

Purpose of Study: The purpose of the study was to examine the potential sales of a newly franchised automobile dealer in a relatively small community such as Stillwater, Oklahoma. In order to accomplish this various marketing models were examined after the economic environment of the nation was analyzed with particular emphasis on the recent developments brought about by the energy crisis. The overall tone of the study was one of guarded optimism. The optimism was shown in the industry model where sales for the entire automobile industry were examined and small car sales were seen to be on the rise. The operation and expansion of the Toyo Kogyo Company of Japan was covered in the company model. The company started mass producing rotary engines in 1967 and marketed them in the Mazda automobile. Mazda's competitive position was examined in the competitive model. In this model, Mazda's relation to the industry was analyzed and the entry of other automobile manufacturers into the rotary engine field was explored. The costs of inventory acquisition and storage were presented in the channel model. Then the market share model for Stillwater was given. This model viewed the demographic characteristics of the community as they affect advertising and market strategy of the Mazda dealer.

Findings and Conclusions: As the energy crisis has taken its toll on the economy, the American public has turned to small cars as a means of reducing gas consumption. Small car sales account for more than 50 percent of all autos currently being sold. Mazda, since it was introduced into the U.S. in 1970, has experienced phenomenal growth in sales which should continue in the future.

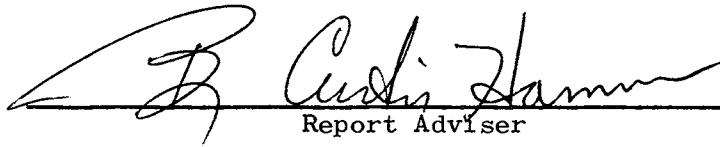
Mazda's sales in Stillwater, however, have been very slow. If the Stillwater dealer is to prosper, he must alter his operations and aggressively seek to expand sales through the judicious use of advertising and salesmanship. He must overcome a poor location, find a qualified salesman, and establish a firm advertising budget. If he continues operations as they are now, his business survival is in jeopardy.

SUPERVISOR'S APPROVAL



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CHAPTER I

INTRODUCTION

Economic Overview

The economy of the United States seldom if ever stands still but is constantly in a state of flux. Much of this flux is experienced in the form of economic growth but occasionally the growth becomes catabolic and the ensuing periods of decline result in a recession or if the decline is severe enough the country may even border on the edge of a depression. The economy of the United States was characterized by President Dwight D. Eisenhower in the late 1950's as that of a 'military industrial complex.' However, that description can be further refined by describing this country's economy as a 'military automotive complex.' This characterization seems more appropriate since the manufacture and sale of automobiles along with the associated services needed to supply them, maintenance, and repairs are an almost inestimable part of the country's Gross National Product. Also tied directly to the automotive industry in the United States are the large outlays of money by federal, state, and local government agencies for the construction and maintenance of suitable highways and streets on which this country's nearly 200 million automobiles travel.

At the start of each year numerous forecasts are made by a multiplicity of governmental, educational, and business activities concerning the economic outlook for the year to come. All of these forecasts seem

incorporate a sense of optimism in depicting the future national economic atmosphere even when the future may appear dark and uncertain for a variety of political and economic reasons. The economic temperature of the country can and does change from year to year and this can be clearly seen by comparing the forecast made by the Michigan Business Review for the years of 1973 and 1974.

The Michigan Business Review reported in January 1973 that for the first time since 1969 more customers anticipate good times in the next two years than bad times.¹ The results of these feelings were very evident in the nation's economy at the time. As Thomas Gies of the University of Michigan said: "The American consumer traditionally shows that the national income accounts as 'the last of the big spenders,' and 1973 will be no exception to that tradition."² Over the previous two years the nation's economy had soared and individual spending had indeed been greater. Gies continued saying that for 1973 "we expect to see Personal Consumption Expenditures making one of the largest gains on record for any period. Autos and other household durable goods will show the increases."³

One year later, the Michigan Business Review in its annual current conditions and the outlook article titled "1974: Markets, Prices, and Outlook," once again written by Thomas Gies, stated that the forecast presented for 1973 "did succeed in identifying the strength of demand in key markets and accurately forecast sales of 11 million passenger automobiles."⁴ The article then goes on to say that the consumer unlike one year ago is in a despondent mood which indicates "a diminishing disposition to make major purchase commitments, such as autos, household appliances, and houses."⁵ Gies further states that,

Recent sales data for the auto industry seem to bear out such an interpretation, for reported fourth quarter data up to the time this is written indicate year-to-year declines of 10-15 percent. ... On the other hand, dealers report shortages of particular models, especially smaller cars, and in some measure the lower rate of sales in recent months may represent a mismatch between capacity to produce big cars and customer preference for smaller types.⁶

As indicated by the preceding the decrease in auto sales may be due to public desire to purchase smaller cars and the inability of the manufacturers to meet this demand. It appears that this trend will continue to be the case for 1974. This view is supported by the "Business Outlook" article in Business Week where it is estimated that large car production will be around 70 percent capacity while small car production will be 100 percent or more of production capacity.⁷ The result will very well lead to another 11 million automobile sales in 1974 but all profits for domestic firms will be down due to the decrease in large car sales.

Even in view of the energy crisis with decreased speed limits and possibility of fuel rationing, the United States still seems to be a country on wheels. Yearly automobile registrations continue to steadily increase and will approach or exceed the 115 million mark in 1974. In this country of over 220 million people, there are more than 100 million men and women with drivers licenses.

In 1970 new car sales dropped almost one and one-half million from what they had been in 1969. However, sales quickly recovered in 1971 and they rose to nearly 10.5 million vehicles. Sales continued to increase in 1972 and the first three quarters of 1973 with total sales for both years near 22 million vehicles. As it has been in the past, automobile sales will continue to be an important part of this country

omic life. And even though the future seems somewhat clouded with certainties, a large part of that future will be determined by the marketing strategies employed by the various competitors in the industry.

The trend to buy smaller cars, primarily due to the energy crisis, very well lead to a boom year for imports, especially those promoting good fuel economy. The overall tone of this paper will be one of guarded optimism since the paper will deal with marketing the Mazda mobile, an import from Japan.

Purpose and Construction

The purpose of this paper is to examine the market potential of a car dealer who is marketing an innovative automobile and to examine of the various methods available to him to increase or to improve market position. Mazda of Stillwater opened its doors for business mid-December 1972 and is still faced with the difficulty of penetrating an established market with a new automobile that may still be in the innovator stage of adoption by the American consumer.

This paper presents an interesting challenge. For although new car sales declined sharply in 1970, imported car sales continued to increase, grantedly slower than before, but never moving backwards away from what their sales had been. Part of the import automobile sales include Mazda, the car with the rotary engine. Mazda was first introduced into the United States in 1970 and as dealerships have spread throughout the country, sales have also increased. The problem of marketing the Mazda in an already well established market of both

istic and import automobiles is the challenge that this paper
resses and a formidable challenge it is.

The objectives of this paper will be to try to develop marketing
els for the neophyte Mazda automobile dealers with special emphasis
ected toward the Stillwater dealership. These models will include
ndustry sales model, competitive model, channel model, market share
el, and finally the strategy necessary to implement these models.

Since this paper will develop models for marketing, I feel that it
necessary to examine exactly what is meant by a model. Phillip
er in his book Marketing Decision Making: A Model Building Approach
is to John Little and quotes from him the following concerning model
: big problem with management science models is that managers
stically never use them."⁸ Little then continues with the following
sons for their niggardly use, "(1) Good models are hard to create;
good parameterization is even harder; (3) managers do not understand
models; and (4) most models are incomplete." Finally Little pro-
s the characteristics that decision models ought to have to be
eptable. "They should be (1) simple, (2) robust, (3) easy to control
adaptive, (5) complete on important issues, and (6) easy to
nunicate with."⁹ Keeping the aforementioned weaknesses and charac-
stics in mind, I will proceed with this paper concerning the
riptive models for the marketing of the Mazda automobile with
ial emphasis directed toward the Stillwater area whenever applicab.

Methodology

The methodology used for this paper has largely been one of
earch for and development of models appropriate to the purpose of ti

er. A considerable amount of time was spent searching for data that would be relative to this paper and useful in the models. There exists a tremendous amount of material concerning the automobile industry and we hope to determine the marketing scene for autos because it is one of the most significant parts of this country's national economy and more work will be done in the future.

The methodology used does not seek to supply all the answers to the multidimensional questions involving the many areas of marketing. What the methodology does try to accomplish is a wedding between the abstract analytical approach to marketing problems and the actual operations that are performed in the areas of marketing, largely, for the most part, by the seat of the pants' type operation. The marriage is at best a precarious one and one that needs the technical help of marketing professionals well grounded in the basics of the 'art.' These marriage counselors must be the enlightened ones who lead those involved in the dark realms of marketing into the light in order to permeate throughout the field of marketing an understanding of the help that the modeling methodological approach to marketing can be. The end result hopefully be a sound marriage with the two aspects losing their individual identities as they merge into a sound union for the betterment of all concerned.

Limitations

The limitations of such an undertaking as the study and analysis of a particular market through the use of model formulation and model use as well as research are numerous. The fact that we are dealing with

le that comprise a given market makes the whole process tenuous for e is no certain, hard set formula that will allow us to make adjust s for capricious actions of the market or market segment toward h we direct our energy and resources. And so this degree of un- ainty must always remain.

In the undertaking of a model building approach to any subject we realize that the models we are dealing with are only simplified ions of reality and for every variable that we include in the model variables are necessarily excluded. The models, therefore, should sed as guidelines to indicate the pathway that is to be followed we should always remember that the route to any objective or goal we set for ourselves or the firm that we are trying to study can eached by many different paths, some clearly marked and frequently , while others are covered with the overgrowths of misunderstanding tia, tunnel vision, and skepticism of the value that models, either alized or mathematical, can be to us or to the firm that we are ing with. We must be careful, therefore, when using models but at same time bold enough to realize that there is value to be gained the use of models.

Another limitation to the study is that the data used are statis- l in nature and whenever we deal with statistics we must be careful we interpret the data and what useful information can be gained fro data. Statistics, like a model, is only a tool that is available id in the analysis and understanding of a problem we are trying to y. Careful examination of all data used and the context of its use ital to any model in which we hope to derive statistics to gain an ght into the evaluation and further development of a model. The

source should be scrutinized for prejudice or bias on the part of individual collecting and evaluating the data.

One final limitation and a necessary one in the construction of paper is its architect. The thoroughness with which the architect dedicates himself in the project is of vital importance. But even with extreme degree of involvement in the paper, the overall ability of writer and any prejudice that he possesses will also affect the quality of the paper. Hopefully this paper contains none of the weaknesses that can arise from the items stated above but only the strength of the architect's ability.

Organization

The paper is structured so as to start with the general far reaching impact of the economy on automobile demand, the broadest view possible and then gradually to narrow the perspective of the paper down to the individual dealer in a relatively small community. This is done by examining the whole automobile industry first and then narrowing it to import autos and then to a specific import with the final thrust focusing on a dealership in a specific community, Stillwater. Mazda Stillwater is a dealership for Mazda Motors of America whose parent company is the Toyo Kogyo Company of Japan.

FOOTNOTES

¹Thomas G. Gies, "Peace and the Forecasts for 1973," Michigan Business Review, XXV (1973), Number 1, p. 9.

²Ibid., p. 8.

³Ibid., p. 9.

⁴Thomas G. Gies, "1974: Markets, Prices, and Profits," Michigan Business Review, XXVI (1974), Number 1, p. 2.

⁵Ibid., p. 3.

⁶Ibid.

⁷William B. Franklin, "Business Outlook," Business Week (September 22, 1973), p. 58.

⁸Philip Kotler, Marketing Decision Making: A Model Building Approach (New York, 1971), p. 650.

⁹Ibid.

CHAPTER II

THE ENERGY CRISIS

1973: The Dawning of the Energy Crisis

In the late winter months of the 1972-1973 winter season, unusually cold weather hit most of the country causing increased use of all forms and sources of energy. Because of an extreme cold wave in early, 1973, talk of a fuel crisis arose as some energy sources became scarce. U. S. News and World Report in February reported that the United States was not short of fuel just all of a sudden but that it had long been on its way.¹ The article pointed out that the United States, a country containing only six percent of the world's population consumes 33 percent of all of the energy used throughout the world.² Of all the energy consumed in the United States, 44.6 percent comes from oil. In 1970 the United States imported 25 percent of its total energy needs and that figure was expected to climb to 35 percent by 1975.³ Little thought was given at this time to a fuel crisis for the coming winter or the ensuing years ahead. The country was soon to realize that shortages were in store for them in the very near future. The United States had become so dependent on fuel imports to satisfy its increasingly insatiable needs for energy that little thought if any was given to the possibility of a fuel crisis occurring either from within or from outside of the country. The fuel shortage that existed in the

part of the 1972-1973 winter ran its course in the spring time when temperatures began their seasonal climb toward the warm summer months. As the winter passed, thoughts of a severe fuel shortage faded into the background.

Throughout the spring and most of the summer, talk of an energy crisis continued but was largely pushed out of the forefront by political and economic issues such as Watergate and the declining value of the United States dollar abroad. In late summer 1973, President Nixon announced that the country must conserve energy and set a goal of a 10 percent reduction in over-all energy use by mid-1974.⁴ Thus as the end of summer approached and the cold season loomed just ahead, talk of fuel and oil shortages once again came to the forefront. Conservation of energy became the major thrust of the large oil companies' air television commercials. Smaller cars appeared as the way to reduce gasoline consumption in tremendous quantities.⁵

In an article in U. S. News and World Report in the middle of September 1973, October 22 to be exact, the possibility of the Arabs withholding oil from the United States was considered.⁶ The possibility came to light when a new round of war between the Arabs and the Israelis broke out in early October. During the fall of 1973, the United States was the world's number one producer of oil, turning out over 10 million barrels a day; but it was also the world's number one user of oil as it consumed oil at a rate of 17.3 million barrels per day. Of the petroleum products imported into the United States in the second quarter of 1973, 15.8 percent came from Arab countries, a figure which was double the second quarter amount imported in 1972. Also during the third quarter of 1973, 25 percent of all of the crude oil imported into

country came from the Arab world.⁷ It was estimated that by 1980 the United States would be importing 40-50 percent of all its oil requirements and that two-thirds of that amount would come from the Arabs.⁸ Therefore, not only the United States would be affected by the restriction of oil flow but its allies would also be affected. Many of the countries that export oil to the United States rely on Arab oil to meet their own supplies.⁹ Consequently, the United States is placed in a vulnerable jeopardy with the Arab world seemingly holding the trump hand. On October 6, 1973, Egyptian forces struck Israel across the Suez Canal.

The Egyptian attack occurred simultaneously with Syria's invasion of the Golan Heights.¹⁰ As the war between the Arabs and the Israelis grew more intense, the United States poured massive supplies of arms and aid into Israel. Because of the US support of Israel, the Arab states put an embargo on oil exports to the United States until such time as the Israelis met the demands of the Arabs.¹¹ As the embargo took effect and the oil supply to the United States started to drop, there was an energy shortage of at least 20 percent for the 1973-1974 winter season began to spread throughout the country. The President through his Energy Policy Office (EPO) began to look for ways to conserve fuel. The President appeared on television on November 7, 1973, and sought the aid of all Americans in helping to conserve energy. The President asked the American people to drive no faster than 50 miles per hour, to turn thermostats down four to six degrees, and to do away with all unnecessary outdoor lighting. In the months that followed, Congress enacted laws that were in line with the President's recommendations.

The effects of the conservation measures have had a significant impact on the American public since they were first initiated. Truck drivers over the country started strikes to protest the lower speed limits and the lack of diesel fuel. Violence was widespread during the time of trucker shutdowns. Congress passed a law requiring all states to reduce their maximum speed limits to 55 miles per hour or lose their federal highway aid. Service stations were ordered to remain closed all day on Sunday, a move which limited weekend recreational activity throughout the nation. In many parts of the country some type of rationing of fuel is already a reality and where it isn't people have to wait in long lines for fuel. In some states fuel can only be obtained on certain days depending on an even or odd license plate number. Surely, these are all signs that the United States is in the midst of a real energy crisis. Only time and the eventual relaxation of the fuel embargo by the Arabs can determine how long this crisis will continue. President Nixon's goal for the nation of energy self-sufficiency by 1980 is undoubtedly worthwhile but may be extremely difficult to meet. For the immediate future at least, the United States will still have to depend on some oil imports in order to meet the day to day needs that still exist.

Effects of the Energy Crisis on the Economy

Many casualties have fallen by the wayside since the energy crisis and the resulting shortages became a very significant part of American life. The Dow Jones Industrial averages suffered almost immediately from the announcement of the Arab oil embargo. From October 26, 1973, to November 23, 1973, the Dow Jones Industrial average fell over 133 points.

t plummeted from 987.06 to 854.00.¹² The energy squeeze was on and American economy was definitely going to feel its effects. "Makers: everything from steel to roadside hamburgers spoke of the prospect of setbacks in production and jobs."¹³ General Motors announced in December, 1973, that it was closing 16 of its auto factories for a week in December because of slumping automobile sales.¹⁴

Time magazine in its December 31, 1973, issue ran an article titled "The Painful Change to Thinking Small." The article discussed the effect of the energy crisis on the automobile industry. As a result of the energy crisis, auto manufacturers turned to making smaller cars in greater numbers and as they did profits decreased and the number of workers employed also decreased.¹⁵ But as was seen in the introduction, America is a country on wheels. Many people need their cars to earn a livelihood and consequently people need enough fuel to operate their cars so they can seek that livelihood.

Fortune magazine in its "Business Roundup" says: "Increased consumer resistance to big cars will deepen the woes of the auto industry, which has already been hurt by the unforeseen swing to smaller cars."¹⁶ The article continues on to discuss the impact of the energy crisis on the United States and says: "... that the US is in for considerable discomfort rather than dislocation ..."¹⁷ The article then says: "The roundup expects only a moderate slowdown in economic growth this winter and the slowdown already under way before the oil crisis."¹⁸

As Americans started turning to smaller cars in the latter part of 1973, the large luxury car sales were not noticeably affected. However, for the first part of 1974, luxury car sales did start to suffer. According to Business Week even Cadillac plans on producing a

-Cadillac sometime this year that will average between 15 and 20
s per gallon.¹⁹

The economy seems to be slowing as much of the country appears
ertain and hesitant. As the months pass economic statistics are
ting to reflect the distortions produced by the energy crunch as
ut and personal income have declined and industrial production
ped 0.8 percent during January.²⁰ "The energy crunch was the major
rit in the production decline. Falling output of autos and electri
gas utilities accounted for four-fifths of the contraction in
uction."²¹ The production of automobiles and associated parts has
en 22 percent since last summer.²²

Some of the downward trends may be reversing. Figures out of
oit for the month of February show that while sales for the month
down nearly 27 percent from the same month in 1973, there was a
ercent increase in auto sales over the month of January.²³ The
y selling rates for the month of February were the highest that
had been in any month since last November.²⁴ During the month of
uary, the low-priced, medium-priced standard size autos as well as
intermediates all showed modest gains in volume and penetration ove
ary.²⁵ So it looks like, at long last, the automobile market may
ecovering, but the extent of its recovery will only be determined
ime and the American consumer.

FOOTNOTES

"Why a Fuel Crisis," U. S. News and World Report (February 19, p. 33.

Ibid.

Ibid.

"America's Energy Crisis: Ways People and Companies Beat It," News and World Report (September 10, 1973), p. 51.

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"Oil: America's High Stake in the Arab-Israeli Fighting," U. S. and World Report (October 22, 1973), p. 36.

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"Mideast: How Far Will Nixon Go," U. S. News and World Report (November 29, 1973), p. 17.

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"The Fuel Crisis: Nixon Acts," Newsweek (December 3, 1973),

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"The Painful Change to Thinking Small," Time (December 31, 1973),

"Learning to Live With The Oil Squeeze," Fortune (December, 1973),

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"The Small Cadillac is Taking Shape," Business Week (February 2, p. 24.

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Car Sales Slump During February," The Daily Oklahoman (Wednesday, , 1974), p. 10.

bid.

bid.

CHAPTER III

INDUSTRY SALES MODEL

Market Demand

Total market demand is a complicated entity and can be influenced by many variable and complicated factors. Philip Kotler states that market demand is composed of eight distinct elements which he ties together in the following definition:

... market demand describes the total volume that would be bought of a defined product class by a defined customer group in a defined geographical area in a defined time period under defined environmental conditions and a defined marketing program.¹

Each of these individual elements will now be discussed as they are applicable to the Mazda automobile. At the present time Mazda is very close to having a nation-wide network of dealers. Since Mazda was introduced on the West Coast in 1970, its franchised dealership organization has constantly been on the increase with the current result that Mazda expects to have a nation-wide system of dealers in operation by the end of 1974. Although its franchised dealers will span the country, dealers in the Midwest and the Northeast will be sparsely covered with just a limited number of new car dealers. Dealership growth will continue in the following years and by the end of 1975 Mazda Motors of America expects to have over 650 active dealers nation-wide ready to meet the increased market demand that is expected to proliferate in the several years.

Product Class

The product class that Mazda falls into is the passenger car class. Mazda's product class can be given further definition by examining the entire product area of passenger automobiles. Up until Mazda introduced the RX-4, its entry into the larger luxury car market, its product classification fell into the subcompact area as the R-100, RX-2, and the RX-3 all would be competitive with other subcompacts such as General Motors' Vega, Ford's Pinto, and American Motors' Gremlin. Mazda, being imported from Japan, also competes with other imported automobiles such as those from Japan, the Datsun, Toyota, and the Honda, and those which are brought to this country from Europe, Mercury's Capri, Buick's Wildcat, Volkswagon, Volvo, and the Audi among a host of others. Mazda's product line includes many different styles in the two door, four door, station wagon, and quarter ton truck categories. Now that Mazda has introduced the RX-4 its product class has expanded another dimension which makes Mazda a more viable competitor in the passenger car class.

Total Demand

The total volume of the automobile market will depend on many numerous variables over which the automobile industry has very little influence. The general swing and tendencies of the economy and the socio-economic factors which influence these tendencies are the most important external factors. However, because the economy appears to be recovering as mentioned in the introduction with 'guarded optimism,' the total demand for automobiles will continue to increase. In order to determine the present and future demand, I will look at the previous

and for automobiles over the past several years. At the same time I also examine some of the other factors which may have a significant effect on automobile sales. Table I shows the passenger car sales for domestically produced automobiles for the United States from 1955 to 1972. Also depicted in this table are the number of automobile imports into this country during those same years and the total corresponding automobile registrations which include all passenger autos registered in a given year.

Table I shows that except for a slight decline in 60 and 61, automobile imports have increased steadily as demand increased throughout the sixties and on into the seventies. Automobile registrations have also been on the increase in those same years. However, they have not risen as rapidly as domestic sales and imports might indicate that they would since the overall increase in the stock of automobiles is somewhat counterbalanced by the obsolescence of older cars through wear and tear. Table I shows that when the final tally for 1973 is in, this country should have in the vicinity of 100 million registered automobiles. Finally, Table I shows the wide variations that domestic sales have experienced since 1955.

Table II shows the population of the United States for the years 1955 through 1972. Also depicted in this table are three individual columns and expenditure columns. The first two columns show respectively personal income per capita and disposable personal income per capita. The last column gives the yearly personal income expenditure. In all of the columns presented in this table yearly increases mark the data as noted. The increases in automobile demand, depicted in Table I, can be partially explained by the increases in both population and income a

TABLE I
 DOMESTIC AUTOMOBILE SALES AND IMPORTS
 IN THOUSANDS

| Domestic Sales | Imports | Automobile Registrations |
|-------------------|---------|-----------------------------|
| 7,920 | 57 | 52,136 |
| 5,816 | 108 | 54,201 |
| 6,113 | 259 | 55,906 |
| 4,258 | 431 | 56,871 |
| 5,591 | 668 | 59,567 |
| 6,675 | 444 | 61,656 |
| 5,543 | 279 | 63,388 |
| 6,933 | 375 | 66,087 |
| 7,638 | 409 | 69,034 |
| 7,752 | 516 | 71,950 |
| 9,306 | 559 | 75,258 |
| 8,598 | 913 | 78,354 |
| 7,437 | 1,021 | 80,414 |
| 8,822 | 1,620 | 83,693 |
| 8,224 | 1,845 | 86,560 |
| 6,547 | 2,013 | 89,230 |
| 8,585 | 2,587 | 92,799 |
| 8,824 | 2,486 | 96,397 |

Source: Statistical Abstract of the United States for the years 1958 through 1973.

TABLE II

PER CAPITA PERSONAL INCOME
FOR THE UNITED STATES

| | Personal Income | Disposable Personal Income | Personal Inco Expenditure |
|---|--------------------|-------------------------------|------------------------------|
| ; | \$1,866 | \$1,660 | \$1,554 |
| ; | 1,940 | 1,708 | 1,589 |
| ' | 2,043 | 1,799 | 1,664 |
| } | 2,057 | 1,818 | 1,683 |
|) | 2,166 | 1,891 | 1,760 |
|) | 2,221 | 1,936 | 1,817 |
| l | 2,273 | 1,985 | 1,836 |
| 2 | 2,370 | 2,060 | 1,911 |
| } | 2,450 | 2,125 | 1,980 |
| + | 2,558 | 2,248 | 2,079 |
| 5 | 2,769 | 2,432 | 2,224 |
| 5 | 2,982 | 2,599 | 2,368 |
| 7 | 3,161 | 2,745 | 2,472 |
| 3 | 3,433 | 2,945 | 2,668 |
| 9 | 3,705 | 3,130 | 2,834 |
| 0 | 3,935 | 3,366 | 3,007 |
| 1 | 4,160 | 3,595 | 3,198 |
| 2 | 4,481 | 3,807 | 3,452 |

Source: Statistical Abstract of the United States for the years 1958 through 1973.

It seems quite natural for automobile demand to increase as the population has increased and has gained additional purchasing power. The data shown in Table III are the number of families in the United States for the same years as displayed in Table I and Table II. The average family income can also be seen in Table III. Once again yearly increases can be observed. Table III also shows the percentage of families owning automobiles and this figure is further broken down into those owning one and those owning two automobiles. Since 1960 the total number of families owning autos has increased only six percent, with a slight decline shown in the early sixties. However, for the same time period, the percentage of families owning two or more automobiles has statistically increased from two percent in 1960 to over twenty-eight percent in 1972. In that same time frame average family income nearly doubled.

The general tendencies that have been observed in Tables I, II, and III should not be altered or reversed over the next several years. With family incomes continuing on in the future, it seems quite plausible that America will continue to increase its demand for automobiles, especially smaller automobiles. Consequently, imports should continue to rise as demand for smaller cars will lead to an increased interest in and demand for foreign subcompacts.

In the past two years domestic automobile sales have increased proportionately more than import sales but the trend for increased sales with domestic and imported automobiles continues to look good with the probability that 1974 will show import increases exceeding domestic automobile purchasers turn toward smaller more economical cars.

Domestic sales in 1974 should be around the eleven million mark again but profits

TABLE III
 FAMILY GROWTH, INCOME, OWNERSHIP,
 AND AUTOMOBILE PURCHASES

| No. of Families (000) | Income | Automobile Ownership | | | New Car Purchases (000) |
|-----------------------------|---------|----------------------|--------------------|-------|-------------------------------|
| | | One | Two** (percent) | Total | |
| 49,300 | \$4,421 | * | * | 71 | 6,100 |
| 50,400 | 4,783 | * | * | 72 | 5,200 |
| 51,200 | 4,971 | * | * | 75 | 4,400 |
| 52,000 | 5,087 | * | * | 74 | 3,900 |
| 52,600 | 5,417 | * | * | 74 | 5,000 |
| 53,400 | 5,620 | 62 | 15 | 77 | 5,000 |
| 54,200 | 5,744 | 60 | 16 | 76 | 6,100 |
| 54,900 | 5,940 | 58 | 16 | 74 | 5,300 |
| 56,500 | 6,265 | 59 | 21 | 80 | 4,600 |
| 56,800 | 6,556 | 56 | 22 | 78 | 5,700 |
| 58,400 | 6,957 | 55 | 24 | 79 | 7,200 |
| 59,100 | 7,436 | 54 | 25 | 79 | 7,900 |
| 60,200 | 7,974 | 53 | 25 | 78 | 7,600 |
| 61,200 | 8,632 | 53 | 26 | 79 | 6,900 |
| 62,100 | 9,433 | 52 | 27 | 79 | 7,500 |
| 63,700 | 9,867 | 54 | 28 | 82 | 8,300 |
| 65,100 | 10,285 | 55 | 28 | 83 | 5,900 |

* Data not available before 1960.

** Includes families with more than two automobiles.

ce: Statistical Abstract of the United States for the years 1958 through 1973.

he big car manufacturers should be down as the swing away from the r, luxury type car to the smaller more economical car will cut into rofit contribution made by each sale. As small car sales increase, expects to more than fit into the market as their sales grow in ext several years.

According to R. D. Brown, who is in charge of Mazda of America and sponsible for promoting the automobile nation-wide, by the end of Mazda will have sales that will rank close to American Motors with 300,000 vehicles being sold in this country alone.² If the trend Mazda has set already can be followed, their expected goal should sy to attain and their effects on the market will become more ptible to the entire industry.

In 1970, the first Mazda was offered for sale in the United States : for that year amounted to around 2,000 vehicles. In the following 1971, sales showed a small improvement as 20,000 cars were sold. e ensuing year as Mazda's dealership expanded into the southwest he southeast, sales nearly tripled as close to 60,000 autos were

As their expansion program progresses, Mazda expects to sell en 150,000 and 180,000 cars in 1974 which is an increase of 25 to rcent over their 1973 sales of more than 120,000 vehicles. Howeve ould be remembered that these figures are estimates that have been .cized by Mazda of America and that similar to their past forecasts time will prove them accurate or inaccurate. Certainly more im- nt at this point is the fact that market demand cannot be repre- ed by a single number. Any adequate representation of the market ld be done with a market demand function and such a function will b assed shortly.

Customer Group

The customer group to be considered in the total market demand is diverse, heterogeneous, and difficult to segment into meaningful groups. The demand for new automobiles structured? The greatest majority of new car purchasers are made as replacement purchases. In a survey conducted by Look Magazine in 1965, 90.4 percent of all new car buyers had owned a car previously and only 12.3 percent of those individuals kept their previous automobile.³ In other words, 79.3 percent of all new car buyers in 1965 either traded, sold, or scrapped their old cars.

Lawrence White states in his book, The Automobile Industry Since 1945, that it is not too surprising that those who buy new cars display different characteristics from those who own cars in general.⁴ He continues on to say, "... new cars are not bought by a random selection of car owners but, instead, tend to be bought by a smaller group who buy new cars comparatively frequently."⁵ More light can be cast on this phenomenon by observing that in Table IV over 58 percent of new car buyers held their previous car for four years or less. This indicates that the majority of new car purchases are made by people who tend to buy new cars rather frequently.

This special group of new car buyers can further be identified by their income level in which they fall. Table V shows this relationship. For the most part, new car buyers earn more money than the average car owner with slightly over 50 percent of the new car buyers falling in the \$10,000 per year and above categories. White points out several other distinguishing characteristics of new car buyers when he says,

New car buyers make extensive use of installment credit, with an average of 61 percent of new car buyers financing their cars in the 1960's. Only 45-50 percent of used car buyers

TABLE IV
NUMBER OF MONTHS NEW CAR BUYERS HELD PREVIOUS CARS

| Months Held | Percent |
|-------------|---------|
| 0-12 | 6.8 |
| 13-24 | 12.4 |
| 25-36 | 19.9 |
| 37-48 | 19.2 |
| 49-60 | 13.4 |
| 61-72 | 8.8 |
| 73-84 | 4.7 |
| 85-96 | 4.5 |
| 97+ | 10.3 |

Source: 1971 Automobile Facts and Figures, Automobile Manufacturers' Association, Inc. (Detroit, 1972).

TABLE V
INCOME DISTRIBUTION OF CAR OWNERS AND NEW CAR BUYERS

| Income Dollars) | All Car Owners (percent) | New Car Buyer (percent) |
|--------------------|-----------------------------|----------------------------|
| Under 4000 | 17.3 | 8.1 |
| 4000-4999 | 8.0 | 4.7 |
| 5000-6999 | 28.0 | 25.1 |
| 7000-7999 | 11.3 | 11.8 |
| 8000-9999 | 14.4 | 16.4 |
| 10000-14999 | 13.9 | 20.2 |
| 15000 and above | 7.1 | 13.7 |
| TOTAL | 100% | 100% |
| MEAN | \$6762 | \$8042 |

Source: Lawrence White, The Automobile Industry Since 1945 (Cambridge, 1971), p. 99.

finance their cars. New car purchases are somewhat seasonal in nature....

the majority of such sales coming in the fall, right after the new s are introduced, and again in the spring when the weather turns and a young man's fancy turns ...

Automobile Market Demand

The automobile market demand is not geographically limited within continental boundaries of the United States. Demand for cars is lent in all corners of the country and automobile dealers are d throughout the land. Generally speaking the time period that be covered in this paper will be a year, or more precisely, 1974. er, some dissection will take place as smaller time units such as s and quarters also appear. This will be done in order to more analyze the existing market in view of the immediate past. This enable logical revisions to be made in recognition of those ing factors that affect the overall market and especially that of the market with which this paper will be concerned.

Exogenous variables have significant influence on the market demand ew automobiles. Particularly significant factors are the number of mers, the customer's need for the product, their demographic cteristics, personal disposable income, purchasing power, and the f their current car. All of these items influence the single most tant aspect of market demand and that is the individual purchaser automobile.

In order to understand the people that comprise the automobile t, a look at some specific demographic characteristics may be

ful. Automobile ownership by income level is depicted in Table VI with the percent of multiple car ownership at the corresponding income levels. The age structure of drivers in the United States is displayed in Table VII along with the male and female composition of those same drivers.

TABLE VI
AUTOMOBILE OWNERSHIP BY INCOME LEVEL

| Income Level (Dollars) | All Automobile Owners (percent) | Owners of Two or More Automobiles (percent) |
|---------------------------|---------------------------------------|---|
| Under 1000 | 25 | 3 |
| 1000-1999 | 41 | 1 |
| 2000-2999 | 50 | 7 |
| 3000-3999 | 60 | 6 |
| 4000-4999 | 70 | 9 |
| 5000-5999 | 75 | 9 |
| 6000-7499 | 86 | 15 |
| 7500-9999 | 92 | 26 |
| 10000-14999 | 96 | 41 |
| 15000 or more | 96 | 60 |

Source: 1971 Automobile Facts and Figures (Detroit, 1972).

TABLE VII
AGE AND SEX OF U.S. DRIVERS

| | Male (000) | Female (000) | Total (000) |
|----------|---------------|-----------------|----------------|
| 16 | 100 | * | 100 |
| | 900 | 600 | 1500 |
| | 1400 | 1000 | 2400 |
| | 1600 | 1100 | 2700 |
| | 1600 | 1100 | 2700 |
| | 5500 | 4000 | 9500 |
| 24 | 7600 | 6200 | 13800 |
| 29 | 6700 | 5300 | 12000 |
| 34 | 5900 | 4700 | 10600 |
| 39 | 5800 | 4800 | 10600 |
| 44 | 6000 | 4800 | 10800 |
| 59 | 5800 | 4500 | 10300 |
| 54 | 5100 | 3800 | 8900 |
| 59 | 4500 | 3000 | 7500 |
| 64 | 3600 | 2200 | 5800 |
| 69 | 2600 | 1400 | 4000 |
| and over | 3300 | 1300 | 4600 |
| ALL | 62300 | 46000 | 108300 |

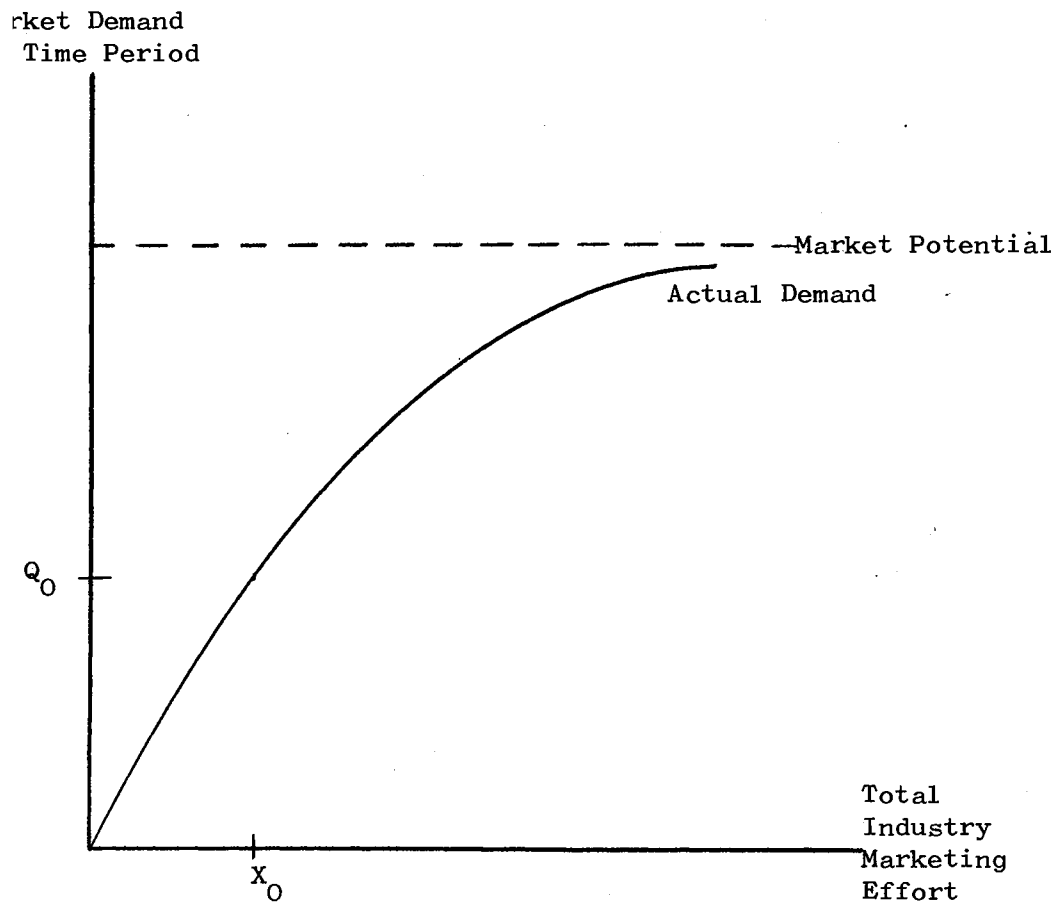
Source: 1971 Automobile Facts and Figures, Estimated by the Automobile Manufacturers Association from the U.S. Department of Transportation, Federal Highway Administration, Drivers Licenses-1969 (Detroit, 1972).

inally, the

.. market demand is also affected by controllable factors.
 .. Demand in most markets will show some elasticity with respect to industry price, promotion, product improvements and distribution effort. Thus a market demand also requires assumptions about future industry prices and industry marketing outlays.⁷

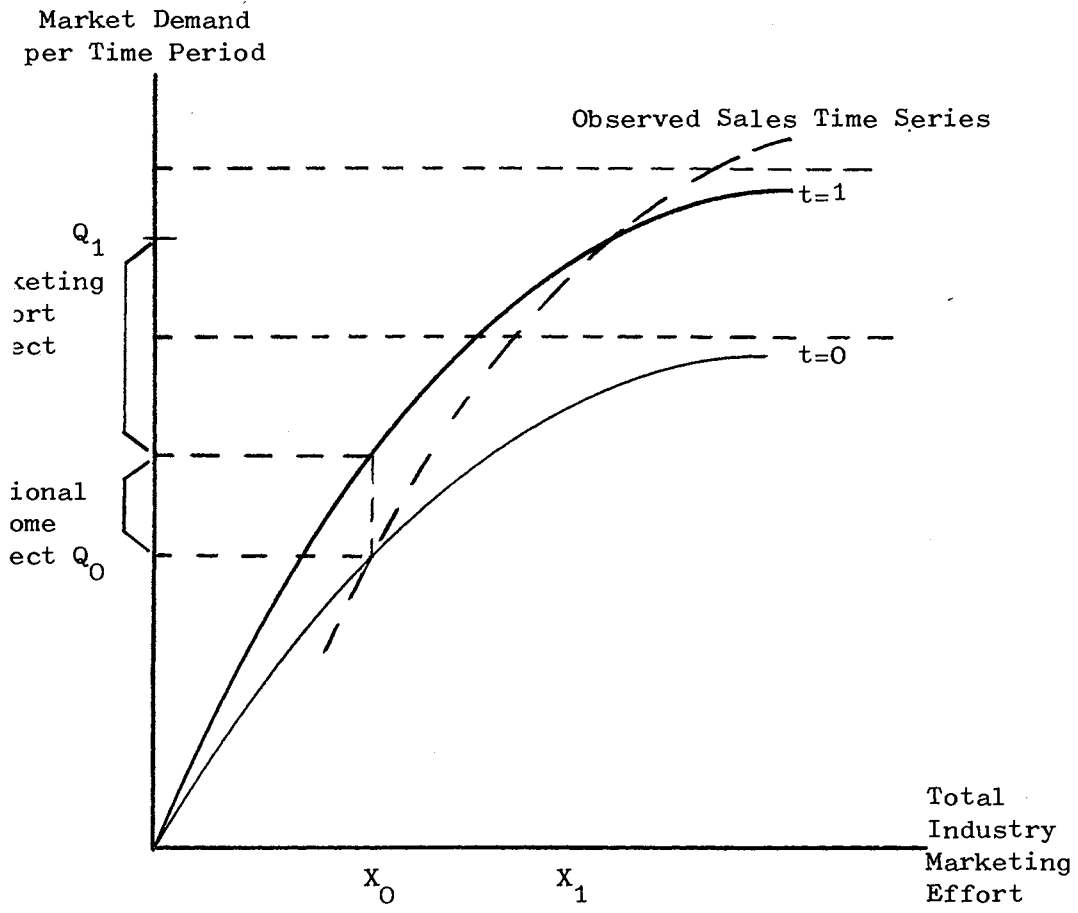
Remembering now that the quantity demanded is a function and not a single number, we can say that "the level of total market demand, at any point in time depends on two major factors: (1) the size and composition of the market, and (2) the current level of total industry marketing effort."⁸ Philip Kotler then goes on to say that the size and composition of the market is important because it determines the upper limit of a particular market's possible consumption under the most intense level of marketing effort.⁹ Kotler refers to that upper limit as the market potential or the market saturation level.¹⁰ The actual percent of market potential that is achieved is determined by the level of marketing effort that is expended by the individual automobile retailer and the automobile manufacturer.

With the foregoing in mind, we can now define the market potential as the sum total of all autos produced and available for sale in the United States, this definition includes both domestic and imported automobiles. As illustrated in Figure 1, the actual demand will fall well short of the total potential. This result will generally hold for any given market in the short run. Long run demand is more likely to be dynamic as indicated by Figure 2. The actual market demand for any period will be determined by the effort that is expended by the automobile industry. Consequently, if the industry's expenditures are X_1 in Figure 1, the market demand for that time period will be Q_1 .¹¹



Source: Kotler, Marketing Decision Making: A Model Building Approach (1971), p. 86.

Figure 1. Static Market Demand Function



Source: Kotler, Marketing Decision Making: A Model Building Approach (1971), p. 86.

Figure 2. Dynamic Market Demand Path

the demand function that is depicted in Figure 2 is a monotonically increasing, concave function which approaches the market potential asymptotically. The function can be expressed as:

$$Q_t = k_t \bar{Q}_t \quad (1)$$

Q_t - is the actual market demand at time t ,

k_t - is the fraction of realized potential at time t where $0 \leq k \leq 1$, and

\bar{Q}_t - is the market potential at time t .

In the above equation both k_t and \bar{Q}_t can be expressed as functions of the current industry marketing effort and the various environmental factors that affect the market demand, respectively. Therefore, by letting $\bar{Q}_t = g(Y_t)$ and $k_t = f(X_t)$, Equation (1) can be rewritten as follows:

$$Q_t = f(X_t) g(Y_t) \quad (2)$$

X_t - is the current level of industry marketing effort and

Y_t - is any basic environmental determinant of market potential.

Equation (2) expresses actual market demand, Q_t , as a product of two functions involving X_t and Y_t . Equation (2) gives some indication as to current demand but in order to forecast the future demand in the long run, the equation needs to be made dynamic. This can be done by assuming that statistical analysis of past data indicate that:

$$X_t = c X_{t-1} , \quad (3)$$

$$Y_t = d Y_{t-1} .$$

t is, the current levels of X_t and Y_t are functions of the previous period's level adjusted by constants of proportionality c and d , respectively. Assuming that these functions hold constant or nearly so, the demand for t periods from the base period would be given by:

$$X_t = c^t X_0,$$

$$Y_t = d^t Y_0.$$

on substituting (4) into (3) we obtain:

$$Q_t = f(c^t X_0) g(d^t Y_0).$$

Equation (5) is the short run dynamic demand function and is shown graphically in Figure 2.¹²

Now let us take a look at some of the features of demand for automobiles in the long run. Marc Nerlove¹³ writes in A Note on Long-Run Automobile Demand that in order to determine the long-run demand for automobiles that the total stock of cars, adjusted for depreciation with large amounts of depreciation for the first few years and smaller amounts for the last several years of its useful life, must be taken into consideration. He further states that:

If we assume a constant percentage rate of depreciation over time, we may derive the total stock of automobiles, adjusted for the age composition of the stock, from an index of past purchases of new cars derived in a way to adjust for differences in make and model.¹⁴

Let $s(t)$ - be the stock of cars during period t ,

d - be the percentage rate of depreciation,

$x(t)$ - be new car purchases during period t , and

$x(t-1)$ - be new car purchases during period $t-1$, then

$$s(t) = x(t) + (1-d) x(t-1) + (1-d)^2 x(t-2) + \dots \quad (1)$$

Equation (6) shows that the stock of cars during period t , adjusted for depreciation, is just the new car purchases during period t and $(1-d)$ times the stock level in period $t - 1$; that is,

$$s(t) = x(t) + (1-d) s(t-1) .$$

Therefore, "the demand for automobiles may be considered as the demand for a stock of automobiles adjusted for both age and make, that is, $s(t) = x(t) + (1-d) s(t-1)$."¹⁵

Nerlove¹⁶ goes on to identify some of the factors that may affect the demand for automobiles. These factors are:

- (1) the price of automobiles relative to other commodities,
- (2) real disposable income, (3) population, (4) the extent and quality of the highway network, (5) the degree of urbanization and/or sub-urbanization, etc.

When all these things are taken into consideration, the long-run demand for automobiles will be found to be tied to the overall economic growth and climate of the country. Therefore, the long-run demand for automobiles can be expressed as a function of these various variables.

Let $s^*(t)$ - be the long-run equilibrium stock,

$p(t)$ - be the relative price of the auto,

$y(t)$ - be the real disposable income, and

$z(t)$ - be the other variables mentioned.

Therefore, the long-run demand for autos can be written again as:

$$s^*(t) = a_0 + a_1 p(t) + a_2 y(t) + a_3 z(t) ,$$

where the a_i are appropriate constants needed to satisfy the equation. Since the long-run equilibrium stock demanded by consumers cannot be observed, so Nerlove¹⁶ seeks a substitute that can be estimated statistically.

for this purpose he makes the assumption that the rate of adjustment of actual stock is proportional to the difference between the equilibrium stock and the actual stock. This difference can be expressed as:

$$s(t) - s(t-1) = b[s^*(t) - s(t-1)] \quad (9)$$

where:

$s(t)$ - is the actual stock during period t ,

$s(t-1)$ - is the actual stock during period $t-1$,

$s^*(t)$ - is the long-run equilibrium stock, and

b - is the constant of proportionality.

Equation (9) is used to determine the long-run equilibrium demand for automobiles by using available data.¹⁷

Equations (5) and (9) together blanket the short-run and the long-run forecasts for automobile demand. However, in order to fully use these equations an extensive analysis of the available data would have to be executed. Such an analysis is beyond the scope of this paper and no attempt is made to arrive at future market forecasts.

FOOTNOTES

¹ Philip Kotler, Marketing Decision Making: A Model Building Approach (New York, 1971), p. 84.

² News From Mazda, Mazda Motors of America press release, PR 542 973.

³ "National Auto and Tire Survey," Look (July, 1965), p. 34.

⁴ Lawrence J. White, The Automobile Industry Since 1945 (Cambridge 1971), p. 96.

⁵ Ibid., p. 97.

⁶ Ibid., p. 106.

⁷ Kotler, p. 85.

⁸ Ibid.

⁹ Ibid., p. 86.

¹⁰ Ibid.

¹¹ Ibid., p. 87.

¹² Ibid., pp. 87-88.

¹³ Marc Nerlove, "A Note on Long-Run Automobile Demand," Journal of Marketing, XXII (1957), p. 57.

¹⁴ Ibid., p. 58.

¹⁵ Ibid., p. 60.

¹⁶ Ibid., p. 61.

¹⁷ Ibid., p. 62.

CHAPTER IV

THE COMPANY MODEL

History of the Company

Now that we have an overview of the industry sales model let us define the company model for Mazda Motors of America, Inc. The parent company for Mazda Motors of America is located in Japan and is known as Toyo Kogyo Company, LTD. Toyo Kogyo has been in the automobile business and precision machine tool business for over 50 years. The company currently produces both rotary and piston powered automobiles their primary aim seems to be toward the rotary engine vehicle.

A German by the name of Felix Wankel developed the rotary engine in the 1950's. At the start of the 60's, Toyo Kogyo obtained the right to test and develop the engine from Wankel-NSU. "The company's first prototype was a bitter disappointment. Run for the first time in December of 1961, it vibrated violently at idle, spewed clouds of smoke and consumed great quantities of oil."¹ Development of the engine, however, continued on into the mid 60's. In late 1963 a successful prototype was constructed and immediately evaluation was initiated on long-run performance of the engine.

Finally, in 1967 after almost four years of tests and engine improvements, the rotary engine Mazda reached the new car dealers' showrooms throughout Japan. Sales for the company began an immediate rise and the idea of the rotary engine began to receive market acceptance.

Kogyo's sales, which in 1966 had been 92,000 automobiles, rose to 100,000 vehicles in 1967.²

In the ensuing years since 1967, rotary engine Mazdas have gone into full scale mass production. The line of rotary engine automobiles available has gradually been expanded since 1967 and now includes models ranging from the small R100 to the larger RX-2. Mazda models also include the sporty RX-3 and just recently, in January 1974, Mazda introduced a larger version of the rotary engine when it presented the RX-7 to the American market. Two door, four door and station wagon models are available, all with the rotary engine. Mazda also expects to have a small truck with the rotary engine available for sale by late 1974.

Since the Mazda was introduced into the United States in 1970 on the West Coast, sales have climbed steadily. Over 58,000 Mazdas were sold in 1972 as compared to 20,000 in 1971. Sales in 1973 reached over 100,000 vehicles, a figure which verified the forecast made by Mazda executives in 1972. In 1974, Mazda expects to see sales increase by 25-50 percent over what they were in 1973. This means that 150,000 to 180,000 cars will be sold this year with practically 90 percent rotary power.

Eventually, Mazda Motors of America expects to see their sales in the United States climb to the 300,000 to 350,000 vehicle level. Such growth as has been displayed by Mazda in this country in such a relatively short period of time is truly phenomenal. But the overall success of Mazda is a combination of many factors including the revolutionary rotary engine and a marketing program that has expanded at such a fast pace that Mazda Motors of America obviously believes that effective advertising produces sales and not vice-versa.

the size of Mazda Motors has steadily increased within the past years. In 1966, Mazda produced only around 92,000 autos while they turned out over 800,000. With continued increases expected next several years, Mazda plans on producing nearly 1,000,000 in 1975.

Although Toyo Kogyo produces both the standard reciprocating engine and rotary or Wankel engine, its main thrust and emphasis seems to be almost completely shifted toward the continued development and improvement of the rotary engine.

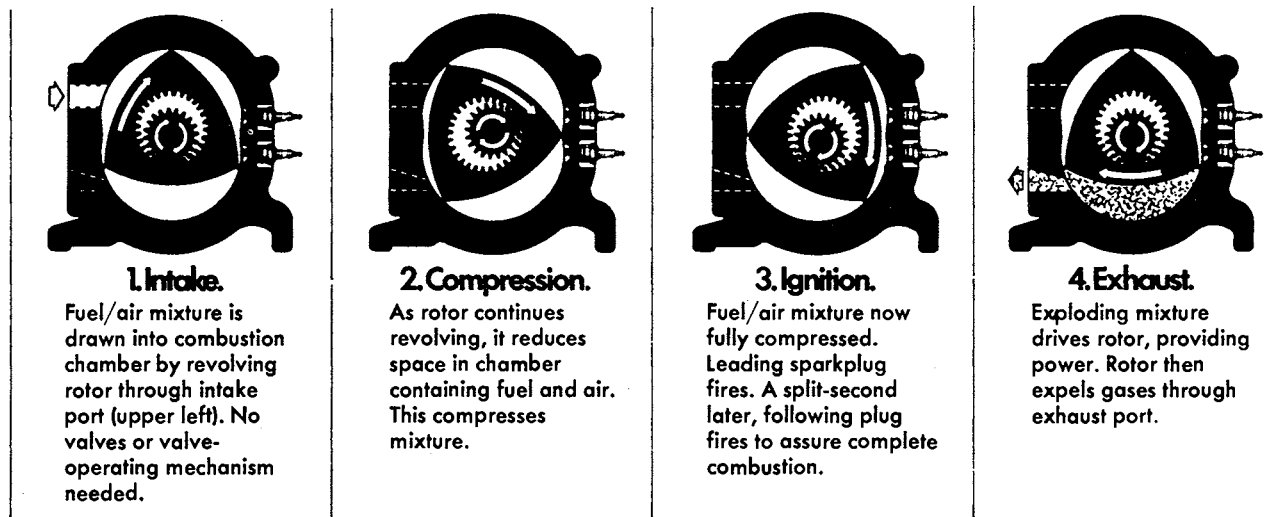
What is the rotary engine and why is it having such an impact on the automobile industry and markets?

An Innovative Technology

The automobile is a well developed product that has been consistently improved upon since its invention. The engine that has been used in almost all automobiles is an internal combustion engine which was developed by Nikolaus August Otto and patented in 1877.³ The engine consisted of pistons and various mechanical devices that could convert the up and down motion of the pistons into rotary motion which enable a vehicle to move. In the 1920's, a German engineer named Wankel became interested in another type of internal combustion engine, one which initially made rotary energy. The two engines are compared in Figure 3.

Figure 3 graphically presents the operation cycle of the piston and rotary engines. The lower half of the figure shows diagrammatically the operation of the piston engine.

The conventional piston engine employs the four-stroke cycle first used 94 years ago in an engine built by Nikolaus



How your piston engine works.

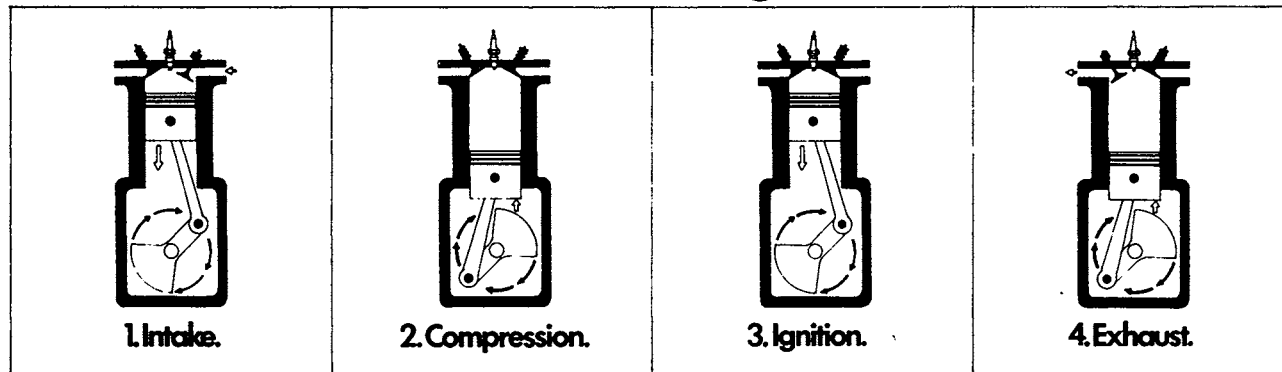


Figure 3. Comparison of Rotary and Piston Engines

Agustus Otto. During the intake stroke a mixture of fuel and air is drawn into the cylinder. When the compression stroke has reduced the mixture to about 10 percent of its original volume, the mixture is ignited by the firing of a spark plug. The expanding gases produce the power stroke. During the exhaust stroke the products of combustion are driven out through the exhaust port ...⁴

The cycle is completed. In direct comparison to the piston engine

... the Wankel or rotary engine has three small chambers of variable size, each of which undergoes a complete four-stroke Otto cycle in one revolution of the rotor... . On the intake stroke a fresh charge of fuel and air enters the chamber through the intake port, which is always open. As the rotor turns clockwise the charge is sealed off and compression begins. When the charge is fully compressed, it is ignited by the firing of a spark plug. The expanding combustion gases drive against the rotor until the exhaust port is uncovered, allowing the spent gases to escape.⁵

The development of the rotary engine was hampered during World War II but was revitalized in 1951 when Wankel received support from NSU Motorenwerke AG, a German producer of motorcycles. Development of the engine continued throughout the 1950's. In the late 50's and early 60's, licenses for individual development of the rotary engine were obtained by the Curtiss-Wright Corporation of the United States and the Toyo Kogyo Company of Japan among others. Through the joint efforts of these various companies, many of the difficulties encountered with the rotary engine were resolved, enabling the Toyo Kogyo Company to mass manufacture a commercial rotary engine beginning in 1967.

The rotary engine is an innovative engine that may hold the answer to the problem of automobile pollution. The rotary has already passed the stringent 1975 pollution emission standards set by the United States Government through the Environmental Protection Agency. Because of its compactness, the Wankel engine has many far reaching implications for the automobile industry.

There are both advantages and disadvantages associated with the rotary engine. First, the advantages of the rotary engine will be discussed. The rotary engine is approximately 30 percent smaller than a piston engine, which allows for more room for emission control devices under the hood and also for roomier car interiors with an overall decrease in the length of the vehicle. The engine is quite simple and it has fewer moving parts in comparison to the standard reciprocating engine. Because the engine is light, greater fuel economy and tire wear make it more economical. The engine can operate on fuel with an octane rating as low as 70. The engine is almost vibration free at extremely high rpm's and because of its lack of vibrations it runs very quietly. Consequently, automobiles powered by the rotary engine are also very quiet even at high freeway speeds.

The disadvantages of the rotary engine are centered primarily in the technological field. The efficient performance of the engine is dependent upon the effectiveness of the seals which close off one combustion chamber from the next. The combustion takes place at a slower rate than in the piston engine and so the thermal efficiency of the rotary engine is below that of the piston engine resulting in lower mileage miles per gallon than would be obtainable with a comparable piston engine. However, as rotary engine technology is improved the effects of the current disadvantages will be minimized or possibly even eliminated.

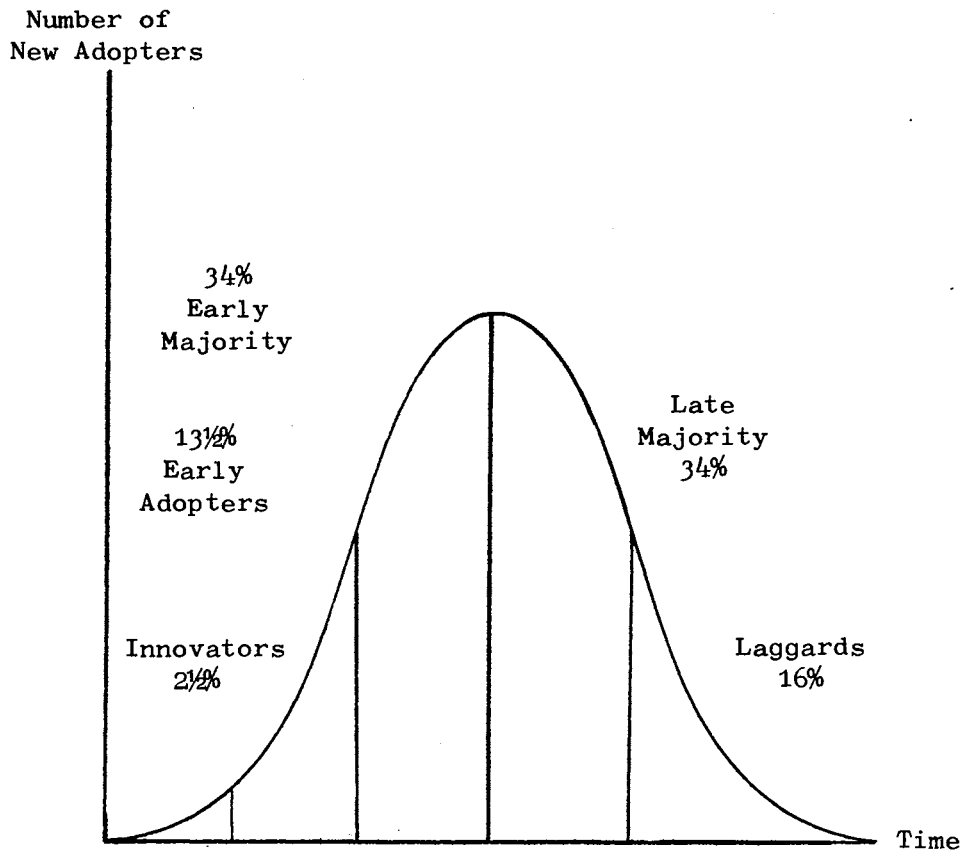
Will the rotary engine be the future propellant of the automobile industry? This and several other questions concerning the rotary engine are still up in the air. Time, testing, and acceptance by the public will determine the answers.

The United States Market for the Mazda

Fuyo Kogyo has produced over 600,000 Wankel engines since 1967 and is currently the only automobile manufacturer who markets the rotary engine powered automobile. However, both General Motors and Volkswagen plan to market a rotary engine powered auto by the end of the current year or the start of the next. The rotary engine is probably in the innovator stage or the very beginning of the early adopter stage of product acceptance. The various stages in the product acceptance cycle are depicted in Figure 4. Mazda Motors of America apparently feels this is the situation since they have indicated that their sales will increase over the next several years before leveling off at 300,000 to 400,000 rotary engine vehicles per year.

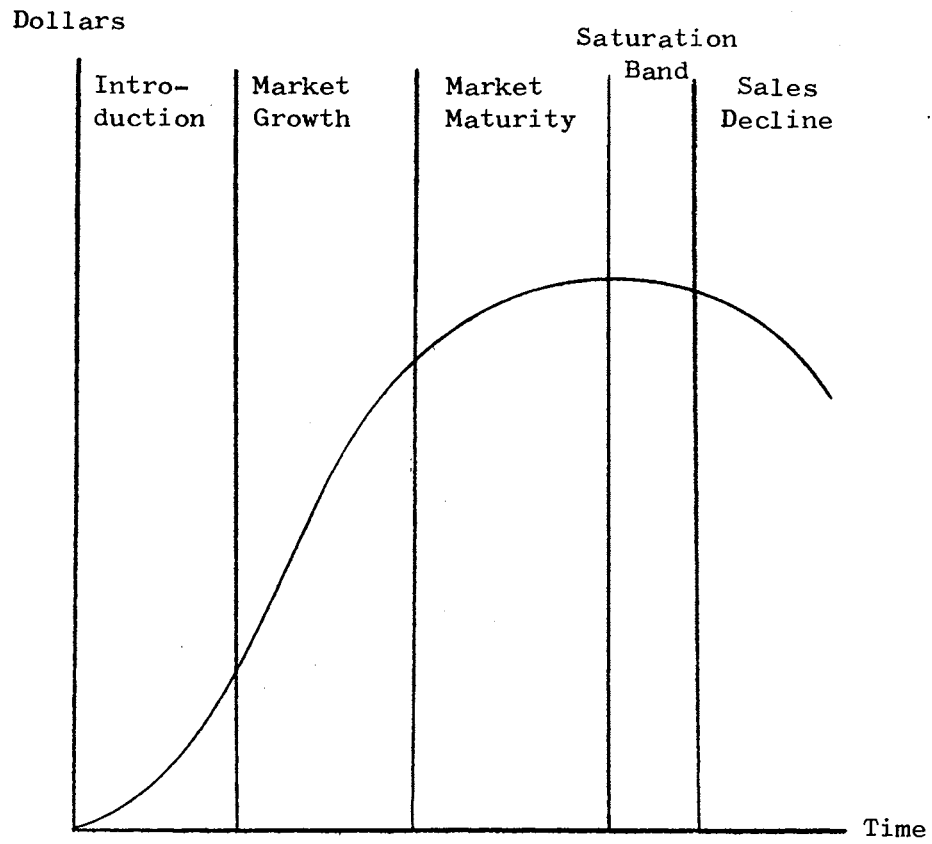
Corresponding to the consumer acceptance cycle depicted in Figure 4 is the product life cycle displayed in Figure 5. In Figure 5, Mazda Motors finds itself in the late introduction or early market growth stage of development. According to Gosta Mickwitz,⁶ there are five distinguishable marketing instruments: price, advertising, service, product quality, and packaging. Each of these items is associated with a specific stage of the product's life cycle. Mickwitz further says that in each stage of the life cycle different instruments play dominating

In the introductory stage of the cycle, the product's quality plays the utmost importance as innovators purchase the product. In the early stage of the cycle, advertising is the most potent instrument to be used in the product's marketing.⁷ Since I fell that the Mazda is now in a transition between these two stages, I will only discuss these two aspects of marketing instruments.



Source: Philip Kotler, Marketing Decision Making: A Model Building Approach (1971), p. 528.

Figure 4. Consumer Product Acceptance Cycle



Source: Ronald R. Gist, Marketing and Society (1971), p. 457.

Figure 5. The Product Life Cycle

The quality of the Mazda has been assessed by many agencies
 hed to magazines such as Consumer Reports, Motor Trend, Road and
 , Car and Driver, Road Test, and Popular Science, among others.
 f the test results that have been printed along with the articles
 have been written about the Mazda indicate that the whole car is a
 quality vehicle. For example, an article in Motor Trend written by
 Smith says: "Forget for a moment that Mazda's RX-2 is powered by
 any engine; the RX-2 would still be a first rate automobile."⁸
ar Science, in an article in its January, 1972, issue, said:
 Mazda RX-2 sets high standards for a Wankel-powered compact, and
 ctureres just getting started in Wankel programs will find it a
 act to follow."⁹

Road Test in its January, 1974, issue said: "Today the rotary
 ie is here to stay and a fact of automotive life."¹⁰ The article
 continued on to say:

Mazda Motors is looking to the future, and seem to have one
 of the few powerplants in existence, the rotary, that will
 meet emission control standards for the next few years
 without a great loss in fuel economy, and still provide
 enough power to make driving more of a pleasure than a
 chore."¹¹

Starting in 1971, Mazda centered its sales around the rotary engine
 and in 1973 offered two different rotary engine powered autos in
 RX-2 and the RX-3. However, as 1974 entered the scene, Mazda un-
 ed a new rotary powered car, the RX-4. The RX-4 is larger and more
 rful than any of the previous versions of the Mazda. Road Test
 : "We think it quite fitting that ... Mazda saw fit to make its no
 ship the best performing of the lot. It proves they have no inten-
 of allowing interest to flag or excitement to wane in their show-
 is."¹² Also included in the article was a discussion of the

performance, dependability, and endurance of the new RX-4 and it gave it the highest rating among the rotary engine cars Mazda now has on the market.¹³ These are just a few of the laudatory remarks that are being heard throughout the automobile atmosphere about the quality of the rotary powered autos.

The advertising for Mazda is being handled by a Los Angeles firm and nothing is being held back. When Mazda first came to this country in 1970 sales were not very good as only 2,000 automobiles were sold. Mazda Motors of America hired C. R. Brown, a man who had worked for several American automobile manufacturers, to be its General Manager. Brown almost immediately centralized the business into a solid unit instead of splinter factions with each going their own way and developed an expansion strategy for the Mazda that spanned the United States. Along with the expansion plan, he also formulated a suitable advertising strategy that complemented the expansion program. The advertising expenditure was tied to sales in order to establish a minimum and then it was correspondingly increased as the dealer network expanded throughout the country. For every car sold by Mazda to a dealer, \$1000 was added to the advertising fund. In 1971 three million dollars were spent on advertising and that amount more than doubled in 1972 as a result to seven million. In 1973 Mazda Motors of America budgeted and spent fifteen million dollars for advertising and they expect the 1974 advertising expenditure to also show a significant increase. It seems evident from the preceding that the sales that the advertising expenditure is tied to is the expected sales of the firm over the next several years and not past sales. The company's planning for advertising during their growth period of sales appears to be well thought

l sufficiently projected to meet both present and future

we say that sales are primarily a function of the controllable
 es found in marketing mix then we can express sales, Q, as:

$$Q = f (P,A,D,R)$$

- Price,
- Advertising,
- Service, and
- Quality.

ore, without knowing or being able to ascertain specific details
 the marketing mix of Mazda in the United States, I think it is
 that the management of Mazda is working diligently at trying to
 at their optimal mix through a policy of flexibility, innovation,
 tivation.

t appears that the leadership of Mazda is moving into the future
 sound marketing program that entails dealership expansion from
 rrent level of nearly 400 dealers to approximately 655 dealers
 5 spread throughout all of the 48 contiguous states.

s sales practically tripled in 1972, with close to 90 percent
 rotary engines, Mazda rose into fifth place in sales among imports
 was a significant climb from the twelfth place occupied at the
 1971. During 1973 Mazda moved into the fourth position as their
 more than doubled from the previous year. Only Volkswagon,
 , and Datsun are in front of the Mazda. However, during the first
 onths of 1973, the three leading imports all suffered set backs in
 over the levels that had been reached during the first nine months

1972. In comparison, Mazda's sales during the same time periods
ved significant increases. The total sales of each of the three
ling imports are well ahead of Mazda's and consequently it will tak
uple of years for Mazda to overtake any one of the leading three.
can Mazda continue to increase at such a fantastic rate?

Wards' Auto World in a recent article said, "Because of its
erent advantages, we predict that in 1980 some 77% of all cars sold
the United States will be Wankel powered."¹⁴ The article then
tinued on to say, "So sweeping are Wankels' applications, it will
ome the dominant power source wherever small engines are used."¹⁵
itional support comes from an article in Forbes which discusses the
erest of the Big Four automobile manufacturers in this country in
rotary engine.¹⁶ The article also discusses the bright future of
da in this country since it is the only car currently available wit
rotary engine and will continue to be the only one available until
1975 models come out in late 1974. The article concludes that no
ter what the future may hold for Mazda, that Mazda has made a lasti
act on the automobile industry in this country.¹⁷

Finally, an article written by Dr. David E. Cole, Professor of
hanical Engineering at the University of Michigan and son of Edward
e, current President of General Motors, gives further support to th
ure of the Wankel engine.¹⁸ Professor Cole discusses in depth the
ration of the rotary engine from the point of view of an expert
ering the operation of the engine from the technical viewpoint of
h an expert. In addition to the other favorable aspects of the
ine already discussed, Professor Cole says, "Perhaps the most far
ching economic significance of the Wankel lies outside of the engin

self in the potential it offers for the redesign of the automobile
asis."¹⁹ He further expects that because of the small size of the
engine that dramatic cost-control opportunities face automobile manu-
facturers in the years ahead.²⁰ Professor Cole concludes his dis-
ussion of the advantages of the rotary engine by saying,

Overall the Wankel-powered car would probably weigh from 600
to 1,000 pounds less than the standard car, equivalent to a
savings of \$600 to \$1,000, on the basis that present cars
retail at about \$1 per pound. The potential saving should
more than pay for the safety features and emission-control
systems that will be required in the future.²¹

With the preceding thoughts in mind it seems very reasonable to
expect Mazda's sales to continue to soar at least as long as it holds
its monopolistic position as being the only mass producer of rotary
engines. And even when competition arrives on the scene, Mazda because
of its quality and performance still should continue to do well.
Therefore, Mazda seems in an excellent position to achieve its 1975
goal of 300,000 to 350,000 automobile sales with over 90 percent
propelled by the rotary engine. Such sales would push Mazda into the
number two spot among imports and make them prime contenders to move
in front of Volkswagon and American Motors into the number four spot in
sales in the United States among all automobile manufacturers.

FOOTNOTES

- ¹News Release from Mazda, PR 543, p. 2.
- ²Ibid., pp. 3-4.
- ³"Otto, Nikolaus August," Encyclopaedia Britannica (1972),
e 16, p. 1162.
- ⁴David E. Cole, "The Wankel Engine," Scientific American (August,
, p. 15.
- ⁵Ibid., pp. 15, 17.
- ⁶Philip Kotler, Marketing Decision Making: A Model Building
Technique (New York, 1971), p. 62.
- ⁷Ibid., p. 62.
- ⁸Steve Smith, "Road Test: Mazda RX-2," Motor Trend (November,
, p. 64.
- ⁹Jan P. Norbye, "Wankel-Powered Car Proves Silent, Powerful, and
Emission-Free," Popular Science (January, 1972), p. 83.
- ¹⁰"Mazda," Road Test (January, 1974), p. 48.
- ¹¹Ibid., p. 49.
- ¹²John Ethridge, "Mazda's New Flagship," Road Test (March, 1974),
p. 5.
- ¹³Ibid., p. 26.
- ¹⁴"Ward's Wankel Report," Ward's Auto World (July, 1972).
- ¹⁵Ibid.
- ¹⁶"Wangle Yourself A Wankel," Forbes (December, 1972), pp. 24-27.
- ¹⁷Ibid., pp. 24-27.
- ¹⁸David E. Cole, "The Wankel Engine," Scientific American (August,
, pp. 14-23.
- ¹⁹Ibid., p. 20.

²⁰Ibid., p. 19.

²¹Ibid., p. 20.

CHAPTER V

THE COMPETITIVE MODEL

Introduction

"Given the functional expressions for industry demand and the company's share of total demand, the company's task is to find the marketing program that promises to maximize its profits."¹ In order to maximize profits, the company must consider both the internal, controllable variables and the external, uncontrollable variables that affect its goals. This chapter will discuss some of the exogenous variables that will affect the firm's marketing mix and consequently strategy. The primary item to be examined in this chapter is competition. Where does the firm receive its competition? What contribution does competition have to the company's marketing strategy? What unique challenges does the company face in marketing its product? These are just a few of the questions that will be examined in this chapter.

Competition

The internal combustion engine, invented by Nikolaus August Otto and 97 years ago, paved the way for the automobile as we know it today by providing an engine that was both powerful enough and small enough to propel a small vehicle. As the state of the art was refined and more firms sought entry into this futuristic industry. The o

g all of these firms had in common was the internal combustion engine. Other engines such as the steam and electric engines were tried from time to time but they all seemed to pass on while the old reliable reciprocating engine just grew stronger and became more deeply entrenched as the sole automobile power train. As the industry developed larger automobile manufacturers became larger and stronger while smaller ones sought to improve their product and to maintain their market share; in other words, the small manufacturers sought just to survive. Competition during this time centered around the body of the car, the styling, the workmanship, and as time elapsed price came to become an important factor. During this time, as all companies tried to meet and best their competition with improved performance, styling, and reliability, one common element remained, the reciprocating piston engine of Otto. Never in its history has the piston engine received real competition from a mass produced engine, that is until the Mazda Motor Company obtained a license from Wankel-NSU to develop and market the rotary engine. But if the rotary engine is so good, what is the competition doing to combat the Mazda?

Competition for the Rotary Engine

The concept of the rotary engine has existed for quite awhile as mentioned earlier but due to problems in technology the advancement of the Wankel engine as an operable alternative to the piston engine was delayed. The rotary engine was considered to be a dirty engine, even dirtier than the piston engine. The efficiency of the engine was also highly questionable. The first prototypes of the Wankel engine that were

prior to 1966 were not considered to be a serious threat to the rotary engine as their overall performance at best was poor. Interest in the rotary engine increased all through the sixties as companies sought to acquire licenses to try to develop a rotary engine of their own. In 1969 the world's first mass produced Wankel engine automobile was manufactured by Toyo Kogyo. The car that defined the rotary engine was called the R100. The remainder of the automobile industry, still being conservative and even somewhat despondent toward the Wankel engine, maintained a wait and see policy. Because of their lax attitude toward this revolutionary engine, the rest of the world's automobile manufacturers lagged even further behind. Thus, since Mazda introduced the Wankel engine in the R100, the company has been able to maintain almost a total monopoly on rotary engine cars especially those that are mass produced for public consumption.

In 1970 the first step was taken by a major automobile manufacturer to develop a rotary engine of its own. General Motors, in a unique contract, negotiated with Wankel-NSU for the right to develop a Wankel engine and the additional right of not having to share its technology with anyone else. In order to obtain this exclusive contract, General Motors agreed to pay Wankel-NSU, now a subsidiary of Volkswagen, a total of 10 million dollars which would be spread out over a five year period.

Historically, the auto industry has resisted change. Why the gamble? But that attitude is crumbling these days under government antipollution demands, the sudden United States success of rotary powered Mazdas imported from Japan and General Motors' growing commitment to the new engine.³

General Motors' "growing commitment" to the new engine has brought the rotary engine out of the world of the novel and placed it in the

round as a major innovative concept that may well change the
e of the entire auto industry.

Since Mazda first started mass production of the R100 and its sub-
nt rotary engine automobiles, it has competed in a well established
try with what amounted to a fundamentally new and previously un-
n power plant. Mazda's market position has been aided by the big
made by General Motors into the rotary engine field. General
s' interest in the rotary engine has been responsible for many
able articles and editorials being written about the rotary engine
neral and the Mazda in particular. The remainder of the automobile
try now finds itself behind its leader, General Motors, and
al Motors is currently behind Mazda.

The seemingly inevitable stampede appears to be in progress.
s Auto World has said that by 1980 it expects approximately
rcent of all cars sold in the United States will be Wankel powered
hat the rotary engine will become the dominant power source for
echanized world of engines.⁴ If this estimate is to be reached,
echnological development that will take place over the next several
will be phenomenal and possibly unsurpassed in the history of
trial development.

But why has there been such a delay in the development of the
y engine? Two main reasons stand out as to why competition has
slow to develop. First, lack of faith in the capabilities of
ology to adequately meet the new challenges presented by the
ie. And secondly, the great cost that would be incurred in order
he automobile manufacturers to retool their engine plants so as to
pable of mass producing the smaller rotary engine. The second

on is illustrated by the fact that it has been estimated that it
d cost more than \$2 billion for General Motors to retool its curren
ne production facilities. The cost of retolling for Ford would be
illion, but Ford has to develop a suitable engine first while
ral Motors has been working on theirs since 1970.⁵

However, in view of the results of the tests conducted by the
ronmental Protection Agency (EPA) in early 1973 on the rotary
ne and the recent court suit brought by General Motors, Ford Motor
any, Chrysler Corporation, International Harvester, and Volvo to
y the 1975 standards of pollution emission control because it woul
be technologically feasible to meet those standards in their 1975
als,⁶ the whole industry may have no choice but to go to the rotary
ne.

In the suit brought by the automotive companies listed above, a

... three-judge U.S. Court of Appeals panel refused to
rule on the issue, but (it) shifted to the EPA the burden
of proving that its projection of the industry's ability
to meet the 1975 standards was reasonable and reliable.⁷

sequent to this ruling, the EPA published some miscellaneous amend-
s to their policies and rules regarding the 1975 emission standard
amendments, in effect, delayed until 1976 the stringent 1975
ssion standards.⁸ Thus, the automobile manufacturers now have an
ed year to attempt to cleanup the reciprocating piston engine in
er to meet emission standards that the rotary engine already meets.

The fact that the rotary engine already meets the now old 1975
lution standards was established in 1973. In October, 1972, when
world's automobile manufacturers submitted their annual status
orts on their progress toward meeting the 1975 standards, Toyo Kogy
completed 50,000 miles of durability testing on a 1975 prototype c

RX3. Mazda claimed at that time that throughout the entire testin
od, the measured emissions from the car remained well below the
; requirements. The Environmental Protection Agency (EPA) contacte
o Kogyo and offered to test their 1975 prototypes in order to verif
r claims. Mazda did submit two prototypes for testing at the EPA'
Arbor Laboratory. The results, which were published by the EPA on
ch 1, 1973, certified that indeed the two Mazdas submitted for
ting, an RX3 and an RX4, were capable of meeting the 1975 pollution
sion control levels that had been established by the EPA.⁹

Since Mazda first received its license to work with the Wankel
ine, 26 other auto producers the world over have also applied for
enses. The competition which has resulted can only profit from
da's research and development as part of the licensing procedure
olves an agreement with Wankel-NSU to the effect that the results c
research will be shared with the licensing body, Wankel-NSU, and
sequently will be available to the other licensees. So while other
omobile manufacturers rush to develop and market a Wankel powered
omobile, Mazda is already there and can only benefit from the
licity that will be produced as the others try to catch Mazda.

But where does the competition stand at the present time? Mazda's
petition is moving steadily ahead. In 1974 other Wankel powered ca
uld be available to the consumer. Most notable of the competitors
t will enter the market this year is General Motors (GM). Since GM
st purchased the right to develop its own Wankel engine from Wankel
in 1970, GM has exerted continuous effort to perfect a suitable
ary engine to propel some of its autos. In an article in Motor Tr
azine in the February, 1974, issue, the author, Carl Ludvigsen,

as that GM expects to start production of its GMRCE's (GM rotary
 ustion engine) in June, 1974, and the first GM cars with the GMRCE
 be available in October, 1974, in a restyled, sleek 2 + 2 Vega
 e.¹⁰ The article says that GM also plans to place Wankel engines i
 Nova, Ventura, Omega, Apollo, Camero, and Firebird range of cars
 in the ensuing two years after its first rotary engined Vega.
 ral foreign companies in Japan and Europe may also produce a rotary
 red auto this year. The European company of Comotor, which is
 ly a Citroen enterprise located in Germany, is expected to introduc
 Wankel engine in the GS Birotor, a Citroen car, sometime this
 ng.¹¹ The eyes of the entire auto industry, however, will be
 ted toward the GM rotary. For if GM experiences success with its
 ry engine and moves to a full line of rotary powered automobiles,
 remainder of the automobile world will more than likely follow sui
 a's market competition will try to exert itself this year as these
 cars are introduced. Only the years ahead will tell if success
 ts GM and the others. Mazda, however, has already proven itself t
 success and as new rotary cars appear on the market, Mazda will
 oubtedly be given a push toward meeting its future goals.

But aside from its remarkable engine, the car itself must be
 eted and sold to the public. In this respect, Toyo Kogyo faces th
 dard marketing problems encountered in any well established market

Competition in the Market

Mazda's main source of competition comes mostly from other sub-
 acts like itself. The subcompact class is a fairly large class an
 ludes both domestics like the Vega, Pinto, and Gremlin and other

rts like the Volkswagon, Datsun, and Toyota. The competition
 ently enjoys certain advantages over Mazda. The dealership network
 he domestic compacts has existed for a long time as all domestic
 ompacts are sold in conjunction with the larger autos produced by
 parent company. Most of the imports have been selling cars in this
 try long enough so that they also have a well established system of
 chised dealers. Along with their nationwide system of dealers, mo
 ompacts also have established and refined channels of supply and
 ribution.

On the other hand, Mazda is still in the neophyte stage of ex-
 ing its dealership system and will not be nationwide until sometime
 nd the first of April. Mazda presently has a little less than
 thirds of the expected total number of dealers in existence. As i
 ership system continues to expand during the next several years,
 la must establish new lines of supply and distribution. Advertisin
 lems such as the scale and intensity of advertising must also be m
 overcome if Mazda is to continue to be successful.

Competitive Strategy

Mazda's penetration of the automobile industry can be characteriz
 one of intensive growth which according to Kotler can be achieved i
 of three ways: through market penetration, market development, or
 uct development.¹² Mazda is now seeking to increase sales and
 fits by concentrating on market penetration and market development.
 da Motors of America is developing its market by expansion into new
 graphical areas in the continental United States. In order to expa
 market penetration, Mazda is extending its promotional effort in

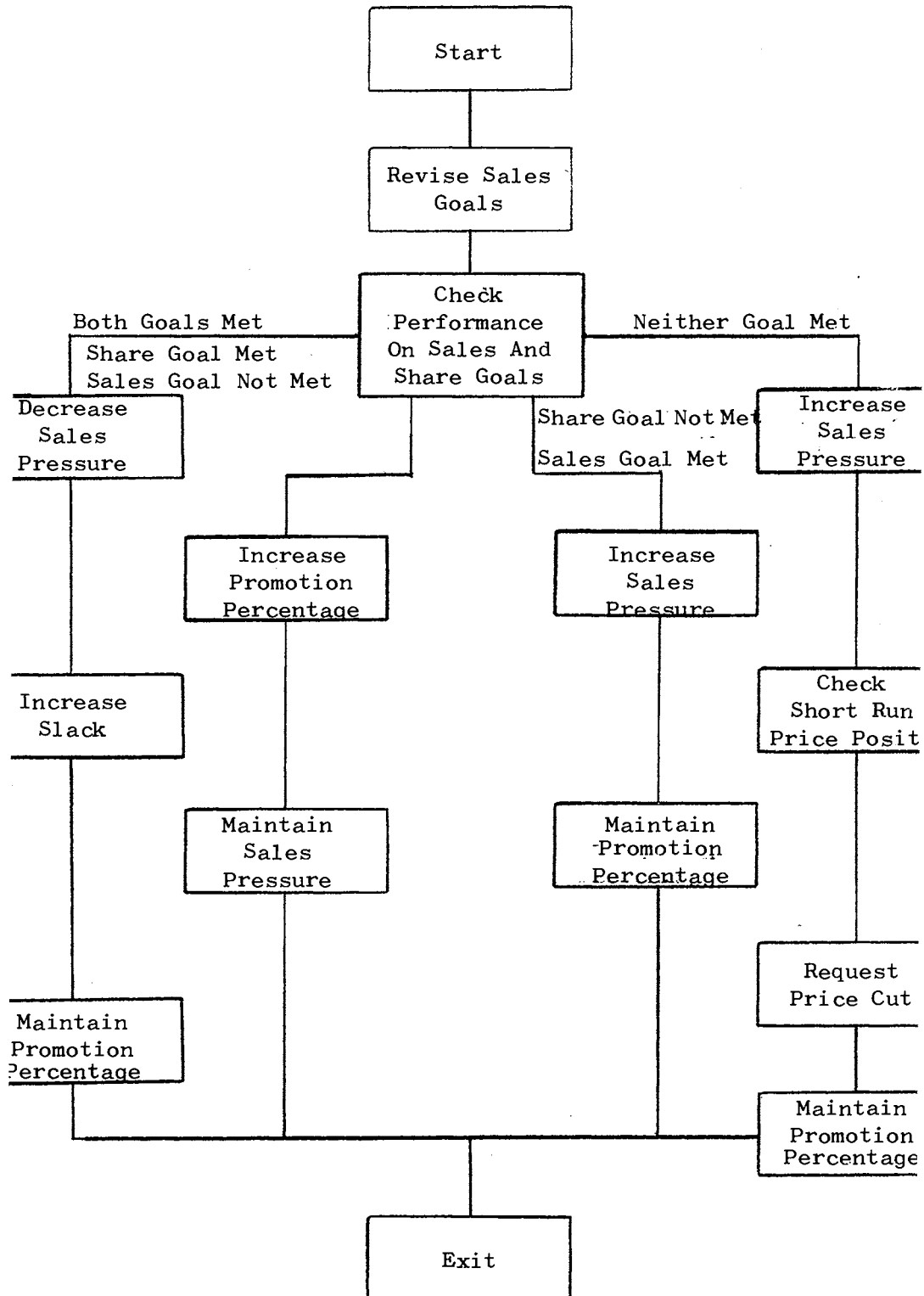
to attract some of its competition's customers or at least make the market aware of the existence of the Mazda.

Promotion seems to be the underlying factor that can aid in the development of further market penetration and market development. Cyert points to this same item in Figure 6 as being a fundamental factor that aids in the achievement of both the market share and the sales goals that have been set by the company.¹³ By using the processes outlined in Figure 6, the company is able to continuously check on its position and then make adjustments in its strategies in order to improve its actual position with regard to the market and its sales.

Advertising

Fundamental to the promotion process is advertising. Mazda has turned all of its national advertising account to the Los Angeles based agency of Fotte, Con, and Belding. The advertising goals decisions are directly related to sales goals and market share goals. The foundation of the entire range of advertising that the firm conducts is the advertising budget and its determination. Although Mazda would not disclose how their advertising budget is determined, it appears from observation that the budget is linked to expected sales. Mazda dealers place \$40 into an advertising fund for every automobile that they sell. Of course the \$40 is included in the price of the car. The national advertising fund is then supplemented by the parent organization to bring the programmed budget up to the appropriate level to meet their planned expenditures.

As Mazda sales nearly tripled from 1971 to 1972, rising from 20,000 in 1971 to almost 60,000 in 1972, the advertising budget more than



Source: Cyert and March, A Behavioral Theory of the Firm (1963)

Figure 6. Sales Decision Process

ed, rising from \$3.5 million in 1971 to more than \$7 million in

In 1973 Mazda doubled both its sales goals and its advertising budget. Sales goals for 1973 were set at 120,000 and the advertising budget increased to \$15 million.¹⁴ At the end of 1973 when the total sales were calculated, Mazda had exceeded its goal of 120,000 car sales. Although I have been unable to find any information regarding Mazda's 1974 advertising budget, I did find information indicating that they expect an increase in car sales of 25-50 percent over the level achieved in 1973, consequently, I feel that they also expect to substantially increase their advertising budget in line with their expectations.¹⁵ Mazda has been successively aggressive in trying to capture a large share of the market. Their policies appear to be both well planned and innovative. Their main aim is rapid expansion in the territory served and in their national advertising coverage. As has been seen, Mazda has been successful in both areas, and their sales have blossomed out in response to their efforts. Mazda Motors of America has been built on a firm foundation and it would seem that such a foundation will ensure its continued success and growth.

FOOTNOTES

- ¹Philip Kotler, Marketing Decision Making: A Model Building Each (New York, 1971), p. 99.
- ²"Wangle Yourself a Wankel," Forbes (December 15, 1972), p. 27.
- ³Ibid., p. 24.
- ⁴"Ward's Wankel Report," Ward's Auto World (July, 1972).
- ⁵Forbes, p. 24.
- ⁶Richard A. Wright, "2 Mazdas meet 1975 standards in EPA tests," Automotive News (March, 1973), p. 6.
- ⁷Ibid.
- ⁸Federal Register (Thursday, June 28, 1973), Vol. 38, Number 124, III, "Control of Air Pollution from New Vehicles and New Motor Vehicle Engines."
- ⁹Thomas A. Austin, An Evaluation of Two Mazda 1975 Prototypes Rotary Engines (March 1, 1973), p. 1.
- ¹⁰Karl Ludvigsen, "What Hathe Felix Wankel Wrought," Motor Trend (February, 1974), p. 65.
- ¹¹Ibid.
- ¹²Kotler, p. 236.
- ¹³Richard M. Cyert and James G. March, A Behavioral Theory of the Firm (Englewood Cliffs, 1963), p. 156.
- ¹⁴"10 Hot New Products," Advertising Age (January 8, 1973), p. 60.
- ¹⁵"News From Mazda," Mazda press release (1974), PR 705.

CHAPTER VI

CHANNEL MODEL

Introduction

"A market channel refers to the combination of market intermediaries used by a manufacturer in making his product available to the ultimate consumer."¹ This is the definition of a market channel as given by Davis and is very broad and general. There are many different and, in their own right, complex channels available to any given manufacturer. The circumstances surrounding any given situation will usually determine a specific channel system to be used. Martin L. Bell defines: "A channel system has a basic function to provide consumer satisfaction at a profit by the movement of a product-service from its point of origin to its place of consumption."² Davis states further that the market intermediaries that constitute a market channel are called market institutions.³ Davis then discusses market institutions and he says: "They represent a wide variety of businesses that perform the functions needed by the manufacturer in moving his product through the marketing channel to ultimate users."⁴ Finally the functions performed by the market intermediaries can be very complicated and costly involving ownership, possession, and promotion of the goods.⁵ In dealing with an automobile retailer, all of the above descriptions of channels of distribution apply.

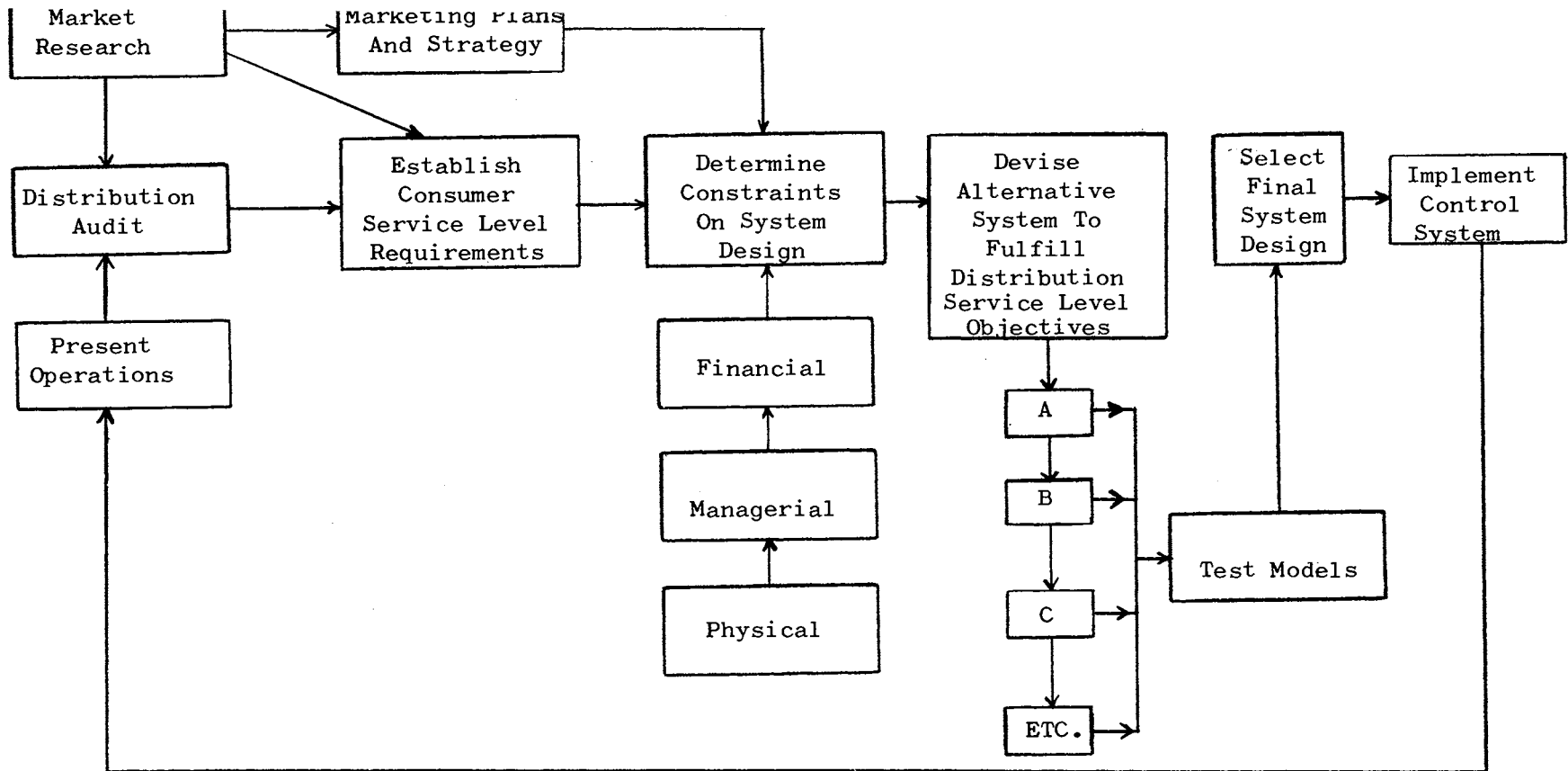
"The objective of a distribution system is, as in every other part of the business, directed toward producing maximum system efficiency."⁶ At least that should be the objective. There are, however, instances, which occur perhaps too frequently, that make it appear that the channel model is fashioned hurriedly and, therefore, operates inefficiently.

In physical distribution, the system output is a level of customer service represented by a certain composite of the following factors: product availability, order cycle time, stockout percentages, delivery frequency, delivery reliability, and so forth. Balancing the cost input against the service output determines the efficiency of the system. This provides the fundamental challenge of distribution system design.⁷

These factors, which are more visible to the firm, are often given more attention than the channel model. However, the elements that comprise the channel model may ultimately determine the success or failure of the business.

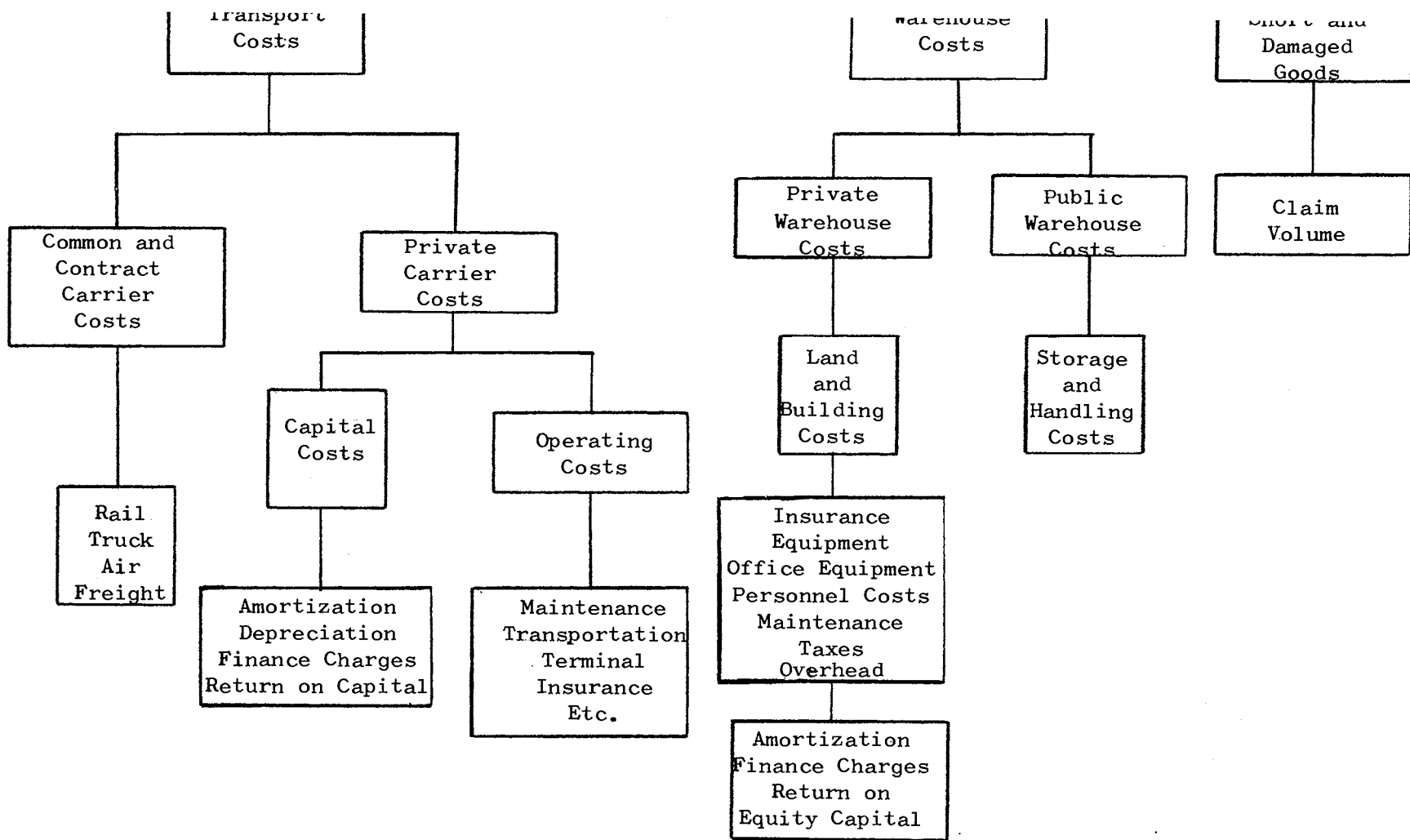
Distribution and Supply

The distribution and supply design depicted in Figure 7, as provided by William B. Saunders, indicates some of the complexities involved in determining and then in actually applying an efficient channel model. The analysis begins with the distribution audit or "traffic analysis" to determine what shipments are made from where to where, in what frequency, under what conditions, by what modes, with what degree of reliability, etc."⁸ Next, all costs must be determined and then analyzed to see where economies are possible or how the system can be improved without any increase in cost and if possible with a cost decrease. Of critical importance in the analysis is the level of customer service that will be desired and the ability to meet these service requirements. Figure 8 (a and b) show diagrammatically the

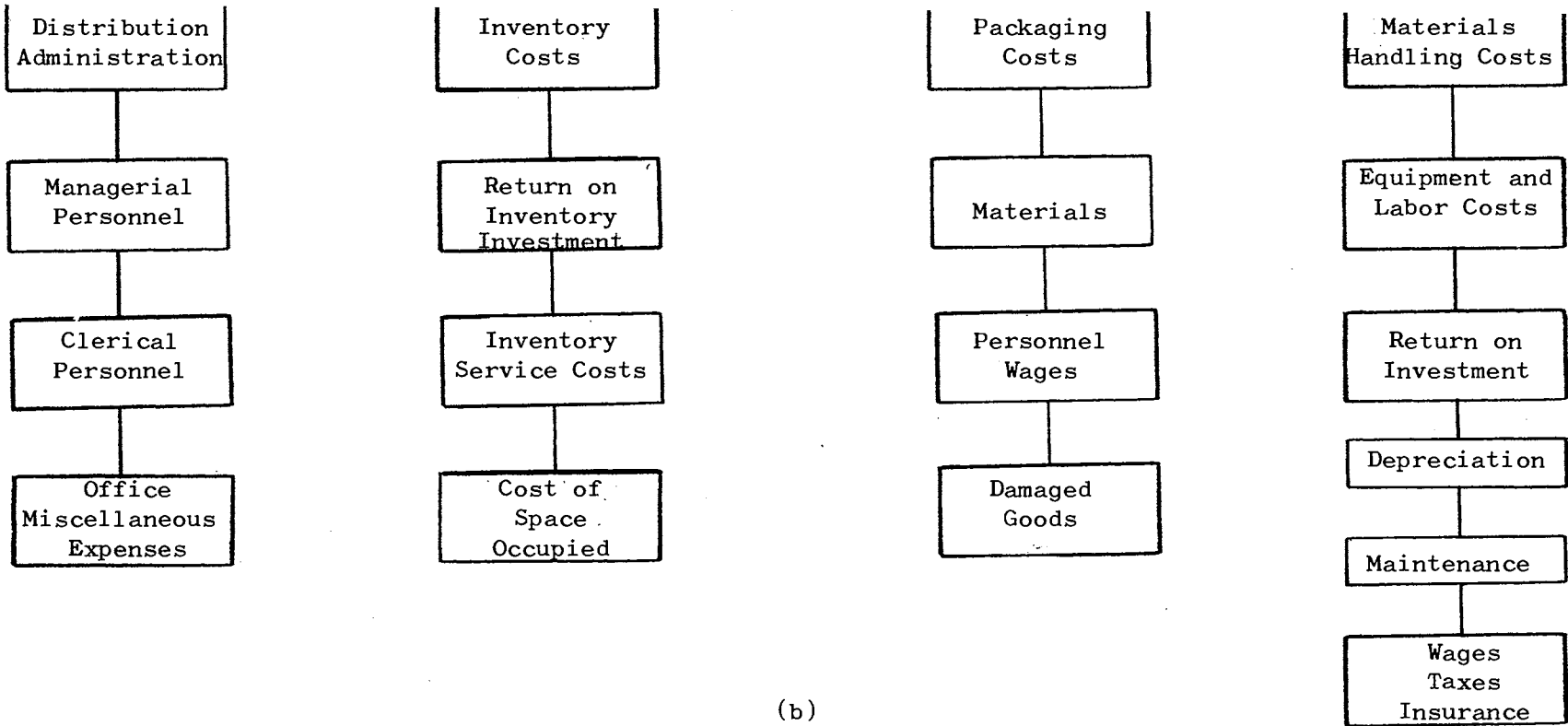


Source: William B. Saunders, "Designing a Distribution System," Distribution Age (January, 1965).

Figure 7. Distribution and Supply System Design



(a)



(b)

Source: William B. Saunders, "Designing a Distribution System," Distribution Age (January, 1965).

Figure 8. (Continued)

detail that must be dealt with in order to thoroughly arrive at total cost of the transportation system and the channels of distribution that have been chosen for the given business at hand.

Logistics

When dealing with a franchised automobile dealer, distribution is of the utmost importance. The dealer must seek an efficient physical distribution system at minimum costs. The system be adequate enough to meet the demand of that particular outlet. According to Kotler, "The physical distribution system is made up of decisions on warehouse locations, inventory levels, packaging and handling procedures, and transportation carriers."⁹ William Saunders further breaks the categories given by Kotler into those displayed in Figure 8 (a and b). These categories of Saunders are indicated by a thorough examination of all of the costs associated with the areas of physical distribution. These costs represent only part of distribution logistics, the other part being the demand aspect. According to Kotler demand aspect has come to the foreground recently in comparison to cost aspect. He further states that: "Each component physical distribution decision can affect company sales... Inventory level may affect availability and hence sales."¹⁰ Kotler continues on to discuss the remaining elements of the physical distribution system when he says:

Packaging and handling procedures, insofar as they affect the damage goods rate, will affect the number of customers. Transportation modes, insofar as they can mean faster or slower arrival of goods, will affect buyer satisfaction and sales.¹¹

he franchised automobile dealer is concerned with all of the costs of cost that have been covered by Kotler and Saunders and the costs of demand expressed by Kotler. The dealer acts not as a manufacturer but as a procurer and redistributer of the goods with which he

His primary concern is the mix of time, place, and possession. The dealer, however, is more than an intermediary as he takes possession of the automobiles he sells by paying the distributor, the factory or wholesaler as the case may be, for the automobiles he receives as well as the goods needed for servicing those vehicles. The dealer in turn absorbs all of the costs associated with the distribution channel plus, in the case of Mazda, he is also charged a fee for national advertising, which, of course, aids the dealer by greater product awareness on the part of the average consumer and so, hopefully, sales.

In the life of a business there are necessarily many pitfalls, some of them are avoidable and some unavoidable. The person in charge has the ultimate responsibility to analyze 'all' the costs that may be incurred including those which we have just seen in Figure 7 and Figure 8 (a and b). Failure to do so can only jeopardize the continued existence of the business.

The manager must not just recognize the costs involved in the distribution system but the other costs that arise from the other departments of the business. After assessing all of the costs he must periodically review his ability to meet even the most trivial of costs with the resources available to him. Although such an analysis cannot ensure success in the adventure, it will preclude the totally sudden and rising costs that can be damaging to a business. Thus, such an

Analysis may greatly aid in the ultimate attainment of the goals of the business.

Inventory

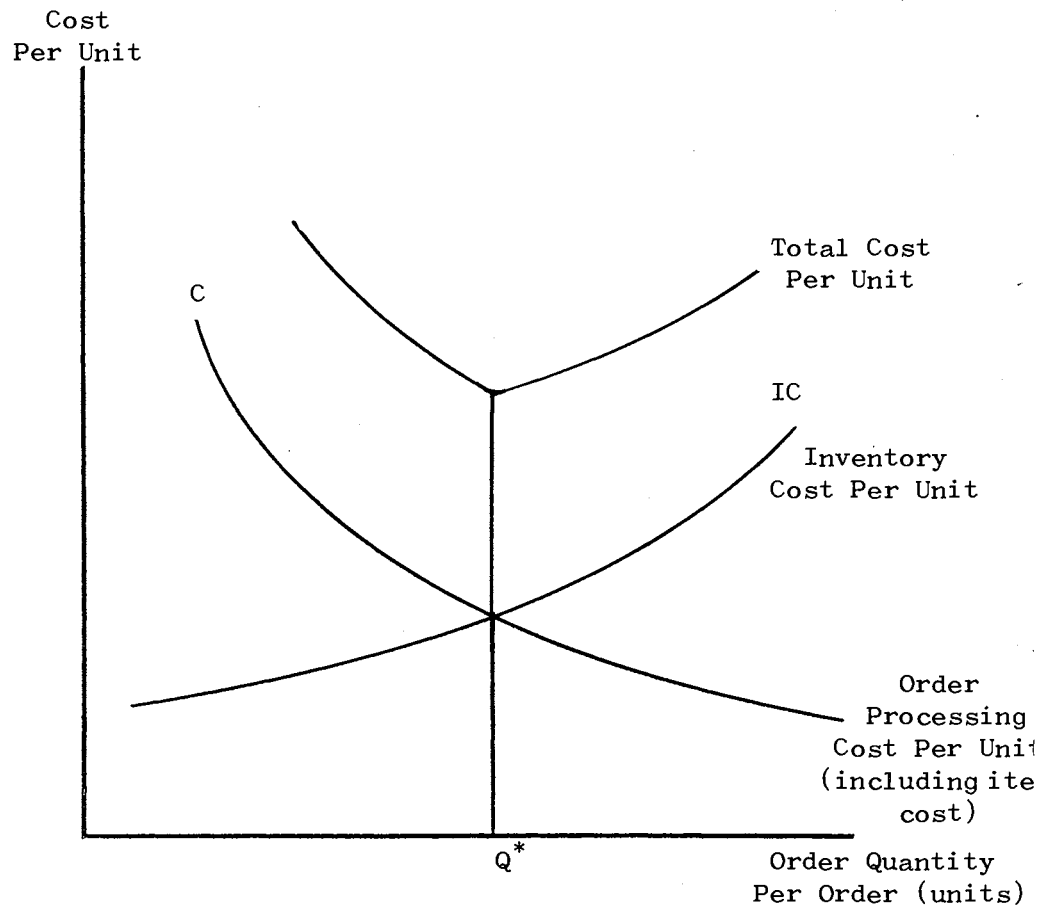
Of vital concern to the Mazda dealer is the level of inventory of automobiles and spare parts and the economic order quantity and order quantity which he must adhere to in order to adequately meet his demand. In dealing with inventory, the dealer must concern himself with two different costs. The first is the ordering cost, the costs associated with placing an order and then transporting the items into the inventory. The second cost is the carrying costs which include interest on the money invested in inventory, storage space, rent, obsolescence, payment taxes, and insurance on losses due to theft, fire, deterioration, and depreciation.¹² In order to lower inventory costs, the dealer must minimize both ordering costs and carrying costs.

Let D be the demand for a given period and Q be the quantity ordered each time, then D/Q is the number of orders placed per unit of time. If C is the order cost for each order then total ordering cost is $(D/Q) \cdot C$. The relationship between order cost (C) and carrying cost (IC) is illustrated in Figure 9.

Total carrying cost (IC) is the cost of keeping an item in the inventory for a specified period of time. By observing Figure 9, we see that the minimum total inventory cost occurs where the carrying cost and the order cost curves intersect. Therefore, in order to determine the economic order quantity (EOQ) we set:

$$C = IC \quad (1)$$

then substituting we get



Source: Donnelly and Ivancevich, Analysis for Marketing Decisions (Homewood, 1970), p. 227.

Figure 9. Optimal Order Quantity (Q^*)

$$D/Q \cdot C = Q/2 \cdot IC \quad (2)$$

olving for Q we obtain

$$Q^2 = D \cdot C/IC, \text{ or} \quad (3)$$

$$Q = (D \cdot C/IC)^{1/2} \quad (4)$$

:

Q - is the economic order quantity,

D - is the total demand,

C - is the order cost per order, and

IC - is the inventory carrying cost.

The EOQ is a simplified version of reality, as is any model, and is based on three assumptions: (1) the demand (D) for the item is known with certainty; (2) the time necessary for receiving the order after it is placed is exactly known; and (3) the rate at which inventory is used is constant.¹³ With these assumptions, the order point can be determined as that point at which the amount on hand is equal to the amount required during the lead time.

$$\text{Order point} = D \cdot LT/OT \quad (5)$$

where:

LT - is the lead time and

OT - is the time between orders.¹⁴

The basic weaknesses with the above inventory discussion is that even if ever, in the real world, is there certainty with regard to demand and lead time. However, this formulation of the EOQ can give misleading bounds to the manager and thus some degree of certainty in an uncertain world. More complicated formulations for EOQ exist that include uncertainty of demand and lead time but the additional complexities added by these complicated characterizations of the EOQ do not add

ificantly to the present discussion and so they are not included or
 reted at this point.

Mazda of Stillwater, as far as I could ascertain, has two methods
 of automobile supply open to it. If it orders directly from Mazda of
 Northwest, through Houston, it must order a minimum number of ten
 automobiles, which for a smaller dealer is excessive. The second order
 method and one that supplies some relief from large order quantities
 is a joint order placed with one or more other Mazda
 dealers in this general area. If a joint order can be placed, the
 dealer can obtain half or less the minimum required order. However,
 such orders are hard to come by and cannot be planned on a regular
 basis. The result of such an order policy is a cautious approach to
 ordering replacements which results in the possibility of a stockout of
 cars in models and lost revenue. A sounder method of automobile
 ordering is needed to assure a representative line of available cars for
 effective customers.

Pricing

The price of an automobile is largely determined before the dealer
 receives the product. The autos cost a certain fixed rate, in most cases,
 from the manufacturers to the dealers. Included in this fixed price is
 the cost to manufacture the car and the profit margin that the manu-
 facturer receives for the automobile. The dealer costs include:

- Materials, outside and inside,
- Productive labor,
- Burden,
- Profit,
- Freight,
- Sales and advertising,
- Administration, etc.

f the above costs are based on a standard volume of production by manufacturer.¹⁵

Dan Cordtz says in "How Auto Firms Figure Their Costs to Reckon
rice Dealers Pay," that the suggested retail price set at the
ry for the dealer (the factory cannot do more than suggest) rarely
ds 31.6 percent of the invoice price, or as it is usually expressed
rcent of the factory suggested list price.¹⁶ Of course part of the
must include some padding so that the dealer can 'deal' with the
mer. Cordtz goes on to say: "In todays hotly competitive auto
t, it's rarely possible for a dealer in the low-priced field to
hat gross profit."¹⁷ Profits will vary as the dealer adjusts his
to sell the car. However, with respect to import car sales, the
rs generally will not adjust their prices to any great extent
they feel that if one customer does not purchase their product
another one will since demand is so good.

Business Location

Fundamental to the channel model is the business location and what
should be considered when trying to determine a suitable location.
large extent sales and some overhead costs will be determined by
ite of the business. The problem of determining a business loca-
is not just one of site availability. Many other factors should be
dered along with the site such as street location, traffic, posi-
of the building, parking space and similar criteria. Kotler
ifies three methods to aid in site selection. They are: the
list method, the analogue method, and the gravitational method.¹⁸

The checklist method is the most elementary method of the three. It considers potential sales at the site and the associated costs of operating at that site. At first the checklist method was an intuitive method used to determine suitable site locations based solely on the subjective opinion of one individual. As time went by, real estate investors developed checklists to help firms determine desirable locations. Richard Nelson has published one of the most inclusive checklists. It consists of eight major factors: trading area potential, accessibility, growth potential, business interception, cumulative location potential, compatibility, competitive hazards, and site economies.¹⁹ Such a checklist can identify the good and bad points of a site and greatly aid in an adequate business location selection.

The checklist method is the only one discussed in this paper since it is the simplest of the three and for that reason alone would probably receive greater acceptance.

But what about Mazda of Stillwater? The people in charge of Mazda of Stillwater simply wanted a Mazda franchise and so set out to find an 'available' location. They found a site and were subsequently given a franchise. But what are the merits of the location? Other than the fact that the location is on a heavily traveled street, East 6th, there are few. The building is elongated and runs away from the street. The signage on the street is minimal causing a shortage of parking space and cramped quarters for automobile storage. The site is sandwiched in between other businesses and is almost unnoticeable from the street at a distance for a car just driving past. Surely the business has suffered from use of a lack of visibility and accessibility. It would appear that

les for site selection were followed. A building was needed and
resent one was available.

FOOTNOTES

- ¹Kenneth R. Davis, Marketing Management (New York, 1966), p. 342.
- ²Martin L. Bell, Marketing: Concepts and Strategy (Boston, 1972) p. 308.
- ³Davis, p. 342.
- ⁴Ibid.
- ⁵Ibid.
- ⁶William B. Saunders, "Designing a Distribution System," Distribution Age (January, 1965), p. 33.
- ⁷Ibid.
- ⁸Ibid.
- ⁹Philip Kotler, Marketing Decision Making: A Model Building Approach (New York, 1971), p. 323.
- ¹⁰Ibid.
- ¹¹Ibid.
- ¹²James H. Donnelly and Hohn M. Ivancevich, Analysis for Marketing Decisions (Homewood, 1970), p. 226.
- ¹³Ibid., p. 228.
- ¹⁴Ibid., p. 231.
- ¹⁵Marcus Alexis, Robert J. Holloway and Robert S. Hancock, Empirical Foundations of Marketing: Research Findings in the Behavioral and Management Sciences, Dan Cordtz, "How Auto Firms Figure Their Costs to Add on the Price Dealers Pay," (Chicago, 1969), p. 338.
- ¹⁶Ibid., p. 339.
- ¹⁷Ibid., p. 340.
- ¹⁸Kotler, p. 313.
- ¹⁹Ibid., p. 314, Richard Nelson, The Selection of Retail Locations (New York, 1958), F. W. Dodge Corp.

CHAPTER VII

MARKET SHARE MODEL

Introduction

The primary purpose of this chapter will be to look at the market share of automobile sales that Mazda of Stillwater can achieve or should have and maintain in the months and years ahead. In order to accomplish this task, I will look at the economic environment in which the company is located to ascertain any significant deviations from the normal economic environment. The effects of these deviations, if any, as well as the effects of the economy on the market will be considered. The demographic characteristics of the city will also be considered. The various medias that are available for advertising and promotion of products in the local market will be examined. Finally, I will attempt to tie all of these variables, both the internal and external variables that affect the firm, together into an operative model that will attempt to explain how the full market potential that exists for Stillwater can be achieved.

Demographic Elements of the Community

Stillwater is located in the north central part of Oklahoma and is the home of Oklahoma State University. The current enrollment of the school is just over 18,000 students. The enrollment of the University has grown dramatically since 1960, as can be seen in Table VI, from ju

TABLE VIII
 POPULATION OF STILLWATER AND ENROLLMENT
 LEVEL OF OKLAHOMA STATE UNIVERSITY

| Population of Stillwater | Enrollment at Oklahoma State University |
|-----------------------------|--|
| 23,965* | 10,298 |
| 24,000 | 10,854 |
| 24,000 | 11,301 |
| 24,000 | 11,795 |
| 24,000 | 11,961 |
| 32,500 | 13,214 |
| 32,500 | 15,079 |
| 32,500 | 16,010 |
| 32,500 | 16,546 |
| 32,300 | 16,841 |
| 31,126* | 17,492 |
| 32,300 | 18,447 |
| 32,500 | 18,670 |
| 33,800** | 18,560 |

* Official population of Stillwater according to the 1960 and 1970
 Censuses of Population made by the U.S. Dept. of Commerce.

** Current population of Stillwater as estimated by the Chamber of
 Commerce.

NOTE: The remaining population estimates are from Sales Management's
 "Survey of Buying Power" for the years 1961 to 1973.

Enrollment figures for Oklahoma State University were obtained
 from the Registrar's Office at Oklahoma State University.

10,000 students to its present level. Also seen in Table VI are corresponding population levels for Stillwater covering the same periods as the enrollment data for Oklahoma State University. Table VI further shows that the student body comprises a significant portion of the population of Stillwater and as such it makes a decidedly relevant impact on the economic atmosphere of the city.

Table VII shows the rise in the number of households in Stillwater from 1966 to 1970. These figures may be more significant for the automobile market in Stillwater since few families can do without an automobile for transportation while the vast majority of students will be carless. Also depicted in Table VII is the corresponding income per household per year. In addition, Table VII contains the effective per capita income for Stillwater as well as total retail sales and retail automobile sales for the various years.

There are two other demographic characteristics that I feel are significant in helping to determine the level of expenditure on durables including automobiles and they are the age group composition of the population and the educational level of the population age 25 and over. The two are illustrated in Table VIII and Table IX, respectively. Table VIII depicts the age group structure of the city while the latter shows the educational level by percentage of the total population of 25 and over. Table VIII indicates that the majority of people in Stillwater fall into the 20 to 35 year group. Of course, a majority of those in the lower end of this age group would probably be students, whether upperclassmen or graduate students. All in all, this is the age group that I would expect the Mazda to appeal to. However, Mazda's ability to draw these individuals is somewhat hampered by the price of

TABLE IX
EFFECTIVE BUYING DATA FOR STILLWATER

| | Effective Buying Income | | Households | Retail Sales (000) | Aut Sal. (00 |
|---|----------------------------|---------------|------------|--------------------------|--------------------|
| | Net (000) | Per Household | | | |
| 0 | \$46,565 | \$7,510 | 6,200 | \$23,684 | \$4,7 |
| 1 | 45,717 | 6,723 | 6,800 | 24,216 | 4,5 |
| 2 | 46,799 | 6,882 | 6,800 | 25,428 | 5,1 |
| 3 | 47,920 | 7,074 | 6,800 | 26,734 | 5,5 |
| 4 | 50,375 | 7,408 | 6,800 | 33,091 | 7,2 |
| 5 | 72,459 | 7,876 | 9,200 | 34,516 | 7,9 |
| 6 | 72,440 | 7,874 | 9,200 | 37,711 | 8,3 |
| 7 | 72,680 | 7,900 | 9,200 | 39,319 | 8,4 |
| 8 | 76,478 | 8,223 | 9,300 | 42,102 | 9,3 |
| 9 | 87,018 | 9,888 | 8,800 | 44,343 | 9,2 |
| 0 | 91,387 | 9,519 | 9,600 | 49,017 | 9,2 |

Source: Sales Management's "Survey of Buying Power" for the years 196 to 1971.

TABLE X

STILLWATER AGE GROUP POPULATION, 1970

| Age Group | Number in the Group |
|-------------|---------------------|
| Under 5 | 1,996 |
| 5-14 | 3,473 |
| 15-19 | 5,915 |
| 20-24 | 8,679 |
| 25-34 | 3,674 |
| 35-54 | 3,766 |
| 55-64 | 1,600 |
| 65 and over | 2,023 |

Source: Current Stillwater Business Data Highlights, prepared by the College of Business Administration of Oklahoma State University (1972).

TABLE XI

EDUCATION LEVEL--PERCENT OF TOTAL POPULATION AGE 25 AND
OVER BY YEARS OF SCHOOL COMPLETED, 1970

| Number of Years of Years Completed | Percent |
|---------------------------------------|---------|
| Elementary: 1 to 4 | 1.73 |
| 5 to 7 | 4.60 |
| 8 | 8.13 |
| School: 1 to 3 | 8.57 |
| 4 | 21.23 |
| College: 1 to 3 | 19.48 |
| 4 or more | 36.06 |

Source: Current Stillwater Business Data Highlights, prepared by the
College of Business Administration of Oklahoma State University
(1972).

automobile. The base price generally starts in the vicinity of \$2,000 to 3,600 dollars. Such a relatively high price for an import is billed as an economy car is definitely one of the obstacles Mazda's success must contend with now and in the future.

The Economic Environment

The economy of the City of Stillwater, as one might reasonably expect, is centered primarily around the University. Oklahoma State University is the largest single employer in the community. Consequently, when the University prospers the whole community prospers and when the University is in a decline the whole community suffers. The University is and has been doing well as can be seen in Table VI. As the student population has grown, the number of people, both academic and administrative, needed to successfully educate and administer to the students has also increased. Therefore, the number of people in the permanent community has increased also, resulting in a stronger economic environment for the overall community. As a result, the bulk of the consumption for the city can be traced directly to the University. The student population of the University has its own impact on the community consumption especially in the area of non-durable goods and durable goods that do not involve a substantially large capital outlay. For this reason, I feel that the student population does not significantly influence automobile sales within the community. Should a student want to have an auto or plan to purchase one, more than likely it will be purchased in the student's home town with the help of his or her parents.

Over the past several years the income trends for the various classes of income have all tended to increase in the Stillwater area. This increasing tendency can be clearly seen in Table X. During these years, the growth in the number of households, the effective buying power per household, city retail sales, and the net income for the city experienced steady and continuous growth. These figures for the city along with the associated population estimates can be seen in Table VII.

Advertising Media

As in most small communities, the vehicles for carrying out advertising are limited to say the least and, for the most part, of questionable value. However, since these are the only available vehicles, I will take a look at the more important ones. The Stillwater community has one locally produced community newspaper, the Stillwater Press, two radio stations, one is both AM and FM while the other is a FM station, KSPI and KVRO, respectively. The University produces a daily newspaper, The Daily O'Collegian, and also airs a radio station, educational FM. Also available is an assortment of other newspapers, radio stations and television stations throughout the state. Stillwater has no television stations of its own but receives many programs in other parts of the state through cable television or directly from the stations themselves. The discussion in this paper will be limited to the local vehicles and not those outside of the immediate area since large scale advertising for Mazda is handled by an advertising agency in Los Angeles and other dealers located throughout the state use most of the vehicles available outside of the immediate area.

TABLE XI

PERCENTAGE OF HOUSEHOLDS BY INCOME LEVEL

| | \$ 0 to 2,499 | \$2,500 to 3,999 | \$4,000 to 6,999 | \$7,000 to 9,999 | Over \$10,0 |
|----|---------------------|------------------------|------------------------|------------------------|----------------|
| 0 | 26.3 | 26.2 | 31.8 | 10.1 | 5. |
| 1 | 35.2 | 23.4 | 19.1 | 11.4 | 10. |
| 2 | 35.2 | 23.4 | 19.1 | 11.4 | 10. |
| 3 | 33.4 | 23.0 | 20.0 | 11.7 | 11. |
| 4 | 31.5 | 22.1 | 21.5 | 12.0 | 12. |
| 5 | 31.5 | 22.1 | 21.5 | 12.0 | 12. |
| r* | \$ 0 to 2,999 | \$3,000 to 4,999 | \$5,000 to 7,999 | \$8,000 to 9,999 | Ove \$10,0 |
| 6 | 34.3 | 22.7 | 20.8 | 9.4 | 12. |
| 7 | 33.8 | 22.6 | 20.8 | 9.4 | 13. |
| 8 | 32.3 | 22.2 | 20.7 | 9.7 | 15. |
| 9 | 28.7 | 19.7 | 22.0 | 9.5 | 20. |
| 0 | 28.5 | 19.5 | 21.9 | 9.6 | 20. |
| 1 | 28.3 | 18.9 | 22.9 | 11.5 | 18. |

* Sales Management changed their income intervals between 1965 and 6. But the data is very similar and so it is included.

Source: Sales Management's "Survey of Buying Power" for the years 1965 to 1972.

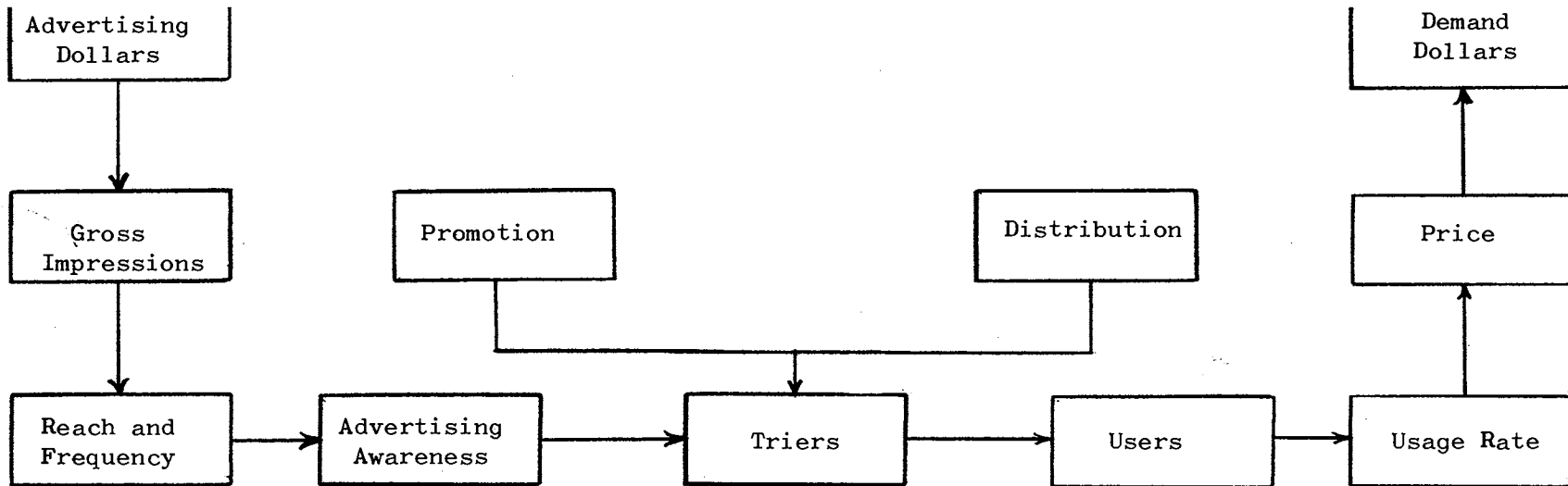
In the Stillwater area there is only a limited number of advertising media available. The Stillwater News-Press, which is the local newspaper, appears five times during the evening and also on Sunday morning. The reach of the newspaper is over 9,000 families which make the best advertising medium in the area. The Daily O'Collegian is printed five days out of the week and it appears Tuesday through Saturday in the morning. The reach and effectiveness of the newspaper is very questionable as it is read primarily by the students of the university. However, it does have the capability of reaching the community and this is definitely a plus in its favor. Stillwater's two radio stations' value in regards to people reached is also questionable. The airways in the area are flooded with many radio stations, both AM and FM, from the neighboring communities of Tulsa and Oklahoma City. The Stillwater Mazda dealer has not established an advertising budget yet or if he has he would not reveal it to me. He has indicated that he will use most of the vehicles available in Stillwater but in an affordable way.

The national advertising conducted by Mazda Motors of America is beneficial to all of the Mazda dealers across the country. Mazda of Stillwater receives some spinoff advertising from several other newspapers from the state's two largest cities, Tulsa and Oklahoma City which are read extensively in Stillwater. The advertising that Mazda dealer receives in these publications can also be of benefit to Mazda of Stillwater. Mazda of Stillwater's advertising budget, it would appear, is set on an affordable basis. As sales are made advertising is increased and when sales fall off, advertising may be decreased. Because of the location of the store, which seems to have been built in order to

uflage rather than promote the business, the main problem that advertising must confront in this instance is one of recognition by all the individuals in the community that there is a Mazda dealer in . . . Frequently I have encountered people expressing a desire to look and test drive a Mazda but they don't know where to go since they are aware that Mazda of Stillwater exists.

Some set method is needed to establish an advertising budget and to appropriate the necessary funds to meet the required advertising advertising media should be examined with regards to cost and range in order to see which vehicles may be the most beneficial. In respect, the possibility of using billboards should also be considered. Until this is done, effective advertising will be lacking in the Stillwater area for Mazda.

One way for Mazda of Stillwater to determine how much money to set for advertising is to make the best possible prediction for potential sales. This should be done with the realization that advertising produces sales and not vice versa. Once the size of the market in Stillwater has been determined, the dealer then needs to estimate marketing effort that his competitors engage in with one another. Then the dealer can determine the size of his budget by the percent of market that he expects to capture. After the budget has been established and implemented, the dealer then updates the budget as necessary to achieve his goals in view of the results that have been achieved. The process is summarized in the DEMON Model given in Figure 10. The DEMON Model, DEMON is an acronym for Decision-Mapping Optimum Go-No Networks, gives the manager a realistic way to check



Source: D. B. Learner, "Profit Maximization Through New Product Market Planning and Control," in Frank M. Bass, Charles B. King, and Edgar A. Pessemier, eds., Applications of the Sciences in Marketing Management (New York, 1968), pp. 151-167.

Figure 10. Marketing Planning Framework of DEMON

is goals attainment and then to update and readjust those goals as necessary.

Dealer Operation

Mazda of Stillwater operates a service department along with the sales department. The service department seems adequately supplied with spare parts. A standard bench stock card file is effectively maintained. However, after a service part's number is found the problem, for then the part must be located. Strictly from an observer's point of view, it appears that most of the parts are stored haphazardly in a corner of the service room in boxes that appear to have never been checked or sorted. Certainly these procedures must result in some inefficiency in performing requested service on a customer's car. The service room needs to be organized and the parts sorted and properly labeled so that parts retrieval may be quick and orderly and completed in a minimum amount of time.

The day to day operation of the business is handled by two people, the manager and the service man. The service man opens the showroom at 8 o'clock each morning and handles any 'business' until the manager arrives. After the dealership opened in December, 1972, two salesmen were hired and were always on hand to answer questions and demonstrate the automobile. By the time mid-summer arrived, both men had left for one reason or another and they were never replaced. In a discussion with the owner, he indicated that since sales aren't too high that he is able to handle all of the 'business' that arises. Yet on several recent visits to the dealer, I have found only the service man available to help with questions or if I had been a customer to help

th purchase questions and general questions about the automobile; understandably his knowledge about purchase contracts is limited. The service man cannot even demonstrate the car to potential customers since there is no one else available to watch the shop while he takes a customer out for a test drive.

Clearly, a 'business' that exists to sell any commodity to the public needs to have qualified salesmen, or in this instance, a salesman who is interested in the car and plans to make his livelihood by selling cars for the business, to handle potential customers. The salesman should be ready to meet with the customers, answer questions about the automobile while explaining its operation and then be able to 'sell' the car to the customer.

Conclusion

Mazda of Stillwater is a new car dealer that is trying to penetrate the automobile market in Stillwater and so far has had little success since only about 70 cars have been sold since the showroom opened its doors nearly 16 months ago. In order to improve on the past performance and to make an effective penetration into this well established market the dealer needs to consider some of the factors which are mentioned in this chapter. He needs to determine market potential and then decide what his reasonable share of the market can be if he applies an aggressive promotion program based on a sound advertising budget. The advertising budget should partially be determined by the amount that is expended by the other dealers in the community. Based on what has been said in this chapter, sales, S , is a function of the income of the community, Y , population, N , age composition of the population, C ,

site level of schooling, E, number of households, H, past expenditures on automobiles, M, and advertising, A, and can be expressed as follows:

$$Q = f(Y, N, C, E, H, M, A) . \quad (1)$$

CHAPTER VIII

SUMMARY

Review

The body of the paper is divided into six sections: (1) the energy crisis, (2) industry sales model, (3) the company model, (4) the competitive model, (5) the channel model, and (6) the market model. Each of the models in (2) through (6) deal with the Mazda rotary engine and its place in the automotive industry. The start of the production of the rotary engine, first undertaken by the Toyo Kogyo Company, may have considerable impact on the future of the automobile industry. A large part of the long-run success or failure of the Mazda rotary engine will depend on the total acceptance of this revolutionary engine by the public and the willingness of the large automobile manufacturers to retool for the production of rotary engines. In the second chapter, the energy crisis is viewed as one of the causes in the slowdown of the American economy over the last several months. People in the United States are currently being very cautious about making any long range financial commitments. As a result, car sales and housing starts are off. The major auto manufacturers are laying people off work while decreasing large car production in favor of small car production. Over 50 percent of all cars sold in the United States during the past several months have been small economy cars. This trend should continue on through most of the year.

many people argue about whether the energy crisis is fact or fiction, most of the country is having a hard time finding enough money. Whether the lifting of the Arab oil embargo will have any effect remains to be seen. Until all the facts concerning the oil crisis become clear, it appears that the economy will continue its present slowdown.

In the third chapter, industry sales are viewed in light of the economic growth that is presently moving slower in this country than it has in the past two or three years. The automobile industry is viewed as one of the most important industries in this country as it is responsible for over one quarter of the country's gross national product. The outlook for the industry is one of continued increase in the total car production with most increases coming from the small cars. This means new car sales will expand in order to fill both the expansion and replacement that is required to maintain previous levels.

The chapter on the Company Model dealt with the Toyo Kogyo Company as it is invading the United States automobile market through Mazda of America, Incorporated. Some background information was given on the company. Special attention was given to the acquisition of a license to develop and the subsequent development of the Wankel or rotary engine throughout the 1960's. The company has aggressively followed an innovative program of expansion into the rotary engine field. In 1961 the company first produced the rotary engine for marketing it in an automobile, the Mazda, it has produced over 600,000 such cars. Since the automobile was introduced in to the United States in 1970, Mazda's sales have risen at a rapid rate, more than doubling sales each year as its dealership network spread first into the southwest and then the

heast and by now has almost covered the entire country. The comparison is to develop a complete nationwide system of dealers with sales volume exceeding more than 300,000 units a year. Of its yearly sales, Mazda expects to continue to sell approximately 90 percent rotary engine vehicles.

Chapter V discussed the Competitive Model and the competitive position of Mazda in the automobile market. Mazda was one of the smallest auto manufacturers in Japan until it started the development and eventual production of the Wankel engine. Since moving into the United States market, the car has been more than competitive as it has increased from sales of 20,000 in 1971 to approximately 120,000 in 1973. Sales during each month of this year have reached or exceeded their projected monthly goal. The competition in the automobile market is increasing but Mazda finds itself in the unique position of having a monopoly in such a highly competitive market. The initial success and recent acceptance by the public has put the rest of the industry into a race to build and mass produce rotary engines. However, some members of the industry are taking a wait and see attitude toward the Wankel engine. Of those attempting to market a rotary engine of their own, General Motors is in the lead and expects to market its rotary engine sometime in 1974. All of the effort being expended by other auto manufacturers and the resulting publicity can only aid Mazda as the public becomes fully aware that the rotary is one of the engines that will dominate this country and others into the future.

The Channel Model is discussed in Chapter VI. Mazda must develop competitive, cost minimizing ways to move their autos from Japan to regional storage points in the United States and then to the individual

ers across the country. Price is an important factor and by cutting channel costs the overall price of the car in the market place can be reduced. The complexities of developing an effective inventory system can also be effective in improving the service provided by the dealer and in reducing the overall costs of the dealer. Throughout the report, the reduction of costs is stressed as a way for the dealer to ease overhead and so improve profits.

Chapter VII explores the automobile market in Stillwater. Many factors are discussed which affect the market potential in Stillwater. Among these are some of the demographic characteristics of the community including age composition, level of schooling, population and the number of families. The economic environment surrounding the community is also discussed. The income of the city as well as the income per household is also presented. The increasing total retail sales and automobile expenditures are viewed as being a significant part of the current and future automobile market. Finally the various advertising vehicles available in the immediate community are examined. The promotion of Mazda will more than likely be accomplished through all of the vehicles available including the local newspaper, the University newspaper, and radio stations. However, other means of advertising such as billboards should also be considered. The sales of Mazda will be a function of all of these variables. It is only through the judicious use of each that optimal results can be obtained for the Mazda dealer.

Conclusion

When Mazda of Stillwater opened its doors for business it was at the threshold of a bright expansive future. Success awaited Mazda as :

l into competition in the local automobile market and tried to
lish a realistic share of the potential market. At that time the
r should have made a more energetic attempt to use the marketing
s available to him. Mazda's two largest challenges were and still
to achieve acceptance and recognition by the public and to spread
news of the existence of this revolutionary car and engine. Mazda'
mate success rests on its ability to successfully meet these
lenges. The rotary engine is undoubtedly one of the engines of the
re and it is available in an automobile today, the Mazda. However,
re these challenges can be met and overcome, the dealer needs to
some self introspection to analyze the results of his business over
past 16 months.

It is always easier to stand to one side and say what should have
done but that is not the purpose of this paper. Obviously, the
l dealer is not operating efficiently or sales would be considerabl
er. The problem is to determine what needs to be done in the futu
Mazda of Stillwater is going to be a viable force in the automobile
et in Stillwater, some changes will have to be made. This paper
presented some of the changes that might assist the dealer in
uring a larger part of Stillwater's auto market. The recommen-
ions in this paper are not the only ones available but at least the
sent a starting point. Survival of the business should not be its
y goal, profit maximization through cost minimization should be the
imate goal. Now that the Mazda dealer has seen how not to operate,
should move aggressively to capture his share of the market, if he
s not, the very survival of his business is in jeopardy.

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