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**The Impact of Competitive Marketing Strategies  
on Market Share Leadership:  
An Application to the Automobile Industry**

**Shelley R. Epstein**

**A Thesis**

**In**

**The Faculty**

**of**

**Commerce and Administration**

**Presented in Partial Fulfillment of the Requirements  
for the Degree of Master of Science in Administration at  
Concordia University  
Montreal, Quebec, Canada**

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## **Abstract**

### **The Impact of Competitive Strategies on Share Market Leadership: An Application to the Automobile Industry**

It has been suggested by researchers that a company's ability to capture and sustain market share leadership is a function of the marketing strategy they choose to embrace. A comprehensive study of the relationship between market share and the influence of marketing variables such as (1) price, (2) advertising and (3) observable and unobservable product characteristics is undertaken in order to identify the optimal marketing strategy that produces significant effects on market share

The factors which contribute to market share leadership and which will be further explored include short-term variables such as pricing and advertising expenditures and on-going long-term competitive variables such as a brand's product attributes and country-of-origin.

The car market will be used for the current project because it is an important global market where becoming the market share leader could have some implications for the brand's performance. Weitz & Wensley (1992) accurately define the automobile industry as a particularly significant and turbulent market. Competition is high, market share leadership is a current and on-going issue and data is readily available. The car market has rich examples of market leadership and provides time-series and cross sectional data

In this thesis, the market share model will be analyzed using logit regression analysis. Preliminary analysis and the major model analysis will be presented with a discussion of the results

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## **1.0 Research Objective**

Many of the past research studies suggest that a company's ability to capture and sustain market leadership is a function of the marketing strategy they choose to embrace. This requires a comprehensive understanding of the relationship between market share and the influence of marketing variables including (1) price, (2) advertising and (3) observable and unobservable product characteristics. The critical question is what optimal mix of these marketing variables will produce significant effects on market share? This question can only be answered once the relationship between these variables is established.

The performance of a brand is assessed in terms of market share to incorporate its competitive success relative to competing brands on the market (Gatignon, Weitz & Bansal, 1990). Presumably, a company's motivation to become market share leader may be reflected in their marketing strategy. Although the impact of a company's initial strategy may pave their path towards market leadership, the maintenance of the marketing operation will have significant repercussions on the company's ability to sustain long term market leadership.

Research suggests that there is a proven leader in every market. Such brands are formidable competitors against other brands because they are well-known, widely distributed and well positioned. There are certain cases however, when established market leaders are overtaken by competing brands. In 1992, for example, the Ford

Taurus overtook the Honda Accord as the best-selling car and it has held that lead ever since. Ford Taurus leads the mid-size automobile segment, the biggest and most fiercely competitive segment (Business Week, July 25, 1995). Can this change in market leadership be explained by differences in marketing strategies? The conventional thinking seems to be that competitors must differentiate themselves, offer "something extra." Exactly how one does so is relatively unclear (Carpenter and Nakamoto, 1990).

The objective of the following thesis research paper is to investigate the relationship between market share and marketing variables and evaluate the impact that marketing strategies have on a company's ability to capture market share leadership. The factors which contribute to market share leadership and which will be further explored include short-term variables such as pricing and advertising expenditures and on-going long-term competitive variables such as product attributes and a brand's country-of-origin. The justification of the choice of these model variables is the fact that these variables have been most widely researched in this area and the theories surrounding why and how these variables influence market share are most interesting.

The car market will be used for the current project because it is an important global market where becoming the market share leader could have some implications for the brand's performance. Weitz & Wensley (1992) accurately define the automobile industry as a particularly significant and turbulent market. Competition is high,

market share leadership is a current and on-going issue and data is readily available. The car market has rich examples of market leadership and provides time-series and cross sectional data.

This analysis will be developed using a number of product attributes in order to ensure accurate representation of the essential features of automobiles and in order to allow for greater differentiated products.

The mid-size car market segment will be examined which represents approximately 34% of the total car market. The demand for mid-size cars is expected to remain strong over the next few years as sales are expected to rise 20% between 1992 and 1997 (Business Week, May 18, 1992).

Before presenting the empirical results of this study, section 2 provides an overview of the impact of marketing strategies on market share and a review of theoretical literature which assesses each marketing variables predictive power on market share. The theoretical and managerial significance of this study is outlined in section 3. In section 4, a description of the empirical methodologies and the preliminary data analysis are presented. In section 5, the empirical results of the statistical tests and regression results are presented and a discussion of results follows in section 6. In the final section 7, the limitations and opportunities for future research are presented.

## **.2.0 Literature Review**

The aim of this study is to identify the variables in the marketing strategy that impact market share leadership. In order to develop a better understanding of the relationship between market share and marketing strategies, we will review past theoretical literature related to market share leadership and assess each marketing variable's predictive power over market share.

### **2.1 The Impact of Marketing Strategies on Market Share: An Overview**

To be a market leader, a company must excel in two distinct ways. First, it must constantly build and refresh its areas of expertise so it has the critical capabilities to stay ahead of the pack. Second, a company must consistently adapt its mix of disciplines to work in the manner necessary to prevail in the ever changing competitive environment (Barton Bowen Clark Holloway & Wheelwright 1994).

Treacy and Wiersema (1995) believe companies like Kellogg, American Express, United Airlines and IBM are on a declining slope for precisely these reasons. One or more competing companies in their markets have increased the value offered to customers by improving products, cutting prices or enhancing service. By raising the level of value that customers expect from everyone, leading companies drive the market and push competitors downhill.

But how can companies adapt their marketing strategies to become market leaders and remain market leaders in the long-term?

Marketing strategy literature indicates that the performance of a brand depends on the competitive environment facing the brand, the capabilities of the brand and the marketing strategy (Gatignon et al., 1990). Although there may be various other indicators of product success, Gatignon et al. (1990) suggest that market share is a superior indicator of the long term performance of a brand, especially when the product class is mature and when competition is not price-based.

Much of the literature suggests that a company's current market share in a particular category is a consequence of cumulative marketing expenditures. For the market leaders of the world, the cumulative investment represents moneys well spent on sales and marketing activities over years and even decades. Leading brands like Ivory soap, Heinz tomato ketchup and Ritz crackers have built such high brand equity through consumer awareness and preference that their market positions seem unattainable (Slywotzky & Shapiro 1993).

Cumulative marketing investment is fairly powerful especially for early entrants who alert consumers to the existence of the category, define the category in terms of initial consumer preferences and build a consumer base. However, the value of cumulative marketing investment can be eroded by many variables. A product can lose its

competitive edge and the ability to command higher shares as soon as competitors are able to duplicate its capabilities. Successful marketing dictates the ability to differentiate oneself, not only to obtain the competitive advantage, but to maintain it.

Research has shown that a sound competitive strategy is vital to most firms' growth and prosperity and may have a critical role in determining a firm's long term performance (Zirger & Maidique, 1990). The increasing rate of change in technology and consumer needs shortens product life cycles and emphasizes the need to modify the competitive strategy (Gatignon et al., 1990).

According to Slywotzky and Shapiro (1993), competitors in a market with an established leader face two distinct challenges: first, they must dislodge customers from the market leader and second, they must draw the consumers through the development process from product awareness to loyalty. Overcoming these two challenges can be a very expensive proposition.

A leading example of an automobile manufacturer that made a successful attempt in overcoming the market leader is Ford. For many years, the Japanese automotive industry was renowned for its global standard for vehicle quality and productivity. This was complemented by vehicles that were good values because they contained all the expected features plus the unexpected.

The American automobile methods differed greatly. The broad range of products had car models overlapping each other in terms of price and features and it was only in the mid-eighties that U.S. manufacturers began to understand the debilitating aspects of their product offerings. At the same time, the Japanese seem to have been particularly hurt due to economic variables impacting their country. The valuation of the yen was high and gave the American automobile manufacturers more time to catch up in terms of product innovation. The Japanese also suffered from inappropriate product and investment strategies which were motivated by overly optimistic growth and market share forecasts.

Ford succeeded in establishing the Ford Taurus as the number one car of the year in 1992 and has maintained that position ever since.

<b>Top Selling Mid-Size Automobile</b>	<b>Rank</b>
Ford Taurus	1
Toyota Camry	2
Honda Accord	3

\*Source Fortune (September 18,1995)

Ford's use of promotional campaigns have been much more aggressive than any other competitor and Ford remains dependent on marketing incentives to maintain its high level of market share. Ford has realized that the cost of maintaining its customer base is lower than the cost of constantly searching for a new customer and believe that repeat customers are the key to long-term market success. Ford has combined a competitive model and an effective marketing strategy to overcome the top spot



occupied by Honda Accord; one that will most likely result in sustained sales volume and thus, a solid market share over the long-term (Keller and Maryann 1993).

Another leading example of a company that made a successful attempt in overcoming the market leader is Philip Morris with Marlboro. Marlboro was introduced in the 1920's and registered an insignificant 1% market share compared to market leaders Winston and Camel.

Philip Morris developed a powerful marketing campaign focusing on one element of the marketing strategy, a distinctive symbol. This distinctive symbol, the American cowboy, effectively differentiated the brand and attracted a young, smoking male market. This success, combined with strong brand loyalty created growth momentum for the brand that rivals could not match. This strategy was followed for decades and at present, Marlboro's share of the young, male smoker is estimated at 60-70% of market share. The Marlboro advertising campaign presented such strong key images linked to the brand that even today a product name does not have to appear; the image of a cowboy lighting up is sufficient to make the connection.

Analyzing the market strategy of each organization is difficult as much of the literature exhibits various explanations as to its' nature (Greenly, 1989). This suggests that different strategies should be implemented depending on circumstances as marketing mix effectiveness varies depending on market and industry conditions.

Balasubramanian and Kumar (1990) concur and claim that at the micro level, elements of the marketing strategy varies greatly across industries, across firms within an industry, across time for an industry and across time for a given firm.

While some competitors may be successful in a markets with established leaders, (e.g. Pepsi in the cola market, Ford Taurus in the automobile industry), creating successful marketing strategies is a difficult strategic task. According to Carpenter & Nakamoto (1990), a growing number of studies indicate that brand choices and preferences depend on various variables and constraints, including the configuration of the set of alternatives. For instance, a competing brand that is positioned closely to a dominant brand with no differentiating or redeeming features will be less preferred despite the similarity to the dominant brand.

For the purpose of this research proposal, the definition of marketing strategy focuses on marketing activities and decisions related to building and maintaining a sustainable, competitive advantage. From this perspective, the strategic role of marketing is confined to what Day, Weitz & Wensley (1990) term the 'functional' role of marketing. It is assumed that market leadership occurs when competing brand has a solid long-term perspective of its competitive strategy.

## **2.2 An Assessment of Market Variables Predictive Power on Market Share Leadership**

Market share can be affected by many different aspects of competitive strategy.

However, the concept of the marketing mix is based on the working together of all dimensions of the marketing strategy including product policy, pricing, distribution, and advertising to influence customer choice. A realistic explanation of market share change must, therefore, include all of the important elements of marketing strategy and somehow relate any competitor action to that of rivals.

There are various theories as to which elements of the marketing strategy influence market share. For instance, Gatignon et al., (1990) believe that increases in market share arise when new and proprietary technology lead to a new product advantage. Therefore, despite the fact that supplying a product with a major advantage is usually more costly and time consuming, companies can capture substantial market share rewards. Product innovation is universally recognized as a strategy for building market share in both mature and expanding markets. This is certainly true of the automobile industry as technological improvement has been referred to as the main factor for Ford Taurus's overtaking of Honda Accord's number one market position (Automotive News 1993, page 34 of August 30 issue).

Another line of research suggests that it is reasonable to conclude that the performance of a brand is a function of the relative marketing strategy supporting the brand and its relative product quality (Gatignon et al. 1990). Slywotzky & Shapiro (1993) believe that few companies understand the need for an investment strategy such as this despite the enormous funds they allocate towards marketing

Although factors such as advertising, pricing, and positioning are considered important for long-term success in a market, few studies have related the factors or marketing efforts to long-run measures. Biggadike (1977) identified three aspects of marketing strategies that were associated with successful market status. These included high marketing expenditures, aggressive prices and high product quality. However, there appears to be a general acceptance among researchers to use more sophisticated methodologies that explicitly consider the dynamic nature of marketing strategy issues (Weitz & Wensley, 1992).

The traditional definition of marketing focuses on product development, price determination, distribution and promotion. Slywotzky and Shapiro (1993) propose that this focus is no longer adequate to ensure competitiveness. A redefinition of marketing is proposed that emphasizes analysis, target market selection and strategic investment. Unfortunately, most companies base their marketing budgets on annual sales, expecting immediate gains in market share, rather than letting their marketing

spur sales. Slywotzky and Shapiro (1993) suggest that short-term thinking such as this, merely sabotages the process.

There is an overwhelming consensus that marketing strategy and market share feed off one another. The main question is to what extent?

Company resources are allocated according to the expected success of the brand. To form these expectations, the factors that contribute to the success of the brand in the market must be evaluated. In the following section, each element of the marketing strategy will be discussed from a theoretical framework and its predictive power over market share.

### ***2.2.1 Advertising***

According to Buzzell and Wiersema (1981) all forms of promotional effort can build market share. Advertising is an interesting strategic influence. Although it is a demand-side factor, its means of persuasion may be fleeting and are open to counter-persuasive advertising from rival products. It has been found that advertising outlays are significant contributors to improvements in market share for consumer products.

There is a great deal of evidence that suggests a strong positive relationship between advertising and market shares and to the fact that the impact of advertising lasts a long time. Sullivan (1992) determined that advertising for a brand has a significant effect

on its' long-run survival time. Given this, advertising by an established market leader can perform an important strategic function in affecting the competitive strategies of rival brands (Schmalensee 1981).

According to Szymanski et al. (1993), economies of scale associated with larger amounts of marketing effort contribute positively to market share. Ultimately, the effects and benefits of past advertising efforts may continue to positively impact market share for some time. Scale economies are best achieved by larger companies and the automobile industry is renowned for spending incredulous amounts of money in this area.

Lim and Ong (1989) concur with Szymanski et al. and further suggest that market leaders will relish an advantage over competing brands in that any advertising effort from the previous period will overflow into the next period due to brand loyalty or reputation. This can be a significant asymmetry when comparing two products market shares as advertising is a key ingredient for building brand equity, superior brand image or brand share (Aaker & Keller 1990).

Many of the increases in market share experienced by companies are usually assumed to be caused by expenditures in marketing. The two-fold objectives of advertising are basic in theory, yet much more complex in nature than their purpose suggests. First, to persuade potential consumers of the differential advantages of a product in order to

gain market share and second, to disseminate information on product quality to expand the set of uninformed consumers. These two reasons alone can account for differences in the market shares of products even when price and product quality differ negligibly between brands (Lim & Ong 1989).

Carpenter & Nakamoto (1990) describe the two main functions of advertising. The first is referred to as position advertising where by the advertising positions the brand relative to the competition. The second function of advertising is maintenance advertising, where by once the brands are positioned, the images must be maintained. It is maintenance advertising that will affect the brand evaluation. However, it is questionable whether a superior image can be created by advertising vigorously. Rather, something more is needed. Sherer and Ross (1990) state that "something more" is usually an innovative act of some sort.

Lin & Ong (1989) also contend that advertising can only persuade, and because of the nature of advertising it can be readily contested by others. While advertising is necessary, it may not be a sufficiently powerful tool in tightly securing market shares. For example, using sales promotion in advertising tends to be used to increase sales or shares in the short term. It has been argued that sales promotion activities which simply offer a discount or rebate are the most likely to cheapen the brand and thus adversely affect the long-run brand image or leadership (Aaker and Keller 1990).

Even more so, Slywotzky and Shapiro (1993) argue that most companies fail to respect the impact of continuity. Considering the time and effort it takes in order to move consumers from awareness to consumer loyalty, it may be counter productive to introduce coupons and price promotions. This is a sure-fire method of increasing the number of switchable consumers in a marketplace when the objective should be to increase consumer loyalty and thus, market share.



### **2.2.2 Price**

Economic theory and marketing knowledge dictate that price and advertising are two of the primary influences on market share (Weiss 1968). In general, price has been found to have a negative effect on market share, however studies have been conducted that demonstrate that price is one element of the competitive strategy that was found unrelated to changes in market share. In other literature, there have been arguments that emphasize price's positive effect on market share. These later findings may be somewhat surprising, especially in view of aggressive price reduction strategies that many companies have employed with increasing competitive pressures.

Although in many cases, strategies of price reduction are used to build market shares, growth via rapid price cutting is not common in mature markets. Buzzell and Wiersema (1981) maintain that opportunities to gain share through aggressive price reductions are rare when technology and marketing practices are well established. Furthermore, price reductions in mature markets are likely to be met by rivals, making it more difficult to achieve any type of market advantage. Price wars begin due to inadequate understanding of price and an inadequate understanding of competitive strategy.

Many companies simply do not use price-cutting as a means to building share. When prices are changed, they are offset by changes in product quality or by competitors responding with similar price changes so that the relative price remains unchanged. Earlier research, in support of this view, has shown that virtually all changes in prices among various models of cars could be explained by observable physical characteristics (Hogarty, 1974)

Furthermore, one would expect shifts resulting for example, from an increased advertising effort or any changes in product quality to be reflected in the product dimensions or advertising co-efficients and not through a price co-efficient.

On the other hand, according to Weiss (1968), economic theory suggests that a positive price co-efficient could result by one or a combination of factors. The movement can easily be caused by an exogenous increase in total demand. However, if this were true, the effects of the change would not be reflected by models using market share as the dependent variable.

A study completed by Szymanski, Bharadwaj and Varadarajan (1993) on the relationship between market share and strategies that focus on building market shares, proposed that price can have both a positive and negative effect on market share. Although we are aware that economic theory dictates an inverse relationship, these researchers point out various reasons as to why a positive price effect may exist.

Consider the fact that a higher price may be a signal of higher product quality. Higher market shares endows a business with a higher market power and thus the capacity to charge a higher price.

Economic theory suggests that there are various ways to shift the demand curve to the right including advertising, promotion, product improvement, increased distribution, and changes in economy. However, it is very difficult to determine what effect price is going to have on market share ahead of time. Consumers pay more attention to smaller details of the buying process and companies must justify their costs. This can become an increasingly complex issue especially when it comes to implementing satisfactory pricing strategies.

Given that this research deals with the market for mid-size automobiles, it is important to state that consumers will likely be more sensitive to the entire buying process. The focus is on economical purchases and individuals would therefore tend to obtain the best value for their money.

Given the above assumption and based on the empirical results and other supporting arguments, the following hypothesis is proposed:

**Short-term variables of the marketing strategy will have significant effects on market share. Advertising will have a positive and significant effect on market share leadership and pricing will have a negative but significant effect on market share.**

### **2.2.3 Product Attributes**

Recent theories in the development of consumer behavior have lent support to the view that a commodity benefits consumers through the characteristics it possesses. Product quality features are major decision variables used by marketers to influence consumer purchase. However, quality is truly subjective in nature, difficult to measure and it is the use of quality variants which allows companies to discriminate between heterogeneous consumers (Kwoka 1992).

For the purpose of this research study, product quality is defined as a combination of characteristics that maximizes a consumers utility function. As Kwoka (1992) stated, product attributes are proxies for quality. Prior studies have indicated that product quality is influenced by intrinsic and extrinsic product attribute cues (Chang & Wildt 1994). Product quality in the automobile market would include intrinsic characteristics such as dependability, reliability, spacing and comfort and observable physical characteristics such as automobile length, width and mileage per gallon; all the variables which may directly or indirectly impact consumers utility functions.

Many studies have provided considerable insight into consumers evaluations of specific product attributes (Mannering & Mahmassani 1985, Kwoka 1992). For example, Kwoka (1992) stated in his research, that the length and the width of an automobile were found to be two vehicle attributes that were deemed the most

significant characteristics of an automobile in virtually all empirical work. Mannering et al. (1985) found the significance of fuel efficiency, weight and horsepower were generally quite strong and that automobile manufacturers could benefit greatly from improved reliability.

Jacobson and Aaker (1987) findings suggest the importance of product features and that the successful implementation of differential quality variants can facilitate increased profitability in a market share context. However, redeeming product features on their own may not be enough. Brands must also be supported by a consistent, on-going marketing strategy such as technological improvement, brand share-building advertising, and an effective promotional campaign to market these quality differentials.

Sherman & Hoffer (1971) further state that changes in a set of product attributes may impact changes in market share though the impact may not be consistent across every product market. For instance, changes in a set of product attributes produces greater shifts in market share in a high-price field such as automobiles. However, Hoffer (1971) believes that whether changes in the set of product attributes positively offset improvements in market share must be evaluated against actual profit gains. As well, advertising expenditures should be included in the equation in order to identify the implications on the derived results.

Phillips, Chang & Buzzell (1983) tested certain key relationships with product quality and found a significant positive influence of product quality features on market share. Phillips et al. (1983) stated that quality product features is an important determinant of market share and is not merely a strategy to be used by companies facing well-entrenched competitors. A differentiating set of product attributes may be utilized effectively as a market weapon.

The results of their research contradicted previous views which suggested that a high quality strategy often requires the perception of exclusivity, which is incompatible with high market share. Phillips et al. (1983) assert that quality and market share are complementary. Quality improvements need not result in cost increases and in fact may be obtained through technological improvements. These benefits are passed along to the consumer in terms of higher quality products at prices the same or lower than those of competitors, thus inducing a higher market share.

Market share and product quality features seem to have a reciprocal relationship. All else being equal, market share may in fact have an impact on the perceived quality of a set of product attributes. One view is that a higher market share induces a higher product quality image because widespread acceptance of a product is a signal of quality. If a brand or product is widely used, other potential consumers may see this as a sign of superior product quality. An alternative view is that a high market share

may imply lower product attribute quality as a high market share may diminish the perception of exclusivity.

Mason (1990) claims that increased overall product quality not only stimulates increases in market share but can generate even greater product volume by stimulating overall market growth. New products that are seen as significantly different and improved in quality, features or price may stimulate changes in the demand for that particular product. However, "me-too" products or minor variations on existing products are most likely to affect market shares.

According to Jacobson and Aaker (1987), market share is certainly not obtained solely through the charging of a lower price. The notion of value, that is, quality per dollar, is a better measure. Quality product attributes can be a means of differentiating a product to obtain a higher market share.

Given the above assumption and based on the empirical results and other supporting arguments, the following hypothesis is proposed:

**Product attributes will have a positive and significant effect on market share leadership.**



#### **2.2.4 Country-Of-Origin**

It may not be particularly difficult to recognize the equity inherent in tangible attributes and variables of a product. However, a product not only has a physical nature, but a social stigma and psychological being as well. The perceptions and images associated with a certain brand may be critical to that brand's success and consumer purchase choice.

Country-of-origin (COO) has received widespread research attention over the past few years (Mannering & Mahmassani 1985, Han 1990, Lim, Darley & Summers 1994, Parameswaran & Pisharodi 1994). However, empirical evidence has been somewhat limited in that many of the results have been largely inconsistent. According to Lim et al. (1994), COO effects have been found to vary with the products and countries of interest, although many of the inconsistencies can not be explained by these two dimensions alone.

An interesting line of research suggests that studies which include multi-cues as part of their analysis can expect to produce smaller COO effects. When COO is utilized as the single main discriminating variable, COO effects were larger. However, according to Lim et al. (1994), there is little empirical evidence regarding the reduced effects on COO in the presence of additional research variables and its overall impact on market share.

There are others who believe that a brand's country-of-origin (COO) may be the most potent variable if properly applied (Parameswaran and Pisharodi 1994) and can play a key role when evaluating marketing strategies of automobile brands.

For instance, if a market is organized according to country-of-origin or if consumers consider country-of-origin of brands as an important factor to confine their selection to a narrower set of brands, country-of-origin can create a framing effect due to a similarity effect arising from country-of-origins. In an application to the automobile industry, some argue that Honda Accord was dethroned from its' leadership position not because of Ford Taurus, but because of Toyota Camry which has the same country-of-origin (i.e. Japan).

Parameswaran et al. (1994) believe that COO serves as a useful extrinsic cue and as an alternative method of evaluation for those intrinsic characteristics such as quality and performance which may be difficult to measure. This may be especially true of the automobile market where many of the variables for consumer evaluation may in fact be "hard-to-measure".

The promotional use of the COO is its most obvious application. Unfortunately, few companies utilize COO as a marketing tool in their competitive strategy.

Parameswaran et al. (1994) believe many product managers do not have the proper

skill set to address the cultural issues in marketing the COO of a brand and therefore it is difficult for them to properly translate the COO into a sound marketing communication strategy. This results in a total neglect of the COO variable.

In general, it is agreed that consumers have differing opinions about products made in different countries and attach stereotypical perceptions to products from specific countries. The automobile industry is an ideal example of the extent of these perceptions as rivalry has existed between the U.S. and Japan auto manufacturers for decades. However, Parameswaran et al. (1994) believe that COO effects have been related more to the perceptions about the overall product offerings of a particular country and not so much to the specific product.

Given the above assumption and based on the empirical results and other supporting arguments, the following hypothesis is proposed:

**Country-of-origin will have a positive and significant effect on market share leadership.**

### **3.0 Significance**

#### *Theoretical Contribution*

This is a significant area of research for two main reasons. First, for its' theoretical contribution to market research. Marketing variables seem to produce significant effects on market share. For instance, being a market leader seems to have had an impact on companies short-term marketing decisions such as pricing strategies.

Our efforts will enhance marketing knowledge because few studies have focused on current, detailed data and the factors which influence market share leadership with respect to long term marketing decisions. Much of the past research on the relationship between market share and marketing variables have focused on low-priced, frequently purchased products. This study examines the automobile market; what might be termed a high-priced, infrequently purchased product which prompts a high information search.

Many of the previous studies included the use of PIMS data. This type of data is subject to certain constraints because there are no observations on brands that have disappeared off the market. Therefore the estimated effects of a brand can be interpreted only conditional on survival. In this research, our time series data

considers selected mid-size automobiles over a ten-year span and takes into account whether or not the brand exists in the tenth year.

Most studies in this research area have analyzed cross-sectional data. Analysis based on cross-sectional data and time series data (CS/TS) may prove to be even more significant. First, using CS/TS data allows generalizability of results over time whereas cross-sectional data provides a “snap-shot” view specific to a time period. Inferences drawn from such data could be biased and specific to that time period.

Second, marketing strategies do change across time for a company and across time for an industry. Third, CS/TS data increases the degrees of freedom available for estimation. A large degrees-of-freedom indicates that the prediction is fairly robust with regard to being representative of the overall sample (Balasubramanian & Kumar 1990).

Although many studies have attempted general analysis of this research proposal, it is worthwhile to pursue this question in more specific terms. How key variables affect market share for companies operating in a given industry over a given period of time. Balasubramanian & Kumar (1990) claim that incorrect inferences can be drawn in a cross-sectional regression analysis if data from heterogeneous firms and industries are pooled.

Furthermore, although several studies have been completed on the automobile industry, most of the research has analyzed all car segments in one study.

Balasubramanian and Kumar (1990) claimed that incorrect inferences can be drawn if data from different markets are pooled together. For this reason, analyzing one segment of the automobile industry, the mid-size segment should provide valuable information.

Finally, many of the past studies have used methodologies including surveys. While this information may be very useful, there may be some biases associated with survey responses. A typical response to a survey reflects a respondent's subjective desire, rather than a decision under constraint (Arguea et al. 1994). The following research includes historical data over an eleven year time period.

### *Managerial Significance*

Second, our study provides important managerial implications for marketers.

Existing studies suggest that clearer understanding of the factors that drive market share leadership can help managers focus valuable resources, better utilize resources and increase market share for a firm's new product (Zirger & Maidique, 1990). An astute understanding of these elements can provide important corporate policy direction regarding marketing strategy.

## **4.0 Methodology**

### **4.1 Data**

The following research examines the medium-size family sedan segment of the car market. The data used in this study, taken from a wide variety of sources (see table B) comprised observations on 31 brands over an 11 year period 1982-1992. This period reflects a significant degree of market segment growth and competition whereby each automobile type offers the consumer different levels of a set of generic attributes. The minimum number of brands in any given year was 18 and the maximum number was 29. The selection of brands was based on all medium-size brands that have been considered a mid-size automobile from 1983 up until 1992 as indicated by Consumer Reports. Table A is a list of the automobiles included in the data analysis including the year of introduction onto the market and the year of exit, if applicable.

In order to model one industry, a wide variety of industry characteristics have been included in the dataset to control heterogeneity (see table B) and limit the persistent multicollinearity problem. Price, advertising expenditures and characteristics data were collected on all models for which data were available. If a given model was available as a 2-door coupe and a 4-door sedan, only the data for the 4-door sedan was included.

**Table A: Automobiles included in Analysis**

<b>Country-of-Origin</b>	<b>Automobile Brand</b>	<b>Introduction</b>	<b>Exit</b>
<b>U.S.</b>	Buick Century	1982	
	Buick Regal	1978	
	Buick Skylark	1975	1985
	Chevrolet Camaro	1966	
	Chevrolet Lumina	1989	
	Chevrolet Malibu	1977	1983
	Chevrolet Monte Carlo	1978	1989
	Chrysler LeBaron	1982	
	Dodge Dynasty	1987	
	Dodge Spirit	1989	
	Ford Taurus	1986	
	Ford Thunderbird	1955	
	Mercury Cougar	1967	
	Mercury Sable	1986	
	Oldsmobile Achieva	1992	
	Oldsmobile Cutless Ciera	1982	
	Oldsmobile Cutless Supreme	1961	
	Plymouth Acclaim	1989	
	Pontiac Firebird	1967	
	Pontiac Grand Am	1984	
Pontiac Grand Prix	1978		
Pontiac 6000	1982		
<b>Japan</b>	Honda Accord	1983	
	Infiniti G20	1990	
	Mazda 626	1979	
	Nissan Maxima	1977	
	Subaru Legacy	1990	
	Toyota Camry	1983	
<b>Europe/Other</b>	Hyundai Sonata	1989	
	Saab 900	1978	
	Volkswagon Passat	1990	



The major variables, their measurement and specific data sources are described in detail as follows:

**Table B: Major Variables, Measurement and Data Sources**

<b>Variable</b>	<b>Measure</b>	<b>Data Source</b>
Quarterly Sales	Number of cars sold in a specified 3-month period	Ward's Automotive Yearbook
Advertising Expenditures	Nominal Value expressed in (000)	Competitive Media Advertising Agency, New York City, USA
Price	Nominal Value	Consumer Reports
Product Attributes	Various (Table C)	Consumer Reports
Distribution (Dealers)	Total number of franchised dealerships in the U.S.	Ward's Automotive Yearbook
Consumer Price Index	Base=100, 1982-1984	Current Labor Statistics: Price Data
Country-of-Origin	U.S. Origin=1 Japan Origin=2 Korea Origin=3 Sweden Origin=4 German Origin=5	Consumer Reports

The combination of the above automobile data provided sufficiently detailed data source for estimating the proposed model. Since the data set is time-series and cross-sectional in nature, all the nominal values must be deflated appropriately. An average of the years 1982-1984 was used as the base year (base=100). The quarterly consumer price index was chosen as the index to deflate the following variables: price and advertising expenditures. As well, dummy coding was introduced to differentiate between automobile country-of-origin. Total advertising expenditure data includes expenditures on various mediums for which data was available including magazines,

newspapers television (network, spot, syndicated and cable) and both network and national spot radio.

**Table C: Product Attributes and Measurements**

<b>Product Attribute</b>	<b>Measure</b>
(1) Overall Length	Inch
(2) Overall Width	Inch
(3) Local Mileage	Mile(s) per gallon
(4) Highway Mileage	Mile(s) per gallon
(5) Luggage Capacity	Cubic feet
(6) Reliability	1-5 point scale, much below average-much better than average
(7) FHR	Front Head Room, Inch
(8) FLR	Front Leg Room, Inch
(9) RLR	Rear Leg Room, Inch
(10) FSR	Front Shoulder Room, Inch
(11) Repair Frequency	1-5 point scale, much below average-much better than average

#### **4.2 Preliminary Data Analysis:**

Since the dataset is time-series in nature, all the nominal values were deflated appropriately. From 1982-1987 the Consumer Price Index (CPI) was expressed on a base of 1967=100 however, beginning with the release of 1988 data, the consumer price index shifted to a new reference base expressed as 1982-1984=100 (an average between 1982 and 1984). This new CPI was applicable to the years 1988-1992 in this dataset. Given this, the consumer price index was adjusted for the years 1982 to 1987 inclusive and the entire dataset has been re-adjusted and expressed on a base of 1982-1984=100.

Price and advertising expenditures were deflated using this new Consumer Price Index.

The re-adjustments of both prices and advertising expenditures variables were calculated in the following manner:

$$\begin{aligned} \text{CPI (1982-1984=100)/Original CPI (1967=100)} &= \text{Ratio} \\ (\text{Ratio}) \times (\text{Original Price}) &= \text{New adjusted price} \\ (\text{Ratio}) \times (\text{Original Advertising Expenditures}) &= \text{New adjusted advertising} \\ &\quad \text{expenditures} \end{aligned}$$

All sales data was plotted on graphs in order to illustrate and moreover, evaluate sales patterns over the 11-year period. Nine out of the 31 brands held foreign country-of-origin. Eleven out of the 31 brands sold over 100,000 units (automobiles) on average over the time period (35%). Of all the brands that sold over 100,000 units per year on average over this time period, only two had a foreign country-of-origin. These

include the Honda Accord, selling an average of 303,654 units per year and the Toyota Camry selling an average of 188,042 units per year. The Honda Accord was the top selling mid-size automobile on average over the 11-year period followed closely by the Ford Taurus at 295,981 units on average per year.

**Table D:** Top Automobiles: Highest on Average Unit Sales

<b>Brand</b>	<b># of Units on Average (1982-1992)</b>	<b>Total Units (1982)</b>	<b>Total Units (1992)</b>	<b>Introduction onto Market</b>
Honda Accord	303,654	189,223	394,477	1983
Ford Taurus	295,981	0	409,751	1986
Oldsmobile Cutless Ciera	206,357	113,367	117,292	1982
Chevrolet Lumina	190,916	0	218,114	1989
Toyota Camry	188,042	0	259,193	1983
Pontiac Grand Am	171,617	0	210,332	1984
Buick Century	155,746	99,873	114,273	1982
Oldsmobile Cutless Supreme	149,852	111,987	80,195	1961
Chevrolet Camaro	129,195	182,848	56,909	1966
Ford Thunderbird	115,619	42,585	84,186	1955
Buick Regal	100,326	78,859	91,672	1978

The Ford Taurus and the Chevrolet Lumina have experienced relatively short-term success given their years of introduction onto the market. Particularly the Taurus, which was introduced onto the market in 1986, three years after the introduction of the Accord.

Over an 8-year period, the Taurus steadily increased sales and showed an impressive surge in sales activity between 1991 (299,659 units) and 1992 (409,751 units) in comparison to Honda Accord's relatively flat spread in sales over these two years

(399,297 units vs. 394,477 units respectively). These two brands have been competing for the number one position for top selling automobile of the year ever since and in recent years the Ford Taurus has achieved the number one status.

The Oldsmobile Cutless Supreme, the Chevrolet Camaro, the Ford Thunderbird and the Buick Regal have been on the market, on average, 20 years and have experienced consistent long-term growth since their years of introduction onto the market. However, with the entrance of many new models into this medium-size market segment over the past few years, competition has escalated and is certain to continue well into the future.

Three categories of automobile sales emerge based on the graphical illustration of sales trends and are identified as the following:

- Category (1)** High Level of Sales Throughout 11-year Period or since introduction onto market
- Category (2)** Consistent Level of Sales preceding random Drop-off or Increase
- Category (3)** Flat Sales over the 11-year Period or since introduction onto market

**Table E: Sales Categories**

<b>Category (1)</b>	<b>Category (2)</b>	<b>Category (3)</b>
Honda Accord	Oldsmobile Cutless Ciera	Buick Skylark
Ford Taurus	Buick Century	Dodge Dynasty
Toyota Camry	Chevrolet Monte Carlo	Dodge Spirit
Chevrolet Lumina	Chrysler LeBaron	Hyundai Sonata
Pontiac Grand Am	Chevrolet Malibu	Infiniti G20
	Subaru Legacy	Mazda 626
	Chevrolet Camaro	Mercury Cougar
	Ford Thunderbird	Nissan Maxima
	Buick Regal	Plymouth Acclaim
	Oldsmobile Cutless Supreme	Pontiac Firebird
	Pontiac Grand Prix	Saab 900
	Pontiac 6000	Volkswagon Passat
		Mercury Sable

**N.B.** Although all brands have been ranked, (with the exception of the Oldsmobile Achieva who entered onto market in 1992) accurate estimations of future sales potential of several brands may be premature.

The Honda Accord, the Ford Taurus, the Toyota Camry, the Chevrolet Lumina and Pontiac Grand Am fall within category (1). Since the Chevrolet Lumina's entrance into the market in 1989, this brand has experienced a strong surge of sales and has been able to sustain this high level of sales activity. More impressive, is the Pontiac Grand Prix's ability to maintain a steady, long-term level of sales activity given its year of introduction into the market in 1978.

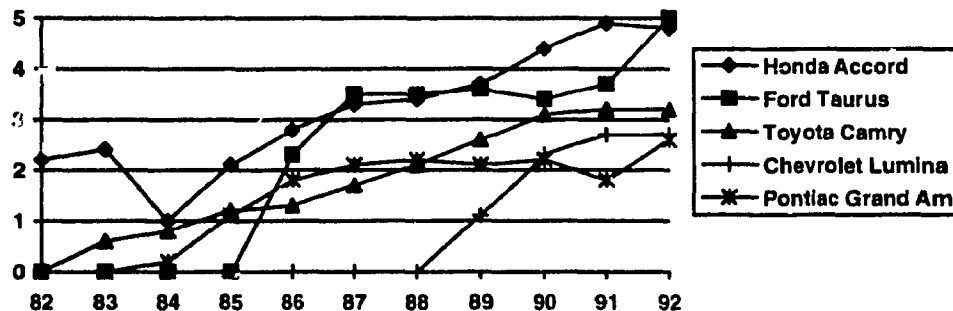
An example of an automobile that falls into category (2) includes the Oldsmobile Cutless Ciera. Although this particular brand is ranked as one of the all-time highest on average sales over the 11-year period and has experienced relatively steady annual sales growth until 1988, the Ciera is beginning to be pulled into a declining sales slope. The same holds true for Buick Century, Chevrolet Monte Carlo, Chrysler Le

Baron, Chevrolet Malibu, Pontiac 6000 and Mercury Cougar who have all experienced strong growth prior to the mid 1980's and then appear to be inclined towards a downward sales slope. This is especially true for the Oldsmobile Cutless Supreme which peaked in 1983 and immediately faced a rapid decent.

The Buick Regal and the Pontiac Grand Prix have experienced inconsistent sales activity over the time period. Etched in a declining sales slope until 1988, both these brands experience a modest surge in sales activity which holds steady for the remainder of the time period.

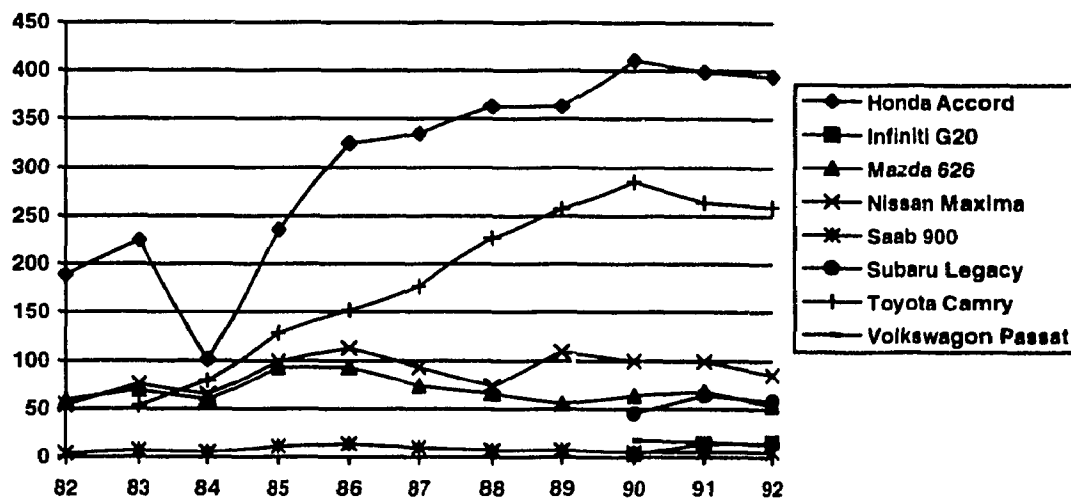
Consistent flat automobile sales are the common denominator for category (3). Automobiles with a foreign country-of-origin either fall within a high level of sales activity (category 1) or consistent flat sales activity (category 3) throughout the time period under analysis.

**Figure 1: Market Share of Five Top Selling Automobiles (%) (1982-1992)**



Out of the eight (8) foreign country-of-origin brands included in this analysis, only the Honda Accord and the Toyota Camry have shown expansive upward growth over this period (Figure 2). The Infiniti G20, Volkswagon Passat and Suburu Legacy have only been on the market since 1990. Realistically, it is too early to evaluate their sales patterns, however the Legacy has already begun to show very impressive signs of sales growth. Sales of the Nissan Maxima and the Mazda 626 remain flat over the time period.

Figure 2: Sales Trends of Foreign Brands (000)



In order to visualize the distribution of the variables and gain further insight into the empirical distribution of the variables prior to analysis of the actual research model, frequencies were computed for all the variables. As well, the mean and the standard deviation of all variables were computed to provide a measure of spread in the data and to locate any possible outliers.



A review of the dataset revealed an insignificant number of outliers and a relatively clean set of data. The inconsistencies which were identified in the process necessitated a reformatting of numbers which included decimal points and several corrections due to human error in initial data entry. The preliminary results appeared significant as all the computations administered very consistent results throughout the 11-year period and registered 0.0001 P-values at a 5% level of significance.

The following table defines the mean value of the dataset variables for a medium-size automobile:

**Table F: Mean Value of Product Variables**

<b>Variables</b>	<b>Mean</b>	
Advertising Expenditures	\$3,155 (000)	quarterly
Price	\$8,955usd	annual
Length	188 inches	annual
Width	69.62 inches	annual
Local Mileage	18 miles per gallon	annual
Highway Mileage	32.54 miles per gallon	annual
Luggage Capacity	14.67 cubic feet	annual
Reliability	2.58 index score	annual
Front Head Room (FHR)	3.48 inches	annual
Front Leg Room (FLR)	41.54 inches	annual
Rear Leg Room (RLR)	27.83 inches	annual
Front Shoulder Room (FSR)	55.91 inches	annual
Repair	2.54 index score	annual

**N.B.** Please refer to Table C for Product Attributes and Measurements

The mean price of a medium-size automobile for the time period was calculated as \$8,955us. The price tag reached as high as \$23,575us for a foreign brand in the later years of the period studied. Advertising expenditures, on average, totaled \$3,155

(000) on an annual basis however, in some instances quarterly expenditures were close to nil. First-quarter advertising expenditures appear to be highest, perhaps largely in part to the seasonal sales cycle of automobiles, whereby the spring season tends to be the most popular time for brand introductions and thus corresponding advertising campaigns.

Medium-size automobiles achieved 18 and 32 miles per gallon for local and highway driving respectively. However, there was a wide spread in the range of these two variables over the time period. Over the years, local mileage dipped as low as 13 miles per gallon and soared to 27 miles per gallon as the all-time high. Accordingly, highway mileage slipped to 22 miles per gallon and increased to 46 miles per gallon in the later years. This may be due, in part, to technological innovations related to fuel efficiency.

The reliability index was a measure of an automobile's past performance taking into account all reported trouble spots. Reliability ranged from much below average (1) to much better than average (5). The spread of data suggests that one-third of the automobiles have reported much below average reliability, followed by one-quarter of automobiles who report average reliability.

The repair index was a measure of an automobile's repair and expense history. This value compares a given models trouble experience with the experience of the average

of that age. It is not a summation of the car's individual trouble spots. Repairs ranged from much below average (1) to much better than average (5). The greatest frequencies were found in much below average and average which accounted for almost 60% of the automobiles in the dataset.

Another important step taken was that the eleven (11) product characteristics dimensions were factor analyzed to eliminate any possible multicollinearity problem which would impact the results of this study and to identify any linear combinations of our variables among the dimensions.

Initially, a table was generated containing information regarding the 11 possible factors and their relative explanatory power as expressed by their eigenvalues. In addition, to assessing the importance of each component, the eigenvalues were used to assist in selecting the number of factors retained for further analysis. Based on this criteria, 3 factors were retained that had eigenvalues greater than 1. Although we are simplifying our scale from 11 to 3, loss of information is minimal as we are still able to explain over 65% of the variance of the 11 variables.

**Table G:** Results For The Extraction of Components

<b>Factors</b>	<b>Eigenvalue</b>	<b>% of Variance</b>	<b>Cumulative % of Variance</b>
1	4.1076	37.34	37.34
2	1.8546	16.86	54.20
3	1.2029	10.94	65.14

The result is an unrotated component analysis factor matrix which includes the factor loadings of each variable on each of the 3 factors extracted. The eigenvalues for factors 1, 2 and 3 are 4.10, 1.85 and 1.20 respectively. A substantial portion of the variance is accounted for by these factors. As expected, the unrotated factor solution has extracted the factors in order of their importance, with factor 1 accounting for the most variance, factor 2 slightly less and factor 3 with the least. The communality is 7.16 which represents the total amount of variance extracted by the factor solution.

It was assumed that factor loadings greater than .40 were considered significant and loadings greater than .50 were considered very significant. The larger the absolute size of the factor loading, the more significant the loading is in interpreting the factor matrix.

As anticipated, the first factor accounts for the largest amount of variance whereby 6 variables loaded significantly. However, a review of this table indicates that some of the variables load twice on the different factors. Therefore, the factor matrix was

rotated in order to redistribute the variance. This resulted in a simpler and more meaningful factor pattern.

A VARIMAX rotated factor pattern was calculated, which generated a different set of factor loadings from the original factor pattern. This procedure signifies that each factor is independent of one another and generated tighter correlations and therefore less ambiguities between factors and variable loadings.

**Table H: Results of Rotated Factor Pattern**

<b>Variables</b>	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>
Length	<b>0.68847</b>	0.38785	-0.36626
Width	<b>0.89982</b>	0.16068	-0.15159
Local Mileage	-0.32816	0.10595	<b>0.57387</b>
Highway Mileage	-0.13019	-0.13603	<b>0.83039</b>
Luggage Capacity	0.24146	<b>0.80195</b>	-0.09881
Reliability	<b>-0.78986</b>	0.10614	0.25305
Front Head Room (FHR)	0.31326	<b>0.56645</b>	0.42697
Front Leg Room (FLR)	0.35755	0.31775	0.19676
Rear Leg Room (RLR)	-0.30255	<b>0.81235</b>	-0.08172
Front Shoulder Room (FSR)	<b>0.83087</b>	0.17649	0.05702
Repair	<b>-0.74936</b>	0.05824	0.21848

By verifying the component loadings on the rotated factor matrix, we can determine which variables are highly correlated with the factor component. For example, factor 1 shares the greatest variance with reliability (-0.79), repair (-0.75), FSR (0.83), length (0.68) and width (0.89). However, there is a negative correlation between these variables. That is, the more reliable and the better the repair record of the automobile, the smaller the size (i.e. width, length and FSR) of the automobile.

Factor 2 shares the greatest variance with luggage capacity (0.80), rear leg room (0.81) and FHR (0.56). Factor 3 shares the greatest variance with highway mileage (0.83) and local mileage (0.57). Using component loading 0.45 as the cut off point, each variable loaded significantly onto at least one factor. The exceptional cases included the variable (FLR) front leg room which did not significantly load on any one factor and FHR which marginally loaded on factor 3.

By examining the content of the items which loaded highly on a factor, it is inferred that:

<b>Factors</b>	<b>Name of Factor</b>
Factor 1	Dependability
Factor 2	Space Availability/Comfort
Factor 3	Mileage

The objective of principal component analysis is to maximize total variance. In this study, we have reduced our scale from 11 variables to 3 and have still managed to explain over 65% of the variance. We have discovered the links between the variables by identifying 3 underlying factors which best describe the variation in our original data.

## **5.0 Analysis Method : Model**

This section summarizes the major regression results and shows the effects of various combinations of the predictor variables included in the model.

This research will analyze secondary market data to estimate the impact of marketing strategies on market share leadership taking several assumptions into consideration:

1. An individual faces a linear budget constraint
2. The relevant characteristics of an automobile brand are known
3. Model assumes that consumers purchase only one unit of the commodity
4. Changes in the demand of a product can be estimated when the quantities of one or more of the attributes are modified
5. Each automobile is described by a specific value on each attribute

The proposed model includes an analysis of both short-term and long-term variables:

**Market Share= f(price, advertising expenditures, product attributes, country-of-origin; error)**

$$MS_i = \frac{e^{\alpha} \prod^s SX_{is} \beta^s \prod^l LX_{il} \beta^l \prod COO_i \beta^c \varepsilon_i}{\sum_{j=1} e^{\alpha} \prod^s SX_{js} \beta^s \prod^l LX_{jl} \beta^l \prod COO_j \beta^c \varepsilon_j}$$

where  $MS_i$  = market share

$SX_{is}$  = short-term variables, (includes price and advertising variables)

$LX_{il}$  = long-term marketing variables, (includes product attributes)

$COO_i$  = country-of-origin,

$\varepsilon_i$  = error term, and

$\alpha$  and  $\beta$  = constant and parameters to be estimated

Three (3) seasonal dummy variables were created to account for seasonality in the dataset. Forty-three (43) time dummy variables were created to account for the different time periods and two (2) country dummy variables were created to account for the differences in country-of-origin including cd(Japan) and cd(Europe/Other). Country dummy U.S., season 1 and time 1 were eliminated from the analysis and used as a base in the regression equation.

The market share of each brand was calculated in the following manner:

$$\text{Market Share (MS) Brand } X = \frac{\text{Total Sales Brand } X \text{ in year } X}{\text{Total Sales of all Brands in year } X}$$

All variables have been expressed in logarithm form (including market share, price, advertising expenditures and factor scores) and double logs of each variable were taken for the model analysis. A series of transformations have been computed in order to provide the following research benefits as outlined by Nakanishi and Cooper (1982) :

(1) to allow the model to be easily estimated using dummy variable multiple regression analysis and,

(2) to increase predictive power of the model (i.e. the market share equation used for this analysis will guarantee that our results fall between zero-percent (0) and 100% market share).

$$\log MS_j = (\alpha + \sum_s \beta_s SX_{js} + \sum_L \beta_L LX_{jL} + \beta_c COO_j + \epsilon_j) \cdot \log \sum_j \exp(\alpha + \sum_s \beta_s SX_{js} + \sum_L \beta_L LX_{jL} + \beta_c COO_j + \epsilon_j)$$

(Dummy Variables)



The final equation shown by Nakanishi and Cooper (1982) which will be used for the subsequent empirical study is the following:

$$\log MS_j = \sum_{i=1}^I \alpha_i \log D_i + \sum \beta_S \log SX_{iS} + \beta_L \log LX_{iL} + \beta_C \log COO_i + \varepsilon_i$$

### 5.1 Regression Results:

Three simple regression models with market share as the dependent variable were calculated. In the first model, from here on in termed the standard model, price, advertising expenditures and the three (3) factors extracted from the principal component analysis were used as independent variables. The explained variation resulting from the regression accounted for approximately 19 percent of the total variance in the market share movement.

Although the r-square of 19 percent is considerably low, this may be due to low variability between the brands in terms of price, advertising expenditures and product quality measurements.

**Table I: Regression Results-Standard Model**

Source	DF	Sum of Squares	Mean Squares	F Value	Prob>F
Model	5	102.82258	20.56452	38.079	0.0001
Error	769	415.30111	0.54005		
C Total	774	518.12368			
Root MSE	0.73488	R-Square	0.1985		
Dep Mean	-4.63038	Adj. R-Sq	0.1932		
C.V.	-15.87090				
<b>Parameter Estimates</b>					
<b>Variable</b>			<b>T for Ho: Parameter=0</b>		<b>Prob&gt;  T </b>
Intercept		-11.128		0.0001	
Price			-3.735		0.0002
Advertising			8.146		0.0001
Factor 1 (dependability)			5.346		0.0001
Factor 2 (spacing/comfort)		3.577		0.0004	
Factor 3 (mileage)			7.924		0.0001

The regression co-efficients on advertising, dependability, space/comfort and mileage were estimated to be positive and were significantly different from zero at the .95 confidence interval. The regression co-efficient on price was estimated to be negative and was significantly different from zero at the .95 confidence level.

The complete list of variables and extent of interdependence among the principal variables (i.e. price, advertising expenditures, dependability, space/comfort, mileage and market share) used in the first model are presented in Table J.

**Table J: Results of Correlation Analysis-Standard Model**

	Price	Adv.	Factor 1	Factor 2	Factor 3	MS
Price	1.00	<b>0.34</b>	-0.06	0.09	0.01	-0.09
Adv.	<b>0.34</b>	1.00	<b>-0.20</b>	0.16	0.16	<b>0.22</b>
Factor 1	-0.06	<b>-0.20</b>	1.00	0.00	0.00	0.08
Factor 2	0.09	0.16	0.00	1.00	0.00	0.16
Factor 3	0.01	0.16	0.00	0.00	1.00	<b>0.30</b>
MS	-0.09	<b>0.22</b>	0.08	0.16	<b>0.30</b>	1.00

The results of the correlation matrix suggest the following relationships:

**Price-Advertising:** a direct relationship between price and advertising is suggested.

The higher the price of the automobile, the greater the advertising expenditures and vice-versa. This relationship implies that higher-priced automobiles are marketed more aggressively than moderately priced automobiles, perhaps to appeal to their spendthrift target market.

**Dependability-Advertising:** an inverse relationship exists between factor 1 (dependability) and advertising expenditures. This relationship suggests that the more dependable an automobile is, the less advertising dollars spent on marketing the automobile. Perhaps this is in part due to word-of-mouth advertising.

**Advertising-Market Share:** a direct relationship exists between advertising expenditures and market share. This relationship implies that the greater amount of dollars spent on advertising brand X, the greater the market share of brand X.

**Mileage-Market Share:** a direct relationship between mileage per gallon and market share. This relationship suggests that the better automobile mileage per gallon, the greater the market share of the automobile.

The second model included time dummies and seasonal dummies as well. In order to evaluate the effect of season and time relative to the first quarter and the first year of analysis, season1 and time1 were eliminated from the analysis and used as a base in the regression equation.

The second model reported no substantial change in the explained variance. This model accounted for approximately 19% of the variance in the dependent variable. The same pattern of co-efficients appearing in the first regression model appeared,

with the exception of price. The t-statistic for price became insignificant at the .95 confidence level. Seasonality was not significant at the .95 confidence level.

The third model included country dummy variables, price, advertising, dependability, spacing & comfort, mileage and time dummy variables in an attempt to obtain a better explained variance. Seasonality was discarded from the analysis due to poor explanatory power. The country dummy U.S. was eliminated from the analysis and used as a base in order to evaluate its effect.

The influence of the variables on market share changed significantly from the two previous models. The value of the r-square moved significantly, from .19 to .55. The same pattern of co-efficients emerged for advertising, comfort/spacing and mileage and were all estimated to be positive and significantly different from zero at the .95 confidence level.

However, with the inclusion of the country dummy variables, the effect of the variable dependability (factor 1) on market share was reversed to negative and became insignificant. Another change from the prior models was the fact that the inclusion of country dummies evoked a positive price effect on market share but maintained its significance at the .95 confidence level.

Twenty (20) out of the 43 time dummies were statistically significant with a negative impact on market share. Only country dummy Europe/Other was significant with a negative impact on market share.

**Table K:** Regression Results (including country dummy)

<u>Variable</u>	<u>T for Ho:</u> <u>Parameter=0</u>	<u>Prob&gt;  T </u>
Intercept	-9.147	0.0001
Price	5.586	0.0001
Advertising	7.685	0.0001
Factor 1 (dependability)	-0.507	0.6124
Factor 2 (spacing/comfort)	3.606	0.0003
Factor 3 (mileage)	8.975	0.0001
Country Japan	-1.534	0.1256
Country Europe/Other	-20.74	0.0001

The complete list of variables and extent of interdependence among the principal variables (i.e. price, advertising expenditures, dependability, space/comfort, mileage, country dummy U.S., country dummy Europe/Other, country dummy Japan and market share) used in this study are presented in Table L.

**Table L:** Results of Correlation Analysis (including Country Dummy)

	Price	Adv.	Factor 1	Factor 2	Factor 3	MS
Price	1.00	0.34	-0.06	0.09	0.01	-0.09
Adv.	0.34	1.00	-0.20	0.16	0.16	0.22
Factor 1	-0.06	-0.20	1.00	0.00	0.00	0.08
Factor 2	0.09	0.16	0.00	1.00	0.00	0.16
Factor 3	0.01	0.16	0.00	0.00	1.00	0.30
CJapan	0.04	<b>0.21</b>	<b>-0.66</b>	-0.14	<b>0.21</b>	0.05
CEurope/Other	0.09	-0.04	<b>-0.24</b>	-0.06	-0.17	<b>-0.58</b>
C U.S.	-0.09	-0.18	<b>0.74</b>	0.17	-0.11	<b>0.24</b>
MS	-0.09	0.22	0.08	0.16	0.30	1.00

A summary table of the results of the three regression models is outlined in Table M.

**Table M:** Results of Analysis Models 1 through 3

	<b>Constant</b>	<b>Price</b>	<b>Advertising</b>	<b>R-Square</b>
<b>1. Standard Model</b>	-1.02	-1.83	8.22	.198
<b>2. Time &amp; Seasonal Dummies</b>	-1.28	-1.83	8.22	.245
<b>3. Country Dummies</b>	-9.14	5.58	7.68	.553

## **6.0 Discussion of Results**

In order to identify the most fitting combination of predictor variables to explain the greatest variance, several combinations were tested for this study. Our principal method of analysis was multiple regression in which all factors were related to market share.

The results confirm the fact that the relationship between market share and the indicator variables is not straightforward. Depending on the variables included in the analysis model, the effect of the variables on market share may change and considerably alter the explanatory power. These results, to a certain extent substantiate the research conducted by Ailawadi et al. (1994) and many other researchers who have stated that the explanatory power of marketing variables on market share may be limited and is very much impacted by the nature and focus of the research; specifically whether there is an industry or firm focus and if cross-sectional data is being analyzed.

In this particular research, the initial results indicate that reliability of an automobile, spacing and comfort, and advertising expenditures will have a positive effect on market share. At the most basic level, all these propositions make perfect sense. The more dependable an automobile, the greater the fuel efficiency of the automobile and the greater the comfort an automobile possesses, the more positive the impact these variables will have on the automobile makers ability to capture high market share.



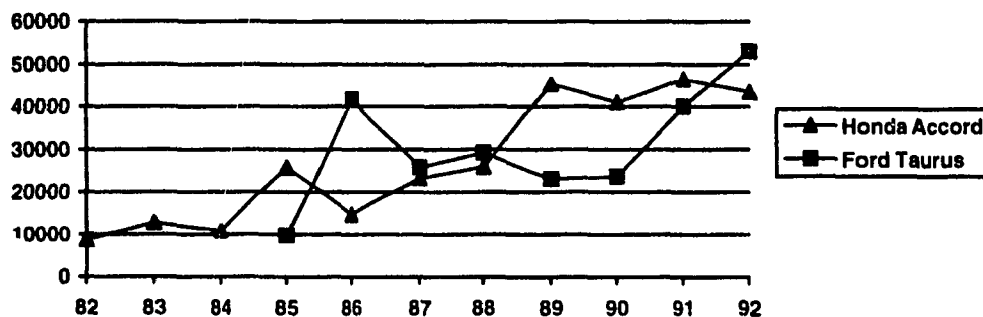
Finally, the greater a company's investment in advertising, perhaps the greater the impact on brand awareness and thus, the higher the market share captured by that particular company's brand.

The positive and significant relationship between advertising and market share is further confirmed with the following illustration.

In 1992, the Ford Taurus clinched the market share leadership position away from the Honda Accord after only seven years on the market. Over the seven year period, the Honda Accord and Ford Taurus experienced substantial differences in market share and there were large discrepancies in their outlay of advertising expenditures.

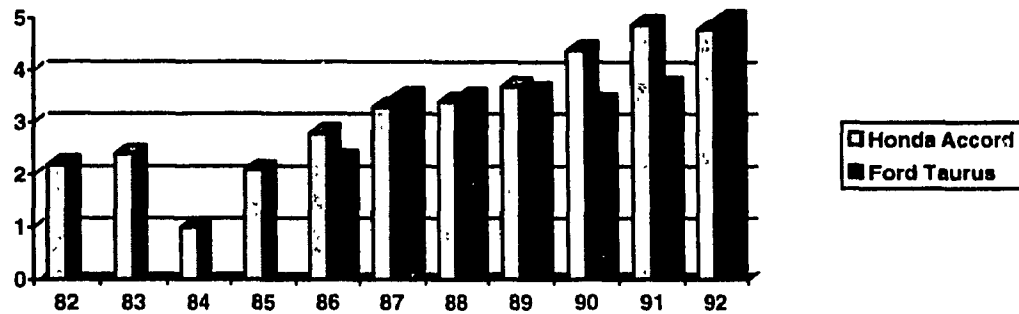
However, in 1992 when the Ford Taurus captured market share leadership for mid-size automobiles, the Taurus also experienced a significant surge in advertising expenditures from \$39,999 (000) in 1991 to \$53,100 (000) in 1992 (Figure 3).

**Figure 3: Advertising Expenditures (000): Honda Accord vs. Ford Taurus (1982-1992)**



Taking into account the number of years on the market, the Ford Taurus spent an annual average of \$35,179 (000) in advertising dollars and the Honda Accord had an annual average of \$27,118 (000) in advertising dollars.

Figure 4: Market Share (%) : Honda Accord vs. Ford Taurus



The one area where the results of this study depart from the majority of past findings is where country dummy variables are included and the subsequent effect of price on market share.

In this particular study we have pursued a simple model using a limited variable set. Market share can be affected by many different aspects of the marketing strategy. Clearly, as more variables are added, the model becomes more complex and less interpretable. It becomes increasingly difficult to separate the interaction effects of variables and a large number of model variables means there is a tendency to increase the potential for high correlations between those variables. In fact, the results of our correlation table (Table L) indicate that multicollinearity may be present, as high

correlations were identified between some of the variables, including the country-of-origin variables and factor 1 (dependability).

The addition of the country dummy variables in model 3 considerably improved the explanatory power of the model, however adding country dummy variables forced the effect of price to become positive.

Although a positive price effect on market share has been identified in past research, this result is somewhat unexpected given our assumption that consumers search for the best value and price in the mid-size car market. A likely explanation for this positive coefficient is the existence of other variables, not in the analysis, but having a positive association with both market share and price and manifesting their influence deceptively through the price variable. Product quality differences as a result of country of origin, cumulative effects of past advertising expenditures or more effective use of advertising expenditures are just some of the possible explanations.

Another possible explanation is the fact that import brands may command higher prices. Consumers are willing to pay these higher prices because higher prices may suggest a higher quality. It is this line of thinking that contributes to a higher market share.

The inconsistent results that we have obtained on the price variable may be due to the fact that multicollinearity is present despite our efforts to eliminate this problem. Perhaps if we had computed a four (4) factor analysis, the product attributes/items would have loaded more accurately on appropriate factor components and thus our overall analysis would have been tighter.

As well, the inclusion of the country dummy variables forced the effect of dependability (Factor 1) to become negative. Again, this may be due to the fact that high correlations were identified in the correlation table between country-of-origin variables and factor 1.

The results indicate that adding country dummy variables to the analysis may require a different interpretation of the influence of country-of-origin on market share. One would assume however, that any effect that COO produces on market share would be evident in the regression co-efficient of the COO variable.

Another striking result of this study is the negative coefficient associated with Europe/Other and Japanese country-of-origin. The strong brand preference indicated towards domestic brands implies greater consumer resistance to the higher prices charged by foreign manufacturers and the domestic manufacturers ability to offer improved product quality. This is an encouraging sign for domestic manufacturers. Where as several years ago, studies performed indicated a strong brand preference

associated with foreign automobiles as foreign makes were thought to have an inherent relative product advantage over domestic producers. By enhancing product features, service contracts and implementing competitive pricing structures, domestic producers are regaining market shares and sustaining them over the long-term.

Furthermore, given the theoretical literature on COO outlined previously in section 2.2.4, we see that the effect of COO on market share is somewhat limited. Can this be, at least in part, due to the fact that COO is part of a set of multi-attributes being analyzed. Perhaps the effect of COO may be maximized when it is the only product cue available. The effects of country-of-origin on market share requires further research attention.

These results are managerially relevant in that they provide vital information on a reasonably specified model, using historical data and a large sample of observations which represent a continuous record of purchasing behavior spanning over eleven years. The results provide managers with useful information necessary to set market share goals. At the most basic level it appears that marketing strategy is positively associated with market share. The fact that CS/TS was used in the analysis, helped capture all the components of variations in marketing strategy.

## **7.0 Limitations and Future Research**

This article is another of several market share studies that is designed to examine the relationship between market share and marketing strategies. An important dimension of this study is the fact that we are focusing on one segment of the automobile market and we are utilizing cross-sectional and time-series data. As Balasubramanian & Kumar (1990) pointed out, incorrect inferences can be drawn in a cross-sectional regression analysis if data from heterogeneous firms and industries are pooled.

In this research, we assumed that the relevant characteristics of an automobile brand are known and these attributes were the ones included in the model analysis. The fact is that this is not always true in practice. These are the reasons that automobile manufacturers develop different competitive marketing strategies, with the hope of capturing the majority of consumers needs and wants. However, we maintain that we have captured the main automobile characteristics, both extrinsic and intrinsic although this is an area that may be viewed as purely subjective.

One limitation of this research may be one of the statistical technique employed: principal component analysis. Principal component analysis relies very much on the judgment exercised by the researcher. There are no final tests on the parameters or the final solution retained confirming that that this technique is one without constraints. This is more of a descriptive technique, exploratory in nature whereby we

try and discover the links which underlie the variables. As there is no final solution, we can not be sure that our final solution is significant. For example, we inferred that Factor 1=Dependability, Factor 2= Space Availability/Comfort and Factor 3=Mileage. We based these inferences on the content of the items that loaded highly on a factor. However, without a statistical test, we can not be certain these are truly significant.

As well, we inferred, based on the items that loaded highly on factor 1, that factor 1 was reliability. However, a careful examination of the items which loaded highly on this factor indicate that perhaps if we had extracted four (4) factors in total, as opposed to the three (3) extracted in this analysis, some of the items that loaded on factor 1 would have loaded more significantly on another factor. This could have been a more accurate representation of the product attributes and therefore would have tightened up the results in the overall empirical analysis.

Due to time limitations, certain research areas were not as vigorously pursued. For instance, we did not analyze the breakdown of advertising expenditures for each brand, therefore it is unclear which type of advertising medium would produce the largest impact on market share. As well, whereas price is objectively defined, quality is not and different consumers may have widely differing opinions as to what constitutes quality (Mason 1990). It is very difficult to quantify the impact of product quality for precisely these reasons. Perhaps the number of product recalls could be

used as a more accurate indicator of quality. Future research should incorporate consumer brand preference into the market share model as well.

A lag term on advertising should have been included in the model, as we know that the impact and effects of advertising may spill over into other time periods. As well, advertising and price should have been made endogenous variables.

It would be interesting as well to consider what percentages of sales were repeat brand purchases as Ford remarked that repeat customers are the key to their long-term prosperity.

We did not explore the reasons for a car's dissolution off the market. Perhaps information such as this could provide insight into competitive marketing strategies in order to identify the relatively unsuccessful strategies and how changes in certain aspects of the marketing variables would impact an automobiles life cycle.

The future of the mid-size automobile segment is becoming increasingly interesting from a competitive point of view. For instance, the Ford Taurus faces a big threat in the redesigned Toyota Camry, due to enter the market in 1996. Toyota is said to be slashing its costs by 20% without eliminating product features. This will allow the Toyota Camry to be priced on par with the Ford Taurus. This is just one example of the automobile industry as an increasingly interesting area of research and the fact that



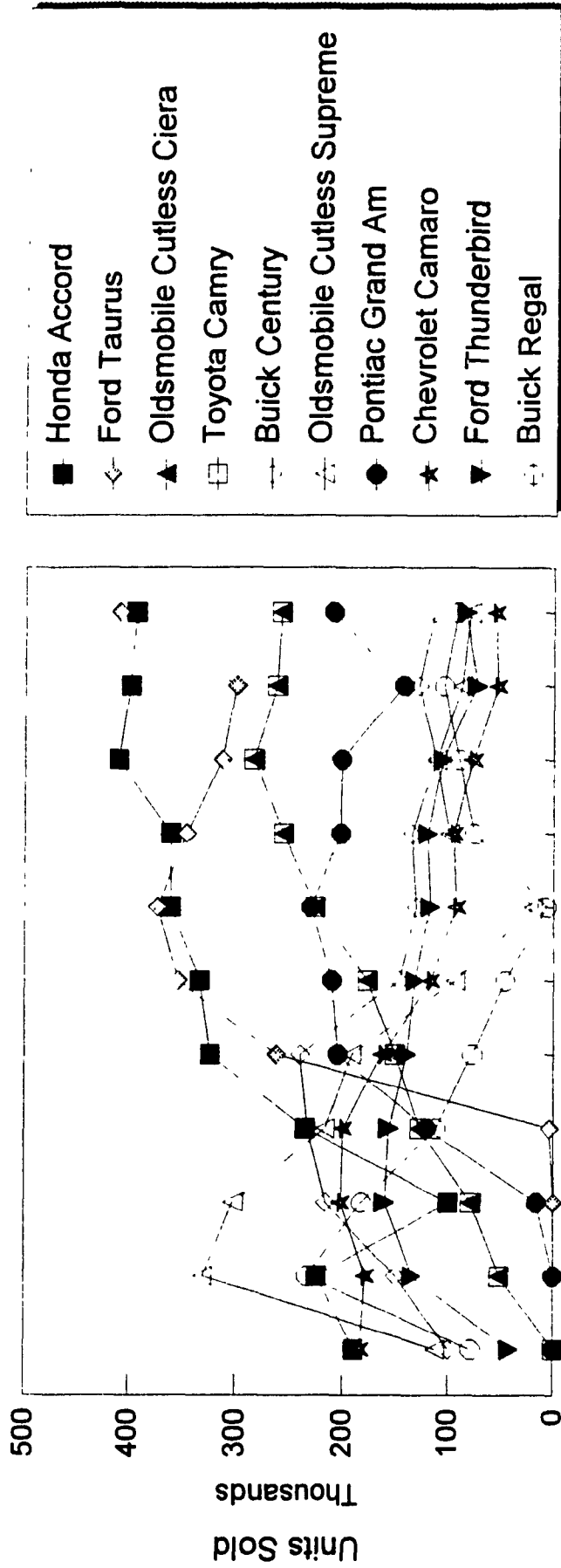
there are various aspects of this industry worthy of examination. Especially given the on-going competitive pressures and the dynamic environment that manufacturers are forced to live with every single day.

## **8.0 Appendix**

Appendix 1	Top Total Sales (1 million +) 1982-1992
Appendix 2	List of Automobiles and Corresponding Brand Analysis Number
Appendix 3	Average Annual Total Units Sold 100,000+ (1982-1992)
Appendix 4	Total Units Sold Per Annum (1982-1992) Brands 1-5
Appendix 5	Total Units Sold Per Annum (1982-1992) Brands 6-10
Appendix 6	Total Units Sold Per Annum (1982-1992) Brands 11-15
Appendix 7	Total Units Sold Per Annum (1982-1992) Brands 16-20
Appendix 8	Total Units Sold Per Annum (1982-1992) Brands 21-25
Appendix 9	Total Units Sold Per Annum (1982-1992) Brands 26-31

# Appendix 1: Top Total Sales (1 million +)

1982-1992



1982-1992

Years

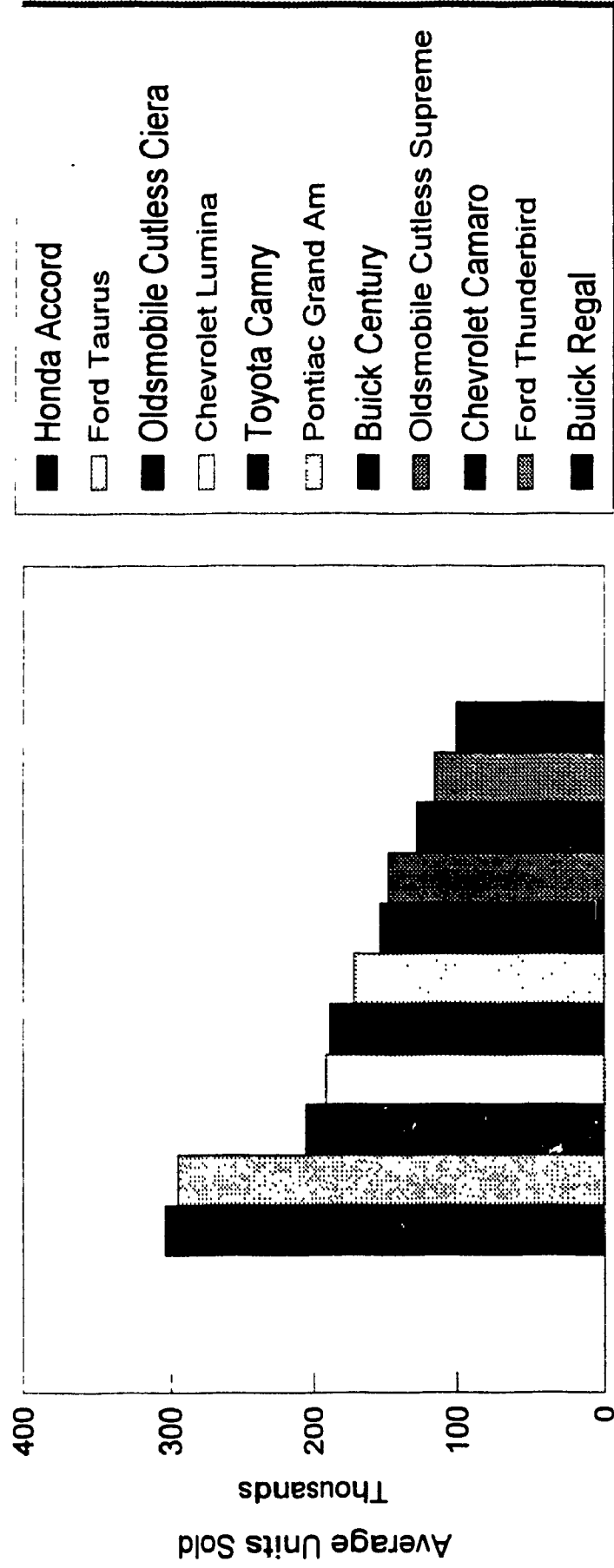
Units Sold  
Thousands

Appendix 2: List of Automobiles and Corresponding Analysis Number

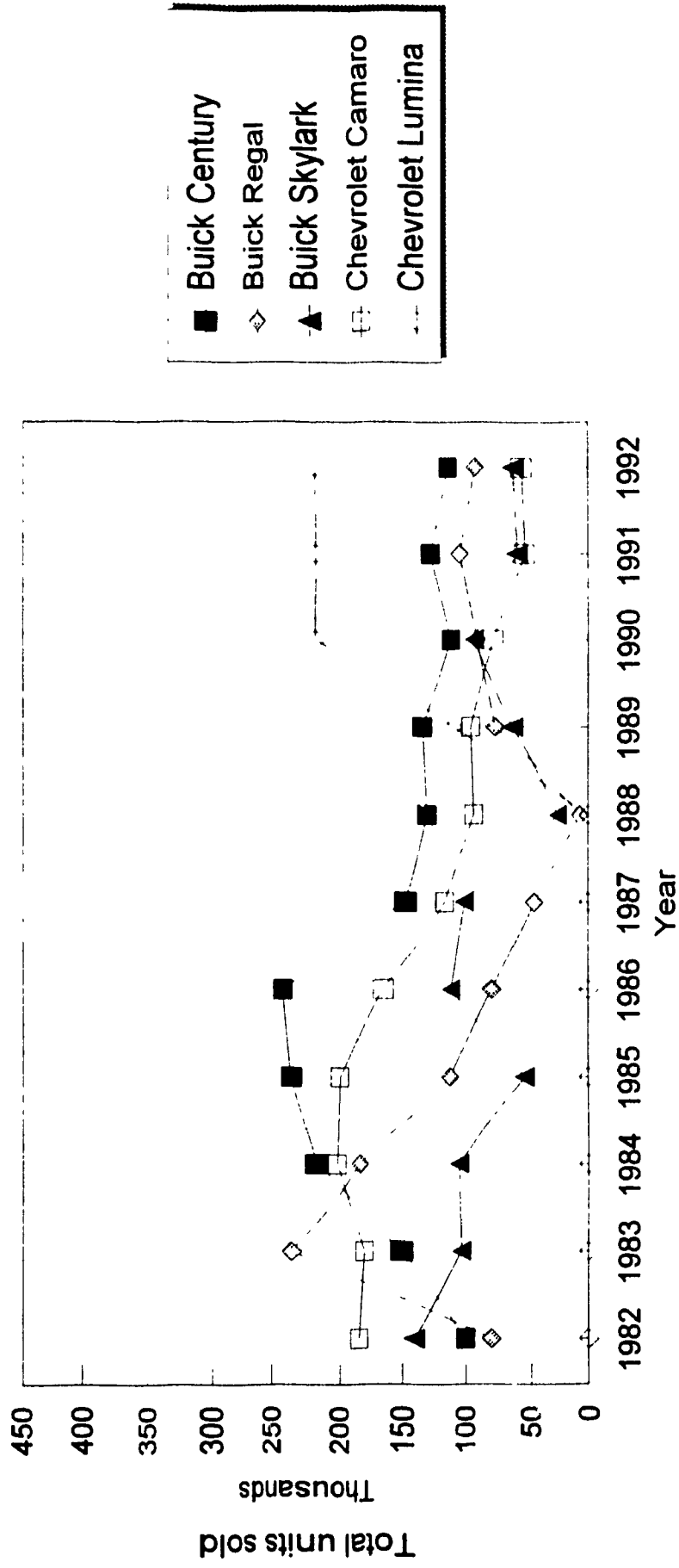
<u>Automobile</u>	<u>Analysis Number</u>
Buick Century	1
Buick Regal	2
Buick Skylark	3
Chevrolet Camaro	4
Chevrolet Lumina	5
Chevrolet Malibu	6
Chevrolet Monte Carlo	7
Chrysler LeBaron	8
Dodge Dynasty	9
Dodge Spirit	10
Ford Taurus	11
Ford Thunderbird	12
Honda Accord	13
Hyundai Sonata	14
Infiniti G20	15
Mazda 626	16
Mercury Cougar	17
Mercury Sable	18
Nissan Maxima	19
Oldsmobile Achieva	20
Oldsmobile Cutless Ciera	21
Oldsmobile Cutless Supreme	22
Plymouth Acclaim	23
Pontiac Firebird	24
Pontiac Grand Am	25
Pontiac Grand Prix	26
Pontiac 6000	27
Saab 900	28
Subaru Legacy	29
Toyota Camry	30
Volkswagon Passat	31

# Appendix 3: Average Annual Total units sold 100,000 plus

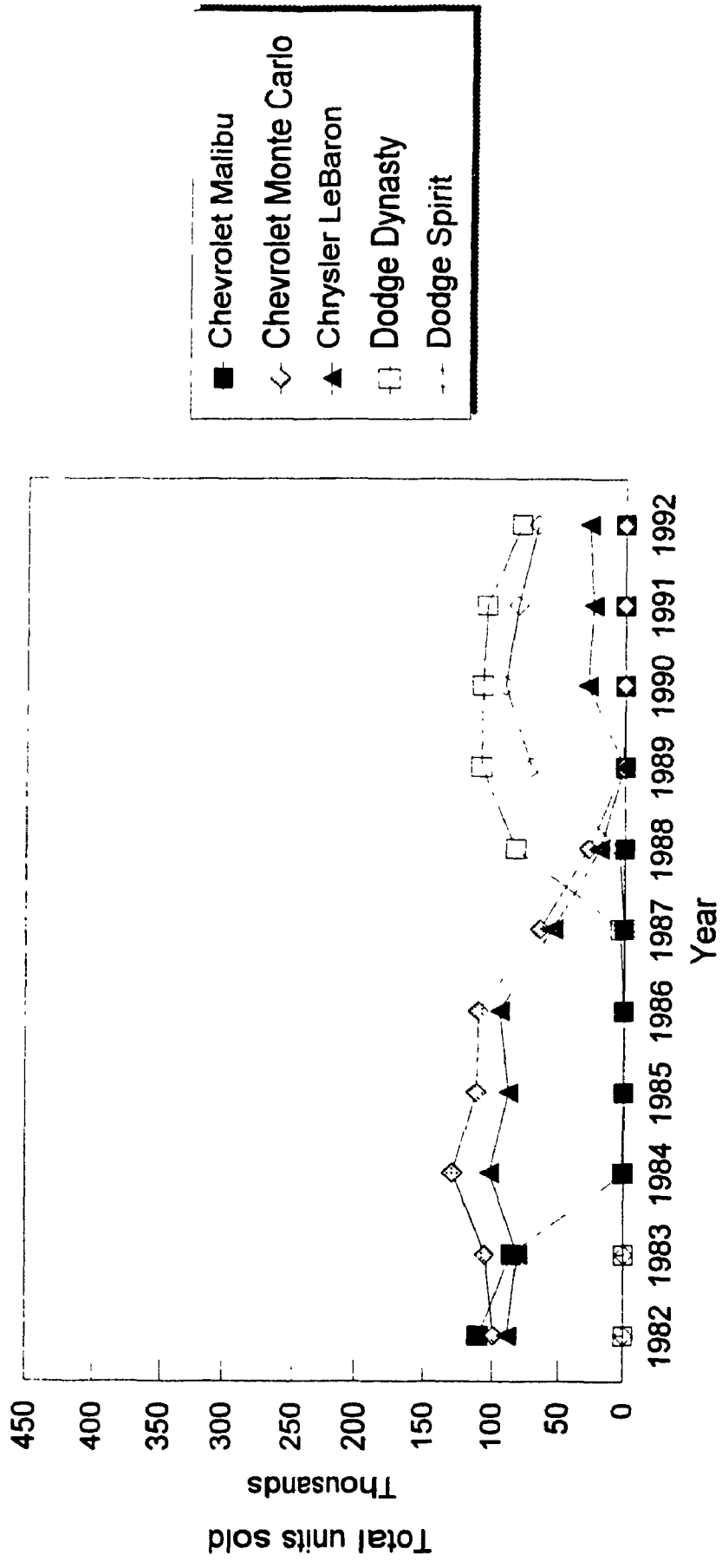
1982-1992



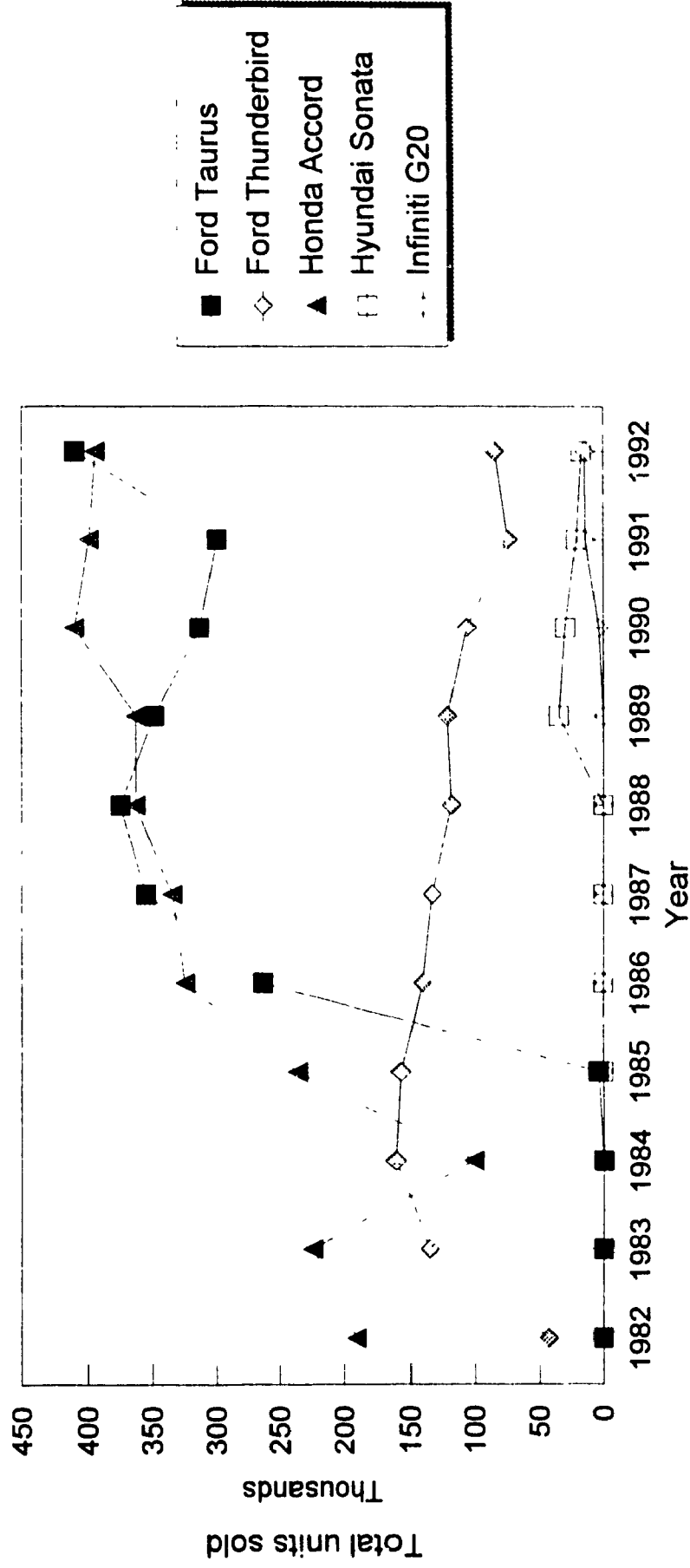
**Appendix 4: Total units sold per annum (1982-92)**



**Appendix 5: Total units sold per annum (1982-92)**

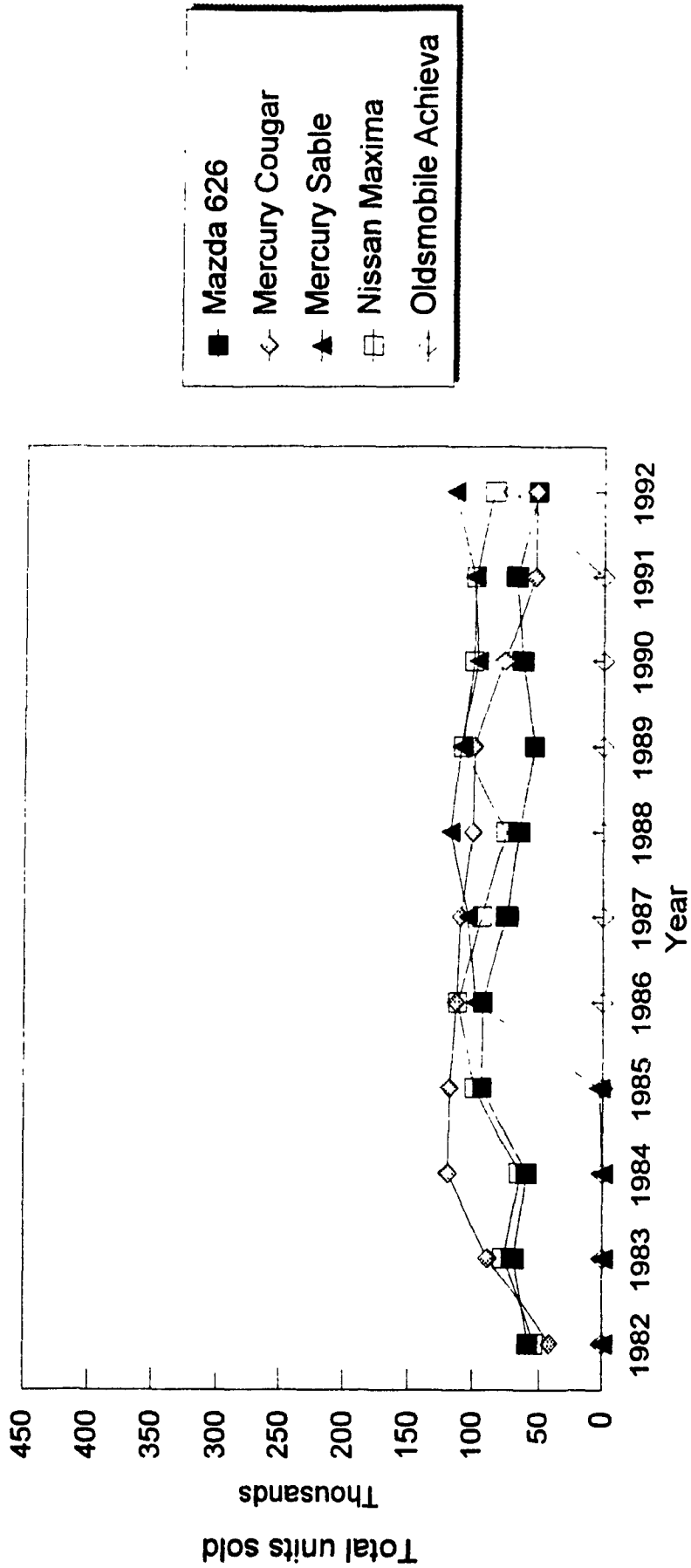


**Appendix 6: Total units sold per annum (1982-92)**

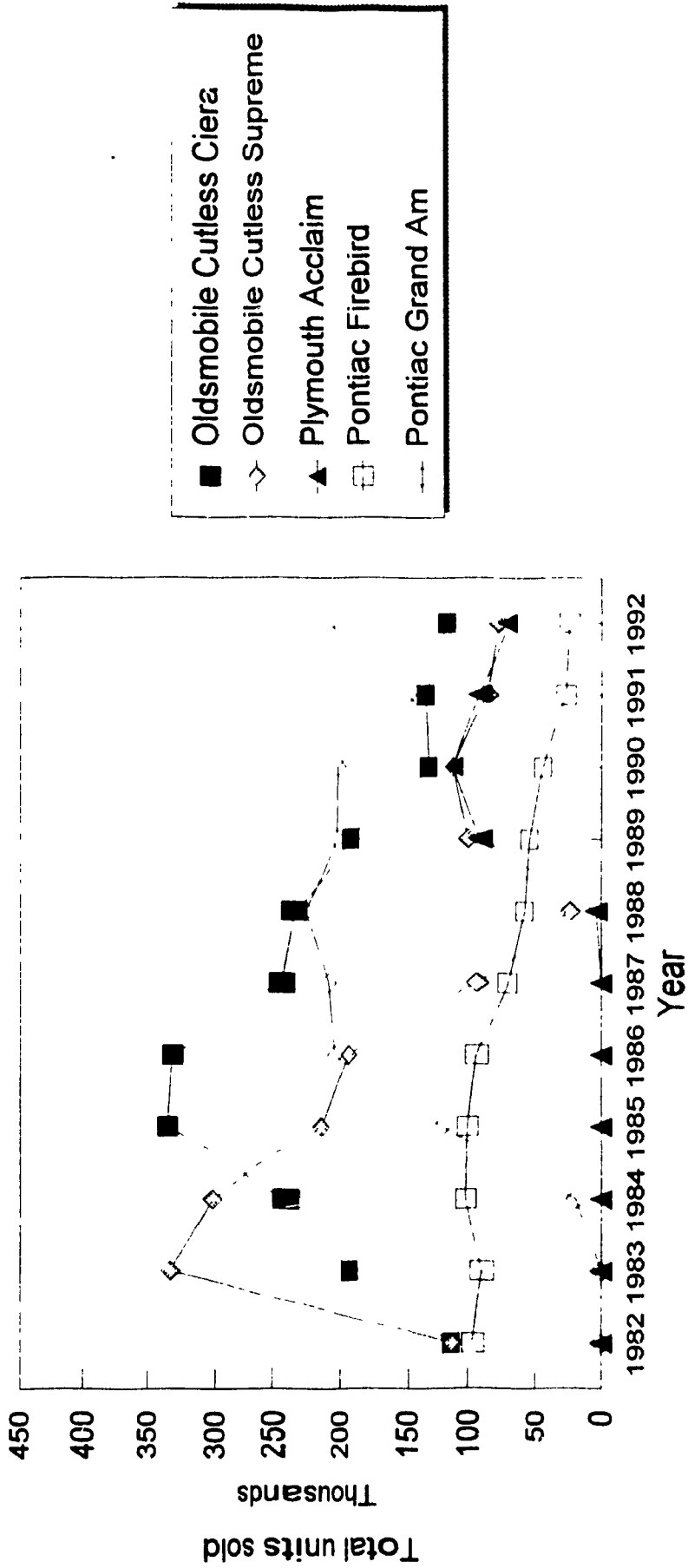




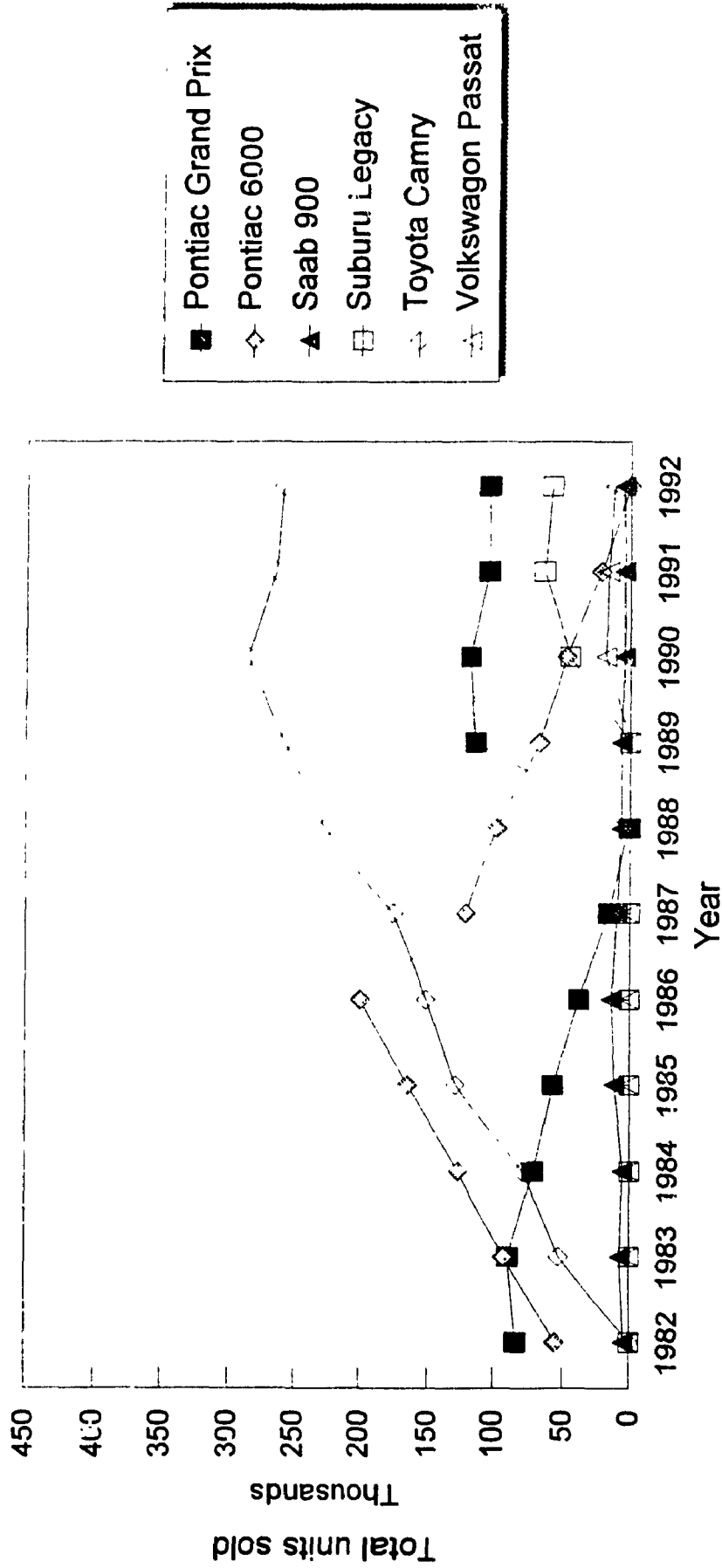
# Appendix 7: Total units sold per annum (1982-92)



## Appendix 8: Total units sold per annum (1982-92)



# Appendix 9: Total units sold per annum (1982-92)



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