

Media's Coverage of the Hybrid Prius in Japan

Masayoshi Kanai

Abstract In 1997, Toyota introduced the first mass-produced hybrid electric vehicle, the Prius, in Japan. In 2003, they introduced the second generation of the Prius. The sales of the latter have been considerably stronger than those of the former. It is assumed that newspapers played an influential role in these increased sales. Consumer behavior theory recognizes that the media affects consumers. Thus, if there was a change in the ways newspapers portrayed Prius, this may have been a cause of the sales increase. The objective of this study is to analyze the ways newspapers reported on the vehicle in 1997-98 and 2003. Articles related to the Prius were collected from two leading newspapers in Japan. Content analysis was done on these articles to find the frequencies of selected features such as environmental, economic, driving, and others. Next, text analysis was performed to determine the attitudes that the articles showed toward those features. This study indicates that newspapers reported on the Prius as an expensive eco-car between 1997-98, but in 2003, they had portrayed the vehicle as an eco-car with good driving quality. The reporting of driving quality improvement seems to play a role in bridging the price gap between Prius and the conventional vehicles. However, in their comparisons of the prices, the newspapers fail to recognize the reduction of air pollutants as a factor that justifies high cost, despite the fact that the newspapers did recognize the high environmental quality of the Prius.

Introduction

Emissions such as CO, NO_x, SO_x, HC, Particle Matters (PM), and Green House Gas (GHG) from automobiles are an environmental concern in many countries. Even though many efforts have taken place to reduce pollution, the automobile is definitely still a major source (Atkinson *et al.* 1991). Japan is no exception. About 20% of CO₂ emissions in Japan are due to automobiles (Hayashida and Narusawa 1999). The Japanese government has tried to reduce CO₂ emissions from automobiles since the Kyoto-protocol was passed in 1997. Car manufactures created hybrid electric vehicles in order to respond to pressure by environmentalists and regulations set by the Japanese government (Plunkett Research 2004, elect. comm.).

The hybrid electric vehicle is a vehicle powered by a gasoline engine and an electric motor (Lave and MacLean 2001). Because it uses a non-polluting electric motor, it produces lower emissions than the conventional vehicles (Coffey and Sorenson 2001). Also it has a high fuel economy, because it converts extra energy into electricity and uses that electricity for the electric motor (Lave and MacLean 2001). Therefore it is considered “an environmentally less harmful vehicle” or “an eco-car” by the Japanese media (Mihori 2003).

In 1997, Toyota introduced the first mass-produced hybrid electric vehicle, the Prius, in Japan. About five years later, they introduced the second generation of the hybrid Prius in 2003. They improved many features of the Prius when they developed the 2003 version. The fuel economy increased from 45 MPG to 55 MPG. The electric motor and the battery were improved to achieve better driving quality. Also, the design of the Prius 2003 is different from that of the Prius 1997, and incorporates better safety features. More importantly, under certain circumstances, Prius 2003 does not produce any pollutants. It is certified as a PZEV (Partial Zero Emission Vehicle), while Prius 1997 was categorized as a SULEV (Super Ultra Low Emission Vehicle). In spite of these improvements, the price of the vehicle remained the same (Mihori 2003).

The most drastic change turned out to be the number of sales of the vehicles. Toyota received 3,500 orders in the first month after the release of the Prius 1997, and they sold about 16,000 Priuses in 1998 (Ikari 1999). For the second generation of the Prius, Toyota received over 18,000 orders in the first month, which was more than six times as much as expected. They project to sell over 70,000 Priuses in 2004 (Toyota 2003, elect. comm.).

I believe that media has played a role in the increased sales of Prius. The function of mass media such as newspapers, TV, and radio is characterized as “mass production and dissemination of information to a mass audience” (Korobeinikov 1981). Media is a major source of product information to consumers (Iwasawa and Shimokawa 2000). However, the product information that consumers receive are mediated realities (Nimmo and Combs 1983). In the process of news making, the media does not publish 100% of the information they collect in a completely straightforward, objective manner. They select what information to use or ignore, and repeatedly edit that information. Therefore, the news articles that consumers view inevitably contain the media’s subjective perspectives (Dahlgren 1981, Chaney 1981, Goto 1999). In this sense, consumer’s recognition of the products is based on these mediated realities.

Of course, media is not the only source of information. Even though the hybrid technology is a relatively new technology and many people may not have direct exposure to it, consumers can still receive information from salespersons, friends, and family members. Moreover, the decision-making process of consumers is recognized as a very complex system (Webb 1999, Olson and Reynolds 2001, Wagner 2003). After consumers obtain product information, they make comparisons with alternative choices. Then, they decide whether to buy the product based on individual perspectives such as preference, needs, and emotion and social perspectives such as family influences, cultural influences, and the media’s point of view (Statt 1997, Gengler and Reynolds 2001). Thus, the role of the media is only a part of the complex structure of the producer-consumer relationship, and media analysis alone does

not fully account for the increased sales of the Prius. However, the media nevertheless does have influence on the behavior of consumers. Therefore, it may be possible that the consumer behavior changes if the image of the Prius portrayed by media changes.

Of the various types of media that exist, I chose to investigate the newspaper. In Japan there are approximately 650 newspaper subscriptions per 1,000 adults, which is the highest rate in the world (World Association of Newspaper 2003). Also survey results indicate that about 90% of Japanese people read a newspaper everyday or almost everyday (The Japan Newspaper Publishers and Editors Association 2003). Another survey shows that 83.8% of Japanese people consider the newspaper as a credible source of information (Dentsu Institute for Human Studies 2001). These numbers suggest that newspapers in Japan are recognized by consumers as essential and powerful sources of information.

The objective of this study is to analyze the ways newspapers reported on the hybrid Prius in the years 1997-98 and 2003. Due to low emission rates of hybrid electric vehicles, they are considered as eco-cars. After the Japanese government set several regulations to control the emissions from automobiles and promote recycling, it is assumed that the environment had become a more eminent concern in society. Thus, consumers are more likely to buy a product if they recognize it as being eco-friendly. Therefore, my hypothesis is that newspapers in 2003 focused on the environmental aspects of the Prius more so than newspapers in 1997-98.

Methods

First, I selected two of the leading national newspapers in Japan as sources of information (*Asahi shimbun* and *Yomiuri shimbun*). I selected those newspapers because of the number of their daily circulations and the demography of the readers. According to the Yomiuri Shimbun (2003, elect. comm.), these two newspapers claim about 18 million daily subscriptions in total, and about 30-35% of households in Japan subscribe to either one or

both newspapers. Yomiuri also claims that about 42% of Yomiuri subscribers and 37% of Asahi subscribers have an income of more than 80,000 dollars—and are thus financially capable of purchasing automobiles.

I collected articles related to the Prius from online archives of past articles of these newspapers. The time period is from one month before the Prius came to the market and four months after the release. The Prius 1997 came to the market in December 1997, and the Prius 2003 came to the market in September 2003. Therefore, I looked for the articles from November 1997 to March 1998 and from August 2003 to December 2003. To gather the articles, I searched for articles containing the word “Prius.” To ensure that I had gathered all articles about the Prius, I also searched for article with key words “Toyota” and “hybrid cars.”

Next, I divided the features of the Prius into four categories: 1) “environmental” (such as low emissions), 2) “economic” (such as price and fuel economy), 3) “driving” (such as acceleration and power), 4) “other features” (such as safety and design). According to a marketing book by Ikeo (1999), economic, driving, and other features are the main factors that customers are most likely to take into the consideration when they making a purchase. To these three, I added the environmental features, since a major selling point of Prius is its high environmental quality.

From this point, I followed the principle of van Dijk’s analysis of news comprehension. This analysis is designed to extract the basic presentation of elements of attentions and attitudes from the discourse. The attitudes reflected in the articles would indicate the meanings of the distribution of attention, and vice versa (van Dijk 1985). I conducted content analysis to find the frequency of references to selected features. Then, I conducted text analysis to classify the attitudes that the articles showed toward the selected features. For the content analysis, based on the method described by Riffe (1998), I counted any word related to the selected features that appeared in the articles, but only if it directly described features of the Prius. Thus I did not count a word, for example, if it was about the fuel

economy of Ford vehicles. For the text analysis, based on the method by Emmison (1983), I read the articles carefully and determined if those features were reported on positively or negatively.

To analyze data, first I used a chi-square test using the time periods as an independent variable and the Prius features as a dependent variable in order to find if the pattern of attention and portrayal from the newspaper had changed. Then I combined the results of the content analysis and the text analysis in order to describe and compare the images of the Prius created by the newspapers in 1997-98 and 2003.

Results

Searching online news archives of two newspapers resulted in 57 articles and 135 references to selected features in 1997-98, and 67 articles and 110 references in 2003. The distribution of the frequency of references to selected features is illustrated in Fig. 1. As it shows, the number of references to environmental, economic, and other features which appeared in the articles decreased from the year of 1997-98 to 2003, but references to driving features increased in 2003.

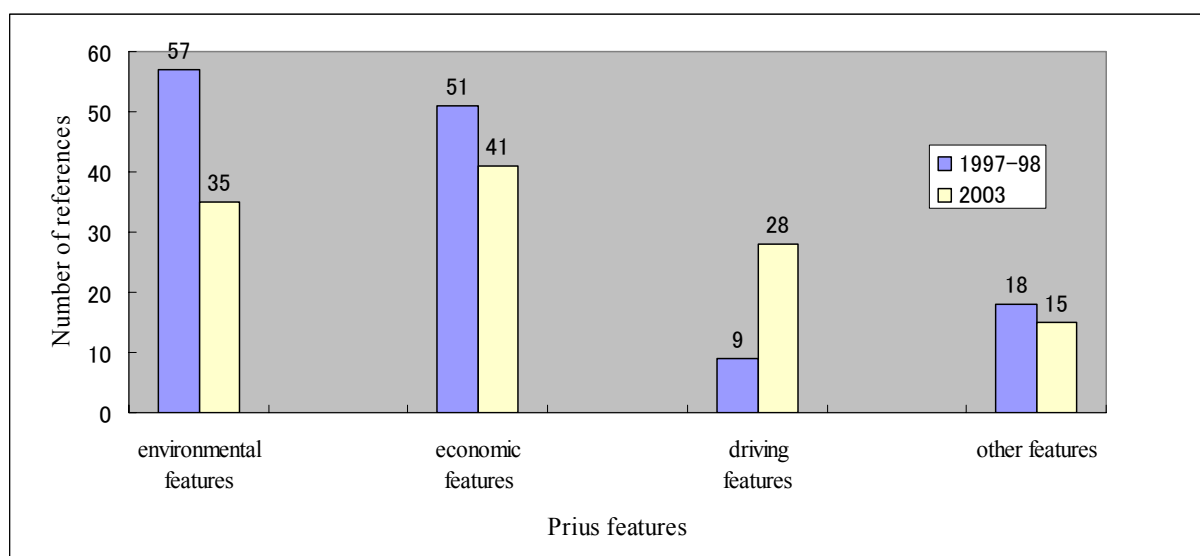


Figure 1. The Frequency of References to Selected Features

The proportion of the frequency of references to selected features in 1997-98 and 2003 is illustrated in Fig. 2. The chi-square analysis detected statistically significant difference between the two time periods in the pattern of attentions that the newspapers paid to with $\chi^2=15.9$ and p-value of 0.001.

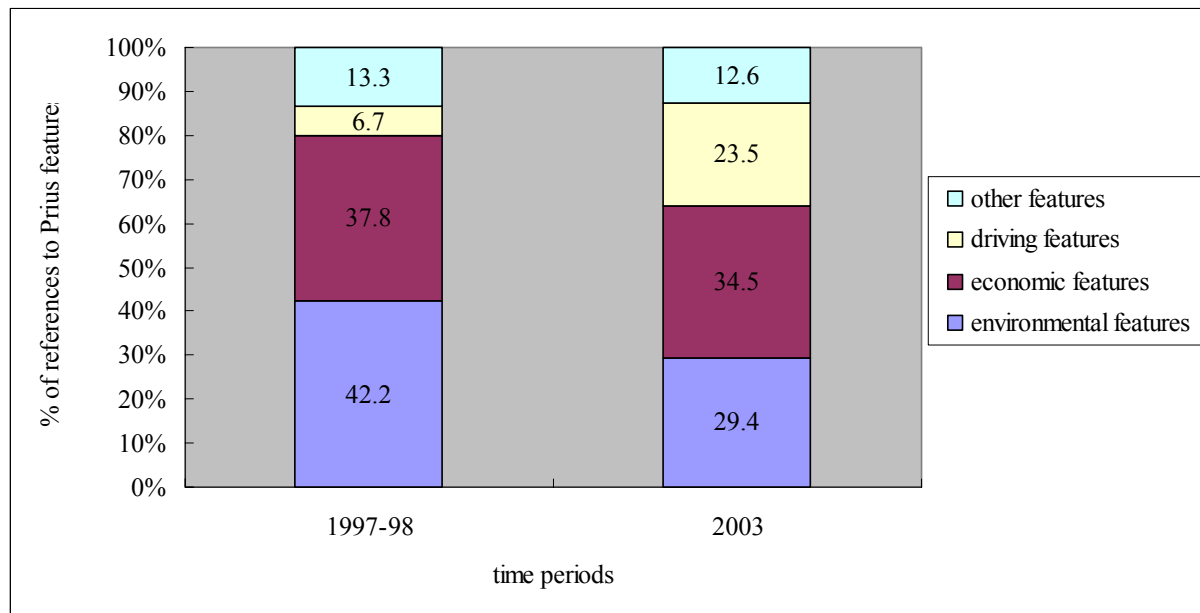


Figure 2. Proportion of selected features in 1997-98 and 2003

The attitudes of the articles toward many of the selected features were consistent throughout each time period, and are illustrated in table 1. In both 1997-98 and 2003, “environmental” and “other” features were reported with positive attitudes. For “economic” features, the newspapers in 1997-98 had positive attitudes toward the fuel economy and negative attitudes to price, but in 2003, their attitudes changed to positive attitudes toward both fuel economy and price. Their attitudes toward “driving” features were negative in 1997-98, but in 2003, they became positive.

	Environmental features	Economic features	Driving features	Other features
1997-98	Positive “The Prius is good for the environment.”	Positive and Negative “Price is expensive, but fuel economy is good.”	Negative “Power is not satisfying.”	Positive “Surprisingly quiet.”
2003	Positive “The Prius is good for the environment.”	Positive “Best fuel economy of any automobile, worldwide. Inexpensive.”	Positive “Large improvement to driving features.”	Positive “Much more sophisticated design.”

Table 1. The attitude of articles toward selected features during two time periods

As Table 1 indicates for the Prius 1997, both Asahi and Yomiuri newspapers described the Prius as an “eco-car” due to its low emissions and the high fuel economy. However, they described the price as about 5,000 dollars more expensive than conventional vehicles with a 1.5 L engine (Asahi Jan 21st 1998, Yomiuri Mar 2nd 1998). They seemed to be concerned whether consumers would chose the Prius for the excellent environmental features and the high fuel economy in spite of the higher price (Watanabe 1997, Hayashi 1998). Even though the driving features of the Prius were not mentioned frequently, Watanabe reported based on his test-driving experience that the driving quality of the Prius was not as good as other conventional vehicles with a 1.5 L engine (1997).

In 2003, improvements to driving features seemed to have some impact on the way newspapers reported on the Prius. They mentioned driving features more often and seemed to accept the change positively. They said driving features were a weak point of the Prius 1997, and improvements to them certainly attracted more people (Asahi 9/2/2003, Yomiuri 9/19/2003, and Yomiuri 10/31/2003). As a sign of this, people of all age ranges bought the Prius 2003, whereas people in the middle and old age ranges were the main buyers of the Prius 1997 (Asahi 9/19/2003, Yomiuri 9/19/2003). The improvements to driving features

were portrayed as an enhancement to the environmental ones as well: newspapers pointed out that the improvement to the electric motor and the battery provides an improvement to the environmental features as well (Asahi 9/2/2003 and Yomiuri 9/2/2003). Even though the price of Prius 2003 was the same as the Prius 1997, the newspapers did not criticize it as expensive. They compared the price of the Prius with a conventional vehicle with 2.0 L engine, whereas they compared it with a 1.5 L engine car in 1997 (Asahi 9/2/2003 and Yomiuri 9/4/2003). This reflects the improvement in the functionality of the motor; even though the engine remained 1.5L, the vehicle's driving performance approached that of a 2.0L car.

Discussion

As Fig. 1 shows, in 1997-98 most of the attention was paid to environmental and economic features, and in 2003 most of the attention was paid to environmental, economic, and driving features. My statistical analysis indicates that in the years 1997-98 and 2003, the ways Japanese newspapers paid attentions to Prius features are statistically significantly different. Also the text analysis suggests that the attitudes of articles toward economic and driving features have changed.

As I have mentioned already, my hypothesis was that newspapers in 2003 focused on the environmental aspects of the Prius more than newspapers in 1997-98. However, the results actually show that the number of references to environmental features went down from 42% to 29%. Although the attitudes of the references were positive rather than negative in both time periods, since the sheer number of references decreased, a change in the newspaper portrayal of environmental features cannot be considered as a factor in the improvement of sales of the Prius. In other words, my hypothesis was not true.

The change in image of Prius in the newspaper most likely came from other features. Table 1 shows the change of attitudes toward economic and driving features, even though the

content analysis did not find a large change in the attention toward economic features. The newspapers called Prius 1997 expensive and Prius 2003 inexpensive. The change of the perspective toward economic features seems to be due to the improvements to driving features. In fact, this seems to bridge the problem of the price gap between the Prius and other conventional vehicles. The newspapers compared the price of the Prius with other conventional vehicles with similar driving quality; Prius 1997 was expensive compared to a 1.5 L engine car, while the Prius 2003 was not expensive compared to a 2.0 L engine car. Thus, the results of the content analysis and the text analysis indicate that the newspapers portrayed the Prius as an “expensive eco-car” in 1997-98, but that the image changed to an “eco-car with good driving quality” in 2003. In other words, the improvement to the driving features of the Prius 2003 was given a notable amount of attention by the media. This is likely to be one of factors that caused the increase of the sales in 2003.

The change in the image of Prius probably reflects Toyota’s strategy for the Prius 2003. During an interview with Mihori, Masao Inoue, who was chief engineer of the Prius 2003, talked about the improvements to the Prius 2003 and his intentions. He said that he wanted to change the image of Prius by improving driving quality, because he thought the users of the Prius 1997 were mainly those who were concerned about environmental issues. If only such people drove the Prius, other drivers who care more about other features (such as driving quality) would continue driving non-hybrid cars. Then, the hybrid car would not be a solution to air pollution from automobiles (Mihori 2003). His point of view was similar to the analysis that Asahi newspaper did one year after the Prius 1997 came into the market. The analysis pointed out the reason why the Prius sales were not as strong as Toyota expected. According to the article, even though the Prius 1997 received a reputation as “an environmentally less harmful car,” it was not attractive enough to many customers. People who purchased the Prius 1997 were mostly ones who were concerned with environmental issues (Asahi 11/20/1998).

Upon careful scrutiny of the newspapers, I find that the ways in which articles referred to the price of Prius deserve attention. Usually, environmental externality is not reflected in the market price (Zilberman 2003, elect. comm.). In the case of the Prius, the newspapers compared the price of the Prius with other conventional vehicles with similar driving quality to decide if it was expensive or not. In their comparisons, newspapers failed to recognize the reduction of air pollutants as a factor that offsets increased cost. In other words, they didn't take the value of environmental protection into account, even though they recognized the superiority of the environmental features of the Prius. Thus the newspapers did not consider the reduction in environmental externality caused by, what they call the "eco-car." This suggests that when environmentally friendly products are introduced into the market, newspapers may not recognize the increased monetary costs as worthwhile costs for the environment. Therefore, I believe that educating society, including the newspapers, might be necessary to appreciate the value of the environmental protections.

According to Organisation for Economic Co-operation and Development (OECD) (1997), in order to achieve more sustainable consumption and production, we need to begin by finding the current patterns of our consumption. A program created by the Oxford Commission on Sustainable Consumption (OCSC) (established by the Oxford Centre for the Environmental, Ethics and Society), recognized the role of the media as an agent to help to shape consumption and investigated its potential to contribute to such consumption (Michaelis 2001). I hope my results can be incorporated into that framework and used by policy makers for sustainable consumption.

However, I need to caution that my study only looks at newspapers; it excludes other types of media, and other information sources such as friends and family, and consumers' individual perspectives. Therefore, my findings alone are not sufficient to account for the increased sales of the Prius. To supplement my study, a direct focus on consumers may produce a more complete analysis.

As a final note, even though OCSC recognizes the media's influence on sustainable consumption, relatively few media analyses on environmental issues and environmentally friendly products have been done in the real world yet. In order to further research and understanding of these issues, the academic world should conduct more media analyses on that field in the future.

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