

Question1: Summarize and justify alternative scenarios (i.e., compelling stories about the future) ranging from pessimistic to optimistic with regard to market performance of hybrid cars.

The Electric Fuel Injection is optimistic scenario. This scenario shows that it took about 14 years for the transition. The hybrid car owner's demographics lists that they have a high level of education, higher income, eco-friendly etc. which is very much similar to that of the EFI's. The EFI customers are the ones who has superior technological knowledge and ready to invest more for their cars. So it can be forecasted that the gradual growth of EFIs might happen to the hybrid cars and adopted by the market in near future. The surveys also predict the increase in sales of the hybrid cars. As there is a lot of customer demand there is a regulation passed by CAFE to maintain a minimum mileage of 27.5 miles per gallon (mpg) for passenger cars and 20.7 mpg across light trucks which is also helping to build more cars. The scheme of incentives and tax credits by the government with fuel-efficient and hybrid vehicles are also increasing the demand for hybrid cars. Customers who believe in "you are what you drive" are preferring cars coming from renewable and non-polluting resources

The Diesel cars is the Pessimistic approach as the customers of diesel car do not have much technical knowledge and will stepback to invest for expensive hybrid cars as they are not concerned with the technology or go-green policy. The environmental problem in disposing the battery which may discourage the customers to buy hybrid cars. The idea of using alternative fuels like E85 may gain the popularity so the customers stepback to pay more and go for hybrid cars. The study shows there is 50% of new car registration in Europe with the diesel cars and may spread worldwide minimizing the growth of hybrid cars.

Anti Breaking System is a Pessimistic approach as the diffusion of product to much time ie 1978 to 1992, and covered a very minimum percentage of cars by 2003. By 2000 it was installed in high end model cars only. It took almost 25 years to reach 69% of the market which is very slow and our forecast is for 10 years so this proves to be an Pessimistic approach. The hybrid cars may not be easily adopted as the traditional source is viewed as convenient and relatively inexpensive among US residents.

Question 2: Develop forecasts of hybrid car penetration in the U.S. market from 2007 through 2016 for each scenario you develop, along with a justification and explanation for your forecasts. (In applying the Bass model, note that market penetration data for the four analog products mentioned in the case, namely, ABS, EFI, Solar, and Diesel cars, were all reckoned in terms of the percentage of the target market that adopted the product. Thus the maximum market potential can at most be equal to 100).

The major characteristics of current hybrid car owners are:

- High level of education.
- Higher income than the average new buyer—approximately \$100,000 a year versus \$85,000 a year for the average buyer.
- Willing to pay more for an environmentally friendly (or “green”) product.
- Want to do something to help reduce vehicle pollution.
- More pessimistic about the future of fuel prices than the average person.

Bass Parameters

Total Market Potential - Number of potential customers before period 1

Total market potential = # customers in target market * % aware * % with access * % with strong intent

Number of households in 2006 - 114 million

<http://www.infoplease.com/ipa/A0005055.html>

Number of households earning nearly 85000 - 25%

https://en.wikipedia.org/wiki/Income_in_the_United_States

https://en.wikipedia.org/wiki/Upper_middle_class_in_the_United_States

Therefore number of customers in target market is 25% of 114 million = 28,500,000

We are not doing any market survey, so our assumptions on other factors are

% aware = 0.5 (50% are aware of hybrid cars)

% access = 0.4 (40% have access)

% strong intent = 0.4

% medium intent = 0.8

Based on our assumptions,

Market potential = $28,500,000 * 0.5 * 0.4 * (0.4 + (0.5 * 0.8)) = 4,560,000 = 4.56 \text{ Million}$

Market Penetration - Number of cars already existing in the market :

Ford Escape	34	801	1,233	1,441	3,039	2,434	1,569	2,060	1,789	1,369	1,343	1,323	1,748	20,149
Ford Mercury Mariner	31	97	108	149	381	428	315	423	351	282	259	161	220	3,174

Total number of actual adopters before period 1 (who already own hybrid cards)

Total Market Penetration = $20149 + 3174 = 23323$

Market Growth Rate

<http://www.multpl.com/united-states-population/table>

0.96% (As per Population growth rate in 2006)

Market Price Elasticity

0.5 (Assumption based on analog products)

Advertising Coefficient

1.5% (Population has good knowledge of hybrid cars because people of this category are highly educated)

Price Coefficient

3% (Assumption)

Price and Advertising Data

Advertising

- Total for 10 years
- Initially, for 4 years advertising can increase by \$0.15, and stable for 4 years, then increase again for 3 years by \$0.20

Pricing

- Decrease by 5% every year for first 5 years, then decrease by 10% for remaining 5 years

Forecasting Scenarios

Period / Forecasting Scenarios	ABS (Antilock Bracking) (Proportion of cars sold)	Diesel cars in Europe (Proportion of new cars)	Electronic Fuel Injection (Proportion of car models)	Average	Market Potential
Total Market Potential	5	5	5	5	
Parameter p	0.003	0.006	0.003	0.004	
Parameter q	0.240	0.140	0.625	0.335	
0	0.02	0.02	0.02	0.02	4.56
1	0.04	0.06	0.05	0.05	4.60
2	0.08	0.11	0.11	0.10	4.76
3	0.12	0.17	0.22	0.17	4.93
4	0.18	0.24	0.42	0.27	5.10
5	0.24	0.31	0.71	0.39	5.28
6	0.32	0.40	1.16	0.55	5.46
7	0.43	0.49	1.84	0.76	5.65
8	0.55	0.61	2.76	1.04	5.85
9	0.76	0.77	4.22	1.51	6.20
10	1.03	0.97	5.63	2.12	6.58
11	1.36	1.20	6.62	2.87	6.97

ABS - Antilock Braking System

- After 10 years, ABS attains market potential of 1.36 million.
- It has 20% of overall market potential of 7 million.
- Coefficient of Limitation (q) = 0.240 is low. Hence the diffusion of the product in the society is slow throughout the period of 10 years.
- It is a pessimistic scenario because in 10 years the market share achieved is only 20%.

Diesel cars in Europe

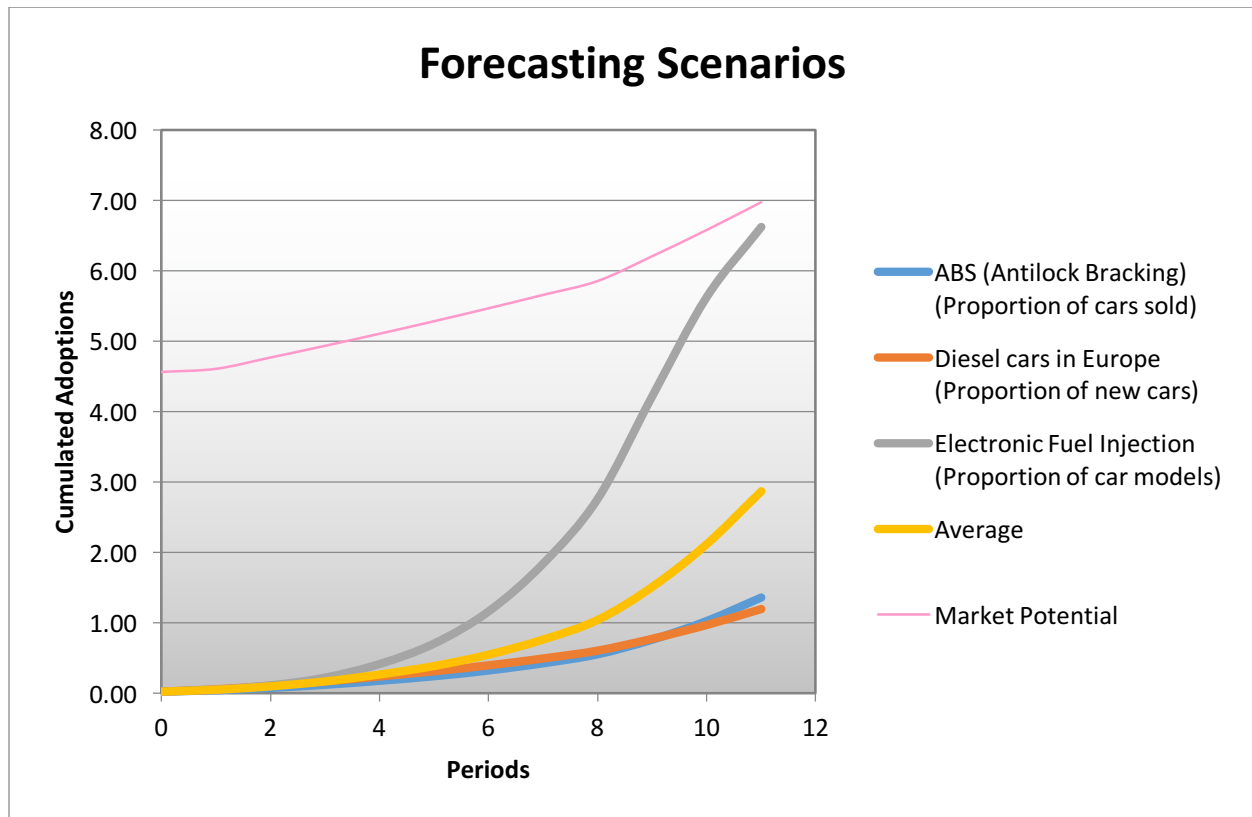
- Diesel cars attains market potential of 1.20 million in 10 years
- It has 17% of overall market potential of 7 million.
- Coefficient of Limitation (q) = 0.140 is very low. Hence the diffusion of the product in the society is very slow throughout the period of 10 years.
- It is a pessimistic scenario because in 10 years the market share achieved is only 17%

Electronic Fuel injection

- This is the best scenario among the three analogous products.
- Coefficient of Limitation (q) = 0.625, comparatively higher than other 2 products.
- After 10 years, EFI achieves market share of 95% which is very good.

Results:

Forecasted market potential for Ford Hybrid model is 6.9 million in 10 years.



Question3: Recommend short-term and long-term strategies that Ford should pursue based on the forecasts that you develop.

According to forecast we developed, Ford should adopt following short term and long term strategies.

Short term strategy

- New Marketing mix for increasing brand awareness and sales:

Product:

Price: The price should be competitive compared to other hybrid cars available with better stand out features.

Promotion: Ford can be promoted using medium as television advertisements, internet, consumer education campaigns and also free test drive at Ford show rooms which special offers.

Place: Targeting state where tax credits are available, sales tax exemption and environmental regulations.

- Cost cutting
 - Overhead cost reduction
- Hedging
 - Investing in flexible manufacturing
 - Invest in other renewables
- Lobbying
 - Tax credits in more states
 - Emission standards
 - Fuel economy standards

Long term strategy

- Investing in R&D
- Enhancing positioning
 - More Optimal positioning by increasing MPG through R&D
- Enhancing capacity
 - Purchasing more production facilities
 - Increasing production efficiency
- Lobbying
 - Tax credits in more states
 - Emission standards
 - Fuel economy standards