

Investigating Consumers' Perception on Hybrid Cars in Oman

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Abstract

The overall objective of this study is to investigate the perception of car consumers on hybrid cars its impact on environment. The study used a quantitative research method mainly a survey. A well-structured questionnaire was distributed to 300 respondents using a convenient sampling technique. A survey Monkey is used for data collection and analysis. Descriptive statistics are used mainly in the data analysis. The findings reveal that most of the respondents owned emission cars and replaces their cars within two to five years. Majority of the respondents said regardless of the situations, they intend to own hybrid car soon due to its efficiency and environmentally friendliness. Most of the respondents were aware about the effects of car emission on environmental sustainability. Hence, they believe that the way forward is to adopt environmentally friend cars including hybrid and electric vehicles. Lastly, more than half of the respondents believe that, given the concern over the climate change, key industry players and the government are keen to replace petrol/diesels vehicles with the environmentally friendly cars sooner than expected once the obstacles related to hybrid and electric cars are addressed. The study is among the first study to examine the perception of car consumers on hybrid cars and the effects of car pollution on the environment. Therefore, we argue the industry players should promote the use of hybrid cars and make the cars affordable to the general masses to save the environment since the future of electric cars is yet at an infant stage with many obstacles.

Keywords: *Investigating, Consumers Perception, Hybrid Cars, Oman.*

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I. Introduction

The automobile industry has established itself in modern civilization and has surpassed mankind's transportation needs. Today, the industry is highly sophisticated, offering features that most consumers require in a car, such as improved gas mileage, a user-friendly infotainment system, and a vehicle that is both reliable and affordable (Jones, 2020). Indeed, it is estimated that there are over one billion cars on the road (Chesterton, 2018). In 2017, the global auto industry total revenue exceeded \$ 5 trillion, and its sales revenue is expected to reach \$ 9 trillion by 2030. (Wagner, 2020). The passion for all types of cars in Oman has attracted world-leading auto brands to its market. The market for auto passenger cars was USD 3.36 billion in 2017 and it is expected to USD 4.23 billion by 2023. (Techsci research report, 2019). As a result, the industry contributes significantly to the global GDP and employment.

Regrettably, it is worth noting that the social costs incurred by this industry far outweigh the social benefits. The automobile industry is a major contributor to the development of greenhouses. Greenhouse gases like carbon dioxide, methane, and nitrous oxide absorb some of the energy emitted by the Earth and heat the atmosphere. This causes an imbalance in the Earth's energy received from the Sun, and the energy escapes, resulting in climate change. Climate change, in turn, causes significant socioeconomic problems such as severe heat waves, flooding, an increase in the risk of heat-related illnesses such as respiratory diseases, heart disease, Asthma, and cancer, and so on (Kandhakar et al., 2020).

Realizing the seriousness and the urgency to address the problem of car emissions have created on the climate, the industry players are taking action to achieve carbon emission target. The players are shifting to production of hybrid and electric cars that are environmentally friendly. For instance, China sold more than 1.3 million electric cars in 2020. Norway has the most per capita number of electric cars on the road. In the case of hybrid cars, Japan has the highest numbers in the world reaching up to 7.5 million hybrid cars on their road. While in other countries such as France, as of 2019 over 70% of French citizens are thinking of changing to either hybrid cars or electric cars (The Editorial Team, 2020). Indeed, hybrid vehicles are designed for better fuel efficiency, more power, and minimum emissions. The overall hybrid vehicle market, by volume, is estimated to be 4,169 thousand units in 2018 and is projected to reach 7,593 thousand units by 2025. The

demand for hybrid vehicle market is rising due to stringent emission regulation standards and the growing demand for low or zero-emission vehicles. Furthermore, governments of various countries provide purchase grants and tax rebates for hybrid vehicles (Market and Market report, 2019). Many car companies offer hybrid models such as Toyota has the Prius and Camry; Honda has Accord, Civic, Insight and CR-Z, while Nissan has the Altima only (Williams, 2020).

According to Khandakar et.al. (2020) the adoption rate of environmentally friendly cars varies across the globe. This degree of adoption is affected by many factors among them include the vehicle price, total cost of owning cars, driving experience, the availability of Charging Station (CS), social influence, and environmental awareness, etc. Lingzi and Slowik (2017) study reveal that a widespread lack of knowledge about the commercial availability of electric vehicles, purchase incentives, fuel and maintenance cost savings, charging options, and awareness of average daily mileage are all barriers to adoption of either electric or hybrid vehicles. Furthermore, She, et.al (2017) study showed that the Chinese consumers interest in Battery Electric Vehicles is relatively low and a large proportion of the respondents have a "wait and see" attitude. Chinese consumers are skeptical of BEV performance, safety, and reliability. Given the limited number of automakers currently selling electric vehicles, this may be true in Oman. Furthermore, Oman will be affected by these fundamental changes in electric vehicle technology. However, there has been little empirical research on Omanis' perceptions of hybrid or electric vehicles. This study attempts to fill this research gap. Therefore, the objective of this study is to investigate the perception of Omanis car consumers on the hybrid cars and its impact on the environment.

II. Literature Review

Concept of Hybrid Cars

A hybrid car is a car that possesses two sources of power, a combustion engine, and a special electric battery that act as a dual-functioning motor. The car functions based on two power sources and constantly rotates from one source to the other or in some cases they both functions simultaneously and work together, based on what the car needs the most. The ingenuity that makes the hybrid car unique compared to other cars is how it stores and uses its energy (Ryswick, 2019). In most modern hybrids, cars are powered by a combination of traditional gasoline power and the addition of an electric motor. In this sort of hybrid engine, the combustion engine is used at high speeds for long distances, such as the highway, and the electric engine at low speeds and short distances, such as in urban areas (Beliveau et.al. 2010).

Hybrid technology turns the world's population into a more fuel efficient and emissions conscious society. The technology saves the environment as it increases efficiency in energy consumption (Hakim, 2005). By driving a car that is more fuel efficient, an individual can reduce the amount of carbon dioxide released into the environment by about 2,500 pounds each year. Due to the steadily increasing gas prices, the popularity of hybrid vehicles has increase among the car consumers. There are many reasons for purchasing these new technologically advanced automotive; however, one of the main reasons is the amount of money customers save on fuel. These new cars are advertised to achieve exceptional gas mileage when compared with conventional cars. It is said that even though they are typically more expensive initially, the amount that you save on gas eventually allows the purchaser to break even and save money (Ransom 2008).

Empirical Research on Consumer Perceptions of Environmentally Friendly Automobiles

Abu-Alkeir (2020) examine the factors that influences consumers' intention to purchase hybrid cars in Arab region. Her findings revealed that there is a positive impact of price, reputation of manufacturer, fuel economy positively influenced consumers intention to purchase hybrid cars. It also indicated that there is a negative relationship between brand image, safety, and customer intention to purchase electric cars. Hence, she suggested that sales and marketing managers of electric & hybrid cars should emphasize on pricing and fuel efficiency of hybrid cars when marketing environmentally friendly cars in this region. Aman et al. (2012) also found environmental knowledge and environmental concerns considerably affect consumers intention to buy environmentally friendly products. According to Boztepe (2012) environmental awareness, green products features, green promotion activities and green price have a positive effect on green purchase behavior. Dagher and Itani (2014) identified three variables that include seriousness of the environmental problem, environmental responsibility, and self-image as factors that significantly affect consumers decision to buy green products. Lu et al. (2014) analyzed the determinants of green purchase behavior, which are social influence, environmental concern, environmental attitude, perceived environmental problem, perceived environmental responsibility, perceived environmental behavior, concern for self-image and role of Government. Companies should focus on these determinants to enhance green purchase behavior and alter their strategies to develop and target the green market segment. Their study suggested that marketers should develop marketing tools that will increase the level of environmental concern and attitude because it has a significant impact on green behavior (Dagher et al., 2015). These findings are supported by Ahmad and Thyagaraj (2015) study which indicated that environmental

concern and self-expressive value benefits positively affect green purchase intention. Besides, environmental knowledge, environmental concern and self-expressive benefits positively impact the attitude towards eco-brands which indicates positive influence on purchase intention.

Hussain, et.al (2020) study the effects of green advertisement as a moderator on customers green purchase behavior in Saudi Arabia. Their findings show that environmental concern, self-image, and social impact had a significant influence on green purchase behavior. Furthermore, environmental concern and self-image have a more substantial influence on green purchase behavior. The moderation results revealed that green advertisement has a positive and significant moderated relationship among environmental concern, self-image, social influence, and green purchase behavior. Karunanayake and Wanninayake (2015) found that price perception, social influence and perceived risk had a significant impact on the purchase of hybrid vehicles. In contrast, knowledge and environmental attitude do not show the significant influence over buying intention of buying hybrid vehicles.

III. Research Methodology

This study used a survey to investigate the perception of the Omanis car consumers on hybrid car and its impact on the environment. A survey is a suitable method for collecting information about peoples' attitudes and opinions (Burns and Bush, 2000). According to Martin (2020), public opinion survey research is the most efficient method for collecting information about a large group of people. A researcher can collect the opinions, perceptions, and observations of a small, representative subset of a population to generalize to the whole. The questionnaire is adapted from Kandhakar, et.al. (2020) who are expert in this field. Extreme care was taken to ensure that the anonymity of the study and confidentiality of respondents. The questionnaire was created, distributed, and analyzed using a survey monkey. The questionnaires were distributed to a sample of 300 respondents in Oman using a convenient sampling technique. Convenience sampling is a type of non-probability sampling in which people are sampled simply because they are "convenient" sources of data for researchers (Sekaran, 2003). 270 questionnaires were returned as valid and complete. Therefore, response rate was 90%. According to Roscoe (1975) rule of thumb, the sample size that is larger than 30 and less than 500 are appropriate for most of the research. The questionnaire is divided into three parts that includes the profile of the respondents, consumers car choices and the environmental impact of car emission. Descriptive statistics are statistical tools are used in data analysis.

IV. Findings and Discussion

Demographic Profile of the Respondents

Overwhelming majority of the respondents (89%) were male and 11% were female. More than half of the respondents (55%) were age between 25-50 years old, 30% with age below 25 years old and only 15% above 50 years old. Eighty one percent (81%) of the respondents were Omanis and the remaining were non-Omanis. Seventy-four percent of the respondents are graduates, 17% are postgraduate holders and the rest are diploma and senior high school certificates holders. Fifty-nine Percent (59%) of the respondents were working in private sector, 39% were working in public sector and the rest were either self-employed or retired. The monthly income of the respondents was quite interesting. Majority of the respondents (60%) earns between 500 and 1000R.O, 20% of the respondents earns between 1000 to 2000 R.O, and only 8% earns above 2000 R.O.

Table 1: Demographic Profile of the Respondents			
Demographic Information		Frequency n = 270	Percentage
Gender	Male	240	89
	Female	30	11
Age	Under 25	80	30
	25-50	150	55
	51+	40	15
Nationality	Omani National	219	81
	Non-Omani	51	19
Education	Diploma	15	5
	Bachelor's Degree	200	74
	Master's Degree	45	17
	Doctorate	0	0
	Other	10	4

Current Job	Public sector	105	39
	Private Sector	160	59
	Others	15	2
Income Per Month (OMR)	Under 500	33	12
	Between 500-1000	162	60
	Between 1000-2000	54	20
	Over 2000	21	8

Respondents Perception on the Choice of Cars

Respondents were asked whether they currently owned fuel types or electric vehicles and how frequently they replaced them. The overwhelming majority of respondents (89 percent) owned petrol/diesel cars, implying a strong dominance of emission cars, while 7% owned hybrid cars and 4% owned electric cars. Furthermore, more than half of respondents (51%) were likely to replace their cars within the next 2-5 years, while only 39 percent replaced their cars every 5 years.

When asked if respondents would consider buying a hybrid car in case they decided to sell their current vehicles. Seventy percent (70%) said they were willing to switch to hybrids, while the rest said they did not want to change. Besides, a hypothetical question was added for those who would not consider purchasing a hybrid as well as those who would consider purchasing one, asking what would be the most important factors to consider when deciding to buy a hybrid car. More than half of respondents (56%) will consider purchasing a hybrid car because of its fuel efficiency, 11 percent are more interested in the car's affordability, and 33 percent will embrace it for its environmental benefits. Participants were asked if they would be willing to pay more for a hybrid car in order to protect the environment. Sixty percent of respondents were willing to pay more for a hybrid, while 40% were unwilling to pay more for a hybrid.

These findings are consistent with previous research such as Abu-Alkeir (2020), Karunanayake and Wanninayake (2015), and Hussain et al. (2020), among others. According to the Abu-Alkeir study, price, manufacturer reputation, and fuel economy all positively influenced consumers' intentions to purchase hybrid vehicles. As a result, she suggested that when marketing environmentally friendly cars in Middle East, sales and marketing managers of electric and hybrid cars should emphasize pricing and fuel efficiency of hybrid cars.

Table: 2 Respondents Perception of the Choice of Cars

Car Choice Information		Frequency n = 270	Percentage
Types of car owned	Petrol/ Diesel	240	89
	Hybrid Car	20	7
	Electric Car	10	4
Replacement Duration	1 year or less	27	10
	2-5 years	138	51
	Over 5 years	105	39
Hybrid as an alternative car	Yes	190	70
	No	80	30
Reason to own hybrid cars	Fuel efficiency	151	56
	Environmental	90	33
	Affordability	29	11
Paying extra for a hybrid	Yes	162	60
	No	108	40

Respondents Perception on Environmental Issues

The last part of the survey covers the environmental issues related to auto industry. To establish whether participants were generally concerned about the environment or not, a simple yes or no question was given regarding their concerns about car pollution. Majority of the respondents (77%) were concerned about pollution created from car emission and only 23% of the respondents said they were not concerned about car pollution. Furthermore, when they asked if hybrid cars are more environmentally friendly compared to petrol/diesel cars, overwhelming majority of the respondents (91%) believe it to be more eco-friendly than conventional vehicles. Finally, the respondents were asked whether in the near future petrol/diesel cars would be replaced with eco-friendly cars. Fifty seven percent (57%) of the respondents think that it is possible to replace emission cars in the near future with environmentally friendly cars while 40% of the respondents do not believe it to happen any time soon. These findings support previous research by Aman et al. (2012), Boztepe (2012), Dagher and Itani (2014), and Ahmad and Thyagaraj (2015). Aman et al. (2012) discovered that

environmental knowledge and environmental concerns significantly influence consumers' intentions to purchase environmentally friendly products, whereas Boztepe (2012) found that environmental awareness, green product features, green promotion activities, and green price have a positive effect on green purchase behavior. Dagher and Itani (2014) identified three variables that significantly influence consumers' decisions to buy green products: the severity of the environmental problem, environmental responsibility, and self-image.

Table: 3 Respondents Perception on Environmental Issues

Environmental Information		Frequency = 270	Percentage
Car pollution Concern	Yes	208	77
	No	62	23
Hybrids are more environmentally friendly than fossil cars	Yes	246	91
	No	24	9
Will petrol/diesel cars be replaced with eco-friendly cars in the future	Yes	154	57
	No	108	40
	Maybe	8	3

V. Conclusion

Hybrid cars is one of the alternative technologies adopted by the auto industry to tackle problem of global warming and making the industry sustainable. However, introducing new technology to the world is always a challenge as people resist to change. Hybrid cars was invented for almost two decades, and its demand is rising given its economic and environmental benefits as a fuel efficient and environmentally friendly cars. It is apparent that an overwhelming majority of respondents currently own petrol/ diesel cars. However, most of the participants were willing to change their current cars for hybrids. Unfortunately, based on the current economic situation, hybrid cars are out of reach to most consumers despite they are attracted to this model. Most of the consumers aim to upgrade to more futuristic technology for whatever reasons they have, but in the end the argument boils down to affordability. In most cases, not just in Oman but on a global scale price is the deciding factor when buying anything. Nevertheless, the survey revealed that many of the respondents were willing to pay extra for a hybrid car for the sake of preserving the environment. This sheds light to the fact that hybrid cars should be affordable like their counterparts for mass scale consumption. Indeed, the study cannot be generalized given the small sample size of the population. Henceforth, future study should increase the sample size and the scope of the issues.

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