CHAPTER -7 Conclusions, Recommendations and Future Scope

Conclusions based on Hypothesis

1) In this study one of the important objectives was to know which features are considered most important while buying a two-wheeler. Here, chi-square test of homogeneity was performed with 5% level of significance. On the basis of test results it is inferred that all the features are not equally important while buying a two-wheeler.

Following features of the Two-wheeler were assigned rank by the respondents.

1. Engine/Battery capacity
2. Speed
3. Design
4. Mileage
5. Light weight and comfortable
6. Concern for environment
7. Price
8. Expenses on Services

- The feature "Engine capacity" was ranked as the most important feature as 29.9% respondents gave 1st rank to this feature, followed by "Design" with 24.4%, "Speed" 22.3%, "Mileage" 22.2% and "Light Weight and Comfortable" 16.39%.

2) It was also of interest to know whether ranking pattern for two wheeler features differ among various age groups, educational groups, occupational groups, income groups and gender. Hence, to test this chi-square test of homogeneity was performed with 5% level of significance and on the basis of the test results following conclusions are made.

- Ranking pattern of various educational groups and both the gender is identical for the feature "Engine Capacity" and ranking pattern of various age groups, occupational groups, income groups is not identical for the feature "Engine Capacity".
- Ranking pattern of various educational groups, various income groups, and of both the gender is identical for the feature "Speed" and differs among various age groups and occupational groups for the feature speed.
- Ranking pattern of various educational groups, income groups and of both the gender is identical for the feature "Design"
- Ranking pattern of various age groups and occupational groups differ for the feature Design"
- Ranking pattern of various age groups, educational groups, occupational groups, income groups and of both the gender differ for the feature "Mileage"
- Ranking pattern is identical among various educational groups for the feature "Light Weight & Comfortable".
- Ranking pattern for the feature "Light Weight & Comfortable" is not identical among various age groups, occupational groups, and income groups and of both the gender.
- Ranking pattern is identical among various educational groups, income groups and of both the gender for the feature "Concern for Environment".
- Ranking pattern varies among various age groups and occupational groups for the feature "Concern for Environment"
- Ranking pattern of both the gender is similar for the feature "price".
- Ranking pattern differs among various age groups, educational groups, occupational groups and income groups for the feature "price"
- Ranking pattern is identical among various income groups for the feature "Expenses on Services"

- Ranking pattern varies among various age groups, educational groups, and occupational groups and of both the gender for the feature "Expenses on Services"

3) One of the important objectives of this study was to take feedback of customers on whether all the features of battery operated two-wheeler are equally good or not. Seven different features/information were put before the respondents and their feedback was taken.
They are as follows.

1. It cost 15 paisa/km.
2. Zero pollution to environment.
3. It can't go beyond 25 km speed.
4. It takes 6 to 8 hours to recharge battery.
5. It is light weight and comfortable.
6. It has a capacity to carry weight of 75 kg.
7. On road price is Rs.28, 500/- .

To analyze the responses, chi-square test of homogeneity was performed with 5% of level of significance. On the basis of test results it is inferred that all the features/information of concept of battery-operated two-wheeler are not equally good.

With reference to battery-operated two-wheeler out of the seven features on which feedback was asked to the respondents, three features were considered either average or poor or very poor.

1. It cannot go beyond 25 km speed per hour.
2. It takes 6 to 8 hours to recharge the battery.
3. Its capacity to carry weight is 75 kg.

Features like "operating cost is 15 paisa per km" and "zero pollution" are considered as very good by majority of the respondents.

4) It was also important to know whether feedback on various features/information of concept of battery operated two-wheeler is identical or it varies among various age groups, educational groups, occupational groups, income groups and of both the gender so that potential segment can be identified and targeted. To analyze the responses, chi-square test of homogeneity was performed with 5% of level of significance and on the basis of the test results following conclusions are made.

- Opinions of various educational groups and of both the gender are similar for the feature "It costs 15 paisa per km".
- Opinions differ with respect to various age groups, occupational groups and income groups for the feature "It costs 15 paisa per km".
- All income groups and both the gender share similar opinions about the feature "zero pollution to environment."
- Opinion about the feature "zero pollution" differs among various age groups, educational groups, and occupational groups.
- All educational groups share similar opinion about the feature "it can't go beyond 25 km speed"
- Opinion of various age groups, occupational groups, income groups and of both the gender differ about this feature "it can't go beyond 25 km speed"
- Opinion of both the gender do not vary about the feature "It takes 6 to 8 hours to recharge battery"
- Opinion of various age groups, educational groups, occupational groups and income groups differ about the feature "It takes 6 to 8 hours to recharge battery"
- Opinion of various age groups, educational groups, occupational groups, income groups and of both the gender differ about the feature "Light weight and comfortable"
- Opinions of various income groups and of both the gender are similar about the feature "Capacity to carry weight is 75 kg."
- Opinion of different age groups, educational groups, and occupational groups varies about the feature "Capacity to carry weight is 75 kg."

- Opinions of both the gender are similar about the feature it's on road price is 28,500
- Opinions of various age groups, educational groups, occupational groups, income groups differ about the feature it's on road price is 28,500.

5) Respondents were asked their opinions about their willingness to make compromises for buying a battery-operated two wheeler. Whether opinions differ with age, education, occupation, income and gender were analyzed with reference to statements given here.

1. Willingness to buy battery operated two-wheeler exchange for improved ecological performance.
2. Willingness to pay somewhat more in exchange for improved ecological performance.
3. Willingness to compromise with speed in exchange for better ecological performance.
4. Willingness to compromise with speed in exchange for very less operating cost.
5. Opinion on whether govt. should offer subsidy in exchange for eco friendly performance of the two-wheeler.

These trade-offs were studied here using ONE-WAY ANOVA and two tailed t-test at 5% level of significance and on the basis of the test results following conclusions are made.

- Average opinion rating is equal among various educational groups, income groups and of both the gender on "willingness to buy battery-operated two-wheeler as it is eco-friendly"
- Average opinion rating about "willingness to buy battery-operated two-wheeler as it is environmental friendly" differs among various age groups and occupational groups.
- Average opinion rating of both the gender is equal about "willingness to buy battery-operated two-wheeler even if it is somewhat expensive"
- Average opinion rating about "willingness to buy battery-operated two-wheeler even if it is somewhat expensive" differs among various age groups, educational groups, occupational groups and income groups.

- Average opinion rating of various age groups, educational groups is equal about "willingness to compromise with the speed of battery-operated two wheeler as it protects the environment".
- Average opinion rating of various occupational groups, income groups and of both the gender differs about "willingness to compromise with the speed of battery-operated two wheeler as it protects the environment".
- Average opinion rating among various age groups, educational groups, occupational groups, income groups and of both the gender differs about "willingness to compromise with the speed of battery-operated two wheeler as its operating cost is very less".
- Average opinion rating is equal among various educational groups on "govt. should introduce special subsidy for battery-operated two wheeler".
- Average opinion rating differs among various age groups, occupational groups, income groups and of both the gender about "govt. should introduce special subsidy for battery-operated two wheeler".

Additional conclusions derived from this study

-From this study it can be concluded that market for battery-operated two-wheeler is emerging in India. Further, keeping in mind the pollution and its adverse effects, green products will rule the market in future. It calls for developing new business model which can hit the triple bottom line i.e.

1) Customer satisfaction
2) Profit maximization
3) Environment protection/ minimization of environmental damage

Exploring new ways of doing business as well as understanding how to meet customers' needs and wants by introducing innovation are becoming very important today. Company should transform itself from conventional business practices to entrepreneurial business practices. Sustainable innovation is the key in 21st century.
Initially, new business ideas once converted into products, they are immature, and may not be in a position to compete against well established products as they are either

technically superior or tried and tested by the customers. Hence, their perceived risk is very low for current products. It can also be attributed to supporting infrastructure availability, govt. policies, socio economic conditions and how customers evaluate the new product. If the product needs change in behavior of the user while adopting a new product or demands cultural shift then it often takes longer time to be accepted in the market.

Here, battery-operated two-wheeler is new for Indian consumers, needs technically sound performance and other support system to be successful. So initially targeting a niche segment makes a good business sense. By taking their feedback, performance of this two-wheeler must be improved.

- Marketers should target females and students initially as they are found most positive about this two-wheeler.

- High performance battery is the crucial feature for making this two-wheeler a success in the market. Hence, companies which are manufacturing and marketing this two-wheeler must focus on further research & development of High Performance Batteries.
- Improving the speed is equally important as it delivers the convenience of moving from one place to another place in a given time constraints. So this two-wheeler must offer minimum 40 km. /hour speed.
- Low operating cost alone is not enough to persuade the customers. Speed is quite significant feature while buying a two-wheeler. Present battery-operated two-wheelers available in the market costs only 15 paisa per km. but its maximum speed is 25 km. per hour. It makes this two-wheeler quite weak in terms of its functional performance.

- Further, this two-wheeler has a potential to appeal to the masses. But it must be reasonably priced to penetrate in the market because majority of the respondents like to buy this two-wheeler as it is environmental friendly but not willing to pay somewhat more for green benefits.

- It must be noted here that this sector also needs subsidy on the lines of other green-technology sectors as lot of investment is needed to set up a recharging stations if battery recharge time is to be reduced as low as 10 minutes.
- Companies should also explore new ways to develop solar battery which can be installed in electric two-wheeler. This alternative does not need battery charging stations and hence huge financial requirement can be avoided for making charging stations. Further, solar battery utilizes natural resources and hence energy consumption can be minimized.
- Weight carrying capacity has to be of two adults.
- Advertising and other promotional measures must highlight its major advantages of low operating cost and zero pollution to environment and try to persuade the market to buy this two-wheeler.
- Respondents from all age groups, educational class, occupational class, income class and of both the gender believe that govt. should introduce subsidy to promote electric two-wheelers. To encourage the purchase and use of electric two-wheeler and to prevent pollution, govt. needs to play active role in India.

- Marketers must join hands with N.G.Os to promote this two-wheeler.
- Supporting infrastructure must be provided by govt. i.e. safety lanes need to be created for safety of the users of this battery-operated two wheeler.

Recommendations

1) Design the two-wheeler on the basis of significant features considered and benefits sought by the customers while buying a two-wheeler

In this study, an attempt was made to identify that which features are considered most significant while buying a two wheeler. Once, most significant features are known, marketer can get insight about which benefits are desired by the consumer while buying a two- wheeler. Hence, very valuable inputs were provided by this exercise.

Respondents were asked to assign the rank of 1 to 8, in order of its importance to various features while buying a two wheeler. Here, rank 1 was assigned to the most important and rank 8 was assigned to the least important feature.

FEATURES:

1) Engine/Battery capacity
2) Speed
3) Design
4) Mileage
5) Light weight and comfortable
6) Concern for environment
7) Price
8) Expenses on services

It is important to note that the feature "Engine/Battery capacity" was ranked as the most important feature. 29.9% respondents gave 1st rank to this feature, followed by "Design" with 24.4%, "Speed" 22.3%, "Mileage" 22.2% and "Light Weight and Comfortable" 16.39%. Thus, these features emerged as the most important while buying two-wheeler. **Therefore, marketer needs to ensure high performance of battery, good design, speed and mileage while designing a two-wheeler.**

2) Make battery-operated two-wheeler functionally strong

With reference to battery-operated two-wheeler out of the seven features on which feedback was asked to the respondents, three features were considered either average or poor or very poor.

- It cannot go beyond 25 km. speed per hour.
- It takes 6 to 8 hours to recharge the battery.
- Its capacity to carry weight is 75 kg.

It is important to note that these features are quite important in determining performance of the two-wheeler. A minimum desirable speed in city area is 40 km. per hour. If this speed is delivered by a two wheeler, it can actually give convenience of moving from one place to another place in a reasonable time. It is the core benefit which customer is seeking from a two wheeler. Further, speed is assigned a higher order i.e.3nd rank by the respondents which show its significance while buying a two wheeler.
Here, it is important to note that respondents in the age group of 22-45 are highly evaluative and disagree to compromise with speed even though battery-operated two-wheeler protects the environment and its operating cost is very low.
Furthermore, respondents from 13 to 21 years and from 46 to 55 years age neither agree nor disagree to compromise with the speed. To conclude, these responses clearly indicate that none of them willing to compromise with speed although it protects the environment and its operating cost is very less.

Similarly, highly educated respondents have shown disagreement to compromise with speed, while remaining other educational groups neither agree nor disagree to compromise with speed even though it protects the environment. Further, all the educational groups do not willing to compromise with the speed of the two-wheeler even if its operating cost is very low.

Opinions of service class and business class were significantly different from other occupational groups as both the groups disagree to compromise with speed. Students, professionals and "others" were found on neither agree nor disagree scale.
Respondents of income group 6,000 to 15,000Rs. p.m. and 25,000 and above Rs. p.m. have disagreed to compromise with speed of the two-wheeler even if it protects the environment. At the same time respondents of income below 5,000 Rs. and from 16,000 to 25,000Rs. revealed that they neither agree nor disagree to compromise with speed even if battery- operated two-wheeler protects the environment.
However, more number of females were willing to compromise with speed as it protects the environment and its operating cost is very less against their male counterparts.

These inputs are quite valuable for a marketer. It strongly indicates that ensuring minimum speed availability is essential for the success of this two-wheeler in the market. Low operating cost alone and environment protection appeal is not enough to persuade the customers to buy this electric two-wheeler.

Similarly, weight carrying capacity is quite important as two wheeler is used to carry domestic/household goods as well as it is used for personal mobility, and many times more than one adult travels at a time. Hence, against the price that customer pays for a two wheeler, he or she expects that two wheeler must carry minimum weight of two adults. It means weight carrying capacity can deliver value to the customer.

Thirdly, current battery-operated two wheeler models takes 6 to 8 hours of time to recharge the battery, which is indeed a long time. This demands alertness all the time from the user to check the charging level, which is practically not possible. It is one of the biggest limitations and can really discourage the customers from buying a battery-operated two wheeler. Charging time should be of 5 to 10 minutes and not more than that. Today's hectic life does not allow more time and hence charging stations must be introduced by the producers of battery-operated two wheelers as it is already followed in foreign countries. Another alternative to this limitation is **to incorporate solar battery which gets recharged automatically**. If solar battery is incorporated, it has a power to drive the market in favour of battery-operated two wheeler. Hence, rigorous research and development efforts are required to develop solar battery which can be installed in electric two-wheelers.

3) Features "It costs 15 paisa per km." and "zero pollution" must be highlighted while designing promotional programmes.

Features like "It costs 15 paisa per km." and "zero pollution" are considered as very good by majority of the respondents. But, interestingly, the feature "zero pollution "is not assigned a very high weightage by respondents while buying a two wheeler. It means it is not significant for the buyers and does not motivate the customers to buy battery-operated two wheeler. Hence, promotional efforts are required to educate customers about pollution and its adverse effects.

However, mileage is very important and assigned fourth rank while buying a two wheeler. So, along with "zero pollution", the feature "less operating cost" must be promoted aggressively.
This study revealed that features like "It costs 15 paisa/km" and "Zero pollution" to environment are very strong. More than 66% said very good about this features and 23% said "good" about this features. Hence, while designing battery-operated two-wheeler marketer must incorporate these two features.

4) Effective customer education programs need to be designed.

It is confirmed from this study that still Indian consumers are not environment conscious except highly educated class of the society as they really appreciated this feature. In aggregate respondents assign very less importance to the feature "Zero Pollution" of battery operated two-wheeler. Presence of this feature does not really motivate the customers to buy it, although they like this feature. So it is a challenging task to make them consider environment as an important criteria while buying a two-wheeler. They must be sensitized about the pollution generated by two-wheeler and its adverse effects on health. Effective customer education programs need to be designed. Both air media and print media can play significant role here. Special articles related to pollution generated by two-wheelers must be published in the news papers. Talk shows and panel discussion must be arranged related to pollution aimed at customer education. Debates in

schools and colleges need to be organized as teenagers are one of the most potential segments for this electric two-wheeler.

Hence, marketing efforts are required to develop a more conscious attitude towards environment. Further, green two-wheeler advertisements with serious messages showing pollution and its adverse impact must be aired/ printed through various Medias. Film and sports celebrities can be hired for special shows as they are the aspiration groups and can influence the teenagers. However, sheer customer education and bringing environmental consciousness is not enough. Environmental consciousness must be reflected in their actions. Hence, one of the biggest challenges is to persuade the customers to buy battery-operated two-wheeler.

5) Price this electric two-wheeler reasonably as consumers are not willing to pay more for green benefits.

This study reveals that age group of 22-45 agrees to buy this battery-operated two-wheeler even if it is somewhat expensive. But respondents of age groups of 13-21 years and of 46-55 years are not willing to buy battery -operated two-wheeler, if it is somewhat expensive. Same was the case with respondents of various educational groups. Similarly, except service class, respondents of other occupational groups neither agree nor disagree to buy this two-wheeler if, they need to pay somewhat more.

Mixed reactions were found from various income groups on willingness to buy this two-wheeler even if it is somewhat expensive. Hence, pricing is a challenge. Income below 5,000 Rs. p.m. revealed that they neither agree nor disagree on buying a battery-operated two-wheeler as it is somewhat expensive. Same is the opinion of respondents with income of 15,000 to 25,000 Rs. p.m. In case of opinion of both males and females, results do not give any strong indication of agreement to pay more for green benefits.

This shows that our consumers are indeed price conscious and therefore, offering battery-operated two-wheeler at the right price is indeed a challenge and most critical task for a marketer. Since, this two-wheeler has a potential to appeal to the masses, it

must be reasonably priced to penetrate in the market because majority of the respondents like to buy this two-wheeler as it is environmental friendly but not willing to pay somewhat more for green benefits.

6) Government should introduce special subsidy for battery-operated two-wheeler as compared to male respondents

At last it was found that respondents from all age groups, educational class, occupational class, income class believes that govt. should introduce subsidy to promote electric two-wheelers. However, more number of females were of the opinion that govt. should introduce special subsidy for battery operated two-wheeler as compared to male respondents. In highly populated and polluted urban areas, this electric two-wheeler can be used to control pollution levels. Hence, subsidies in India need to be introduced to promote electric two-wheelers.