

# Market Analysis and buyer's behaviour of BMW model 328i. A case study

<sup>1</sup>DR. Shakeela Banu C, <sup>2</sup>Muhammed Rashid PP

<sup>1</sup> Department of MBA, Jain University, Bengaluru, India. banu026@gmail.com

<sup>2</sup>Student, Brindavan College, Bengaluru, India. rashifazaa@gmail.com

**Abstract-** Marketing is a key aspect of any business. It is considered as the backbone of a business. Buyer behaviour is related directly to marketing of a product. This study shows that any bad review about a product irrespective of the brand name and brand image; there will be changes in the sales of the product, and also the mentality of the customer towards the product a major automobile company like BMW also had to face problems this is in the case of BMW 328i. The study highlights the buyer's behaviour before and after the car was recalled. The cars were recalled because of battery drainage. This study shows that the sales of this variant was high before the recalling and had a dip after the recalling of cars. An experiment was also carried out to highlight the factor causing the battery drainage with the help of Design of Experiment. The response variable considered was voltage and about six factors were selected for testing the response variable. From the experiment it was seen that if the voltage is 12.2V then the battery doesn't drain and if the voltage is less than 12.2V then the battery drains.

**Keywords:** Buyer Behaviour, Battery drainage, BMW, Design of Experiment, Market Analysis, Recalling, Voltage.

## I. INTRODUCTION

Automobile industry is an industry, which deals and concentrates on motor vehicles either two-wheeler, three-wheeler, four-wheeler or more than four-wheeler. There are many companies that come under the category of automobile. Some of the examples are Maruti Suzuki, Hyundai, BMW, Tata motors etc.

In the current scenario, marketing has become a very important aspect of any business. Any company needs a good marketing strategy. It can be said that marketing is the backbone of any business if any product is to be launched or a new market is to be tapped, marketing is the tool. BMW is an automobile giant that has created a reputation among the high-end cars. Every company has its ups and downs. Indian automotive industry is making a good revolution in the world. Indian automobile under the category of two-wheeler is placed second worldwide. However Indian automobiles lacks in the making of high-end cars and luxury cars. The intention to carry out this study is to show that even a business giant like BMW faced marketing challenges that caused due to the recalling of its particular model of car.

There were complaints about battery being drained out overnight. An attempt is made to study the sales of BMW 328i before and after the recalling of cars due to battery drainage problem. The study also attempts to study the root cause of the problem by carrying out an experiment of design. Many variables were considered and the optimum

conditions of these variables were to be obtained through design of experiments.

## II. REVIEW OF LITERATURE

Bryan A. Lucas and O.C Ferrell (2000) have discussed about two aspects that is marketing fosters and Stiffer innovation. There was a lack of emperhical evidence for the above stated aspects. The study also discussed the relationship between market orientation and product innovation, which is considered to be the focal constructs of their study. The study concluded that product variation varies with the market orientation and inter-functional co-ordinations increases the launch of a new product.

William P. Putsis Jr. and Barry L. Bayus (2001) in their study have shown the importance of market opportunity for any kind of new product and also the importance of marketing for the launch of new product. The study concentrates on the launch of a new product that is personal computer and that the product line management is a tool very competitive in order for the new product line launch. The study also highlights that not just marketing but also the pricing has an impact on the customers during the launch of new product line and also both internal and external factors contribute to this.

Zan Mo et.al (2015) in their study suggested that online response influences the buyer behaviour to a larger extent. Hence whatever the product is or however good the product is there are customers who depend on the reviews before buying a product. The authors have used SOS model that is Stimulus Organism Response model to carry out their

study. The study highlighted that the review of a product was not just positive and good ones but also negative ones and bad ones. This study suggested that negative reviews, service review and logistic reviews did not have a significant impact on the customers.

### III. RESEARCH OBJECTIVES

The objectives of the study are as follows

- To study the impact on sales and buyer behaviour due to the recalling of cars
- To study the sales variations of BMW328i
- To determine potential factors causing the recall
- To determine the root cause of the battery drainage issue.

### IV. RESEARCH METHODOLOGY

A) Data Collection:

- Primary data- a) Interview technique  
b) Observation
- Secondary data-a) journals  
b) News paper  
c) BMW official website

B) Sampling Technique:

- a) Non-Probability Sampling  
- Convenience sampling

C) Sample Size:

- a) Sample 25

D) Sampling Population:

- a) BMW328i users of Kerala and Karnataka

E) Design of Experiment

### V. ANALYSIS AND INTERPRETATION

Among the various variants of BMW, the project concentrates on only one variant of the car that is 328i. An interview was carried out among the customers of the BMW. Interview was also conducted to the customers who are using a different variant of BMW cars just to see the perception of these customers towards the BMW328i variant. There were various reasons for which the car was recalled. The reasons are listed below

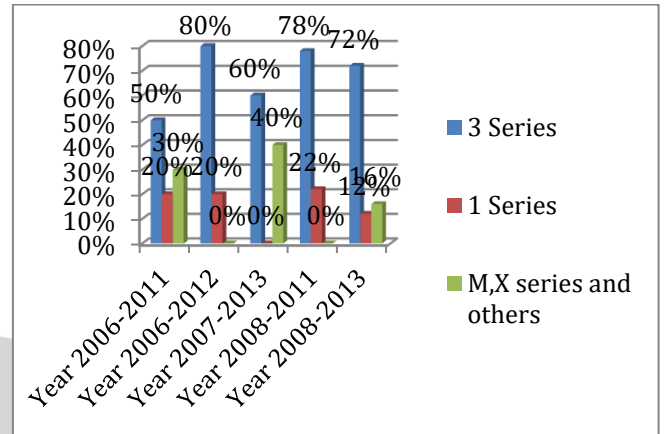
- Battery drainage
- Side marker lights did not illuminate
- Frontal air bag producing excessive internal pressure
- Insufficient lubrication

The above stated are the reasons for the recalling of the cars. However only the potential number of cars that would be under any of this category was given but the actual recalling was very few. The actual recall of cars was very few because the owners had to take the initiative of surrendering the car once the problem was out in the news. These problems were to be fixed because the problems would cause the following hazards

- Car would stall
- Less visibility at night
- Deactivation of air bag

Objective 1:

To study the impact on sales and buyer behaviour due to the recalling of cars



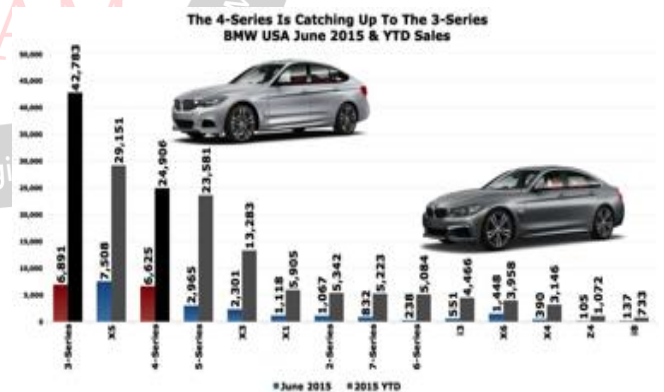
Source: BMW website

Fig1: sales of BMW cars

From the above graph it is seen that the highest number of cars have been recalled between the year 2006 and 2012, the next highest number of cars that were recalled was between 2008 and 2013 this had an impact on buyers as there was a shift in buying behaviour.

Objective 2:

To study the sales variations of BMW328i



Source: BMW official website

Fig 2:Sales figures

The above figure is a depiction of how the 4 series cars is showing better sales as compared to the 3 series from the time the recall has happened. Market analysis of the car was carried out after the recalling of the cars. The sales report from official website of BMW was picked up in order to give a clearer sales figure after the recall was done.

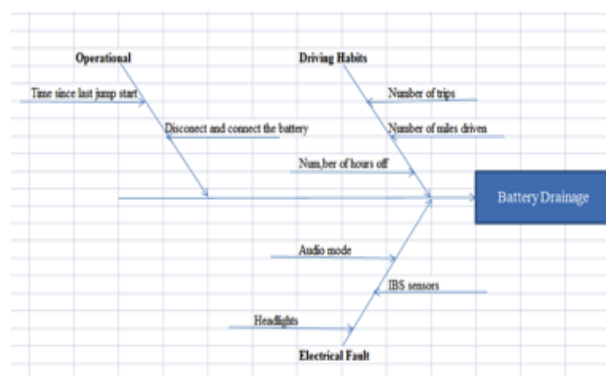
Objective 3:

To determine potential factors causing battery drainage

The following factors were considered to be potential contributors during the data collection process.

- 1) Number of hours off.
- 2) Number of trips in a day.
- 3) Miles driven.
- 4) Disconnect and reconnect of batteries
- 5) IBS sensor disconnected.
- 6) Audio mode and headlights.

These six factors were considered to test the response variable in a randomized design.



Source: Primary data

Fig: 3 Cause and Effect diagram

The cause and effect diagram is depicted in the above fig. From the fig it is easy to boil down to the factors that are contributing to the larger extent to the effect. The reason to select only the battery drainage issue for the further detailing of the study was that the air bag was not an in-house production; was supplied by Takata Company. The engine that goes into the making of 3 series is an in-house production.

If a product or part that goes into the car is out house production then the company retains its reputation by just changing the supplier of that part. But if the product or part that goes into the car is in-house production then it becomes the responsibility of the company to fix the problem. A company as big as BMW cannot be producing faulty products.

Objective 4:

To determine the root cause of the battery drainage issue.

After the potential factors were boiled down, an experiment was carried out where three cars were selected and all the factors were altered in each of this car to see the reason behind the battery drainage problem of this variant of car. Using the analytical tool that is design of experiment, a randomized design was created using these factors and the changes in the response variable were tabulated and indicated in the design matrix: which can be referred in the appendix. This randomized design was developed using the software Minitab and the experiment was carried out on all the three cars.

For the first car it was observed that there was no battery drainage issue whenever there was a voltage above 12.2V irrespective of the other factors that did not show much effect.

For the second car it was observed that voltage has been the same factor that has been showing changes in the battery drainage issue.

For the third car it was observed that the other factors like audio mode, headlights and so on did not have much effect on the battery drainage but changes in the voltage was the main cause.

## VI. FINDING

The findings of this study are listed below

- The research paper found out that there is a direct proportionality between wellbeing of a company and the buyer's behaviour. If a company is going good then the old customers retain themselves and obviously new customers are interested. If a company faces any problem then the effect is shown on the sales of the product.
- BMW has recalled few of its variants. Among the recalled cars it was found out that the 3 series has been recalled to a larger extent. With the data collected it was also found out that among the 3 series variant the sub variant 328i has been the most recalled car.
- The research study also found out the potential reasons for which the cars have been recalled. Out of all the reasons, the recall was done majorly due to battery drainage issue.
- An experiment was carried out on 3 cars and it was found out that if the voltage is anywhere above 12.2V then the battery doesn't drain and if the voltage is less than 12.2 then the battery drains.

## VII. LIMITATIONS

- Among the numerous variants of the car only one variant was considered for the study, which is the 3 series of BMW.
- Among the 3 series of BMW a sub variant was only considered for the study, which is BMW328i series.
- Due to time constraint only 25 respondents were approached for data collection.
- An exact estimate of the after sales was not able to find.
- Among the various issues of the car, only one issue was analysed that is battery drainage issue.
- Only three cars were experimented.

## VIII. CONCLUSION

Marketing is a key aspect and backbone of a business. The study shows that any bad review of a product irrespective of

brand name and brand image there will be an effect on the buying behaviour of a customer. How ever big a company many be they will have to face problems. Not many know that an automobile major like BMW too has faced problems. Getting back the customers trust about the product becomes the prime concern of a company. Thus the company should adopt new marketing strategies in order to improve the buyer's behaviour. Marketing plays a key role in making the customer aware about the launch of a new product. A sound marketing strategy is a necessity for a company be it a new product or to regain the lost trust of the customer over the sold product.

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APPENDIX

Table 1: Data showing the measurement of first car

Car No	Date	Time on	Time off	No. Hrs Off	Voltage	Disconnect and reconnect battery
1	19-05-16	ND	ND	24	8.2	No
1	20-05-16	12 pm	3pm	48	12.4	Yes
1	21-05-16	4.20pm	10.05pm	25.33	12.5	Yes

Table 2: Data showing the measurement of first car

Car No	Date	No. of trips	Miles Driven	Audio mode	IBS sensor disconnected	Days since Jump started
1	19-05-16	0	0	Aux	No	4
1	20-05-16	2	6.4	Aux	No	1
1	21-05-16	3	7.3	Radio	Yes	2

Table 3: Data showing the measurement of second car

Car No	Date	Time on	Time off	No. Hrs off	Voltage	Disconnect and reconnect battery
2	24-05-16	11.54am	2.34pm	13.8166	12.5	Yes
2	25-05-16	11.45am	10.29pm	21.1833	8.2	No
2	26-05-16	2.09pm	4pm	15.6667	8.5	No

Table 4: Data showing the measurement of second car

Car No	Date	No. of trips	Miles Driven	Audio mode	IBS sensor disconnected	Days since jump started
2	19-05-16	2	6.4	Radio	No	3
2	20-05-16	5	67.6	Aux	No	4
2	21-05-16	2	30	Aux	Yes	1

Table 5: Data showing the measurement of third car

Car No	Date	Time on	Time off	No.Hrs off	Voltage	Disconnect and reconnect battery
3	27-05-16	2.05pm	3pm	22.0833	12.4	Yes
3	28-05-16	2.25pm	4pm	23.4166	12.6	Yes
3	29-05-16	5pm	10.05pm	31.5	12.5	Yes

Table 6: Data showing the measurement of third car

Car No	Date	No. of trips	Miles Driven	Audio Mode	IBS sensor disconnected	Days since jump started
3	19-05-16	3	11.4	Radio	No	2
3	20-05-16	5	10.2	Aux	No	3
3	21-05-16	2	6.4	Aux	Yes	2

Table 7: Design matrix of the experiment

Design Matrix										Days Since Jump Started							
Days	Hrs.	Onconnected & Reconnect	Bat.o.	of	Triples	Drive	udio	Mod	Sensor	Disconnec	adights	Mo	of	oltage	oltage	oltage	oltage
1	-	-	-	-	-	-	-	-	-	-	-	-	-	8.4	8.1	8.2	8.5
2	-	-	-	-	-	-	-	-	-	-	-	-	-	10.4	10.6	10.5	11.1
3	-	-	-	-	-	-	-	-	-	-	-	-	-	10.3	11.6	10.4	10.7
4	-	-	-	-	-	-	-	-	-	-	-	-	-	8.5	8.1	8.3	9
5	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2	8.6	8.7	9.1
6	-	-	-	-	-	-	-	-	-	-	-	-	-	10.2	11.1	10.4	10.5
7	-	-	-	-	-	-	-	-	-	-	-	-	-	10.3	10.4	10.9	10.6
8	-	-	-	-	-	-	-	-	-	-	-	-	-	8.6	8.1	8.5	8.8
9	-	-	-	-	-	-	-	-	-	-	-	-	-	12.4	12.5	12.4	12.4
10	-	-	-	-	-	-	-	-	-	-	-	-	-	12.3	12.4	12.4	12.3
11	-	-	-	-	-	-	-	-	-	-	-	-	-	12.4	12.5	12.4	12.5
12	-	-	-	-	-	-	-	-	-	-	-	-	-	12.4	12.5	12.4	12.4
13	-	-	-	-	-	-	-	-	-	-	-	-	-	12.4	12.5	12.5	12.4
14	-	-	-	-	-	-	-	-	-	-	-	-	-	12.4	12.4	12.5	12.5
15	-	-	-	-	-	-	-	-	-	-	-	-	-	12.5	12.4	12.4	12.4
16	-	-	-	-	-	-	-	-	-	-	-	-	-	12.5	12.5	12.4	12.4
17	-	-	-	-	-	-	-	-	-	-	-	-	-	10.3	10.5	10.9	11.2
18	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	8.2	8.1	8.5
19	-	-	-	-	-	-	-	-	-	-	-	-	-	8.7	8.1	8.7	8.5
20	-	-	-	-	-	-	-	-	-	-	-	-	-	10.2	10.6	11.2	10.5
21	-	-	-	-	-	-	-	-	-	-	-	-	-	11.4	11.6	11.4	11.1
22	-	-	-	-	-	-	-	-	-	-	-	-	-	8.7	8.2	8.5	8.6
23	-	-	-	-	-	-	-	-	-	-	-	-	-	8.7	8.6	8.4	8.1
24	-	-	-	-	-	-	-	-	-	-	-	-	-	11.6	11.6	11.8	10.6
25	-	-	-	-	-	-	-	-	-	-	-	-	-	12.4	12.5	12.4	12.5
26	-	-	-	-	-	-	-	-	-	-	-	-	-	12.5	12.4	12.5	12.5
27	-	-	-	-	-	-	-	-	-	-	-	-	-	12.5	12.4	12.4	12.5
28	-	-	-	-	-	-	-	-	-	-	-	-	-	12.4	12.3	12.3	12.3
29	-	-	-	-	-	-	-	-	-	-	-	-	-	12.3	12.4	12.4	12.3
30	-	-	-	-	-	-	-	-	-	-	-	-	-	12.5	12.4	12.5	12.4
31	-	-	-	-	-	-	-	-	-	-	-	-	-	12.5	12.5	12.4	12.4
32	-	-	-	-	-	-	-	-	-	-	-	-	-	12.3	12.4	12.3	12.3