

# Perception Mapping of Entry Level Passenger Cars - An Application of Multi Dimensional Scaling

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## ABSTRACT

The current generation lives in a passionate world of speed. Their thirst for speed is never ending. When it comes to travelling from one space to the other, this phenomenon is not different. Nowadays as the standard of living of the people is on an increasing scale most of them who own two wheelers are switching to four wheelers due to many reasons. This paper mainly focuses on identifying the various unique selling propositions that a customer keeps in mind while buying an entry level hatchback car like Maruti Suzuki Alto, Hyundai Eon and Renault Kwid. A questionnaire was prepared and distributed among the people to collect relevant data. The data obtained from the questionnaires were later analysed using Multi-Dimensional Scaling (MDS) technique. For this particular study in order to interpret the data ALSCAL Multi-Dimensional Scaling (MDS) was used. The perception mapping was done at the end of the study which typically explains about what people think of these cars in the entry segment.

**Keyword:** Entry Level Cars, MDS, Perception Mapping, Hatchback Cars

## INTRODUCTION

Buying a car is always a dream for a common man and entry-level hatchbacks are the gateway to fulfilling the dreams of an aspiring car owner. A typical consumer of an entry-level car is a first-time buyer who wants to step into the world of cars. It is also a segment that is preferred by youngsters who have just started working and are finally independent and earning a decent salary. Then there are those who want a second car in the family, a small vehicle. They may be having several reasons to buy a car and the comparison is very intense in this entry segment.

The new Maruti Suzuki Alto, Hyundai Eon, and Renault Kwid are three of the most sought after entry level hatchbacks in India. These three cars represent the boom and prosperity within this segment and all of them have much to offer to their discerning buyer and contribute a major chunk to the growth of the industry.

## LITERATURE REVIEW

Four out of every ten new car buyers and three in every ten used car buyers, use Internet to do initial research, before

making the purchase (Sharma, 2010). People respond to the information gathered by the senses at an intuitive level, as well as on the basis of rational criteria. The use of bio-feedback systems seems to evaluate the appeal of product offerings, suggesting that this approach is highly effective in predicting consumer purchase behaviour. Consumers' interpretation of product concepts and brand information may be very different from the messages that the company intended to convey. Firms wishing to market to the senses provide simple messages that are memorable, easy to interpret, believable, and relevant to consumer needs (Hill, 2003).

People expect to haggle with dealers over price and to receive substantial rebates or incentives as well as low-interest payment plans. With an increase in multi-car households, car marques and advertisers need to target the right audience, taking into account the pester power of children and the importance of life-stage. Despite the fact that women are the primary buyers of most new cars, he admits that the motor trade has traditionally been contemptuous of women's role in the car-buying process (White, 2004).

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Mehta and Belk (1991) cautioned that there could be fundamental differences in the concept of self, across different cultural entities. They reported this in their studies on Hindu Indian immigrants that they are less susceptible to the western view of self as an object. This also clearly shows in the differential self-belief of migrants from Asia, Africa and other countries to USA.

Different forms of consumer behaviour in the marketplace include, decision making in the household - how consumer choice is manifested in the actions of the family unit. The next is patterns of marriage and family formation and dissolution. It also includes the mobility (geographical, educational, and occupational) and saving trends. Along with the consumer purchases of durable and non-durable goods as well as new products, ideas and brand choice. The shopping behaviour preferences and life styles are also some of the forms of consumer behaviour (Ferber, 1977). The emphasis is on the tangible attributes of the product, which are visible and accountable to the buyer. Customers looking for low-price car, to meet their budget, may necessarily focus on the characteristics of the car, regardless of brand (Keller, 1993). Two aspects of brand loyalty, purchase loyalty and attitudinal loyalty, are the linking variables in the chain of effects from brand trust and brand effect to brand performance (Chaudhuri & Holbrook, 2001).

Two aspects of brand loyalty, purchase loyalty and attitudinal loyalty, are the linking variables in the chain of effects from brand trust and brand effect to brand performance (Lau & Lee, 1999). Nowadays, car owners desire to upgrade their models and brands to avail of the new features and environmental changes and comforts of competing brands. On that account, whether to remain loyal to their existing brand/ product or to switch over to a new brand/product is a million dollar question that bother many car owners. This provides an opportunity for many automobile manufacturers and retailers for innovation. In this confusing scenario, some of the car buyers switch from one brand to another at trade-in time, whereas some other car owners display consistent choice of sticking to their brand/product from purchase to purchase (Sambanandam & Lord, 1995).

Research investigated brand loyalty by examining actual past behaviour and its impact on future behavioural intentions: in terms of expectation to purchase same/other brand from same/another retailer as well as willingness to recommend the brand and retailer to another customer

known to him. Findings indicate that purchase expectation/intention remain a valid research matrix. It would appear that the brand/consumer interface offers greater predictive ability than the retailer/ consumer interface. Willingness to recommend a brand to another consumer does not seem to be influenced by past behaviour, but the higher the respondent's expectation to purchase the brand, the higher will be their willingness to recommend the brand. Same will be applicable to retailer recommendation (Ewing, 2000).

## OBJECTIVES

The purpose of the study is to map the perception of entry segment hatchback cars like Maruti Suzuki Alto, Hyundai Eon, and Renault Kwid. It helps the manufacturer to identify what are the customer's perception regarding the three brands.

## RESEARCH METHODOLOGY

Descriptive research design is used for the execution of this study. A descriptive research is one which portrays accurately the characteristics of a particular group, situation or individual. Thus this design aptly projects the study's findings on a larger population. The population or this study mainly includes people who use entry level cars. This is done in order to map the perception clearly. The samples were collected from the showrooms of Hyundai, Suzuki, and Renault. The approach adopted was non-probability sampling related to convenience. A questionnaire was used for collecting relevant data in order to achieve the research objectives. Opinion from experts and information from previous studies were considered while preparing the questionnaire. Ten point Rating Scale was used to rate the parameters. A sample of size of 118 was estimated based on the variance of different major parameters and conveniently rounded off to 120 respondents. The data collected were then analysed using high end statistical tools including Multi-Dimensional Scaling (MDS).

The questionnaire was mainly having two parts. It consists of all generic questions that were framed to collect the general information of these three particular brand owners. Secondly, questions pertaining to the extraction of perception were added. Thus a set of twelve attributes were filtered that were commonly present in all the three brands

so that the consumers buying nature could be examined properly. These attributes are namely fuel efficiency, ride quality, engine performance, latest technologies and features, build quality and fit & finish, design, value for money, after sales service, low maintenance cost, dealership network, resale value, and brand value.

The tools used to analyze the data were Multi-Dimensional Scaling (MDS) using ALSCAL procedure. MDS analysis starts from data representing similarity scores between objects, and tries to identify which dimensions could have been used for object comparison, for instance. MDS can also be used to test the validity of hypotheses about specific psychological measures used in differentiating objects and identify significant object groupings. MDS algorithms use the Euclidian model as a basis to compute optimal distances between objects in an n-dimensional stimulus space. The related distance function, Euclidian distance, corresponds to our everyday experience with objects.

## RESULTS AND DISCUSSION

The data collected were analysed with appropriate tools. The study could cover 99 male and 21 female respondents. The study could have a full cover of all age categories where majority is in the age group of 22 to 42 (Table 1).

**Table 1: Descriptive Statistics**

<i>Gender</i>		
	<i>Frequency</i>	<i>Percent</i>
Male	99	82.5
Female	21	17.5
Total	120	100.0
<i>Age</i>		
Less than22	2	1.7
22-32	57	47.5
32-42	49	40.8
42-52	8	6.7
> 52	4	3.3
Total	120	100.0

Source: Survey Data

Among the total respondents 82.5% were male and 17.5% were female. 47.5% were between 22 -32 years of age, 40.8% were between the age of 32 – 42 years, 6.7% were between 42 – 52 years, and 3.3% were more than 52 years.

**Table 2: Descriptive Statistics**

<i>First Time Buyer</i>		
	<i>Frequency</i>	<i>Percent</i>
Yes	78	65.0
No	42	35.0
Total	120	100.0
<i>Purchase Decision</i>		
Alone	26	21.7
Joint Decision	94	78.3
Total	120	100.0

Source: Survey Data

Among the total respondents 65% are first time cars buyers and 35% are not first time car buyers. Out of the total respondents 78.33% take decision jointly with their family while buying a car but 21.67% take decision alone while buying a car ( Table 2).

## Mapping of Perception

Different customers have different perception while buying a car. But it can be noted that there are certain factors that can influence every customers perception regarding cars. Car manufacturers take into account these factors while highlighting their USP. Besides these general features, it may be possible that there are other features that could influence their perception. This study tries to analyse these factors and map them visually to interpret it.

## Maruti Suzuki Alto

The first brand considered was Maruti Suzuki Alto, which was India’s one of the most selling cars. Respondents were asked to rate the parameters and the distancing map was created from the same and explained with the help of a visual plot with two dimensions.

**Table 3: Young’s S-stress Formula 1 - Alto**

<i>Iteration</i>	<i>S-stress</i>	<i>Improvement</i>
1	.14477	
2	.12505	.01972
3	.12320	.00185
4	.12295	.00025

Source: Survey Data

Table 3 represents iteration history for the 2 dimensional solution (in squared distances). The analysis suggests a two dimensional solution because the Iterations stopped

because S-stress improvement is less right from the third iteration.

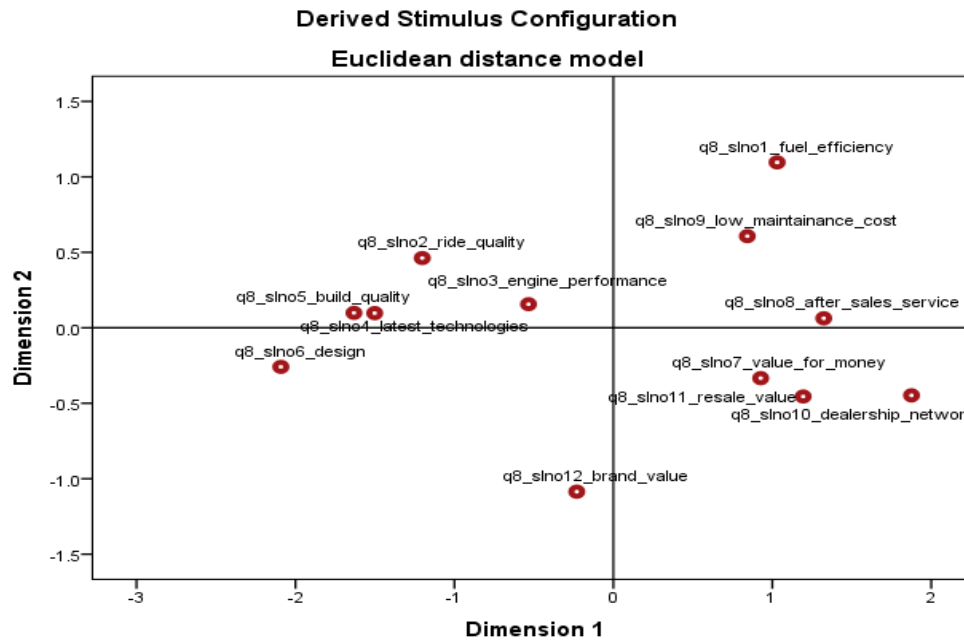


Fig. 1: Multi-Dimensional Mapping of Maruti Suzuki Alto

In Fig. 1, dimension 1 indicates about the durability of the car and dimension 2 indicates about the technical aspects of the car. In dimension 1, factors like fuel efficiency, low maintenance cost, after sale service, value for money, resale value and dealership network are mapped and in dimension 2 factors like ride quality, engine performance, fuel efficiency, low maintenance cost, after sale service, and build quality are towards the positive side. Thus factors like fuel efficiency, after sale service, and low maintenance cost attract the customers more towards the car Alto which can be clearly seen on the positive side of both the dimensions. Through above analysis it is found that Maruti Suzuki Alto is in the minds of customers mainly because of the fuel efficiency, low maintenance cost, and after sale service.

**Hyundai Eon**

The next brand considered for analysis is Eon from Hyundai. Table 4 represents iteration history for the 2 dimensional solution (in squared distances). The analysis suggests a two dimensional solution because the iterations stopped because S-stress improvement is less right from the third iteration.

Table 4: Young’s S-stress formula 1 - Eon

Iteration	S-stress	Improvement
1	.24752	
2	.22268	.02483
3	.22139	.00129
4	.22135	.00005

In the mapping of Hyundai Eon, dimension 1 indicates about the style aspects of the car and dimension 2 indicates about the durability aspects of the car. In dimension 1 factors like design, latest technologies, ride quality, build quality, engine performance, and fuel efficiency were mapped to the positive side while in dimension 2 factors like low maintenance cost, dealership network, after sale service, brand value, design, latest technology, and build quality are towards the positive side. Thus factors like latest technology, build quality, and design attracts the customers more towards the car. By doing the above analysis it is found that Hyundai Eon is in the minds of customers because of the latest technology, build quality, and design i.e. its style aspects.

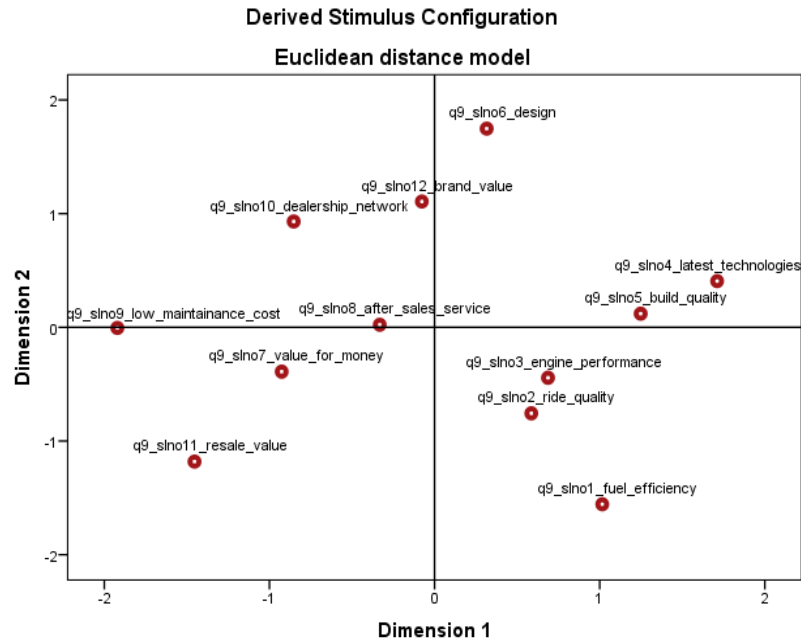


Fig. 2: Multi-Dimensional Mapping of Hyundai Eon

Renault Kwid

The next brand considered for analysis is Kwid from Renault. Table 5 represents iteration history for the 2 dimensional solution (in squared distances). The analysis suggests a two dimensional solution as iterations stopped because S-stress improvement is less right from the third iteration.

Table 5: Young’s S-stress formula 1 – Renault Kwid

Iteration	S-stress	Improvement
1	.17984	
2	.15790	.02194
3	.15688	.00102
4	.15685	.00003

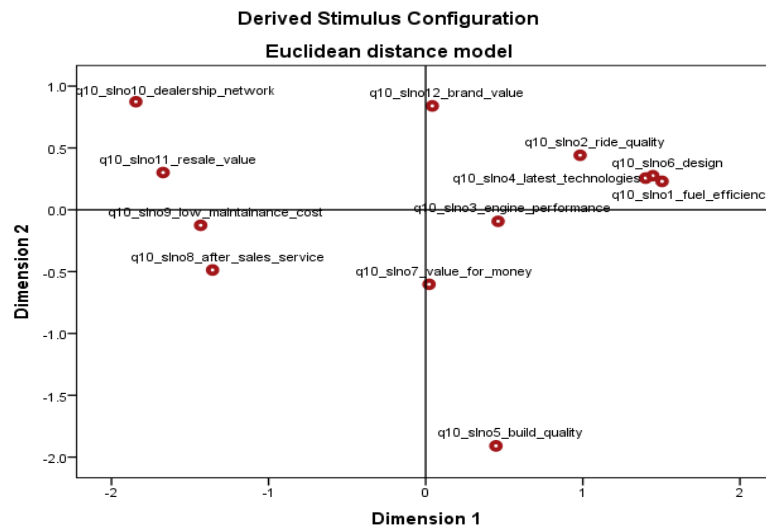


Fig. 3: Multi-Dimensional Mapping of Renault Kwid

In Renault Kwid, dimension 1 indicates about both durability and technical aspects of the car and dimension 2 indicates about the service aspects of the car. In dimension 1 factors like design, latest technologies, ride quality, build quality, value for money, engine performance, and fuel efficiency are mapped and in dimension 2 factors like resale value, dealership network, brand value, design, latest technology, ride quality, latest technologies, and fuel efficiency are towards the positive side.

Thus factors like latest technology, ride quality, design, fuel efficiency, and brand value attract the customers more towards the car Kwid. By doing the above analysis it is found that Renault Kwid is in the minds of customers because of the latest technology, ride quality, design, fuel efficiency, and brand value i.e. its style and technical aspects.

From the above analysis we can say that customers are more attracted towards the durability features of Alto, technical and appearance features of Eon, and the durability and technology of Kwid.

## CONCLUSION

The findings made in this study are attributed to the corresponding brands. Logically speaking also, these findings make sense since it is clearly noted that Maruti Suzuki Alto is in the minds of customers because of the fuel efficiency, low maintenance cost, and after sale service i.e. its durability aspects. Similarly it can be said that Hyundai eon is in the minds of customers because of the latest technology, build quality, and design i.e. its style aspects and Renault Kwid is in the minds of customers because of the latest technology, ride quality, design, fuel

efficiency, and brand value i.e. its style and technical aspects.

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