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A CONCEPTUAL FRAMEWORK FOR DEVELOPMENT OF FEATURE BASED MOTORHOME FOR INDIAN FAMILIES

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ABSTRACT: A Motorhome/Recreational Vehicle is the most common term for a motor vehicle or trailer having living space and amenities available in a home. It is witnessed that over the years, Indian families buying perception and behavior towards cars have now been challenged by the new range of cars equipped with all the luxuries, comforts and facilities that can be afforded at ease. Moreover, there is a significant growth in the number of high middle income class group in Indian society due to increase in per capita income. The present paper aims to prepare a theoretical framework for Modeling of Features Based Motorhome for Indian Families and to propose a feature based Motorhome model for Indian Families that may be beneficial for the Indian Automobile Manufacturers.

Keywords: motorhome, recreational vehicle, caravan, product, model, features, Indian families

1. INTRODUCTION

Motorhomes are designed around customers' needs and crafted to perfection with style and imagination. A motorhome provides sleeping accommodation for between two and eight people. Sleeping place is popularly known as a berth. Each berth is either fixed or converts from another part of the motorhome's interior. A kitchenette area has cooking equipment's; generally a kitchenette has an oven, grill, stovetop, and sink. A separate washroom is housed in the motorhome that has a flushing cassette toilet, shower and basin. A motorhome also has a cab area with a driver and passenger seat. A dinette area offers a table and seating space. It may also have a lounge that consists of side lounge or a U-shaped sofa.

Motorhomes offer a very safe and comfortable travelling option. It is a very common assumption that travelling should be a pleasurable experience, irrespective of whether it is a short drive for a family picnic or reaching an important destination to strike a business deal. The Department of Motor Vehicles of the State of California which is a public service agency clearly stated that in the market several types of RVs and trailers are available such as Conventional, Fifth-wheel, Folding Camping Trailer, Van Camper and Conversion, Motor home and Truck Camper.[1]

2. REVIEW OF LITERATURE

Motorhome/Recreational Vehicle (RV) is defined as a refitted car, SUV, or van with hygiene, cooking, sleeping, and living facilities, or Western-style RV, it is pointed out that RV is not just an SUV or a car.[2] Caravanning and camping is a leisure activity that consists of a number of sequential experiences.[3] Dawn K. Fredrickson and C. Randal Vessell revealed that RV



Figure 1: Recreational vehicles and trailers

manufacturing has evolved dramatically in the past 90 years, far from the days of the “tent and bed” Model T. New technology has produced the vehicle that offers every comfort of home while at the same time stretching the limits of acceptability regarding size and service requirements.[4] Anne Hardy found that Recreational Vehicles (RVs) are a rapidly emerging market within tourism. Despite their growth, little research has been conducted into RVers motivations, experiences and the diversification of the RV market.[5] Shinde and Jain highlighted that Indian car industry is witnessing a shift in demand going from two wheelers to cars due to rising availability of low cost cars and the car being a symbol of high prestige. Along with this, the concept of motorhomes is becoming popular in the country, just as it has gained popularity in the West, especially in Europe and the United States and Canada.[6]

3. INDIAN AUTOMOBILE INDUSTRY

The Indian automotive market is one of the most competitive markets with low costs, which make it an attractive assembly base for foreign automotive manufacturers. The Indian car industry is witnessing a shift in demand going from two wheelers to cars due to rising availability of low cost cars and the car being a symbol of high prestige. At present India offers fourth largest passenger car market in Asia. The economic reforms of the Indian government have encouraged several foreign investors to invest in the car market. Decrease in the rate of duties for small cars has also encouraged a significant boom. According to a report of Indian Brand Equity Foundation Indian automobile industry is expected to be the world's third largest by 2016. [7] Leading car manufactures/players in India.

- » Maruti Udyog
- » Hyundai Motors India Ltd.
- » General Motors India
- » Tata Motors Ltd.
- » Mahindra and Mahindra Ltd.
- » Hindustan Motors
- » Daimler Chrysler India Private Ltd.
- » Skoda Auto India Private Ltd.
- » Fiat India Private Ltd.
- » Nissan Motor Co. Ltd.

As per the data of the Society of Indian Automobile Manufacturers (SIAM) sales growth of cars in July 2015 is 17.47% above July 2014. This clearly reflected in the strong growth in car sales aided overall domestic sales of passenger vehicles, as they rose by 11.4 %.[9]

| COMPANY | JULY | | |
|----------------------------------|----------------|----------------|---------------|
| | 2014 | 2015 | % CHANGE |
| PASSENGER VEHICLES | | | |
| Passenger Cars | 137,922 | 162,022 | 17.47% |
| Utility Vehicles | 45,023 | 45,191 | 0.37% |
| Vans | 16,617 | 15,155 | -8.80% |
| Total passenger vehicles | 199,562 | 222,368 | 11.43% |
| COMMERCIAL VEHICLES | | | |
| M&HCvs | | | |
| Passenger carriers | 2,950 | 4,440 | 50.51% |
| Goods carriers | 14,859 | 18,621 | 25.32% |
| Total M&HCvs | 17,809 | 23,061 | 29.49% |
| LCVs | | | |
| Passenger carriers | 4,305 | 4,692 | 8.99% |
| Goods carriers | 25,661 | 24,042 | -6.31% |
| Total LCVs | 29,966 | 28,734 | -4.11% |
| Total commercial vehicles | 47,775 | 51,795 | 8.41% |

Figure 2: Indian four wheelers sales analysis [10]

Table 1: Market Share of Automobile in India [8]

| Category | Market leader | Other | | |
|---------------------------|-----------------------|-------------------|--------------------|------------------------|
| Passenger car | Maruti Suzuki – 44.8% | Hyundai – 20.4% | Tata Motors – 9.7% | Ford India – 4.1% |
| Utility vehicle | M & M – 49.75% | Renault – 13.24 % | Maruti – 13.11% | Toyota – 10.60% |
| MCVs & HCVs | Ashok Layland – 38% | Tata – 33 % | VECV Either – 15% | SML Isuzu – 9% |
| LCVs | Tata – 40% | Force Motor – 32% | VECV Either – 13% | Mahindra Navistar – 9% |
| Three wheelers-passengers | Bajaj Auto – 52.46% | Piaggio – 30.07% | Mahindra – 9.07% | Atul Auto – 4.44% |
| Three wheelers-goods | Piaggio – 55.57% | Mahindra – 0.99% | Atul Auto – 15.75% | Scooters India – 7.35% |
| Motorcycles | Hero – 53.60% | Bajaj – 23.88% | Honda – 11.67 % | TVS – 5.78% |
| Scooters | Honda – 50.92% | Hero – 21.07% | TVS – 11.65% | Suzuki – 8.77% |

A good network of roads and transportation system along with increased GDP, per capita income and high ownership capacity led to a significant rise in the lifestyle of Indian families. According to KPMG survey in India, rising prosperity, easier access to finance and increasing affordability is expected to see car market gaining volumes. However, with the sudden boost in the economy and an increase in the purchasing power of people, big luxury cars slowly and gradually are now in demand. [9]

4. MOTORHOMES FOR INDIAN FAMILIES

In India, families and individuals are choosing motorhome /RV travel as a way to see parts of the world while maintaining their income. Today, a local farmer is also vying for a Mercedes, young

IT professionals own Audi, young industrialists are driving Ferrari- a great variance in the customer profile and inclination towards owning luxury cars can be seen in Indian car market. As the Indian economy grows, there are more people who move into the higher middle class bracket. They open up a new customer base altogether for Motorhomes/recreational vehicles market. Industrialists and business class of this metro city appeared to be more prone to avail the comforts and pleasures of Motorhome/Caravan/RV as paying capacity of city dwellers is equally good. The concept of Caravan tourism has also gained popularity across India due to freedom and flexibility it offers. A new trend is witnessed among the Indian families advocate that a motorhome is considered as a life time investment and buyers do not mind spending on technology, comforts, facilities and efficiency which is all available in these luxury vehicles.

In India, corporate houses are exploring the marketability of Motorhomes /caravans. The Ministry of Road Transport and Highways is also working on norms to make this kind of tourism more user-friendly. Further, Ministry of Road Transport and Highways reported that caravans are clubbed under the trailer category and along with the prime mover are categorized under articulated vehicles. The Society of Indian Automobile Manufacturers has already recommended to the ministry the standards required for caravans. In India, following are leading brands contributing in the development and growth of Motorhome industry as:

- » Kalapuraparambil Automobiles
- » Relax Caravans
- » Space Tech
- » Sigma Auto Craft Pvt. Ltd
- » Basecamp
- » Para Coat Products Ltd
- » Jbcl Group
- » Chintamani Motors

5. OBJECTIVE AND RESEARCH METHODOLOGY

The present paper aims to prepare a theoretical framework for Modeling of Features Based Motorhome for Indian Families and to propose a feature based Motorhome model for Indian Families that may be beneficial for the Indian Automobile Manufacturers.

The results of the present study are based on descriptive statistics such as frequency distribution and mean score of variables. The secondary data collected from various websites, journals, magazines, newspapers and reference books. Literature review has shown prior research work done in this area.

6. SAMPLE SIZE AND SAMPLING METHOD

The sample size of the study was 200 respondents from the selected 5 major cities of India. The sampling method selected by the researcher was non-probability judgment sampling method. The sample was drawn from 5 selected cities of India belonging to upper and higher middle class.

In this research work, a self-administered and non-disguised five-point scale questionnaire that consisted of 20 closed-ended statements for the purpose of primary data collection was applied. Each statement out of 10 had a five-point scale (i.e. 5- Strongly Agree to 1- Strongly Disagree). The respondents had to tick either of the five-point choices.

The scores on the individual items/ statements were added to construct a total score for the respondent. 200 respondents from urban areas of India namely: Mumbai, New Delhi, Bangalore, Kolkata and Indore. The

researcher visited house to house with convenient and judgmental basis in urban localities in order to administer the questionnaire.

7. DATA ANALYSIS

The excel sheet was prepared where the response of all 200 respondents against 10 statements was entered. Descriptive statistics used in this study included mean, frequencies, percentages and

Table 2: Questionnaire response from selected cities of India

| No | Zone (Selected Cities) | Questionnaire Distributed | Questionnaire Received | % of Questionnaire |
|----|-----------------------------|---------------------------|------------------------|--------------------|
| 1 | Mumbai (West India Zone) | 60 | 37 | 61 % |
| 2 | Delhi (North India Zone) | 52 | 40 | 76 % |
| 3 | Chennai (South India Zone) | 57 | 36 | 63 % |
| 4 | Kolkata (East India Zone) | 55 | 35 | 63 % |
| 5 | Indore (Central India Zone) | 61 | 52 | 85 % |
| | Total | 285 | 200 | 70 % |

standard deviations. The data analysis and modeling tools applied in this research work were as: Cronbach’s Alpha Model, Mean, Standard Deviation, Autodesk Inventor 2014 Professional and CATIA V5 R20 (Computer aided three-dimensional interactive application) were used for planning, design and development of the concept of feature based motorhome for Indian families. In this study, Cronbach’s Alpha Model was used for internal consistency, based on the average inter-item correlation. A value of 0.70 or more indicates very good internal consistency reliability in exploratory studies. In this study, the Cronbach’s Alpha value is .693, which assumes good internal consistency among the items in the Questionnaire.

Of the 200 respondents, 136 were male and 64 were female, 90 respondents were between 39-48 age groups, Family Size consisting 3-5 Members were 108 and 104 respondents fall into the income group above Rs 50000/-.

Majority of respondents fall in the age group ranging from 39-48 years. This reveals that the middle age group respondents are more concerned /aware about the concept of Motorhomes/RVs than respondents from other age group. The study disclosed that majority of people of this age group have four/two wheelers for their conveyance. The respondents of this age group are more prominent in taking care of their members of family while travelling with them and more conscious about factors of pleasure and comforts that they usually have in their existing family four wheeler(s).

The Study revealed that Indian male have more experience of driving than females. After hectic routine life of metro, mostly Indian families like to spend their holiday or weekends with their family members by going on an outdoor tour to any serene and calm place where they can have all the pleasure, fun and comforts. Privacy, safety and security of family are the key concerns for them. Under such circumstances, caravan tourism is really offering them a sigh of relief.

Large families however remain a significant but not dominant component of Indian life. The results highlighted that with 49.7% of all Indian households having four or less members, the selected cities for the present study are exception to this fact. This data may be very inspiring for Motorhome / RV manufacturers / developers as to accommodate a family of 3-5 members it is a better option for customer than a luxury car. They are equipped for vacations or short trips.

Results showed that most of the respondents agreed that the concept of Motorhome is new for them to understand. The calculated mean value 3.48 proved this point. They considered car trip is the best option for their families’ enjoyment /pleasure/ entertainment/ sightseeing during their holidays. The calculated mean value 2.68 proved this point. Most of the respondents revealed that their present car trips are comfortable journey affairs. The calculated mean value 2.27 proved this point. 41 percentage respondents agreed that Motorhome may add more comfort/pleasure to their family tour. The calculated mean value 3.51 proved this point.

Out of 200 respondents, 74 strongly agreed that space is available in Motorhome than their existing car. The calculated mean value 4.04 proved this point. Majority of respondents disagreed

Table 3: Mean, median, mode and std. deviation of question

| No | Question | Mean | Median | Mode | Std. Deviation |
|----|--|------|--------|------|----------------|
| 1 | The concept of Motorhome is new for you to understand. | 3.48 | 4.00 | 4 | .839 |
| 2 | Do you consider car trip is the best option for your families’ enjoyment/ pleasure /entertainment /sightseeing during your holidays? | 2.68 | 3.00 | 3 | 1.114 |
| 3 | Your present car trips are comfortable journey affairs. | 2.27 | 2.00 | 3 | .986 |
| 4 | Motorhome may add more comfort/pleasure to your family tour | 3.51 | 4.00 | 4 | .862 |
| 5 | There may be more space available in Motorhome than your existing car. | 4.04 | 4.00 | 5 | .835 |
| 6 | Motorhome may have more aesthetic appearance than your present car. | 3.00 | 2.00 | 2 | 1.409 |
| 7 | Motorhome may offer you more privacy and security than your owned car. | 4.18 | 4.00 | 5 | .783 |
| 8 | Motorhome has more amenities like kitchen, bed, sofa set, dining area, lavatory etc. than a traditional car. | 3.71 | 4.00 | 4 | .631 |
| 9 | Motorhome has a wide range of entertainment facilities for all the members of family than a regular car. | 3.74 | 4.00 | 4 | .698 |
| 10 | Motorhome may increase your family’s living standards. | 3.98 | 4.00 | 4 | .496 |

that Motorhome have more aesthetic appearance than their present car. The calculated mean value 3.00 proved this point. 83 respondents found that Motorhome offer them more privacy and security than their owned car. The calculated mean value 4.18 proved this point. Most of the respondents strongly agreed that Motorhome has more amenities like kitchen, bed, sofa set, dining area, lavatory, and kitchen than a traditional car. The calculated mean value 3.71 proved this point.

Similarly, 53 percentage respondents remarked that Motorhome has a wide range of entertainment facilities for all the members of family than a regular car. The calculated mean value 3.74 proved this point. Most of the respondents agreed that Motorhome may increase their Family's living standards. The calculated mean value 3.98 proved this point.

8. CONCLUSIONS

The popularity of motorhomes and campervans varies from country to country, meaning that in some parts of the world the idea of travelling by motorhome is generally unheard of. Motorhome manufacturers and sellers are therefore looking to countries where there is little competition on the market and economies that are leading to many members of the public gaining extra disposable income. Motorhome holidays are becoming more and more popular, as customers are beginning to see just how flexible an option it has become compared to the more conventional package holiday. In India, Bollywood (Movie) stars, high profile politicians, business tycoons, and sports personalities so far prefer to use vanity vans/ Motorhomes/ recreational vehicles for their respective objectives. Big corporate houses are exploring the marketability of Motorhomes /caravans.

The results of the present research also revealed that a desire for freedom from standard care and work and home life has given momentum to the concept of motorhomes in India. It is also found that RVing creates its own complexities such as the status afforded by ownership of big rigs, and issues related to rig size but still there is good indication that the Indian younger generation is also a growing market for RVing.

Suggestions to manufactures for modelling of motorhomes for indian families:

- » The motorhomes should be made cost effective so that Indian customers can afford it financially or it should be within their reach despite of financial constraints.
- » The weight, size, shape and design of motorhomes should be modeled in such a way that it should be according to likings, culture, customs, daily routine, comfort, pleasure, tradition, interest, and habits etc. of Indian families.
- » Accommodation should be provided as per level of comfort and pleasure.
- » Sleeping arrangement should be made over the drivers seating area or on upper level can be fixed or sliding or removable in nature.
- » Electrical requirements have to be backed up by generator or battery back-up of minimum 24 hrs.
- » All electrical appliances should have a safety fuse systems.
- » Cooking facility should be provided inside the vehicle and it should be made secured.
- » Storage facilities should be provided by a cupboard or locker or by drawer systems.
- » Wash basin should be provided inside or outside the vehicle, depending on layout design.
- » Fresh water tank should be provided in a place that can be maintained at ease.

9. PROPOSED MOTORHOME MODEL FOR INDIAN AUTOMOBILE MANUFACTURERS

Designing and modeling of Motorhome/RV is a quite stimulating work. Companies that manufacture luxury motorhomes often offer new and used vehicles, and some may also provide access to rentals for customers who do not want to purchase but use a Motorhome/RV for a planned trip or event. The size/design is kept within legal limitations so it can be driven on the open road, and it may facilitate all the amenities to the users.

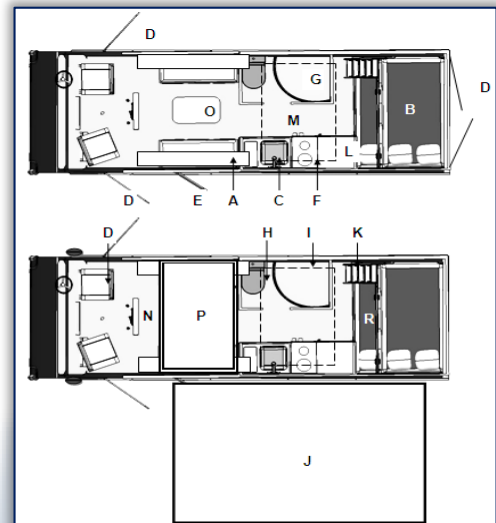


Figure 3: Floor plans with internal arrangement of Motorhome

Table 4: Details of internal arrangement of proposed Motorhome

| | | | | | |
|---|------------------|---|------------------------|---|----------------------|
| A | sofa cum bed | F | gas stove | K | stair or barth |
| B | double floor bed | G | bath room | L | kitchen platform |
| C | wash basin | H | toilet | M | kitchen working area |
| D | door,back door | I | water tank | N | television |
| E | emergency window | J | slide-outs | O | center table |
| P | bed at night | Q | both side wall cabinet | R | bed storage |



Figure 4: Orthographic view of proposed motorhome for Indian families (in first quadrant projection system)

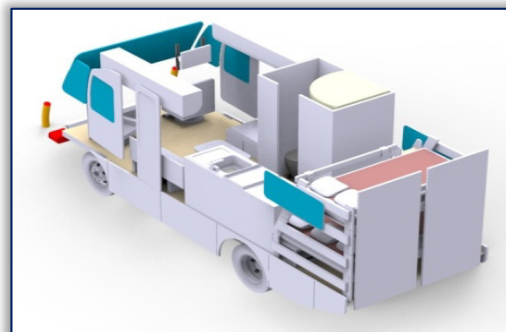


Figure 5: Orthographic view of proposed motorhome for Indian families (in first quadrant projection system)

Based on results through data analysis, the present research study proposed feature based Motorhome model for Indian Automobile Manufacturers. The results of the present study clearly indicates that the motorhomes will become popular in India in the near future, and gain the same amount of success as motorhome manufacturers in Europe and America. The Indian public would be interested in motorhome due to their value for money and practicality.

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