

Current Emphasis on Safety by Indian Automotive Industry & Comparison of Various Safety Features in Fastest Emerging Vehicular Segment of Mid-Sedan

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Abstract—As per the vision of Government of India, Indian automotive industry should work in such a way, where it arises as the terminus of choice in the domain for design and manufacturing of automobiles with output reaching a level of USD 145 billion accounting for more than 10% of the GDP and providing additional employment to 25 million people by 2016. Thus, if above statement emerges as a truth, then purchasing power of Indians will increase – obviously - but problems related to it will also take a giant leap i.e. more no. of vehicles on road as well as more accidents. To overcome this problem various Indian OEM's have geared themselves & have tried to lure customers by introducing various safety features in their newly launched products. This paper helps to understand why Indian automotive industry has started emphasizing more on safety & an answer to a question i.e. Whether OEM's are really serious regarding providing safety at affordable price or they simply bluff about there achievements? Answer to this question will be accomplished with the help of comparisons on basic safety features (keeping some of the most important vehicle selection parameters in mind) in category of one of the fastest emerging vehicle segment in India i.e. mid-sedan

Key Words: *Mid-sedan, Active Safety, Passive Safety, Indian Automotive Industry, Accidents, Safety features*

I. INTRODUCTION

To remain safe means to stay away from calamities/accidents & automotive safety means avoidance/prevention of automobile accidents. In today's modern world, safety means safety of people in & out of vehicle. Automotive safety is classified in two parts first, accident prevention, where all measures will be taken to prevent accidents & secondly, accident mitigation, where all measures will be taken to avoid effects during & after accidents. Accident prevention is more or less in hands of humans & the environment. We can't control environment but can control humans physical & mental condition & their perception. Accident mitigation is the area where automotive world is concentrating, so that errors by humans can be minimized. Indian automotive industry has evolved a lot during past years, and during this evolution lots of things are learned, out of which "emphasis on safety" is one of the most important parameter.

II. WHY TO EMPHASIZE ON SAFETY?

Abundant safety features have been installed & upgraded in cars for years, for humans in & out of vehicle. Roads & vehicles have improved significantly since past many years but accident is still a kind of ghost who will always be available for humans. Below mentioned points helps to understand why to emphasize much on safety.

A. Population Bomb

India is a land of one of the worlds oldest civilization; where census count takes place after every 10 years. As per latest census of 2011 carried out by Ministry of Statistics & Programme implementation, Government of India; current population of India is 121.1 crores, which have grown to 128 crores in 2015. Two things should be noticed here, First, comparing data of 1991, 2001 & 2011 census, it is found that every time there is a growth of 18%-19% in population between these years. As of today, India is having world's second largest population, which is equivalent to 17.5% of world's population. Second, approximately 65% of indians are below 35 years of age. As India is worlds largest democracy, whose GDP is crusing at approximately 7% ; purchasing power of Indians is on rise, thus, global OEM companies are targeting India to expand there business. This means rise in population will give rise to increase in demand of vehicles, which in turn means more number of vehicles will be there on Indian roads & alongwith it accidents / deaths of humans & animals too. Thus, safety becomes important factor for consideration

B. Production & Sales trend of Indian Automotive Market

India is world's fastest developing passenger car markets and second largest two wheeler manufacturer. This industry produced a total of 23,366,246 vehicles in the month of April-March 2015 against 21,500,165 in April-March 2014, registering a growth of 8.68 percent as compared to last year. The sales of Passenger vehicles grew by 3.90%, 3-wheelers by 10.80 %, passenger carriers by 12.16%, Goods Carriers by 5.27 % & two wheelers registered growth of 8.09 % in April-March 2015 as compared to previous year. Within the Two Wheelers segment, which is considered as the most affected segment of road accidents, Scooters, Motorcycles and Mopeds grew by 25.06 %, 2.50% and 51% respectively in April-March 2015 as compared to April-March 2014. Growth trend for sales & production is clearly illustrated in

Fig.1 & Fig. 2. Fig. 3 indicates vehicle share in indian automotive market.

C. Accident occurring on Indian Demograph

Rate of accidental deaths in India in the year of 2013 was 32.6%, which grew to 36.3% in 2014. These accidental deaths were categorized in two parts (i) Natural accidents (ii) Un-Natural accidents. Natural accidents are out of humans’s reach, but unnatural accidents can be controlled.

1). Unnatural Accidents: In India, every hour nearly 36 persons were killed in un-natural accidents in the year 2014. The major causes of un-natural accidental deaths were traffic Accidents (53.4%), Drowning (9.4%), Accidental Fire (6.2%), Falls (4.9%) and Electrocution (3.0%).

2). Traffic Accidents: Traffic accidents are categorized as Road Accidents, Railways Accidents and Railway Crossing Accidents. The share of these accidents was reported as 83.7% of road, 14.8% of railways and 1.5% of railway crossing during 2014. Out of these, most concerned are road accidents

3). Road Accidents: In india, during 2014 , 51 cases of road accidents took place every hour, where 16 persons were killed. During 2014, a total of 4,50,898 cases of ‘Road Accidents’ were reported which caused injuries to 4,77,731 persons and death of 1,41,526 persons. Deaths due to ‘Road Accidents’ in the country have increased by 2.9% during 2014 as compared to 2013. During 2014, main reasons for these deaths were concluded as, first, over speeding which caused 48,654 deaths and left 1,81,582 persons injured . Secondly, careless driving, which caused 1,37,808 road accidents resulting 42,127 deaths and injury to 1,38,533 persons. Besides this, 3.2% of road accidents were due to poor weather condition.

Thus, as per above mentioned sections, safety becomes one of the most important parameter in India & every OEM have started considering this fact. The proof of which is available in following section.

OVERALL DOMESTIC VEHICLE SALES TREND OF INDIAN AUTOMOTIVE INDUSTRY

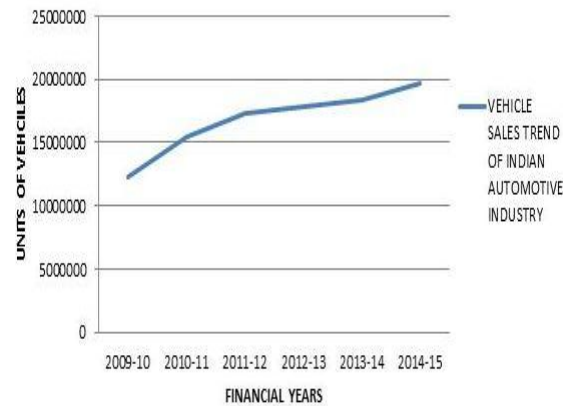


Fig 2. Vehicle Sales trend of India

INDIAN AUTOMOTIVE DOMESTIC MARKET SHARE FOR 2014-15

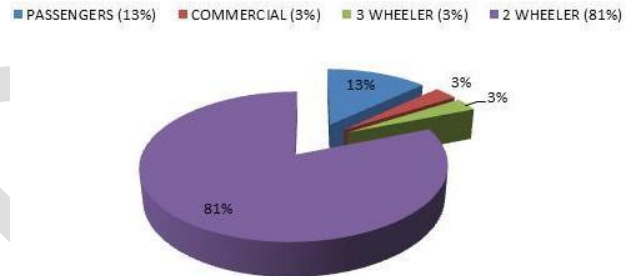


Fig 3. Domestic market share of various segments of vehicle

III. SAFETY FEATURES IN INDIAN AUTOMOBILES

Indian automotive industry had seen various changes since the days of independence, similar to that, customers got independence of choice when, Indian government brought changes in there policies & allowed foreign companies to enter Indian automotive market. This in turn resulted in increase of competition amongst various OEM’s. The result of this competition has given rise to one of today’s most emerging & competitive segment of “Mid-Sedan”. There are various OEM’s fighting tough for the top spot, but they offer much less in terms of safety

A. What are different types of Safety Features ?

Various types of systems are introduced to keep occupants & pedestrian safe. These features are divided in two parts (i) Active safety features (ii) Passive safety features.

1) Active Safety Features: Features that work to prevent the risk of collision are called as active safety features. They are always active for e.g. Tyre pressure monitoring system (TPMS), Traction Control, Brake Assist, Adaptive headlamps, Electronic Stability Control systems, advanced driver assistance system, cruise control systems, night vision systems, Pedestrian protection systems etc.

2) Passive Safety Features: Features that work during accidents to minimize the effect of collision are considered under passive safety features for e.g. Seat belts, Airbags,

VEHICLE PRODUCTION TREND OF INDIAN AUTOMOTIVE INDUSTRY

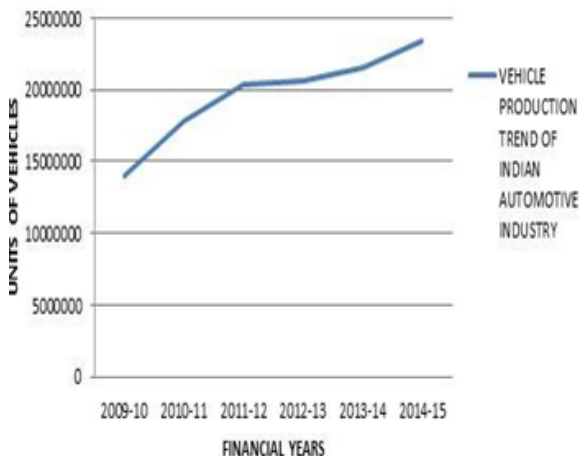


Fig 1. Vehicle Production trend of India

Strong body structures, deformation zones, passenger safety cell, laminated glass, correctly positioned fuel tank, fuel pump kill switch, head restraints, roll - over bars, side impact protection beams etc.

IV. COMPARISON OF LATEST MID-SEDAN MODELS AVAILABLE IN INDIAN AUTOMOTIVE INDUSTRY

Cost of the vehicle and its fuel efficiency are the two most important parameters for choosing a new vehicle in India. Alongwith it some other parameters have also started gaining importance such as brand image, Inbuilt accessories, sales & service, resale value, colour of vehicle etc. Thus cost being top most crucial parameter, comparison of various safety features in 5 different mid-sedans will be limited to their base models only because base models (petrol versions only) are considered as the cheapest versions.

A. Safety Features

Here safety features of Hyundai- Xcent, Honda-Amaze, Maruti Suzuki- Dzire, Tata-Zest & Ford-Aspire are taken into consideration. Here safety features related to body i.e Strong body structures, deformation zones, passenger safety cell etc. are as assumed to be present in all models. Below mentioned are some of the basic features for whom comparisons are done.

Basic Safety features	Safety related warnings	Features to increase visibility for safety purpose
Antilock Braking Systems (with/ without EBD)	Door ajar warning	Fog Lamps
Airbags	Rear Parking Sensors system	Rear Defogger
Central Locking	Driver seat belt reminder	Driver seat height adjuster
Speed Auto-lock door		
Engine Immobilizer		
ESP/HLA/TCA		
TPMS		
Hill Launch Assist systems		

Table I. LIST OF SAFETY FEATURES IN VEHICLES.

B. Result of comparisons

As mentioned in table No. I, total 14 safety features are divided into three different categories i.e. basic safety features, safety related warnings & features which help to increase the visibility. Seeing table no. II & Fig 4, it becomes clear that none of the automotive company is much worried about safety of indian customers., who limit themselves to purchase base models. None of the company has scored even 50%. Though from comparison point of view; Ford seems to be little worried about their customers & thus they have introduced Airbags systems in there base models.

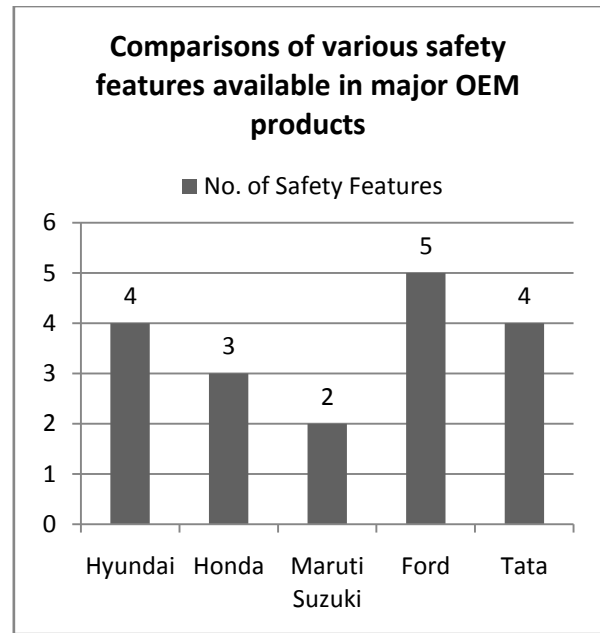


Fig 4. Comparisons of safety features

Safety Features of petrol versions	Xcen -t- Base	Amaze -E	Dzire- Lxi	Aspire- Ambient	Zest- Xe
Basic Safety features					
Antilock Braking Systems (with/without EBD)	N	N	N	N	N
Airbags	N	N	N	Y	N
Central Locking	Y	Y	N	Y	Y
Speed Auto-lock door	N	N	N	Y	N
Engine Immobilizer	Y	Y	Y	Y	Y
Electronic Stability Program/ Cruise Control systems	N	N	N	N	N
Tyre Pressure Monitoring System	N	N	N	N	N
Hill Launch Assist systems	N	N	N	N	N
Safety related warnings					
Door ajar warning	Y	N	N	Y	Y
Rear Parking Sensors system	N	N	N	N	N
Driver seat belt reminder	Y	Y	Y	N	Y
Features to increase visibility for safety purpose					
Fog Lamps	N	N	N	N	N
Rear Defogger	N	N	N	N	N
Driver seat height adjuster	N	N	N	N	N
TOTAL (14)	04	03	02	05	04

Table II. VEHICLE SALES TREND OF INDIA

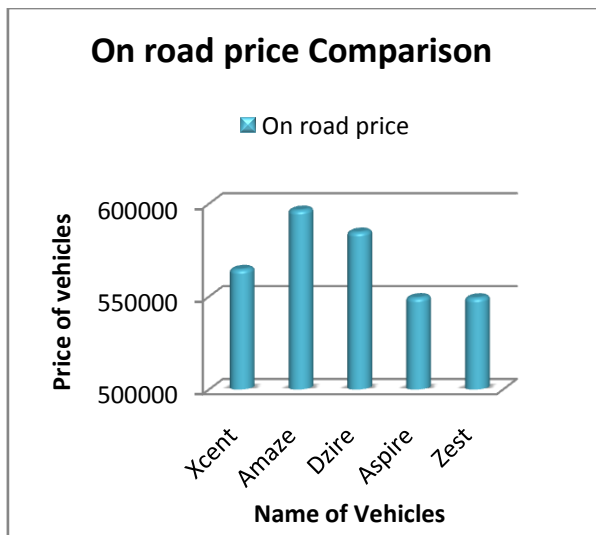


Fig 5. Comparisons of on road prices (in Lakhs) (Compared prices includes Ex-showroom price, RTO & insurance only of Anand, Gujarat, India)

V. CONCLUSION

In India, number of travelers, vehicles & accidents are increasing day by day on road, but still OEM's doesn't seem to be much worried about their customers. Cheaper vehicles offer minimum safety features, which are near to negligible offering. As per Fig.5, strange conclusion arrives i.e. minimum safety offering vehicles are costing more for eg.

Honda Amaze & Maruti Suzuki Dzire, whereas cheaper vehicles offer more safety features like that of Ford Aspire. This situation may improve in near-term future, as this is totally dependent on competition & technological advancements, but as of today, humans lives are at stake.

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