Automobile sector in India : Electric Vehicles

EXECUTIVE SUMMARY

India is the 4th largest automobile market in the world contributing 4% to global sales of passenger and commercial vehicles. The automotive industry accounts for 7.1% of the GDP and had a growth rate of 14.41% in 2017-18. However, when it comes to Battery Electric Vehicles (BEVs), it contributes a mere 0.1% of global sales.

The penetration of BEV in India is less than 0.2%.
We wanted to understand how to increase this number and find out why people are wary of buying an electric vehicle (EV).

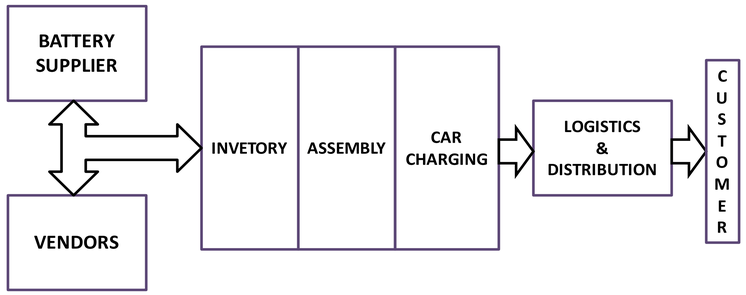
From our primary research we found 3 major problems, which are
1. How to reduce battery charging time (from 1.5hrs for fast charger and 8-9hrs for normal ones)
2. Cost of the battery itself
3. Infrastructure supporting battery charging.

Hence we propose the use of Battery Swapping technology and outsourcing of charging infrastructure to Power generation companies or companies working in the same sector, for Eg: Sun Mobility.

Battery contributes a significant proportion of the car cost, which is around Rs 3-4 lakhs.

Battery swapping will enable them to reduce this price significantly and also reduce or eradicate the problem of long charging time. This will also push other automakers to follow and build a standardized environment for battery swapping, thus enabling the shift to an all electric vehicle economy.

Automakers can tie-up with companies like Sun mobility who are already in this space and take advantage of the available infrastructure. This will be beneficial for both the consumer and the manufacturer, as it will reduce the battery acquisition cost for the manufacturer and will allow the consumer to pay for the range he/she has used the battery for.



OPERATIONAL VALUE CHAIN

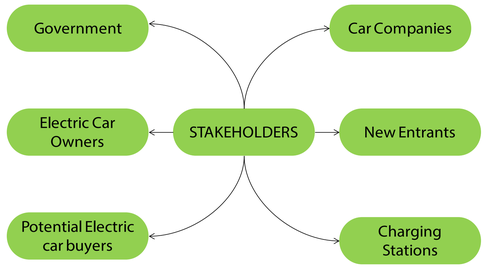
Car price is dependent on the cost added in each stage staring from Raw Material to Distribution stage.
In Electric Vehicles, 33-35% of the cost goes in battery of the Vehicle

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
➢Automakers ➢Government ➢Energy Suppliers ➢Battery suppliers ➢Petrol pumps and charging stations	➢Reduced battery acquisition cost ➢Charging infrastructure ➢Standardized batteries	➢Cheap, hassle-free swapping of batteries for electric vehicles ➢Integration of EVs in the Indian transportation, thereby reducing dependency on fossil fuel based vehicles	➢Providing customers the best range for their EV and giving them a seamless after sales experience	➢Leisure drivers ➢Cab drivers ➢Performance enthusiasts ➢Long-distance travelers ➢Environment friendly customers
	Key Resources ➢Charging infrastructure ➢Government permissions ➢Battery swapping technology		**Channels** ➢Petrol Pumps ➢Charging stations ➢ Automobile ➢Service Centers	
Cost Structure ➢Battery pack ➢Inverter and Control unit ➢Electric Motor ➢Charging Unit ➢Infrastructure			**Revenue Streams** ➢Battery pack ➢Energy units consumed ➢Electric cars sold	

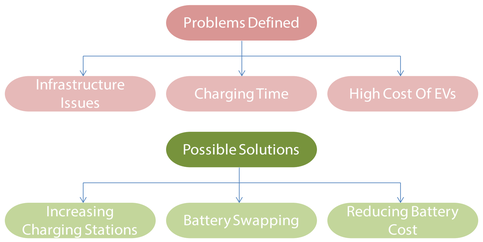
BMC MODEL

India contributes a mere 0.1% of global electric car sales
The penetration of EVs in India is less than 0.2%.
Battery range, charging time and availability of charging stations are some of the impeding factors for the consumer, while Battery cost, No standardized infrastructure and No supporting government policies are major impeding factors for the manufacturers.
We have to design a model which will satisfy the latent needs of the consumers and giving them a hassle free experience for the investment they will do.
Electricity for EVs have to be given from renewable sources of energy so that vehicles prove to be enviornmental friendly.

STAKEHOLDER



IDEATION



Solution of each identified Gap:
1)Charging time issue :
Battery swapping will reduce the waiting time of EV owner to 2-5 minutes from 2-8 hours.
2)Infrastructure Issues :
Tie ups with petrol station/malls/parking areas/offices for charging or swapping stations will reduce infrastructure unavailability issues .
3)Reducing Battery Cost :
Around 33-35% of the car cost goes in the battery, if this battery is completely outsourced to a company which will take ownership and maintenance of this battery, then cost of the vehicle is reduced by 33-35%.

WHY SHOULD INVESTOR INVEST IN YOUR IDEA????

1)EV market is expected to grow in coming years and Indian government is encouraging automobile industries to manufacture EVs to reduce the emission rate.
2)Battery swapping can reduce the waiting time of customer from hours to few minutes.
3)Outsourcing the battery swapping management and related infrastructure can reduce the price of EV by 30-35% without hassle of managing this system.
4)Overall its attractive value preposition offered to consumers and automobile companies can penetrate in the market .

NEEDS ANALYSIS

1)Demand for electric vehicles is expected to reach around 30,000 units by 2022.
2)Today EV owners face issues due to infrastructural constraints , charging time of minimum 1 hour and high price of electric vehicles.

TARGET CUSTOMERS & BENEFITS

Target Customers :
Demand for electric vehicles is expected to reach around 30,000 units by 2022.
Today there are around 2000 EVs on Indian roads.
Government suggests to increase.
Currently the challenges in Electric Vehicles is the Battery cost which can be reduced by 33-35% by out-sourcing the complete battery and related infrastructure management.

Current and expected on road pricing of e20 plus:

Car type	Model	Price (on road)	Fast charging	Estimated Price After Outsourcing battery management
E2O 4d	P4	7,82,662	No	5,12,600
E20 4d	P6	8,61,194	No	6,60,000
E20 4d	P2	10,86,477	Yes	7,80,000

Benefits:
1)Cost reduction gives a better value preposistion.
2)Battery Swapping reduces waiting time of the customer.
3) Reduction in infrastructure unavailability issues.

GROUP MEMBERS

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