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The Road to Adoption of E-Vehicles and Sustainability Issues of Petroleum Retail Outlets in India: A Perspective

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Abstract:
Developing economy and emerging markets are known for challenges in being sustainable. The speed of growth in the developed markets are significantly higher than the emerging markets. The business environment in India and in the world are changing very fast and it is not that easy to adjust with changes. Adoption of E-vehicle is one such story in India and in the world. The recent announcement by the government of India on E-vehicle made every one think and act differently. On the other side Oil Marketing Companies (OMCs) of India in November 2018 decided to add 60,000 more Petroleum Retail outlets which is really interesting to research on. The paper is an attempt to study through secondary resources and recommend the possible future and business model in the Indian market.

Key Words: E-Vehicle, Petroleum Retail Outlets, Charging infrastructure, Non Fuel Retailing, Sustainability, Business Environment

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Introduction:

(NITI Aayog & IEEJ, 2017) A Joint Project Report of NITI Aayog and IEEJ confirmed that Government of India is working on many ambitious project like 24X7 power for all by 2022, 100 smart cities mission, housing for all by 2022 and 10% reduction of oil and gas import dependence by 2022 from 2014-15 levels. Additionally government is also working on provision of clean cooking fuels. India's energy policy is changing very fast and trying to match with global standards. Though India has become the 3rd largest energy market in the world but par capita energy consumption is still much lower than global standards. Other side there is commitment from almost every country in the world to cut down the carbon emission and making environment more supportive for all. Indian government also pursuing its agenda on renewables energy quite aggressively which is evident from the ambitious target of 175 GW of installed capacity by 2022.

Transportation sectors in India and in the world are under tremendous pressure to cut down the carbon emission to make the sector more comfort, efficient and reliable for economy as well as society. Several countries are working on e-mobility for many years and days are not far when such countries will set examples before the rest of the world. India being the growing economy equally committed to make the country cleaner and safe in many aspects. Considering all such developments at global level, recommendations from various regulatory body and policy makers, it is required and expected that Indian economy must match with global changes on time. (BP , 2018) Report has suggested that over the longer-term we need to think on energy transition to grow and prosper, while also reducing carbon emissions.

Any fundamental changes in the economy need to be driven through government, regulatory body and at the same time other stakeholders need to support all such initiatives. Since everyone realised the importance of e-vehicle and that is why government of India set an ambitious target to have all vehicles in India only e-vehicles by 2030. The paper having all such deliberations pertaining to e-vehicles adoption in India and way forward in the short term and long term.

Purpose of study:

The research is indeed has couple of purposes. The one is to study and suggest the best possible way in adoption of E-vehicle in India. The study also come up with certain outcome in terms of battery charging vs. swapping models on appropriate locations like petroleum retail outlets. Considering the commonality, a special consideration is made in evaluating the potential of existing retail outlets (RO) network for EV charging infrastructure. The study also highlighted how adoption of e-vehicle at petroleum retail outlets can create synergy for both.

Research methodology:

Adoption of E-vehicle is indeed a recent development in India and an interesting research area for researchers as well. Considering the time frame, articles published in the leading newspapers, reports from various organizations and consulting firms are the backbone of the proposed research. The authors made an exhaustive survey of literature available related to E-vehicles in India. The research is also

based on perspectives of various policy makers during various conclaves, seminars held recently in India.

Literature Review:

The automobile sector India is indeed growing with right pace. The two wheelers market share is highest (81%) followed by passenger vehicles (13%), commercial vehicles (3%) and three wheelers (3% each) in India (SIAM, 2018 ; annexure-1). There are approximately 6,43,800 electric two wheelers (e2W), 14,200 four wheelers (e4W), 17,50,000 electric three wheelers (e3W) and 150 heavy electric vehicles(HEV) in India on the road (SMEV, 2018; annexure-2). In a report (Department of Heavy Indusry, 2017) confirms that one of the most significant and aspiring initiatives undertaken by the Government of India is through the National Electric Mobility Mission Plan 2020 (NMMEP). The NMMEP has the potential to bring about a transformational shift in the automotive and transportation industry in the country. The policies aimed at progressively having vehicle population of about 6-7 million electric/hybrid vehicles in India by the year 2020. The NMMEP also believes in indigenisation of technology (Department of Heavy Indusry, 2017). The rising investment in R&D, dedicated subsidies and ambitious targets together helping electric vehicle shares to go up globally (Shukla, Dhar, Pathak, & Bhaskar, 2014). National Institution for Transforming India (NITI Aayog) have visualized that India can save 64% of estimated passenger road-based mobility-related energy demand and 37% of carbon emissions in 2030 by following a shared, electric, and connected mobility future (Gupta & Saini , 2018).The existing capabilities like dynamic public and private sector leadership, entrepreneurial culture, ability to build infrastructure right the first time, and a unique confluence of IT and manufacturing skills in India could enable it to lead the world in advanced mobility solutions(NITI Aayog, 2017).

Challenges for Petroleum Retail Outlets in India:

India has recorded 45 per cent jump in the number of petrol pumps in India in last six years and behind only to USA & China (Times of India, 2017). Oil companies plans to increase 60k plus petroleum retail outlets in India (Times of India, 2018 & LiveMint, 2018). As per the data from Petroleum Planning & Analysis Cell (PPAC), Government of India (Annexure-3), India already have more than 60,000 petroleum retail outlets and adding 60,000 more will increase the burden for all as existing outlets are struggling for its sustainability in terms of return of investment, profitability, loyalty of customers (Kishore & Patel, 2012 & Sarkar, 2009). Retail outlets of OMCs has plus and minus both. It has availability of space, electricity infrastructure availability and opportunities for cross selling. Some challenges can't be ignore as installation of safety measures will be an additional expense and also congestion at retail outlets may go up leading to customer's dissatisfaction.

Challenges for E-Vehicle in India:

Issues today related to public vs. private transportation; battery charging vs swapping models; nature and quantity of incentives; and development of storage technologies (Gupta D. , 2018).In the future, charging infrastructure will be an important component for scaling up EV use in urban areas (Shukla,

Dhar, Pathak, & Bhaskar, 2014). Indigenous inputs for EV production is really very low. It means EV companies have to import most of things so cost may go up. The GST rate on batteries is 28%, while it is 12% for electric vehicles (Gupta D. , 2018). The power ministry is close to finalizing a policy for electric vehicles charging infrastructure that proposes granting subsidies to PSUs for setting up a basic charging station network in big cities and highways for gaining momentum in electric vehicle sales (Singh, 2018). If we opt for the charging model, traffic congestion will worsen, with lengthy queues. The battery swapping model, however, would involve no waiting time (Gupta D. , 2018) .The e-vehicles in India is having many challenges and it can't be a successful unless government support. setting up public charging station shall be a de-licence activities and any individual/entity is free to set up public charging stations, provide that, such stations meet the technical as well as performance standards (Government of India, 2018). Local governments can facilitate EVs by a range of interventions including investing in infrastructure, integrating electric mobility in urban development guidelines, developing local EV targets, integration with IT platforms and facilitating public private partnerships (Shukla, Dhar, Pathak, & Bhaskar, 2014).

The literature clearly indicated on challenges and possible solution for adoption of e-vehicles in India. The immediate focus should be on developing infrastructure followed by other supportive essentials.

Discussion & Implications:

Considering the challenges for OMCs and adoption of E-vehicles in India, it would be appropriate that OMCs and e-vehicles companies can work together to be sustainable in long run. Currently, it has been observed that a petroleum retail outlets in India offering fuel (petrol, Diesel & lubricants) as well as CNG. Similar way in the future, OMCs can offer charging station/battery swapping points to create value proposition for customers. Offering battery charging station/battery swapping option will also increase profitability and loyalty of outlets.

(Banerjee & Pawar, 2013) Studied that it is important for the marketers to know their customers, and to differentiate their market offers as per the targeted segment in any sector.

(Obilo & Alford, 2018) finds that consumers attempt to satisfy their various recognized needs, they evaluate several alternatives to determine from which they can derive the most value.

(Kulkarni, 2011) suggested that in today's competitive environment only the best survives. To survive and grow, the retailers need to strategize their operations to ensure customer delight, repeat purchases and increase in profitability. (Elayidom, 2015) studied that the key factor in the development of a competitive CRM strategy is the understanding and analysing of customer behaviour and this helps in acquiring and retaining potential customers so as to maximize customer value.(Khurana, 2008) suggested that improving service quality is believed to improve profitability and enhance retail store performance. Such improvements however, require monitoring and continuous measurement of performance along service dimensions that determine standards of service quality. (Lin & Lekhawipat, 2016) commented on adjusted expectations play an important role in the post-purchase process. By

considering the changes in individual-level expectations in the post-purchase period. (Furrer, Ching Liu, & Sudharshan, 2000) said that in the areas of services marketing and relationships marketing, the concept of service quality plays a central role in understanding customer satisfaction and retention.

(Ghosh, Tripathi, & Kumar, 2010) Observed that any decision-making process for retail outlets becomes complex due to the inseparability of goods and multiplicity of services. A customer now appreciates shopping in a pleasant environment at one-stop location with a wider product-portfolio in a speedy manner. (Balaji, 2009) Conveyed that higher customer satisfaction leads to improved financial performance by lowering customer switching, improving loyalty, reducing price elasticity and transaction cost, promoting positive word-of-mouth, and enhancing firm image and reputation. (Lewis & Mitchell, 1990) in their study suggested that consumers are becoming more aware of the alternatives on offer, and rising standards of service prompted by competitive trends, have increased customers' expectations. (Akbar & Parvez, 2009) Confirmed that customer satisfaction has found to be an important mediator between perceived service quality and customer loyalty.

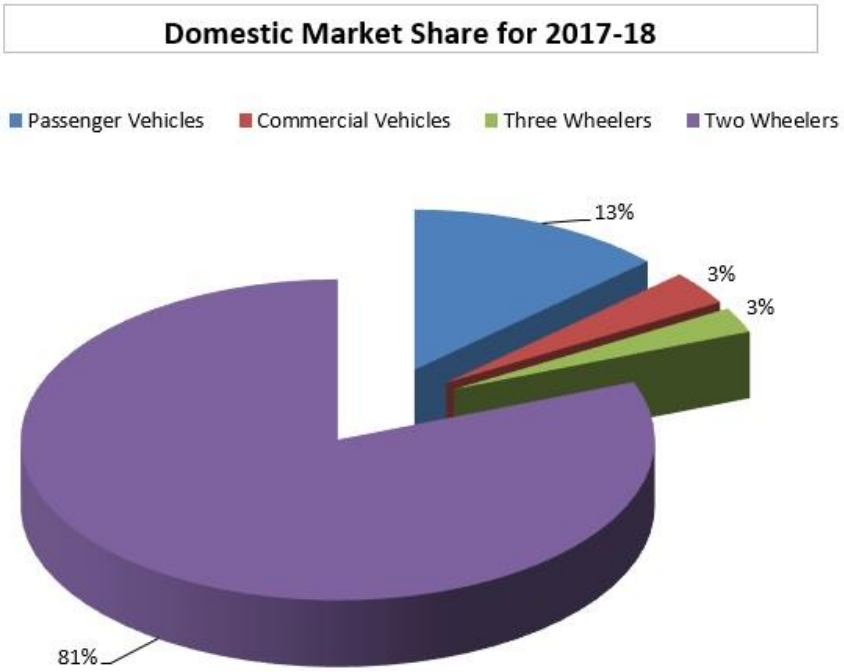
Such literature further confirms that retail being as a service, it is important to take care of customers' satisfaction. The role of physical evidence, people and process are vital in keeping customers happy and satisfied in any business particularly in retailing and services.

Conclusion:

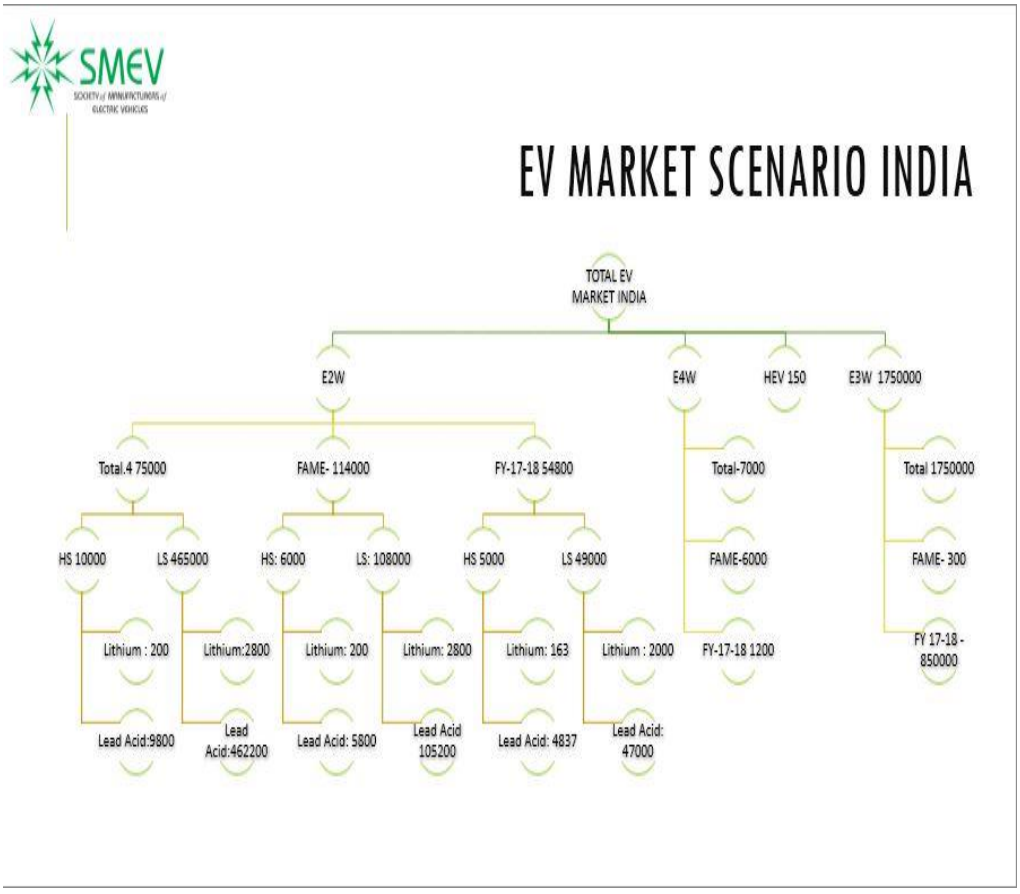
The e-vehicles in India has potential to grow. The government is committed to make it successful. Automobile companies also realized that sooner or later they have to work only on e-vehicles and that is why slowly they are working on developing infrastructure related to adoption of e-vehicles in India. The OMCs can play an important role in supporting e-vehicles and at the same time they have opportunities to earn more. As of now it appears that e-vehicles has miles to go in India and OMCs should not consider this as a threat rather they may consider this as a source of revenue in the form of allied retail business/non-fuel retailing at least in the short term. Overall adoption of e-vehicles in India requires commitment and support of all stakeholders to make it happens sooner or later.

Limitations and future scope of research:

The paper is written based on recent changes in the policy in Indian economy with the help of secondary source of data only. The future research can be done in various way. One can be through including the views of potential customers on their expectations from e-vehicles companies in India.



(Annexure-1, Reference: SIAM, 2018)



(Annexure-2, Reference: National Automotive Board, DHI-GoI, 2018)

							Nos.
STATE WISE RETAIL OUTLETS (Including Pvt Co.)							
State/UT	**01.04.2012**	**01.04.2013**	**01.04.2014**	**01.04.2015**	**01.04.2016**	**01.04.2017**	**01.04.2018 (P)**
REGION -NORTH							
CHANDIGARH	41	41	41	41	41	41	41
DELHI	408	408	403	394	395	396	397
HARYANA	1989	2151	2333	2419	2534	2726	2862
HIMACHAL PRADESH	358	359	361	382	396	414	432
JAMMU & KASHMIR	422	453	469	475	485	494	503
PUNJAB	3058	3193	3229	3248	3316	3380	3427
RAJASTHAN	2932	3135	3327	3465	3736	4116	4476
UTTAR PRADESH	5302	5680	6013	6247	6616	7069	7473
UTTARAKHAND	461	483	505	514	551	570	590
Region Total	**14971**	**15903**	**16681**	**17185**	**18070**	**19206**	**20201**
REGION - NORTH EAST							
ARUNACHAL PRADESH	67	70	71	71	71	74	85
ASSAM	684	720	753	759	788	828	871
MANIPUR	67	73	80	83	85	85	97
MEGHALAYA	162	170	175	179	190	198	203
MIZORAM	27	30	32	33	36	37	41
NAGALAND	67	68	68	68	69	70	73
SIKKIM	35	43	44	46	47	50	51
TRIPURA	49	56	63	64	67	68	71
Region Total	**1158**	**1230**	**1286**	**1303**	**1353**	**1410**	**1492**
REGION - EAST							
ANDAMAN & NICOBAR	9	9	9	9	10	12	14
BIHAR	1942	2167	2316	2385	2511	2604	2695
JHARKHAND	918	1027	1062	1082	1151	1189	1207
ODISHA	1230	1369	1438	1464	1560	1639	1681
WEST BENGAL	1999	2120	2183	2178	2244	2299	2333
Region Total	**6098**	**6692**	**7008**	**7118**	**7476**	**7743**	**7930**
REGION – WEST							
CHHATTISGARH	752	886	998	1040	1108	1176	1249
DADRA & NAGAR HAVELI	21	21	27	31	31	31	31
DAMAN & DIU	24	25	31	31	31	32	32
GOA	105	104	109	111	114	115	116
GUJARAT	2524	2770	2910	3050	3384	3765	4025
MADHYA PRADESH	2349	2630	2873	3005	3269	3528	3711
MAHARASHTRA	4160	4644	5025	5207	5419	5684	5970
Region Total	**9935**	**11080**	**11973**	**12475**	**13356**	**14331**	**15134**

REGION – SOUTH							
ANDHRA PRADESH	4002	4502	4710	2811	3004	3197	3336
KARNATAKA	3068	3306	3621	3737	3836	4027	4214
KERALA	1844	1880	1900	1932	2009	2048	2100
LAKSHADWEEP	0	0	0	0	0	0	0
PUDUCHERRY	139	144	150	153	156	160	164
TAMILNADU	3889	4340	4541	4616	4702	5039	5388
TELANGANA	0	0	0	2088	2228	2434	2626
Region Total	**12942**	**14172**	**14922**	**15337**	**15935**	**16905**	**17828**
ALL INDIA TOTAL	**45104**	**49077**	**51870**	**53418**	**56190**	**59595**	**62585**

(Annexure-3, Reference: PPAC, 2019)

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