SMV Green Solutions

LEARNING REPORT

Executive Summary

SMV Green Solutions, a social enterprise headquartered in Varanasi, works with low-income communities across 7 cities in India to enable them to own e-rickshaws as livelihood generating assets. Mobility focused social businesses like SMV not only play an important role in enabling sustainable development outcomes for both communities and the environment, but also demonstrate the business case to accelerate EV adaption beyond metropolitan cities. E-rickshaws offer affordable commuter solutions that are particularity accessible to low-income commuters, thus contributing to making cities and settlements inclusive and sustainable (SDG11), and reducing transport emissions contributes to healthy livelihood and promotes well-being of drivers and commuters of all ages (SDG 3).

One of the major challenges in the growth of e-rickshaw sales is access to finance for low-income buyers. SMV has been working closely with select financial institutions to address challenges with credit assessment, loan paperwork and other KYC requirements, to get up to 90% of asset value financed for their potential buyers. Additionally, a fragmented market with poor after sales support has been a deterrent for e-rickshaw drivers and potential new buyers, which SMV is trying to solve by offering aggregated services with

new e-rickshaws. These challenges are further elevated in semi-urban areas by lack of supporting infrastructure, potential customers' awareness and irregular income patterns.

SMV's "Vahini" program to promote women owner drivers of e-rickshaws is a step to drive gender parity in the transport sector in India (SDG 5) and with plans to expand into more non-metro cities, SMV will further empower women from low-income communities and help reduce inequalities within Indian cities (SDG 10). SMV has identified specific barriers which potential women drivers face, including both gaps in essential documentation, social taboos and ingrained family decision making structures, as well as impact of prior work experience in converting new Vahini's, all of which its programme is tackling to drive greater scale-up and gender inclusion in the sector.

SMV's growth plans and path to profitability will be tested in the coming months, however it has built a successful model around which it continues to overcome these barriers and drive growth of the e-rickshaw market. With multiple players now present in EV infrastructure development (assembly, charging and distribution), and innovative battery technologies and financing bodies now entering the e-rickshaw space, further collaboration will be essential to help drive forward SMV's own strategy as well as continue to develop the Indian market as a whole.

Introduction

Air pollution is now the third-highest cause of death amongst all health risks in India. India is home to 15 out of 20 most polluted cities in the world and around 30% of air pollution in India is caused by vehicles. The problem of air pollution is even more acute in small cities, especially in last mile transportation where commuters have no option but to rely on diesel/petrol transportation for commuting needs. However, in recent years there has been a large push by the government towards shifting to more sustainable transportation options, including the introduction of electric vehicles.

With the introduction of the electric rickshaw ("e-rickshaw") in the Indian mobility space, there has been a huge demand from both drivers and passengers. Due to its low cost compared to a standard auto-rickshaw, people from marginalized communities are particularly drawn towards this vehicle for earning an improved livelihood. The absence of funding and service support however limits the affordability amongst these communities despite the increasing demand by commuters.

SMV's inclusive and holistic offerings help to overcome existing barriers that impede people from becoming owners of electric vehicles and enter the sustainable transportation segment. SMV provides an end-to-end solution to bring e-rickshaw drivers mainstream, and helps its end customer - both men and women - become owners of an electric vehicle. The business has a multi-bottom line impact in terms of clean energy, financial inclusion, gender inclusion, and poverty alleviation.

The e-rickshaw not only helps to reduce air pollution but also helps the driver to earn around $11 to $13 a day. Besides this, it provides a safe, reliable & affordable last-mile transportation for passengers.

SMV's target customer group includes manual rickshaw pullers, E-rickshaw drivers, women micro-entrepreneurs, and unemployed youth from marginalized communities. The organization ensures that its end customers are brought to the mainstream by providing them asset ownership by facilitating access to affordable loans, providing training & insurance cover (both personal & vehicle). Besides this, it also helps its customers to connect with the formal banking system by providing support in opening a bank account and training them on financial literacy so that they can start saving for their longer-term financial needs.

Report Objective

The objective of this report is to capture and consolidate key highlights and learnings from SMV's core business activities in the year 2019. Having been established since 2015 SMV has been a pioneer in the e-rickshaw sector in India, growing its business to reach an estimated customer base of 50,000 by 2025 through its various service offerings.

In 2018 SMV received funding support from the Shell Foundation ("SF") which was designed to allow it to focus on both the overall expansion of its existing business model, but in particular two key new initiatives for SMV. Firstly is a new flagship programme, Vahini (female ownership of e-rickshaws), in order to empower women through mobility both by creating women micro-entrepreneurs as well as offering safe and affordable transport to female passengers. Secondly is SMV's Semi-urban expansion, in order to provide safe and affordable transportation into more rural areas of India where last mile transportation is less available and reliable.

Through this report SMV will use the learnings to create a roadmap for future development of its own business model, as well as to provide valuable insights to support the growth of the Indian e-rickshaw sector as a whole.

The report will be split into three core sections:

Part 1 will focus on SMV's existing business model. It details existing market challenges and SMV's role to date in helping to overcome these, as well as SMV's core business expansion through SF funding and key learnings from this work.

Part 2 will detail SMV's Project Vahini, providing key learnings and challenges of this women focussed expansion, as well as an informative case study of a Vahini e-rickshaw driver.

Part 3 details SMV's semi-urban business expansion, and despite being a new venture, initial learnings and challenges from this.

Part 1 SMV's core business expansion

This section details the learnings from the recent expansion of SMV's core business model, however in order to frame the key learnings that SMV has derived from this, it is import to firstly outline some of the key market challenges that exist and how SMV's existing model helps to provide solutions to them.

Existing market challenges and SMV impact

Challenge 1: Despite there being significant growing demand for e-rickshaws in India, this segment of the transportation market remains relatively informal and unorganized and lacks systematic regulation and operating standards. It is estimated the electric passenger segment registered annual growth of 20% since 2015 and is projected to reach over 935,000 units by 2024 with a CAGR of 15.9% during the forecast period, however the market remains nascent and fragmented.

E-rickshaw drivers struggle to buy vehicles and get the required service support from dealers, and since the community has limited information on the e-rickshaw market, where available they tend to buy e-rickshaws that are unauthorized and/or unapproved.

SMV Solution: SMV tackles this issue by offering value aggregation services that helps these buyers to get everything under one shed. SMV partners with e-rickshaw manufacturer as distributor and sell their vehicle through its showroom. Apart from this, SMV offers full registration, insurance and after sales support to its e-rickshaw customers.

Challenge 2: As the majority of e-rickshaw drivers come from marginalized communities and don't have enough funds to buy an e-rickshaw in cash, they are required to approach financial institutions for asset financing. Since the majority of drivers don't have access to banking facilities or any previous credit history the majority of banks are unwilling to provide them the finance required to buy a vehicle or only fund up to a maximum of 60% of the vehicle price.

Drivers are generally able to pay 15%-20% Loan to Value, but not many financial institutions are willing to provide loans of 80%-85% of the value of the e-rickshaws. Due to the unavailability of funds to pay the required down-payment, there remain a large number of potential e-rickshaw drivers that are not able to finance the vehicle purchase.

SMV Solution: SMV identifies and works with Financial institutions like local Banks and Micro-finance companies with a vision to reach and serve the un-banked communities in India. As the e-rickshaw market segment is new for financial institutions, SMV works with them to better educate them on the sector, earnings potential for drivers, and help create products that offer maximum loan to value of 85% to 90%.

Through this work financial institutions are able to offer un-banked communities with financial products previously not available, with interest rate of loan products ranging between 20% to 23% p.a on a reducing basis. The per month EMI ranges between Rs 6500 to 7000 which roughly translates to Rs 233 daily.

Challenge 3: It is estimated that about 60% of the existing e-rickshaws are not owned by drivers. The driver usually pays about Rs 300-Rs 400 daily rent for the vehicle through various financial institutions. These drivers drive vehicles for years but are unable to become the owner of the vehicle due to not being able to meet all the documentation and KYC requirements required by the financial institutions.

In addition, the processes that financial institutions require for these types of applicants is quite time consuming and difficult for them to complete in order to be accepted by the banks.

SMV solution: SMV's community outreach backed up by strict scrutiny of the applicants provides risk comfort to the various finance institutions. Before submitting a case with a finance partner, SMV collects the KYC (Know your customer) documents and visits customers' houses to do a preliminary discussion to understand his/her financial health. During this discussion, SMV collects data like income, expenses to arrive whether the applicant will be able to benefit from the loan or the loan will be an additional burden on him or her. Post discussion, SMV shares the data and recommendation with the Finance institution for further approval.

It takes on average about 10-15 days for a bank or financial institution to process a loan, but through the support activities performed by SMV the total turnaround time has now been reduced to 5-7 days on average, a time reduction of over 50%.

Besides this, SMV helps the e-rickshaw drivers to open a bank account and provides basic training on banking service & mobile payment so that they can inculcate saving habits. In addition to this, SMV supports the financial institutions in collection activity wherever the driver is facing issues in making the payments.

Key Learnings

As part of its core business expansion, SMV planned to scale its operation from 2 cities to 10 locations (8 Urban and 2 Semi-Urban cities) by the end of 2019. The organization aimed to reach 1,200 new customers through this planned expansion. The expansion was planned in a phase-wise manner and included scaling of the Vahini programme as well.

To date, SMV has expanded core operations into 7 locations – Varanasi, Allahabad Lucknow, Patna, Delhi, Gorakhpur & Chandauli (Semi-Urban Location) – with expansion

into the remaining locations planned over the next 1 year. Through this expansion process, SMV has already detailed a number of key learnings that it can utilise as it continues to evolve and adapt its business model.

The following are the key learnings from the expansion.

Gestation Period: There is a minimum time that a branch needs to establish itself and create a customer base in any new location. As part of the planning process, the SMV team anticipated that a new branch will start doing regular business within 2-3 months of initial launch, however it was found that a branch in fact takes around 5-6 months to create a suitable foothold and presence in a new location. Furthermore, the gestation period can be more for a location that is in a less developed market stage. For an early market stage, the gestation period might be more than 6 months and thus needs to be factored into planning. SMV faced this issue at Gorakhpur where the e-rickshaw is new and demand for the electric vehicle is picking up, albeit more slowly than other markets.

During the initial set-up period, the team also identified the importance of building SMV brand awareness amongst the new customer base in order to try and reduce the time it takes for the branches to start doing business. Trust building in these new markets happens over time and multiple interventions are required to effectively reach out to the target audience. Therefore, it is imperative that while planning the expansion the team needs to factor this into the gestation period of new branches.

External Factors: One of the key learnings is to fully understand & evaluate the external factors when identifying a new location. The team encountered various issues around the local administrations' sudden policy changes i.e. Temporary ban of e-rickshaw registration in Allahabad & Varanasi & unplanned route mapping for e-rickshaws in Lucknow negatively impacted the business. A detailed analysis needs to be done to check how encouraging and supportive the local administration is towards scale up of Electric Mobility in their areas, and any potential local legislation that needs to be factored in the business model.

Readiness for Electric Mobility: SMV found that a location that presents great potential avenues due to the low penetration of electric vehicles could at the same time be a pre-mature market for electric mobility. These locations might be at a nascent stage for EV uptake and thus take additional time to mature. Hence, it is important to assess the market readiness and appropriate time for adoption of e-mobility solutions in such a location.

Customer Referral: Referrals from existing customers are a major source of lead generation for branches. Word of mouth is the most effective medium to propagate messages in the community. A prospective customer usually consults his fellow peers before deciding to buy an e-rickshaw. Implementing a referral incentive plan would encourage existing customers to share more leads and will also help in maintaining customer stickiness

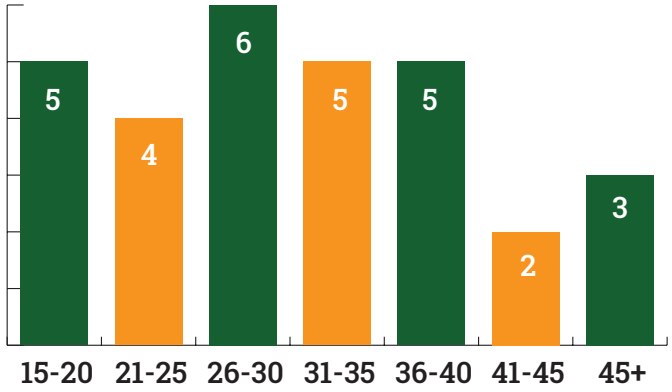
Part 2 Project Vahini

SMV's flagship programme "Vahini" (Female owner of e-rickshaw), aims to empower women through mobility by creating women micro-entrepreneurs in last-mile transportation whilst at the same time offering a safe, affordable & eco-friendly transport to female passengers. Under this programme, SMV provides electric rickshaw fitted with a cloud-based camera (to ensure the safety of women drivers & female passengers), access to loans from formal financial institutions and vocational support (License, Insurance, Driving Training & Financial Literacy) to women from low-income backgrounds so that they can earn their own livelihood.

The Vahini project was piloted in Allahabad in 2018 with 3 women drivers and by end of 2019, the total number of Vahini stood at 65 women across 3 cities - Lucknow, Varanasi & Allahabad.

Customer acquisition and conversion has been difficult in the case of women e-rickshaw drivers and over the last two years, the SMV team has worked to resolve some of the key barriers faced. As part of this process the team did a thorough deep dive to understand the common challenges and issues that can be identified and resolved for successfully scaling the Vahini programme.

Female passenger respondent age group



In this pursuit, an independent research study was conducted by SMV team with the existing Vahini drivers and female commuters to understand the existing barriers and benefits of the programme. The following are the key learnings from the study.

Key Learnings

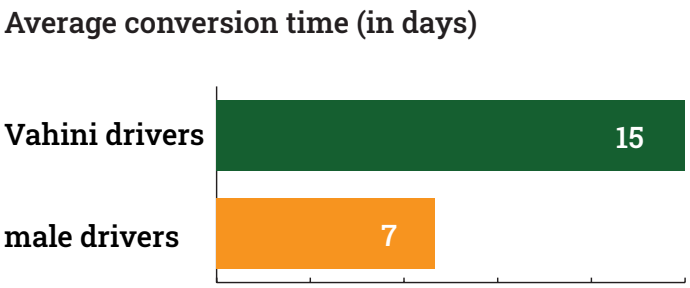
Conversion Rate: The conversion rate has been higher for women who are already working or have previously held jobs. In the existing Vahini fleet the majority of women were working before becoming an e-rickshaw driver, thus had some familiarity with the concept of wanting to support their own livelihood. In the case of non-working women, the conversion rate to become e-rickshaw drivers is between 10%-15% whilst for working women the conversion rate is 40%-50%, a substantial difference.

Whilst this does not exclude non-working women from becoming e-rickshaw drivers, and SMV is keen to support as many women entering the workforce as possible, in order to scale the Vahini programme it is clear that targeting women who have worked previously offers more chance of success.

Lack of Documentation: A large majority of the target women don't have basic documentation required for either getting a loan or for vehicle registration. From the research it was detailed that most women have only one document, that being an Aadhar card (Unique Identification Card). Documents like Permanent Account Number (PAN) and owning a Bank account are generally not available with the prospective Vahini at the time on-boarding. Besides this, about 98% of women also don't hold a proper driving license required for driving e-rickshaws.

It was also found that most women will only apply for a PAN and Bank account once they are convinced to become an e-rickshaw driver, not beforehand. The time taken to get a PAN Card is between 15 to 30 days, whereas the Bank account takes 5 days to open. It was seen during the research that a large number of dropouts happen during this waiting period.

Decision Making Process: Male members of the family play a vital role in the decision making of Vahini. Women, in general, are convinced of the benefits of joining the programme however they are often required to seek final consent from their family members, especially husband, brother and father, in order to apply for Vahini. Therefore, there is a very crucial need to also create a sensitization and awareness programme for male members of the prospective Vahini family.



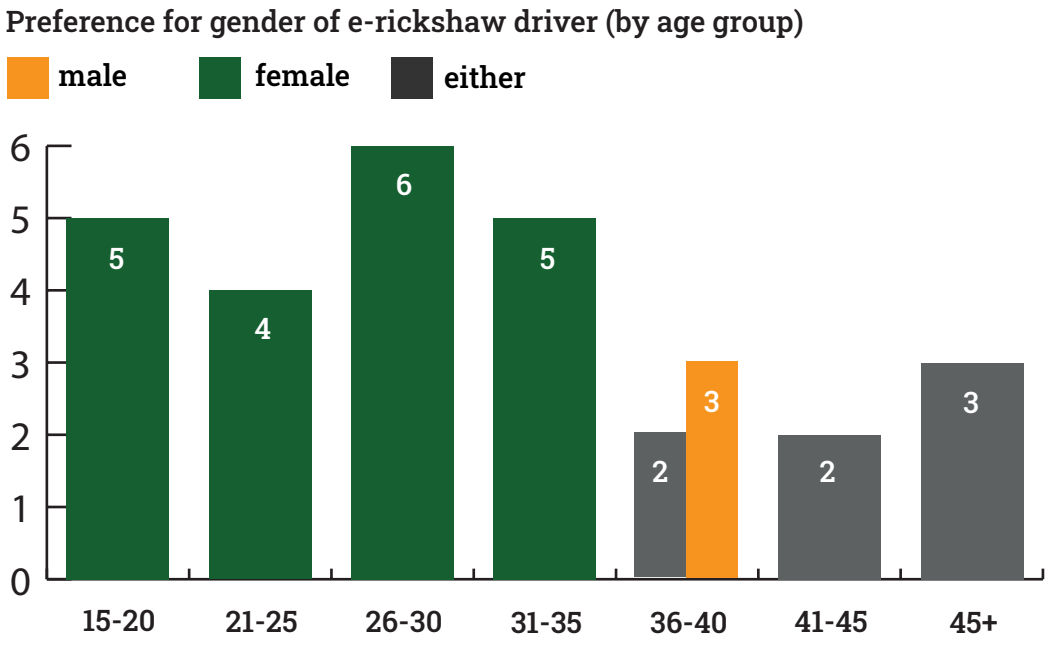
There is a different marketing campaign and narrative that therefore needs to be built for these male stakeholders so that they can also better understand and see the benefits of Vahini programme alongside that of the women.

Turnaround Time (TAT): In the case of the male e-rickshaw driver, the total time taken from initial sourcing to conversion is between 5 to 7 days, whereas the total turnaround time for Vahini is between 15-20 days (it extends to 30 days in a few exceptional cases) across all locations.

The main difference in TAT is due to the multiple interactions with women and their family members required ahead of conversion, as well as the additional time taken to get the required documentation ready and the additional training provided to women.

Benefits: Asset ownership, on-board camera (for safety) & work flexibility are the main reasons that appealed to existing Vahini to become e-rickshaw drivers. For most of the existing women drivers, an e-rickshaw is the first income-generating asset that they have purchased which can be used both by herself and her family members. The asset ownership equates to a large say in the overall decision-making process that takes place in the Vahini family.

The camera in the vehicle gives women and her family members comfort and safety to drive the vehicle without fear. The flexibility associated with e-rickshaw driving attracted the women to become the e-rickshaw driver. Compared to their previous job where they used to work for a fixed number of hours they now can earn as per their convenience and based around other family commitments they may have.

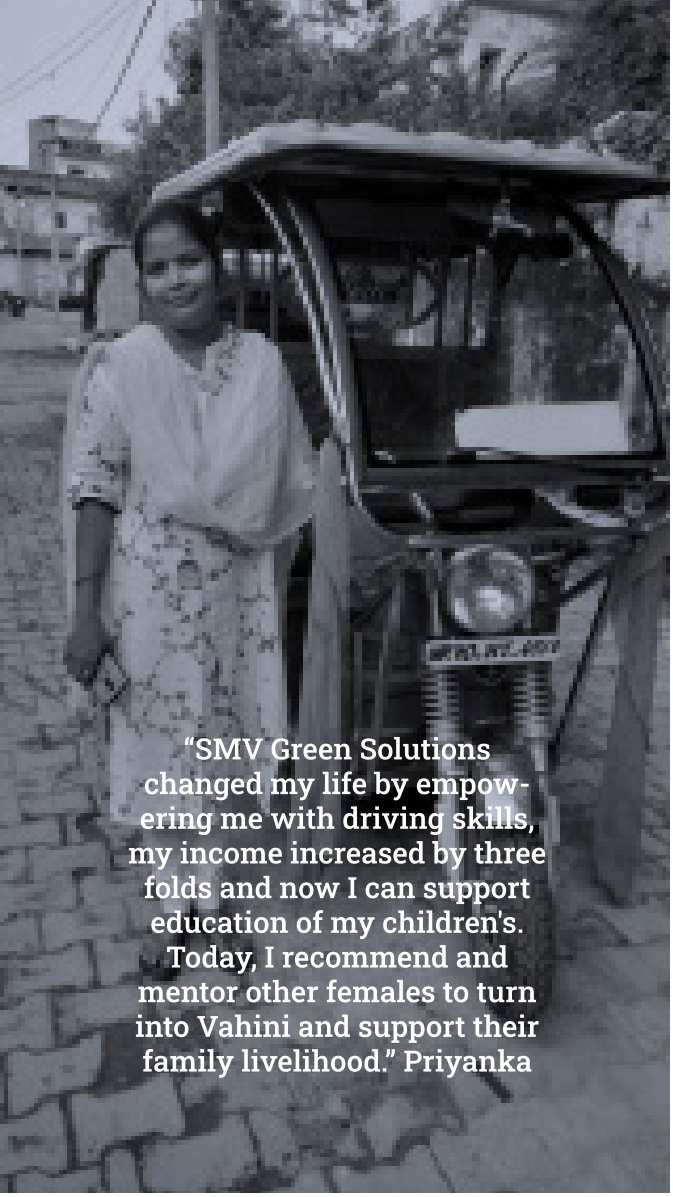


Commuters Preference: The research detailed a number of clear preferences between different commuter groups. Female commuters between the age group 15-35 years prefer female drivers over male drivers for commuting, largely due to safety concerns. Young commuters in general feel safer and more comfortable in traveling with Vahini e-rickshaw and would prefer them over normal e-rickshaw for their commute.

Commuters over 35 years seemingly have no preference over who is driving the e-rickshaw, and for them reaching the destination quickly and the availability of vehicle matters most.

Support Enablers: Peer-to-peer learning, training from external agencies and support in getting driving license and other documentation are a few enablers that help to reduce the entry barriers for women e-rickshaw drivers. These enablers help in outreach and attract participation as the prospective women find it comfortable and easier to learn from their fellow counterpart who is already driving an e-rickshaw.

The challenge remains scaling up this pool of Vahini to them help attract and train more and more women to participate in the programme.



Case Study:

Priyanka Vishwakarma

A Thirty-two-year-old woman from Allapur Colony, Prayagraj (Uttar Pradesh), India. Priyanka was married at the age of nineteen in an abusive family. Priyanka's husband left her in 2015 with the responsibility of supporting her five children. This dismal incident forced Priyanka and her children to fight for the basic needs of survival. But Priyanka did not give up and started working as a maid to support her family. The income from work was minimal, barely providing two meals a day to the family. Priyanka wanted to provide good education to her children but felt helpless due to lack of skills which can increase her income.

In November 2018, Priyanka came to know about SMV Green Solutions and its flagship program "Vahini" through an awareness campaign run in her colony, Allahpur. It sounded like an idea that she could pursue and decided to visit at organizations branch office for more information. After visiting the branch office, she was briefed about the project and how it can help improve her financial crisis. Priyanka took time but eventually agreed to become Vahini in January 2019. The real decision point came when Priyanka learnt about the minimal down payment and end to end support by the SMV team.

Priyanka took driving lessons at SMV Green Solutions. With passing time, she gained confidence in herself about being a Vahini. After the purchase of a vehicle the initial challenge was to get secured customers. SMV team helped introduce her to families who send their children to school, which ensured a secure customer segment and assured earnings.

In order to provide complete security and support Priyanka, as well as to break the stereotype of male dominated sector, the E-rickshaw is set up with a security camera. SMV also has provision for law and order support to Vahini, in case of any misconduct by male passenger or traffic police. The supportive ecosystem helped Priyanka to increase her income by three folds and significantly change her livelihood and future for her family. From August 2019 Priyanka began carrying male passengers too, adding to her income and further demonstrating the potential role of Vahini.

Part 3 Semi-Urban Expansion

Urban development in India has resulted in a rise in the number of cities from 5,161 to 7,935 (As per 2011 census data), along with increased concentration of the population in these cities. With a notable rise in population, demand for intra-city mobility has also increased. E-rickshaws have proven one emerging solution to cater for this increased demand in urban areas, however demand for e-rickshaw in semi-urban areas remains a grey area.

To ascertain the demand and market, SMV opened a branch in Chandauli to test the scope for electric mobility in semi-urban locations. Chandauli is a town and a nagar panchayat or Notified Area Council in Chandauli district in the state of Uttar Pradesh, India. It is the administrative headquarters of Chandauli District.

Out of the total Chandauli population, 12.42 percent live in urban regions of the district while 87.58 % of the population of Chandauli districts live in rural areas.

Since its inception the branch is struggling to meet the expected sales and hasn't been able to achieve the forecasted monthly sales targets set. The SMV team did a deep dive to understand the reason for low sales and demand for electric vehicles, and the following are the key learnings from the study.

Key Learnings

Limited awareness about E-Rickshaws: It came out from the study that people close to urban areas have some basic information about e-rickshaws but as you go into more rural areas the people have limited awareness about electric vehicles and their ability to offer transportation solutions.

Due to limited awareness, people are still commuting on bicycle, petrol auto and on foot. There is a need to spread greater awareness in the villages so that people can better understand e-rickshaws and the services they can provide in order for them to start using them over existing solutions.

Lack of Infrastructure: One of the key barriers to electric mobility uptake in semi-urban location is the lack of infrastructure in a semi-urban location. There is an irregular power supply which makes it difficult for e-rickshaw drivers to charge their vehicle hence lithium-ion electric rickshaw will be the best solution for semi-urban locations.

Compared to lead-acid the lithium-ion battery offers better performance and can be charged in 3.5 hours as opposed to 8-10 hours in Lead-Acid batteries. Also, the price of lithium-ion is reduced after government subsidy under FAME 2 Scheme[1] making the electric rickshaw affordable for drivers in rural/semi-urban locations. Therefore, lithium-ion battery e-rickshaw should potentially be better marketed and sold in the rural/semi-urban location.

Scope for Vahini: There is apparent demand for women e-rickshaw drivers by women in the semi-urban areas but there is a need for additional research and understanding around a number of practical challenges - lack of formal documentation, societal pressures, and informal employment on farms (women in rural areas are often engaged in working their own agricultural land due to lack of resources).

In order to understand these challenges fully and how best to overcome them, Vahini in a semi-urban location needs to be implemented separately and should not be merged with a standard semi-urban location pilot.

Irregular Income Pattern: One of the key findings from the semi-urban location research is that the e-rickshaw drivers have irregular income, and this is directly proportional to the agricultural sector seasonality. During the harvesting period, the income of the e-rickshaw driver will be more as people will be travelling regularly to sell their produce while during the sowing period the movement will be less hence it will have a direct impact on income.

Although the e-rickshaw driver is able to earn an amount that is sufficient to meet their ends, there is a need to provide additional avenues that can boost his or her income. Advertising on the electric vehicle can be one of the alternatives that can be looked to ensure that e-rickshaw drivers are getting regular income.

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[1] https://dhi.nic.in/writereaddata/UploadFile/publicationNotificationFAME%20II%208March2019.pdf

Part 4 Impact on SMV business plan and future research

Over the last four years SMV has focused on scaling its services to a wider target group, and during this process the organization has faced diverse challenges that impacted its business goals. SMV has however succeeded to pull out key learnings from its core expansion and Vahini programme that will help the organization to re-look at its existing strategies and re-focus them to create a future roadmap of success for both itself and others in the sector.

The following are key areas that SMV has thus identified that are critical both for its own business model, as well as needed to further the growth of the sector as a whole.

Market Identification Strategy: Identification of potential geographic areas for business expansion requires a thorough investigation and deep dive of each specific market. Market Identification is a very crucial step for expansion hence it is imperative that any organization should spend a significant amount time in ascertaining the readiness of a particular location with respect to:

Existing Business Landscape and market maturity

Demand & Awareness for Electric Vehicles

Existing Transportation Infrastructure, &

(Local) Government policies towards Electric Vehicles.

Both Primary and Secondary Research should be done thoroughly to evaluate the aforementioned parameters before a new market selection is made.

Slow and Steady Expansion: An aggressive expansion strategy doesn't necessarily provide adequate scope to understand and identify the effectiveness of the business process and market potential. In the short run, an aggressive growth approach may help the organization to expand its outreach however it doesn't give time to fine-tune gaps in the process that impact the business in the long run.

In a new sector such as e-mobility it is thus advisable that expansion should be slow and steady to ensure that the organization gets sufficient time to test the market fully in a particular location while ensuring that processes are full proof for future learning and expansion.

Lithium-ion for Rural Market: Recognising the limited infrastructure and demand for electric rickshaws in rural markets there is an apparent need to introduce lithium-ion electric vehicle in this market. Compared to lead-acid battery electric rickshaw

the charging time for lithium-ion battery electric rickshaw is less. Besides this, lithium-ion electric rickshaw offers better performance and has similar price.

It is clear therefore that there needs to be additional market and consumer research, marketing strategies and clear incentives to better introduce lithium-ion solutions into these rural markets if e-mobility solutions are to effectively expand into these locations

Alternate Business Model: Currently, the electric rickshaw segment is still in an early growth phase and there is a need to build and support the ecosystem further so that the segment can continue to grow at existing or faster rates. At present, businesses/companies dealing in the electric vehicle segment are facing multiple market barriers with respect to end-customer financing, manufacturer identification, and service management. There is therefore a clear need for end-to-end models to both support existing companies in the sector as well as attract new entrants into the market.

SMV has been working with different financial institutions and top electric vehicle manufacturers in India to look at potential Aggregation / Franchise models that could help existing businesses/companies to overcome a number of these market challenges. Further research is however required in order to explore these new and innovative models, pilot them with key partners, and understand the financing needs to fully scale them in order to offer a viable new model to overcome these existing stakeholderchallenges and develop means to continue to grow the sector successfully.