

Module : Introduction to Innovation Management
[ACPA7005]

Research Proposal on

"Innovative Business model in mobility solution"

Course : MSc Industry 4.0 Advanced Manufacturing

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Introduction

The below piece of work focuses on the business model of the world's leading automobile company TATA, for its significant milestone in developing its remarkable disruptive innovation "NANO". This is a great example of cost discipline, design and supplier collaboration. Nano is based on the path-breaking Business model of sales and servicing, which enables the creation of thousands of job and make the Nano truly a "people car". This is an inspiring example of Indian entrepreneurship and engineering to foreign investors. This innovation is applied as a multiple business model approach. The competition is not only with low-cost cars but also with the three-wheeler auto rickshaw and two-wheel vehicles. This report describes the synopsis, its market analysis, key determinants with their implications, and the journey to get this into reality.

1. Company Profile

Tata Motors Limited (TML), is a \$42 billion organization. It is the India's largest company in the manufacturing of cars, heavy vehicles like buses, trucks and defense vehicles. This company has been introduced in India in the year 1945, TATA is part of around \$101 billion Tata Group which was founded by Jamsetji Tata in 1868. TATA is recognized for its policy, engineering, design, and development and also for the future of society and mobility in India. This company mainly work for sustainability and give back to the world with their product ideas and product, which really helps people to achieve their dream. It's the largest company in the world and has many sub-companies to handle its activities. It has almost 78 subsidiaries in India and internationally. It's one of the top brands in the world which also tie up with JLR in the united kingdom and Tata Daewoo in South Korea as an operation part of the automotive industry. [1]

The new business model developed by Tata Motors is to enable radical innovation and discovery-driven plans. There were continuous changes as this project production focused on the cost effectiveness. The new business involved open innovation perspectives, such that Tata Motors engaged suppliers through long-term collaboration and partnerships to reach new low-cost production solutions. Therefore, Tata Motors invested in external innovation heavily, such that 85% of the Nano's components were outsourced and use nearly 60% less vendors than normal production, mostly from local suppliers. [3] . Nano appearance shown in below Image 1.



Image 1 : Nano Overview

2. Synopsis

What Is TATA Nano ?

The Tata Nano is the Innovative business model of the company TATA motors based in India. It's a compact city car which has an engine located at back and intended to appeal to the existing bike and scooters with a reasonable very cheap price of Rs.100000 launched in 2008.

2.1 Objective :

The objective of the promotion strategies are kept to create awareness about this innovation in the market and company brand value. This is the cheapest car in the world and will burst into the market in less time.. The development of Tata nano was an innovation in low price tag without compromising safety and standard. Also the benchmark of this innovation was Maruti 800 which an product of automobile company MARUTI. The company Tata Motors had captured new market by introducing NANO. [4]

2.2 Market Analysis :

The question arises why ?

So as per the India times news & Instagram post the chairman shared that looking at families on scooters with a child in between is not safe on roads, This picture motivated him to innovate the country's first affordable car. The team working on this project took 5 years to research and develop. The company with its supplier work hard to reduce the manufacturing cost without affecting the safety factor and quality standard of each component . This will be cheapest car because of major three factors like the company has its own plant , manufacture the complete car & having best engine technologies (FIAT). [2]

2.3 Implications :

The innovation business module by TATA brought into the market at a very low price so that this could expand the car market by 60% according to the rating by CRISIL. This is an Indian analytical company that provides ratings, research, risk and policy advisory services. This makes them a normal middle-class family affordable to live a better and safe life. The expected rise in sales by 20% is seen as compared to previous years. The theoretical and managerial implications were studied.

The study shows the link business model, strategy, and how the modifications in the business environment may affect this relationship and performance of the company [5]. It also helps to understand the market behavior in terms of adopting low cost product and innovation.

3.The principal drivers for the innovation

The main drivers for Tata motors are mainly better communication, keeping the value of their innovation with recognition and the initiative efforts with all facilities that enable learning from other companies. This leads to support for collaborative research. The changes in demand play an very important role. The strategy behind initiating the innovation is to understand the amount of finance required (cost parameter). In order to have affordability the cost of production should be low as possible and the product should be more simplified. [6]

Cost-effectiveness is the major point in developing this Innovation. This requires major process engineering which needs to be accepted by the customers. Tata tried to keep this design at a low cost and faced many challenges while designing the overall structure of the product. In order to keep the design specious and lower cost, the engine of the car is placed at the rear and with front-wheel drive design with petrol tank situated at the front. This made the car low-cost and compact. To minimize the weight lot of carbon fiber and plastic components were implemented without affecting the performance of that part. Facilities like power window, AC, and remote locks were kept for higher-version cars and was excluded from the basic model. [6]

These drivers of innovation provide important tools to analyze innovative capability and also provide an analytical framework to understand the sources of innovation and technology.

4. Barriers and Issue in development

The company faces many challenges in the Indian market and one of them is connected to one of its business model dimensions. Some people were diverted from the view that this is the cheapest car and is for low-income people, and it's lower in rank for some people. Now it's been taking force ahead and pushing this car for young generation also, where the youngster going to college and the woman can also think about the vehicle for their usage. The company also faced political issues at its manufacturing plant situated in West Bengal (India). To overcome this issue it was shifted to Sanand in the Indian state of Gujarat. [7].

The car booking was jeopardized and the situation worsened in mid-2010, when a few cars caught fire due to electric circuit failure. This was the incident where the safety of the vehicle was the main concern for the customers.

4.1 International Market Issues :

The company faces difficult conditions in the international market with dales value and the export with higher interest rates but some of the factors used to deal with this situation by dealing with the Indian government. [8]

Safety Issues were a concern due to the increasing number of road accidents in India. Tata Nano has introduced the crash test with the government. Regular requirement which will be maintaining the proper seat belts and strong anchor points. Introducing airbags and tubeless tires. Brand Issue is the starting point, as the car brought into market, decreased in sale of their competitor Maruti 800 is observed. People are getting the same facilities at a cheaper price. This innovation had made a big impact on the car market in India with respect to used cars which are the main competitor for NANO. All other car manufacturers are now in the race of building cheap cars to attract middle-class customers. This product is made for customer care and always prefers its customer first. During this launch, the facility of an 8.5% interest rate was announced for the first 1 lakh customer. Contribution to the environment by replacing the two stroke polluting vehicles. All these factors and benefits potentially made this innovation project challenging. [8]

4.2 Analysis on Impacting factors :

Below is the information about factors used in the scanning component of strategic management. In terms of "Economic Factors" for the growth and the notion like make in India" implemented to boost this sector. For any manufacturing-related organization, the cost of labor is the main factor and its been seen that its easily available in India as compared to the other country. The other factor like Trust is also the main factor with ref to the company, creating jobs amongst the society which comes under "Cultural, Demographic & Natural Environmental Factors". However, Tata is considered a friendly company which is a very beneficial point for this organization. In terms of "Political, Government and Legal Factors", the plant was shifted to Singur which is in west Bengal and shows as a very good example of government policies in terms of the automobile industry. In terms of "Technological Factors". [9]

5. Key determinants & new skills support

Tata motors own Tata technologies an company that helps in the design and development of component, technical problem-solving and providing cost-effective solutions to proceed with this project.

To understand the new development and the in-lined success factor, not only Innovation management frameworks is required but the properly set up is required to manages the design projects. [9]

Approximately 15 engineers from Tata technologies submitted patent applications for the Tata Nano. in 2009. The new skill and support from the Tata technologies design and development team were taken for the development of the Tata nano product, as this company has built expertise in developing lightweight components and did various projects in weight optimization in body structures. They have also introduced new technologies required for deploying sensors and internet connectivity in cars.[10]

6. Key determinants of process in development

Tata nano development process involves the modular design revolution in which the component of this car developed separately and been assembled its one specific location. "Gandhian engineering" approach, which means more form less for more and more people. The business process is being implemented in Tata for the NANO project. The plant vender has there warehouse as per there production line, the material delivered for production were displayed every day to estimate the cost and quantity requirement. This was the paid warehouse and use to have full control of the material. [13]

6.1. Tata Nano System Integration :

The challenge was to build the new engine management system with min cost and schedule constraints. The solution was found to use work tools for a model-based design approach and generate a code for the prototype control system. Due to this, the costly sensor was eliminated with a reduction in validation cycle time from weeks to hours. The modification and changes can be easily made with an integrated platform for modeling, simulation and testing. This will give the information about how the system works. The nano development process involves the modular design revolution. EMS development consisted of two main parts such as Hardware & Software . The common “V” cycle model was implemented for the development of EMS. The experience in NANO proved that rapid prototyping on model-based design is very useful. This prototype added high value to the product. As the company has its own manufacturing facility the integration of cyber security is controlled over the private data to be shared for business purpose. The plastic parts which was previously manufactured with tooling were now manufactured as per additive manufacturing process. [11]

7. Technologies Implemented for Development:

Tata Motors also looked at distributed manufacturing technology - Creating low-cost manufacturing units that would design and give out to entrepreneurs, who might like to establish a manufacturing facility. The company also examined different ways of servicing and in-service issues about the process and procedure to follow, which will keep costs under control. An experiment on the plastics material were carried out and by using the new technology like Aerospace adhesive instead of welding process. Many of their experiments were criticized by auto expert and industry persons. But the company did some experiment with engineering plastics, new materials, and using new technology like aerospace adhesives instead of welding. Many of these experiments were criticized but they still proceed on their innovation. New vendors were captured according to their skill. Expertise in data handling and product design expert were brought into the tram to share their experience and develop this product as decided. [12]

8. Impact and influence of external environment

There are many outside factors to run the business effectively with external environment as the growth depends upon surroundings. The factors like economical , demographical , legal and the governmental cannot be controlled. Economically the future of the organisation depends on the stakeholder and attitudes whether its advantages or not . In this area Tata used joint venture technique with foreign companies which they are involved with. Tata Group developed in the technology field as they have many enterprises and resources which made them helpful to get the success in research and development. In terms of Legal - It is very important for organisations to achieve competitive advantages over competitors. When an organisation is going to start business in new countries initially they have some disadvantages over existing home competitors such as better market knowledge, reputable local customer relationship and supply chain. [5]

9. Management Overview

This innovation was accepted by the higher management in a very positive way. In terms of strategy Tata has used the market penetration pricing strategy so that they can introduce this product to the market. They kept the sale value very low to capture the sales value to the customer.

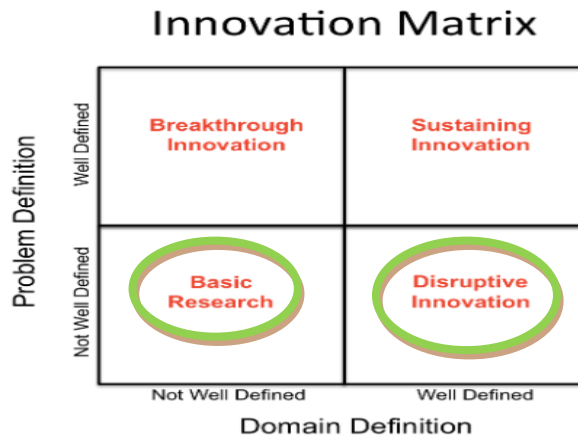
The marketing strategy was to pitch this business model as an affordable car for the Indian masses. This could be a great alternative to bikes or scooters. The marketing strategy element never intended to compete with the other car dealers.

Management thinks it was a good idea to launch this business model worldwide. It was designed as the greatest innovation in the automobile industry with affordable cost for a middle-class family to fulfill their dreams and be safe on roads with the best finance and lucky draw options. This kind of approach had knock-on effect on development of their other product costs and vendor development. [9]

10. Best practice process of this innovation

As pointed out in " Mapping innovation" by Greg Satell, innovation arises when the right people with their ideas and events come together to create something new and useful. The mapping metric helps to map innovation, problems, and then move around these four quadrants as shown below.

The basic ideas of the research was safe and affordable mobility. The development of NANO was conditioned by using of disruptive technologies and due to this, it was tagged as disruptive innovation. This is the opposite of sustaining technologies. this results in worse performance, the products for business are typically cheaper, smaller, and more convenient to use and offer some new features that some customers appreciate. They are classified as the bottom of the pyramid market. [12]



11.Critique of the whole innovation process

11.1 Possible threats and risks :

In extreme climatic conditions, if we take the example of Canadian winters, tata nano may come up with battery failure issues. There is a lot of competition with other cars having better features & this may affect this new model which will affect the growth of the product. at are already established in the country instead of trying a new product. This will definitely affect the spreading of the customer area. Tata Nano's base model does not provide the customers with airbags which can be a major issue in terms of safety point of view. There is a risk of achieving the desired sales target as well.

11.2 Market Requirement and pricing :

Looking at the requirements Tata's basic assumption was safe transportation and aspiration of becoming a car owner. The target segment of the two-wheelers segment was a little bit not up to the mark as Rs 1 Lakh is still a big amount for people who can afford two-wheelers. Later the company had also made some efforts to focus on youth with additional features incorporated to move away from their target segment.

11.3 Product and Positioning :

As this was meant for low-priced products, the development team worked on product core benefits. But the expectation is mismatched with the two-wheeler owner. The few incidents of engine fires developed a negative impact regarding safety and the positioning challenge with the customers.

11.4. Mitigation :

To overcome the problem more investment in battery quality and provide customers with extended battery warranties and regular service checkups for batteries. The company can invest in its technology and provide the customer with what they need. With the help of media, marketing advertising can make this model more popular among the people and spread awareness about the Nano launch. To cover the safety point the higher version of this model will have a lot of features as compared with the other competitors.

12. Conclusion

New product development requires a multiple business model approach. Designing a new business model is essential since you need a new business unit, a new hurdle rate, customer segment & an expansion of the value network with a new type of partner.

However, it also shows that the multiple business model innovation approach implies introducing new offerings, and serving a new customer segment through disruptive innovation and radical technology innovation only. Furthermore, this approach is an industry form of business model innovation, it extends the organization partners' network with equivalent partners, for example, research and development and heterogeneous partners which includes suppliers and distributors.

The Tata outcome is therefore an awakening call to not just India, but also other developing nations to never underestimate the value that non-market strategic coordination brings to revolutionary propositions.

The work done by TATA is remarkable and shows its vision toward the people's care and safety for the family to travel on two-wheelers in this present traffic condition in India, to avoid any accidents. Many people were getting employed during this project and the first 1 lakh customer really felt proud for getting this car at its basic price.

This car was introduced as the cheapest car thinking that it will catch the customer in huge percentage all over but noticed that, people thought the reduction in cost may lead to a compromise in the quality thus it worked at some point but from a business point of view with sustainability in market, it leads towards failure.

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