

# Tata nano: the people's car essay



**ASSIGN  
BUSTER**

Tat Nano – The Peopl Car ta o e le's r dia k big. Ind must think small to stay b — Ra atan Tata, Cha airman Tata G Group In March 2009, Tata Motors India's larg , s, gest automob company by sales lau bile unched the world's cheap pest car, the Tata Nano i India price at \$2500 (see Exhibit 1 for a pict in ed ture of the N Nano). Throu ough this laun nch, the comp pany realized Tata Group Chairman R d Ratan Tata's v vision of mak king a “ peop ple's car” – a safe, affordab car which was within everyone's r ble h reach. Ratan T Tata's overar rching ambit tion was to build innova b ative product for the ma ts asses. He exp plained, “ The aim is to c e create produ for that la ucts arger segmen nt—good and robust produ that we a able to pro ucts are oduce innovatively and g to the ma get arketplace at lower costs. ” 1 The next c ” cheapest car a available in t world wa the the as Chine QQ3 at \$5 ese 5, 000 manufac ctured by Che Automobi ery ile.

By targeting th two-whee le vehicle ow y he ed wners, Nano created a new segment – the ultra low cost w w (ULC) segment pr riced between two-wheeled vehicles an the Maruti Suzuki 800, the next che n nd , eapest car in India. The Nano was a resounding suc n N ccess, and by May 2009, Ta Motors ha received 20 ata ad 06, 000 orders for it. How wever, Tata M Motors was p producing Na ano from the interim fa eir acility that ha an ad annua capacity of 50, 000. Their new plant, w al f r which would start comme d ercial product tion by April 2010, would have at best an annual ca d t apacity of 350 0, 000. Ra Kant, Vic Chairman of Tata Mo avi ce n otors, wonde ered what w would be the optimal cap pacity comm mitment for th Nano.

The overwhelming positive market response to Nano suggested that the hat company's internal estimates of the market demand for Nano-like vehicles in India was close to actual. In fact, global automakers such as Renault-Nissan and Chrysler had already announced plans to target the ultra low-cost segment. Moreover, Indian automaker Maruti Suzuki was expected to launch the Maruti Cervo in May 2010 priced between \$3200 and \$4400. 2 Knowing that the Nano would face competition in the near future, should Tata Motors be conservative in its capacity commitment and stick to its current planned annual capacity of 350,000? Alternatively, should the company cement its first mover advantage by making an aggressive capacity commitment? If so, how much annual capacity should the company commit to? Overview of the Indian Passenger Vehicle Segment

The Indian automotive market was the fastest growing in Asia driven by India's large population of 1.1 billion and a low car penetration of approximately 14 cars per thousand people. The e. \_\_\_\_\_

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This Professor Krishna Palepu and Bharat Anand and Research Associates Rachna Chawla, Research Coordinator of the India Research Center for her assistance with exhibits and case authorizations. These cases are intended to serve as endorsements, source of primary data, or illustrations of effective or ineffective management. not intended Harvard College. To order

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[harvard.edu/educators](http://harvard.edu/educators). This publication may not be digitized, photocopied, or otherwise reproduced, posted or transmitted, webbed, without the permission of Harvard Business School. 10-420 Tata Nano – The People's Car passenger vehicle segment in India comprised of three segments – passenger cars, utility vehicles (UV) and multi-purpose vehicle (MPV) with the passenger car segment contributing to 78% of total volumes in the segment. In 2009a, Maruti Suzuki India Ltd. was the leader in the passenger vehicle segment with 47% market share (see Exhibit 2a and 2b for competitive landscape for passenger vehicles in India and segment wise market share).

3 This segment was expected to grow at a compounded annual growth rate of 14. % in the period from 2009 to 2013. 4 Bulk of this growth was expected in the passenger car segment, especially the small car segment on the back of the reviving Indian economy and shifting preference to fuel efficient and low maintenance cars. The UV and MPV segments were expected to grow because of reductions in taxes. The market was also witnessing a polarization with people's preferences moving from sedans to small cars or utility vehicles. 5 A 22% growth in premium car sales in 2009 had prompted players such as BMW and Mercedes Benz to expand in India.

Exports were another growth area and India's largest markets were Asia and Africa and as output quality improved Europe was also gaining in

importance. 6 Tata Group The Tata Group founded by Jamsetji N. Tata in 1868 as a trading firm, was India's largest conglomerate with revenues of \$70. 8 billion in 2009.

Its 98 group companies, operating in more than 80 countries in across seven business sectors—information technology and communications, engineering, material, services, energy, consumer products and chemicals—employed 357, 000 people. The group's 27 publicly listed companies had a combined market capitalization of about \$60 billion, among the highest among Indian business houses and a shareholder base of 3. 2 million. The Tata group had aggressively pursued an internationalization strategy and exported products and services to over 85 countries.

By 2009, its international operations contributed to 64. 8% of its total revenues. It was also focusing on driving growth through new technologies and innovation and the Nano and Ekta supercomputer (ranked as the world's fourth fastest computer in 2008)<sup>7</sup> were examples of this effort. Tata Motors Tata Motors was India's largest automobile company by sales with consolidated revenues of USD 14 billion (2008-2009). With 4 million vehicles on Indian roads, it was the leader in commercial vehicles and among the top three in passenger vehicles with products in the compact, midsize car and utility vehicle segments.

Its cars were primarily sold in India, and only 3. 3% of cars produced were exported mainly to Asian countries, Africa, Australia, Europe, Middle East, and South America. History of Tata MotorsThe Tata Engineering and Locomotive Company (TELCO) was established in 1945 to manufacture

locomotives and other engineering products. In 1954, TELCO entered into a 15-year collaboration agreement for manufacturing commercial vehicles with Daimler Benz and soon launched the Tata Mercedes Benz.

After the technical collaboration with Daimler Benz ended, TELCO began designing and developing its own commercial vehicles in-house. Ravi Kant, Vice Chairman, Tata Motors elaborated, “ What worked in our favour was our lineage both from the Tata side, which Period from April 2008 to March 2009. b See Tarun Khanna, Krishna G. Palepu and Richard J. Bullock, “ House of Tata: Acquiring a Global Footprint,” HBS Case 708- 446. 2 Tata Nano – The People's Car 710-420 gave us our work ethic and values, and the Mercedes side, which taught us technical excellence.

This potent combination helped us create reliable and hardy vehicles that could take a lot of abuse. “ 8 Over the next two decades, TELCO established its position in the commercial vehicle segment through introduction of various light and heavy commercial vehicle models. In 1991, TELCO entered the passenger car segment with the launch of the Tata Sierra. In 1994, capitalizing on India's liberalized foreign direct investment rules it formed a joint venture with Mercedes Benz to manufacture Mercedes Benz passenger cars in India.

Ratan Tata's vision of developing an all Indian passenger car, “... with the Zen'sc size, the Ambassador'sd internal dimensions, the price of a Maruti 800e and the running cost of diesel,” was realized when the Tata Indica, India's first large-scale indigenously developed passenger car was launched in 1998. Tata Indica became India's largest selling car in its segment within

two years of its launch, proving that it was possible for an Indian car to compete successfully in a market dominated by foreign players. In 2003, TELCO changed its name to Tata Motors and soon thereafter embarked on a global expansion strategy using international acquisitions, partnerships, and other activities to expand geographies as well as enhance its product offerings. Kant summarized their international strategy, “ Our international business philosophy is to be seen as a local company in the country of operation. The local management was given a lot of freedom and only a couple of senior managers were transplanted from India to new markets. In 2004, Tata Motors became the first Indian industrial company to list its American Depository Receipt (ADR) shares on the New York Stock Exchange (NYSE).

By 2009, it had plants in Bangladesh, South Korea, Spain, Morocco, Thailand, and three plants in the U. K. for Jaguar Land Rover. It also distributed Fiat cars in India.

Tata Motors had a strong focus on research and development (R&D) with over 2, 000 engineers and scientists, at multiple locations in India, and in South Korea, Spain, and the UK. However as Kant pointed out, “ The passenger cars coming into India are built on third- and fourth-generation platforms—so in that sense, there is a certain disadvantage that we started with vis-a-vis other car makers. We are still an evolving company. ” 10 Tata Motors was influenced by Ratan Tata's passion to innovate affordable products for the masses, which accounted for about 70% of India's 1. 2 billion population. Tata explained, “ All along, the focus of entrepreneurs and corporations has been to develop products for the top of the pyramid that

has about 250-300 million people... The need of the hour is to create products and services for the rest of the Indians” 11 He added, “ If we don't do that [target the lower income segment], I think the Chinese will come and do it for us.

” 12 One of its most successful experiments in this area was the 2005 Tata Ace, India's first indigenously developed mini-truck priced at \$5000, built as a replacement for the three-wheeled auto-rickshaws often used to transport goods in India. Unlike other commercial vehicles, the Ace with its compact size and shorter turning radius, could manoeuvre through India's narrow urban streets and cost effectively transport small loads to villages and towns in rural areas. The Ace, priced similar to a three-wheeled vehicle, cost 50% less than any other four-wheeled c The Maruti Zen, a 5-door hatchback was introduced in India by Maruti Suzuki in 1993 and was one of the best selling cars of the Suzuki family in the compact segment. d The Ambassador was the first car to be manufactured in India. It was launched by Hindustan Motors in India in 1948 and was renowned for its dependability, spaciousness and comfort factor.

e The Maruti 800 was a car based on the Suzuki platform which was launched in the Indian market in 1984. It sold for a price of \$4, 444 and was India's bestselling car for 20 years until Maruti's Alto took over. 3 710-420 Tata Nano – The People's Car commercial vehicle in India, was significantly cheaper than pickup trucks with similar payload capacities found in international markets, and thus created an entirely new product category. Ace sales exceeded Tata Motors expectations and sold its annual production



target of 30, 000 vehicles in less than a year despite being available in only approximately 25% of the country.

In October 2005, encouraged by this success, the company doubled its annual production to 60, 000 units. f In anticipation of stiff competition from industry players expected to come out with four-wheeled oneton vehicles to rival the Ace, Tata Motors further enhanced capacity to about 250, 000 vehicles a year by setting up a greenfield plant in Northern India in the state of Uttarakhand. It also expanded the product portfolio by launching passenger, compressed natural gas (CNG) and other higher end variants with enhanced features such as greater mileage, better fuel efficiency and assurance of extended life. Tata Motors also launched the export version of the Ace in Sri Lanka, Nepal and planned to expand to other developing markets.

The Jaguar Land Rover (JLR) acquisition In 2007, Tata Motors was looking for an acquisition that would enable it to cater to the higher end segment of the market. At that time, Ford put up the Jaguar and Land Rover brands for sale. These two branches had made a profit of about \$450 million dollars in the first half of 2008. Land Rover was reputed for making rugged vehicles with strong off-road capabilities that were popular among farmers and defence forces and its models included midrange and sport-utility vehicles ranging from \$42, 150 to \$92, 750. Jaguar models ranged from \$34, 995 to \$92, 500 but over the last couple of years, it had acquired a reputation for poor quality.

Tata Motors was interested only in the Land Rover brand. Kant explained, “ We felt that it fitted in quite nicely with our product line of multi utility and sports utility vehicles. Tata branded vehicles are at one end of the spectrum and Range Rover and Land Rover were similar kind of products at the other end [higher end] of the spectrum. However, we did not have an option on that and we were told that either we have to take both or none.

” Tata Motors’ bid a price of \$2. 3 billion for both the brands; their price as well as their ability to convince the union that they were ‘ long-term ethical partners’ helped them win the bid. In FY 2009, the global recession led to a steep fall in JLR sales and Tata Motors reported an annual loss of \$520 million primarily because of losses at its JLR unit. Tata Motors had trouble arranging finances as the global credit crisis and economic recession reduced availability of funds. It initiated cost-cutting measures at its JLR unit and these bore some success as the company reported profits two quarters later. However though the JLR unit had made an operating profit it still had a debt of \$1.

9 billion on its balance sheet. JLR sales had increased in emerging markets such as Russia and China but continued to lag significantly in its large traditional markets of US, UK and Europe (excluding Russia). India was another target market for JLR and Tata Motors launched JLR brands in India in June 2009 and positioned them in the premium and luxury car segments by pricing them in a range of \$136, 000 to \$199, 000. The Nano Project Genesis The origin of the Nano lay in a seemingly benign observation by Ratan Tata in 2002, “ I observed families riding on 2-wheelers – the father

driving the scooter, his young kid standing in front of him, his wife seated behind him holding a little baby.

It led me to wonder whether one could conceive of a f See Krishna G. Palepu and Vishnu Srinivasan, “ Tata Motors: The Tata Ace,” HBS Case 108-011. 4 Tata Nano – The People's Car 710-420 safe, affordable, all-weather form of transport for such a family. ” 13 In 2003, at the Geneva Auto show, Tata announced his dream car project. Kant recalled: He was asked by some media person, ‘ What do you think the price of this car will be? ’ And, more or less as a flash in his mind came the answer, Rs. 1 lakh.

He probably felt that the cheapest car was around Rs. 250, 000 at the time, and 2-wheelers cost roughly Rs. 0, 000-50, 000, so the number should be somewhere in between. That's when the number stuck.

And it remained there throughout its life, for better or worse. Ratan Tata summoned an initial team of five engineers to Mumbai. The team made a 60-slide presentation on low-cost modes of personal transport but had little idea what they were supposed to do next. In turn, Tata urged the team to dream of building a low-cost car that would be priced marginally more than a 2-wheeled vehicle but would revolutionize personal transport in India. In addition, he entreated “ Make me part of the team. In 2005, Ravi Kant was appointed Managing Director of Tata Motors, recruited from the Commercial Vehicle Business Unit of the company.

Kant in turn appointed as team head 35-year old Girish Wagh, who had previously led the development effort for the Tata Ace. Although the small car project resided in the Passenger Car Business Unit, Wagh reported

directly to Kant. A largely new organization began to be created drawing primarily from lateral recruits rather than internal Tata Motors personnel (see Exhibit 3 for manpower pool deployment). Design and Development Process Three Requirements development process: In a typical automotive project, one would benchmark against existing best-selling cars, define performance targets on which one wants to differentiate, and then develop a new car. For lower-cost cars, one would achieve cost targets either by making cars smaller—a smaller car requires a smaller power train and so on—or through local sourcing. In contrast, we had three clear targets that drove the entire process: first was a cost requirement, Rs.

1 lakh. Second were the regulatory and safety requirements of the domestic market; this was a given (see Exhibit 4 for domestic safety regulations).

Third were performance targets that were actually defined by the minimum amount that a customer would accept from such a car. Early on, the project team realized that simply “going smaller” would not achieve the disruptive cost target that had been set. Instead, they would have to innovate on what such a car looked like and what it included. Rather than benchmark against earlier-generation cars, their initial benchmark was a 2-wheeler.

“For example”, as Wagh recounted, “we initially started with a 10-inch wheel rather than a standard 14-inch tire for mini-cars. Similarly, for two or three years, we were designing a car without doors since two and three-wheelers do not have any doors. These specifications would have met regulatory requirements. But we quickly realized that customers would not be satisfied. The little market research we did early on made us realize that even a two-wheeler owner had large switching barriers to a car that cost Rs.

1 lakh—for example, they were concerned about whether it would have resale value, would it be trustworthy, would there be hidden costs, would it not be trendy, etc. Kant affirmed, “ As we moved ahead in the program we realized we had to produce a real car rather than something that was an embarrassment or an apology for a car. ” Wagh described the project targets that would define the subsequent Re-inventing a Car The main cost components of a car were its power train (consisting of the engine, transmission, drive shafts, clutch, and axle), that typically accounted for 25-30% of a car's total materials cost; rolling chassis items (the wheels, brakes, and steering) that contributed another 20-25%; and the remainder spread over body parts and trims. 710-420 Tata Nano – The People's Car Roughly, 70% of suppliers were local, and 30% foreign. In aggregate, 85% of the car by value was outsourced.

Internally, Tata engineers played a key role in the overall design as well as on particular components. One such component was the engine. Though the team initially scouted the globe for an off-the-shelf engine, and even tried motorcycle engines, they quickly decided to design it in-house. Wagh described the process of development here: Here, as in many other cases, we questioned many things that were taken for granted in the auto industry.

Today 98% of cars have a front-engine layout with either a front wheel drive or as you go towards luxury cars a rear-wheel drive. By going with a rear-engine rear-wheel drive, we were taking on certain risks—for example, a risk of NVH (noise, vibration, and harshness). However, the benefit was it would free up a lot of space inside the car for the customer—the interior volume is far better than other small cars in India—and give us the benefit of very low

footprint and therefore low weight. With a lower weight the power train size can come down because it has to pull lower weight, the body and trim weight is lower, and the rolling parts that have to carry that weight through the life of the car will be lower.

Similarly, we went with a two-cylinder engine but were trying to extract a good amount of power from it. Emissions, therefore, were going to be a challenge. Therefore, we decided that there would be no additional technologies like turbo-charging, inter-cooling, or gasoline direct injection. At the same time, when we drove the car with a 543 cc engine—our fourth version of the engine—we found that the performance was not sufficient in terms of acceleration and drivability. Therefore, we went back to the drawing board and increased the capacity from 543 cc to 586 cc and eventually 624 cc, where the performance was excellent. While this was happening, we were mindful of the cost target since it is very easy to stretch the envelope or convert to a three-cylinder engine and make all our problems vanish.

The end result was something we are proud of. Our engine is far cheaper than the next cheapest engine in India. But, it is also far better in terms of fuel efficiency. Moreover, in terms of emissions, the carbon dioxide value of 101 grams per km is the benchmark in the country now (see Exhibit 5 for major milestones for the Nano).

Bharat Parekh, Head of Strategic Sourcing, Tata Motors, described the early process of reaching out to suppliers: We had a rough break up of Rs 1 lakh and how much we would allocate on the engine, the gearbox, the body, suspension, electrical items, etc. more or less by applying percentages

straightforwardly from the cost of a typical car or by using two-wheeler input costs as a benchmark in certain cases. However, the targets really evolved over a period at an item-level basis. One set of suppliers we targeted were the two-wheeler suppliers in the country. Apart from that, we also had our standard supply base working on the Indica.

In addition, we looked at suppliers for the next cheapest car in the market too, the Maruti 800. We created a supplier outreach that included almost 800 different suppliers to understand what each could contribute. However, to start with we had nothing to offer them in terms of specification. We said, ' This is what we are trying to create, something that has not been done before, we'd like you to contribute ideas in terms of what product you are doing today and what is the specification we should be looking for. ' Parekh recounted the reactions of suppliers: Roughly, 70-80% of suppliers were game for these types of parameters. Some were not.

In those cases, they did not give us enough credibility—either because of our reputation more as a commercial vehicle manufacturer [rather than passenger cars] or because of the lack of foreign collaboration on this project. Others took the Tata name seriously—it commands respect among supplier communities and what Mr. Tata says is not usually taken lightly—or simply took pride in contributing to an Indian-designed car. When we started this project, my 6 Tata Nano – The People's Car 710-420 job was more of a salesperson (trying to sell the Nano idea to suppliers) rather than a purchasing man. After six months, I really did not have to do any selling at all.

More than half the components were proprietary parts designed by suppliers themselves. One of the major foreign suppliers was the Bosch Automotive Group, a premier German auto supplier known for engineering excellence. Dr. Bernd Bohr, Chairman of the Automotive Group, described the project environment inside Bosch: Tata did not come to us with large rulebooks or specifications. They simply told us what the weight of the car would be, that it would have a two-cylinder engine, and would need to achieve Euro 4 emission regulation. In addition, it needs to drive, of course.

And that was the major difference from other auto projects or customers. Early in the process, one could already see that our teams were coming up with new ideas that created a kind of self-momentum. Where usually one would say that cost reduction is not so exciting for an engineer, here we really had teams having fun. For example, typically each cylinder has an injection valve on an engine; here, our engineers came up with the idea of saying, let us have one injection valve for two cylinders and give two spray holes so that it takes care of two cylinders.

On the software side, a typical electronic control unit (or ECU) for a middle-class car in Europe would have 5500 parameter groups, for the Nano we have 1700. With that complexity out of the system one can have a smaller processor, less power consumption, and so on. Similarly, the idle speed control, which keeps the engine at the same rest when you are idling, has over 100 parameters you can adjust in a typical car. The Nano has seven.

Maybe in some cases the RPMs would vary by 10 or 20 RPM, the engine will still not stall, and 99% of drivers would not notice. But that's the kind of '



perfection' that has accumulated in control systems over the years.

Questioning things we have taken for granted is useful. We are now using low-price vehicles as a training and learning ground to do things simpler. In terms of technical innovation itself, I would probably put this project at a five or six. There were some things like pushing diesel injection from 2000 to 2500 bar, coming up with new materials and new laser machining processes, where it would be an eight or nine.

However, the major challenge was getting across the cost barrier while doing all this. That would be a ten. Other suppliers provided similar accounts.

Surinder Kapur, managing director of Sona Group that designed the steering column, recounted, " When we figured out that the car would be rear-wheel drive, we knew that the steering column could be engineered differently since the front wheels would not hold the weight of the engine. So we kept the steering column hollow.

" 14 Similarly, the seating system, designed by Tata Johnson Controls Automotive Ltd. , (a 50% joint venture between Tata Autocomp Systems Ltd. and Johnson Control) at 50-60% of the cost of a Maruti, had 10% fewer components; seats mounted on a horizontal rail eliminating the need for a seat frame and allowing passengers to tuck their feet under the seat; a similar structure for driver and co-driver seats; and, a three-position reclining driver rather than an infinite position reclining seat. Bohr described the symbiotic nature of the relationship with Tata Motors through the Nano project, noting, " this will help us address the growth market beyond India because we see potential for these kinds of cars in other countries.

We also wanted to go through the learning experience and later transfer what we had learnt to products that we are producing for our European, American and Japanese customers and there are already first success stories of this transfer. It is the first time that Bosch is proud of having done cost reduction. We have Bosch at the high-end of the market with the lowest-cost volume production vehicle in the world and so it was publicized a lot and it showed our 7 710-420 Tata Nano – The People's Car organization that we could do such a thing. " At the same time, Bohr emphasized that " we will not buy ourselves into this market segment.

So the margins we've calculated are similar to what we have on European large volume projects... " Numerous innovations occurred in various other areas.

Door handles ended up having 70% less parts than the cheapest European cars. The tires had no tubes. Instrument panels on the dashboard were similar to motorcycles. The rear suspension was also similar to motorcycles, in order to help balance a higher center of gravity and a rear-mounted engine.

Certain items such as anti-lock brakes, electronic power assisted steering, cruise control, trip-tronic, navigation system, and air bags were excluded from the car. The team used inexpensive brake drums and some variants did not have the servo system or the brake booster. The Nano had also lower trim levels. Wagh summarized: The entire system was being re-invented.

Innovation at the aggregate level trickled down to system, then to sub-systems, then to parts. We went through a tremendous amount of iteration

in the design process. The entire engine was redesign thrice, the entire body was redesigned twice, and the floor plan of the car redesigned around 10 times, the wiper system redesigned more than 11 times. In any other project, you very clearly define the layout and targets, and work towards it where execution excellence comes into play. Whereas here, it was more of iterating with design, re-defining targets as we were moving on, and working with suppliers through the re-designs.

Culture and Management Wagh recounted the internal functioning of the team: The Nano was in effect a new product, in a new location, with a new plant, and a new team. The space and the way the teams were structured were the same as any other project. However based on my experience during the Ace project, we instituted frequent sessions to bring everyone together. Every morning a group of us – sometimes up to thirty – would meet for sessions lasting as long as four hours, an entire morning where we would express concerns and issues, challenge assumptions, appreciate failures, celebrate achievements, and recognize delays. More important, bringing the team together allowed us to take decisions fast.

Since there were so many iterations, delayed decisions would have been very costly. There were many young people in the team who had a lot of humility to learn. The project team leveraged expertise more broadly from within Tata Motors too. For example, stalwarts from the commercial vehicle arm helped identify ways to lay alternate fuel lines, make better use of plastics, or build better lamps.

Similarly, personnel from the two-wheeled vehicle industry were brought in, particularly in sourcing. Parekh added: There was a great degree of collaboration between suppliers, the design team, and the sourcing team too. The entire cost book for the vehicle was maintained by us. At every review, we would tell the designers based on their ideas, “ this is where we stand today in terms of cost, and this is the kind of stretch that we’ve got to take to bring it further down. From the supply side, we tried to do as much in purchasing commodity inputs as we could. For example, we decided that steel is a very important commodity and individual suppliers would not get the kind of volume that we could, so we took over the entire steel procurement ourselves, saying that steel would be negotiated by Tata Motors.

Similarly for plastic granules. We went to the extent of even talking to the people who manufacture machine tools – for example, we negotiated prices of presses with sheet metal suppliers to help our suppliers. 8 Tata Nano – The People's Car 10-420 In addition to the materials cost targets, we also had targets for the running cost of the vehicle. A two-wheeler customer would be comparing what he was spending on a twowheeler every month compared to a Nano.

Therefore, there was a target for fuel efficiency, for repair and maintenance costs, and so on. We had to ensure we do not allow suppliers charging us anything in the after-market and giving us a concession on the original equipment price. Therefore, the pricing was worked out starting from prototype car parts requirement to production parts to replacement parts.

The aggressive cost targets played out in other ways. For example, the Bosch engine management kit consists of thirteen different parts.

After we finalized the order at a kit level, they were unable to give us a break-up over individual parts since they said, ' We don't know how we're going to make it, so we don't know the component wise cost allocation for the individual parts we're going to realize. As we go along, we'll hopefully work out how we meet your targets. ' It took them over a year to provide us a break-up where I could release the partwise order. This was the type of commitment that suppliers undertook.

In some cases, like the engine, we ended up with exactly the same cost as our initial targets. In other cases, we exceeded the targets for individual parts, which had to be compensated by corresponding reductions in other parts target costs. A typical new car project would typically last four years. In the absence of benchmarks, the early conceptualization stage was drawn out. Ratan Tata and Kant directly monitored the progress of the Nano team throughout.

As managing director of Tata Motors, Kant's direct approval was typically required only for large-budget items. In contrast, for the Nano project as Kant reflected: Even a Rs. 1 item could not be bought without my signature. There were two occasions when the cost was not reducing and it seemed as if we would have to alter the price. At that time, I told my team we would rather abandon the project than alter the price, because then you have taken away everything.

We went back to the drawing board. Wagh noted, “ Mr. Ravi Kant’s presence and intelligence made a large difference to the project. The credit of managing the timeline and cost goes entirely to him. I would report directly to him roughly every week.

” For the first few years, Ratan Tata held four to five hour reviews every month with the Nano team, discussing progress. In addition, he visited the Engineering Research Center in Pune, the hub of the development activity, nearly every month and was involved in several key decisions. Wagh described the impact: The Chairman would himself come out and drive every prototype or mule, and give us feedback – this is not good enough, we need to improve acceleration or comfort. Since he was directly involved and most of the engineers were getting a chance to interact with him and demonstrate their work, it led to a very high level of motivation. For the next iteration, people would work with more energy and enthusiasm, with a belief that something will get accepted. Gradually this set the DNA of the team.

What motivated us was that we were working for a dream for the Chairman. There were many naysayers who were saying this is not possible. That used to fire up the Chairman. It also used to fire up many of us. Launch By 2007, a beta prototype of the car was ready and tested at an overseas launch to maintain secrecy.

Ten days before the launch Tata joined the team in Pune, drove the car, and oversaw finishing touches including changes to the seat covers and air vents (see Exhibit 6 for a comparison between Nano and comparable cars). On January 10 2008, the Nano was unveiled at the AutoExpo, where Tata simply

said, “ Since we commenced this exercise four years ago, we are all 9 710-420 Tata Nano – The People's Car aware that there has been a very steep increase in input prices of steel, tires and various and sundry other inputs. Bearing all this in mind, I would like to announce today that the standard car will in fact have a dealer price of One Lakh Only (100, 000 INR), VATg and transport being extra. Now having said that, I just want to say that that is because a promise is a promise. ” 15 In March 2009 the Nano was launched in India with the standard version priced at Rs.

100, 000 (\$ 2162), excluding value-added and transportation cost. Three variants of the Nano were offered, differing largely in trim levels: a standard version, the CX, and LX models (see Exhibit 7 for differences between Nano models). The car received rave reviews. Steve Cropley, Editor in Chief of Autocar UK, said: This is a car neither the Germans nor the Americans could have built. They'd have lost sight of the cost and marketing objectives. The Japanese could get closer, but they've already had a shot and the resulting car cost twice as much.

The genius of the Nano is the way it brings car ownership to a completely new kind of customer, halving the entry cost of car ownership. You have to go back 90 years to the early days of Henry Ford to find a parallel. 16

Manufacturing In choosing a manufacturing site for the Nano, Tata Motors soon confronted various options. Different states competed to highlight their attractiveness as a manufacturing location and offered significant incentives including tax and excise duty benefits. The eastern state of West Bengal offered incentives such as land subsidy -- 646 acres of land on a 90 year lease starting with an annual rental of Rs 1 crore per year and going up to a

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maximum of Rs 20 crore per year in the 60th year — , a loan of Rs 200 crores at 1% interest repayable after twenty years, tax paybacks and concessional power to match the benefits Tata Motors would have got in other states. 7 Tata Motors decided to set up the main manufacturing plant in Singur in West Bengal.

Tier-1 ancillary manufacturers were based in and around the Nano plant. Co-locating most of the important vendors in the area would reduce inventory and logistics costs. Ashok Belani, CEO, Tata Johnson Controls Automotive Ltd. explained, “ Since this was a volume project, we had to be closer to the customer. It was important for some of our key suppliers to stay in a radial distance of 1 to 2 kilometer from where we set up the base to meet cost expectations.

The manufacturing team had already provided substantial engineering input during the design stage for reducing the work content, resulting in a reduction in the plant area and lesser equipment. Soon after construction started at the Singur plant, Tata Motors confronted land acquisition challenges there. The main opposition party in West Bengal claimed that the plant would displace thousands of farmers and that their land had been acquired under questionable circumstances. Massive farmer protests ensued, with demands that 400 acres of the land be returned to local farmers. 8 Parekh recalled: Suppliers' people were being targeted in terms of violence, theft and dacoity in their plants.

We had to keep them committed to the project, and said ‘ look, things are going to change or we will find a solution together, we will not let you down. ’



This was the most challenging part and this is where I got maximum support from Mr. Ravi Kant. He personally came and addressed a number of supplier conferences along with me, where we gathered all the Nano g Value Added Tax 10 Tata Nano – The People's Car 710-420 uppliers and told them what we were trying to do, described the challenges, how we were trying to meet them, and what our future strategy was. In September 2008, Tata Motors suspended work on the Singur plant despite large financial repercussions—it had already spent Rs 15 billion at the site.

Forty-six tier I suppliers, each of whom had made significant investments in creating their Singur facilities, had to be relocated quickly. The challenge for suppliers was exacerbated by the adverse impact of the recent global meltdown on their businesses. In response, Tata Motors agreed to bear 75% of relocation costs. Ratan Tata and Ravi Kant continued to motivate the project team through this period, noting that it would be particularly important to defy skeptics who felt that activating the new plant at Sanand in the western state of Gujarat would take at least 18-24 months. Within six months, Tata Motors activated the fall back facilities at their Pantnagar plant in Uttarkhand and started producing the car from there in limited numbersh Distribution Tata Motors distributed the Nano through its traditional Passenger Cars channel partners. Earlier, for booking, the company had also leveraged nontraditional channels such as other Tata Group companies' retail outlets—Croma and Westside.

The company was exploring the possibility of extending such non-traditional channels for the purpose of distribution to enhance its reach. Tata Motors was considering moving to a distributed manufacturing setup sometime in

the future. This would entail having mother plants, from where completely knocked down kits could be sent to strategically positioned satellite mini-factories where the Nano could be assembled and then delivered to the buyer. Marketing and Sales The marketing team played a critical role by helping the development team understand which features customers considered necessary versus desirable-but-optional in a low-cost car.

They also analysed the operating economics of current two-wheeled vehicles and the Maruti 800 (see Exhibit 8 for Nano and competitor operating economics). In attempts to reduce maintenance cost, the service team defined parameters such as fuel efficiency, tire life, service intervals and expenses involved in periodical servicing. The phrase “ Now You Can” embodied the positioning of the Nano. Rajiv Dube, President of passenger cars at Tata Motors elaborated: The Nano had the promise of putting many people on wheels who earlier thought that they could never own a car or it would take a long time for them to own their first car.

This car meant different things to different people. It was a car that allowed people to climb up the social ladder. It was a car that was egalitarian in nature. It made a green statement with the lowest carbon dioxide emissions amongst all cars in India, ‘ Now I don't have to be mbarrassed about driving a car.

‘ Traffic, in terms of the congestion was no longer a concern, ‘ Now I can move around in a car which has the smallest footprint, but yet travel with relative comfort. ‘ h See Laura Alfaro, Lakshmi Iyer and Namrata Arora, “ Tata Motors in Singur: Public Purpose and Private Property (B),” HBS Case

709-029. 11 710-420 Tata Nano – The People's Car Though Tata Motors released a print advertisement at the time of the launch it shied away from traditional media. Instead, as Dube reflected: When we unveiled the car, and said that we will be holding on to the price of a lakh, I think that created the kind of press that even the most concerted marketing campaign may not have got us. As per some estimates, the kind of PR that was generated was worth more than a 1000 crores, in terms of the global visibility that the car got.

Tata Motors ran ticker banners and ticker tapes on television channels and promoted the use of 'Nano' as a generic word for anything that was 'small, cute or happening' through SMA campaigns. News briefs were branded as 'Nano News' in some newspapers, there were 'Nano breaks' on television and radio and Nano pop-ups on major websites including social networking sites. Nano – The Capacity Commitment Decision In February 2010, one year after the launch of the Nano, Kant needed to decide what kind of capacity commitment Tata Motors should make towards the Nano. Tata estimated the domestic market potential for the Nano at one million cars per year.

Moreover what should the global strategy for the Nano be? Capacity constraint in the face of Demand Tata Motors had limited initial capacity since they were manufacturing vehicles from their interim facility at the Pantnagar, which could produce only 50, 000 cars annually.

This was done in the wake of the decision to move the full facility created at Singur, in eastern India, to Sanand in Western India, (more than 1500 kms apart) which would have taken them between 18 to 24 months. This forced them to start Nano sales only through the booking mode wherein people had

to pay upfront money to book a Nano, which would be delivered to them only at a later date. They started trial production of the Nano at their new facility in Sanand in January 2010 and commercial production was expected to start in the next two to three months. This plant would have a capacity of 250, 000 cars per annum on a two-shift basis. By making very little marginal investment, and operating the plant on a three shift basis, this capacity could be increased to 350, 000 cars per annum.

The company could also expand the capacity to 500, 000 cars per annum at a later date. By May 2009, Tata Motors received 206, 000 fully paid orders for Nano. The company did a computer generated random allocation to 100, 000 customers and gave an option to the balance to either retain their booking amount with Tata Motors to be serviced after cars had been delivered to the first 100, 000 customers or get a complete refund. Fifty Five thousand customers opted to retain their bookings with Tata Motors. As of January 2010 Tata Motors had delivered 20, 000 Nanos. An analysis of the first set of car bookings revealed that 50% of the bookings were for the LX version, 30% for CX and 20% for the base model.

Kant commented: This gives you an idea of how the consumers' mindset itself has changed. People want a low price car but they want to have comfort. Therefore, they want air conditioner, and other accessories even in a Rs 100, 000 car. A Rs 100, 000 car is an idea, but ultimately the product has to sell on its own standing. This project is going to make huge amounts of money, very shortly. Soon it will be cash break-even, and maybe a year later it will become profitable.

i A crore was equivalent to Rs 10, 000, 000 12 Tata Nano – The People's Car 710-420 Moreover, 75% of the bookings were outside the big five cities namely Mumbai, Delhi, Kolkata, Chennai and Bangalore. Thirty percent of the demand was from existing two-wheeled vehicle owners and 50% was from those who were buying their second car. The pride of owning a Nano also played a huge role in driving its sales. Nano owners who had booked the car based on its style were happy about a host of other factors ranging from its large interior space and effective air-conditioner to its drivability and fuel efficiency. One of Nano's first owners described his experience, " Wherever I stop the Nano, people get drawn to it and ask me about it. I truly feel like the " Brand Ambassador" of Tata Nano.

19 Dube believed that the second and third wave of bookings would be much larger than the first wave. He explained: When we accepted the first wave of bookings, there was still a lot of scepticism around the Nano, whether at Rs 100, 000 it would really drive well? What would be the ownership experience? For the large population of two-wheeler owners, Rs. 125, 000 even for the basic version is quite a lot. These customers would not want to put their money down until they saw some market experience, or word-of-mouth feedback.

I think a large number of twowheeler owners are still to exercise their purchase option for the car. Domestic Market Potential Tata Motors had positioned the Nano as a replacement for the predominant scooters and motorcycles in rural India. In 2009, the annual domestic demand for two wheelers was about 7. 4 million units. 20 The minicar segment in India was expected to grow at a CAGR of 50. 4% from 0.

0.5 million units in 2008-2009 to 0.38 million units in 2013-2014 driven by increasing disposable income and introduction of lower priced cars. <sup>21</sup> By 2020, in India there would be 439 million people with incomes that would theoretically allow them to spend between \$2500 and \$5000 on a new vehicle. Global Market Potential Tata Motors believed that there was potential for the Nano beyond the Indian market. Ratan Tata observed, “ We also recognize there is a market not only in developing countries, but possibly for a low-cost car in developed markets.

” <sup>22</sup> A. T. Kearney forecast sales in the ultra-low-cost segment (\$2500 to \$5000) would rise from 2.6 million in 2009 to 15.

6 million in 2020 (see Exhibit 9 for an analysis of the low cost car market). The key markets for these segments were India and other Southeast Asian countries (see Exhibit 10 for growth estimates for regular and ultra low cost cars). <sup>3</sup> Moreover, Indian exports of small cars were expected to grow at a CAGR of 19.6% from 2008-2009 to 2013-2014. <sup>24</sup> Tata Motors planned to export an upgraded variant of the Nano from India to some markets and build it locally in others.

The primary targets for expansion beyond India were other emerging economies in Asia, Africa and Latin America where safety and emissions standards were similar to India. On the anvil was also the Nano Euro car for the European markets that would meet European standards. However, there were concerns regarding its success in Europe. Bohr believed, “ You are maybe not going to sell a lot of Tata Nano's in Germany. Because here the car consumer is used to certain standards as far as speed is concerned, as

far as the overall comfort and handling is concerned and that's pretty different from what the Tata Nano is targeting. " In the next stage, Tata Motors planned to go to the US and other developed markets.

Ratan Tata stated, " For the US, we need a car that will have a larger engine, which needs additional crash tests, modifications, and we're in the process of doing this. <sup>25</sup> However, the cost of regulatory compliance, distribution as well as meeting basic customer requirements in these markets could drive the price up by 60% to 90%. <sup>26</sup> The aim as Kant said was to create a ' Nano Universe. ' <sup>13</sup> 710-420 Tata Nano – The People's Car Competition Tata Motors faced the threat of competition in the future and a couple of players planned to enter the ULC segment.

Dube worried, " Most Everything [in the Nano] can be emulated. The window available is quite short because somebody will find a way of doing it and possibly doing it better. " Though local manufacturers enjoyed a competitive advantage compared to established manufacturers because of their detailed knowledge of local markets and customer requirements, the established players could be expected to enter the fray soon given an expected growth rate of 24% in the ULC segment. <sup>27</sup> Global players such as Toyota (India contributed to 3% of its global volumes in 2009) and Ford (India contributed to 0.

6% of its global volumes in 2008) had decided to increase their India focus and in line with this strategy planned to launch cars in the small car segment in 2010. <sup>8</sup> Toyota's Etios was expected to be priced at \$10, 82629 and Ford's Figo at around \$7600. <sup>30</sup> Players had to adapt strategies to adapt to the

Indian market. Ford had invested about \$500 million in enhancing capacity at one of its plants in India, increased its vendor base, adopted a policy of multiple vendors for most components and single suppliers for critical components, indigenized content—the Figo would have 85% local content. 31 Similarly, Toyota had also built a good vendor and dealer network in India.

The question remained whether they would move further down the ladder and target the ULC segment. Would companies such as Toyota for instance with its emphasis on perfection as enshrined in the Toyota Way be willing to make some of the compromises on product quality that making a ULC car might entail? However, some players such as Renault-Nissan had decided to take the challenge head on. Renault-Nissan's CEO Carlos Ghosn, who was working with Bajaj Auto, India's second largest two-wheeler manufacturer with a market share of 32% to develop a \$3,000 car stated, "I'm very bullish on the \$3,000 car. We're not trying to do it in Japan or Paris; we're asking Bajaj to do it.

We don't know how to do a car like this, but for them it's a natural evolution. " 32 Their car was expected to be launched in India in 2012. The design, manufacturing and sourcing for the car would be done by Bajaj, and Renault-Nissan would look after marketing in India and overseas. Chrysler was considering developing a car called the Dodge Hornet with China's Chery Automobile and Hyundai had announced a \$3,700 car. 33 Next Steps Kant wondered how big a bet Tata Motors should make on the Nano. Should they be conservative and let supply lag demand, thereby risking ceding market to competitors? Or should they make an aggressive commitment and capitalize



on the excitement, first mover advantage, and pre-empt competition? The latter option, of course, would involve making a significant financial commitment on a relatively low margin vehicle segment with low barriers to entry.

Tata Motors had already spent in excess of Rs 20 billion on the Nano project including the facility creation, capacity creation and product development. It had earmarked Rs. 5 – 30 billion as annual capital expenditure for the company for the next 3-5 years, however enhancing capacity for the Nano would substantially add to this. The actual cost was difficult to estimate, as it would depend on the company's manufacturing strategy.

34 A possible benchmark was Maruti Suzuki's estimated capital expenditure of Rs. 17 billion for setting up a new plant with a 250, 000 annual capacity.

35 The JLR acquisition had also stretched the company's finances and Tata Motors had a huge debt burden. Kant knew that, in making the capacity commitment for Nano, he had to balance many different considerations. 4

Tata Nano – The People's Car 710-420 Exhibit 1 The Tata Nano Source: Company documents.

15 710-420 -16- Exhibit 2a Competitive Landscape for Passenger Vehicles in India Segment/Automobile Company Audi BMW India Pvt. Ltd. Nissan Fiat India Ltd. Ford India Ltd. General Honda Siel Motors India Hindustan Cars India Ltd.

Motors Ltd. Ltd Hyundai Mahindra & Maruti MercedesMotor India Mahindra Suzuki India Benz India Ltd Ltd Ltd Pvt Ltd Toyota Skoda Auto Kirloskar India Pvt. Tata Motors Motor Pvt Ltd. Ltd Ltd Volvo Car Volkswagen India Precision

Cars India Pvt. Ltd. Passenger Cars A1: Mini – (Upto 3400 mm) Nano A2: Compact (3401-4000mm) Indica A3: Mid-size (4001-4500 mm) Indigo Jaguar Landrover Jaguar Landrover Jaguar Landrover A4: Executive (4501-4700 mm) A5: Premium (4701-5000 mm) A6: Luxury (5001mm & above) Utility Vehicles B1: Max.

Mass upto 3.5 tonnes, No. of seats including driver not exceeding 7 Safari Sumo, Winger B2: Max. Mass upto 3.

5 tonnes, No. of seats including driver exceeding 7 but not exceeding 9 C: Max. Mass not exceeding 3.5 tonnes, Multi Purpose Vehicles (MPVs) – Van type vehicles ACE MagicSource: Adapted from CRISIL Research Cars and Utility Vehicles Annual Review, June 2009. Tata Nano – The People's Car 710-420 Exhibit 2b Market Share by Segment for Passenger Vehicle Segment in India Category Segment/Subsegment Manufacturer M1 Category : Upto 8+1 seats (Passenger Carrier) A: No. of seats including driver not exceeding 6 A1: Mini – (Upto 3400 mm) Maruti Suzuki India Ltd A2: Compact (3401-4000mm) Hyundai Motor India Ltd Maruti Suzuki India Ltd Tata Motors Ltd A3: Mid-size (4001-4500 mm) Honda Siel Cars India Ltd Hyundai Motor India Ltd Maruti Suzuki IndiaLtd A4: Executive (4501-4700 mm) Honda Siel Cars India Ltd Mercedes-Benz India Pvt Ltd SkodaAuto India Pvt Ltd Toyota Kirloskar Motor Pvt Ltd A5: Premium (4701-5000 mm) BMW India Pvt Ltd Honda Siel Cars India Ltd Mercedes-Benz India Pvt Ltd Toyota Kirloskar Motor Pvt Ltd A6: Luxury (5001mm & above) BMW India Pvt Ltd Mercedes-Benz India Pvt Ltd B: Max.

Mass upto 3.5 tonnes B1: No. of seats including driver not exceeding 7

Mahindra & Mahindra Ltd Tata Motors Ltd Toyota Kirloskar Motor Pvt Ltd B2:

No. of seats including driver exceeding 7 but not exceeding 9 (7+1 & 8+1)

Mahindra & Mahindra Ltd Maruti Suzuki India Ltd Tata Motors Ltd Toyota

Kirloskar Motor Pvt Ltd C: Multi Purpose Vehicles (MPVs) – Van type vehicles

& Max.

Mass not exceeding 3.5 tonnes Maruti Suzuki India Ltd Tata Motors Ltd

Cumulative 2007 – 2008 2008 – 2009 8.09% 21.27% 5.

81% 15.78% 17.95% 14.52% 21.

85% 39.63% 25.93% 14.70% 5.57% 23.

93% 57.74% 12.56% 15.81% 31.41% 23.

33% 21.93% 23.98% 16.69% 49.41% 13.

95% 34.33% 17.81% 16.01% 34.45% 65.54% 36.

90% 63.09% 49.92% 20.49% 15.48% 43.98% 6.

23% 39.70% 88.96% 11.04% 54.79% 18.9% 13.92% 42.77% 8.59% 31.

38% 73.12% 26.88% Source: Compiled from Society of Indian Automobile

Manufacturers. 17 710-420 Tata Nano – The People's Car Exhibit 3 Manpower

Pool Deployment (for Nano Project) Campus Recruits(%) 21.05 0 0 2.94 38.

46 8.25 13.46 14.29 Internal Transfer(%) 2.63 33.33 33.33 14.71 7.69

5.83 19.23 57.14 Lateral Recruits(%) 76.32 66.67 66.67 82.35 53.85 85.

92 67.31 28.57 Division Central Quality Eco Car Planning Finance and

Business Planning HR/Admin/HDT/Security/Safety/CSR Kaizen Promotion

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Office Manufacturing Manufacturing Planning New Product Introduction

Source: Company documents. Exhibit 4 Domestic Safety Regulations

Regulations Full frontal crash – Steering Intrusion Full Frontal Crash –

Survival Space Protection from steering system – Head from impact test

Protection from steering system -Body from impact test Seat belt anchorages

Seat anchorages Side Door intrusion for doors Head from impact on

Dashboard Roof Crush (rollover) Offset frontal impact (European Regulations)

Side impact (European regulation) Source: Company documents. Exhibit 5

Major Milestones for the Nano Milestone Concept Finalization 1st Mule built to

design Alpha prototype design release Alpha prototype assembly Site

selection – Singur Styling freeze and approval Alpha prototype testing Beta

prototype design release Beta prototype assembly Beta prototype testing

Site selection – Sanand Quality proving batches CMVR certification Launch

Start of commercial production Date/Duration June-2005 January-2006

January-2006 April 2006-September 2006 17 May 2006 23 July 2006 April

2006 – December 2006 February 2007 May 2007 May 2007-December 2008

3 October 2008 November 2008-March 2009 February 2009 23 March 2009

April 2009 Source: Company Documents. 8 Tata Nano – The People's Car

710-420 Exhibit 6 Feature Comparison between Nano and comparable cars

Nano (Tata Motors) Maruti 800 (Maruti Suzuki) 4584-4930 M800 AC Feature

Not Available M800 AC Feature Not Available Feature Not Available Feature

Not Available Feature Not Available 3335 mm 1440 mm 1405mm 2175mm

170 mm 4. 4 m 4 persons 650 kg (Std) 655 kg (AC) Alto (Maruti Suzuki) Price

in \$ a Air Conditioner Heater Tinted Glass Front Power Windows Body Colored

Bumper, Door Handle and OVRM Central Locking Front and Rear Fog Lamp

Dimension Overall Length Overall Width Overall Height Wheelbase Ground

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Clearance Min. Turning Radius Seating Capacity Kerb Weight 2703-3460

Nano CX/LX Nano CX/LX Nano CX/LX Nano LX Nano LX Nano LX Nano LX

3099 mm 1495 mm(1620 mm with OVRM) 1652mm 2230 mm 180 mm 4m 4

persons 600 kg Nano 615 kg (Nano CX) 635 kg (Nano LX) 624 cc 35 PS @

5250 +/- 250 rpm 48 Nm @ 3000 +/- 500 rpm 5103-5881 Alto LX/LXi Alto

LX/LXi Alto LX/LXi Feature Not Available Feature Not Available Feature Not

Available Feature Not Available 3495 mm 1475 mm 1460mm 2360mm 160

mm 4. 6 m 5 persons 720 kg (Alto) 735 kg (Alto LX/LXi) Engine Displacement

Maximum Power Maximum Torque 796 cc 37. PS @ 5000 rpm 59 Nm @ 2500

rpm 796 cc 47 PS @ 6200 rpm 62 Nm @ 3000 rpm Source: Company

documents and [www. marutisuzuki. com](http://www.marutisuzuki.com), accessed November 2009.

aMumbai; ex-showroom price. This price excludes registration, insurance,

road tax and Octroi (entry tax), which differ from state to state and from

dealer to dealer. Ex-road price is the price at which a car buyer drives away

the car. New car prices in India vary widely due to differences in road taxes

across states. 19 710-420 Tata Nano – The People's Car Exhibit 7 Feature

Price(Rs. )a Fog Lamps Bumpers Wiper Differences between Nano

Models Nano 134, 250 No Grey 2 Speed single arm Plain Yes No No Black

Driver No 2-spoke No Single stalk Base No Plain Base, single tone, flat Yes

Mechanical Driver side Yes Molded No CX 160, 320 No Grey 2 speed single

arm Tinted Yes No No Black Driver and co-driver Yes 2-spoke No Single stalk

Base No Plain Plastic molded with fabric insert Yes Mechanical Driver and co-

driver side Yes Molded Yes LX 185, 375 Front and Rear Body Color 3 speed

Tinted Yes Yes Yes Body Color Driver and co-driver Yes 3-spoke Yes Double

stalk High Yes Antiglare Plastic molded with fabric insert Yes Powerised

Driver and co-driver side Yes Molded HVAC Windshield Steel Wheel (w/o

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wheel covers) Internal Antenna Central Lock with Key Driver ORVM Seat with slider and recliner Rear seats with nap rest Steering Wheel Trip meter in instrument cluster Combiswitch Gear shift knob Floor Console(with cup holders, switches and power point for mobile chargers) IRVM Door trims Carpet Window winding Sunvisor without vanity mirror Seat belt Roof Liner Air Conditioner Source: Company documents. aAll prices are ex-showroom Mumbai prices for the BS3 emission models. The price for the CX model is for the solid paint variant and for the LX model it is the metallic paint variant. 0 710-420 -21- Exhibit 8 Nano M800 Alto Santro King XK A-Star Chevrolet Spark Bajaj 3 Wheeler: Passenger Carrier 110, 000 99, 000 13 36 45, 870 1, 250 15, 000 3 30. 0 47. 0 885 12, 396 129, 232 142, 513 9. 50 35, 969 5, 000 40, 969 2. 40 2. 73 13. 33 3. 33 41, 471 5, 000 46, 471 2. 76 3. 10 12. 60 3. 15 314 4, 400 45, 870 50, 584 3. 37 23, 500 2, 000 25, 500 1. 57 1. 70 5. 07 1. 69 Executive Bikes Nano and Competitor Operating Economics 123, 000 110, 700 13 36 51, 291 1, 250 15, 000 4 23. 6 47. 0 351 4, 920 51, 291 56, 562 3. 77 29, 873 5, 000 34, 873 1. 99 2. 32 6. 10 1. 52 43, 789 5, 000 48, 789 2. 92 3. 25 9. 12 2. 8 38, 950 5, 000 43, 950 2. 60 2. 93 9. 94 2. 49 41, 471 5, 000 46, 471 2. 76 3. 10 11. 27 2. 82 547 7, 652 79, 773 87, 972 5. 86 654 9, 153 95, 415 105, 222 7. 01 761 10, 661 111, 140 122, 563 8. 17 988 13, 827 144, 142 158, 957 10. 60 1, 250 15, 000 4 16. 1 47. 0 1, 250 15, 000 4 18. 1 47. 0 1, 250 15, 000 4 17. 0 47. 0 1, 250 15, 000 4 19. 6 47. 0 1, 250 15, 000 4 17. 0 47. 0 191, 303 172, 173 13 36 79, 773 228, 814 205, 933 13 36 95, 415 266, 523 239, 871 13 36 111, 140 345, 665 311, 099 13 36 144, 142 309, 908 278, 917 13 36 129, 232 50, 000 45, 000 13 36 20, 850 1, 250 15, 000 2 50. 0 47. 0 143 2, 000 20, 850 22, 993 1. 53 14, 100 2, 000 16, 100 0. 4 1. 07 2. 61 3. 10 Total Investment (Rs. ) Finance amount(Rs.

) Interest rate (%) Repayment period (months) Installment amount payable per year (Rs. ) Operation details Kilometers covered per month Kilometers covered per year Passenger capacity Fuel average (kilometers/liter) Fuel price per liter(Rs. ) Fixed Expenses Registration charges + Road Tax per year (Rs. ) Annual insurance charges(Rs. ) Repayment of finance per year Total fixed costs Total Fixed costs per kilometer. (A) Operating Costs Fuel Costs(Rs. ) Repairs and maintenance costs(Rs. ) Total Operating costs(Rs. ) Fuel cost per kilometer (Rs. Running cost per kilometer (Rs. )(B) Ownership cost per kilometer (Rs. ) (A+B) Ownership cost per passenger per kilometer (Rs. ) Source: Company documents. Note: All prices are computed for Delhi.

710-420 Tata Nano – The People's Car Exhibit 9 Type Mini-car Analysis of the Low Cost Car Market Price \$7801-12000 Markets Advanced markets such as Europe and Japan, increasing popularity in North America. Emerging Markets Market size 2. 5 to 3. 7 million Description Also known as A class vehicles. Achieves low cost via size Uses technology and parts of minicars sold in advanced markets. Achieves cost levels via reduced content and local sourcing Produced in high volumes with basic trims. Achieves cost levels via reduced content and local sourcing. Regular low-cost car \$5001-\$7800 2. 4 to 4. 5 million Ultra-low-cost car \$2500-\$5000 Emerging Markets 2. 3 to 3 million Source: Adapted from A. T. Kearney Inc. , A Nano Car in Every Driveway? How to Succeed in the Ultra-Low-Cost Car market, 2009, <http://www.atkearney.com/index.php/Publications/a-nano-car-in-every-driveway.html>, accessed October 2009.