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INDIGENIZATION:

**The only Solution for sustainable
development of India:
Evidences from global small car Market**

©AUTHOR:

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(Based on his Ph.D. Thesis submitted to Nagpur University, India)



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Aim: Totally indigenous car and all higher end technologies



=> Made In India = Customer Delight.

AIMS AND OBJECTIVES:

To make each and every car technology according to the latest and future internal and external customers' demand. To keep upgrading present technology to cope up with future, through continuous R & D. All the technology will be developed in India using all Indian resources. This will make India self-reliant on the technological field. It'll achieve the ultimate goals on total Techno-Socio-Economic Standards. It'll delight the customers till they reach the self-actualisation level in the field of car technology. As Car stands at the middle of the basic technology to the space age future technology once this is achieved India can achieve the indigenisation of space and future technologies as well.





ACKNOWLEDGEMENT

Dearest Almighty God,

Words are inadequate to express what I feel.

My Sadguru Swami Madhavnath (Late Mr. Madhav Vishnu Wakade, Pune), my father Mr. Manohar Govind Urkude, mother, Mrs. Perna Manohar Urkude, sisters Ms. Ashwini and Dr. Amita, my wife Mrs. Surekha, my daughters Ms. Ayushi and Ms. Arya, my Ph.D. Guides Late Dr. Madhukar Rode and Dr. Arun Ramchandra Bapat, His Excellency Honourable President of India Dr. A. P. J. Abdul Kalam. Many Scientists, Economists, Military personnel, Engineers, Managers and Roadside Mechanics, many true Gandhian Thought leaders, Sarasanghchalak Rajju Bhaiyya and many swayansewaks, and many Swadesi movement leaders like Mr. Rajiv Dixit, many industrialists most prominently Mr. Rahul Bajaj, even experts in many other fields and of course good friends of mine have requested to keep their name secret as they feel getting work done devotedly for the sake of the humanity or for the sake of the nation, is more important than name, fame and vote of thanks.

Thanks really to you o Almighty, who at every moment helped me at every moment, for this almost nil plagiarism book, when was written since 1992, till 2002, except for the published data taken from the surveys, and from the authentic organisational data from SIAM, or JD Power or PCRA, AMA, FADA, ACMA, FICCI, SEBI, etc.

Though Author is working on this project since 1992, many felt that the complicated statistics and research methodology be kept away in case this book has to be read by all, hence, this book has simple hypothesis testing been kept, with some cases, live examples those happened before 2002 A.D.

What is applicable to India is true for every other nation too, and hence with due respect, I tried to kept myself away from blame game, it also proves that, more the indigenisation more will be the new ways to think about similar as well as different things, and implement too, and thus, every nation should be self reliant in the coming era to let human society achieve the Millennium Development Goals (MDG) of UNO, hence this small effort, otherwise as my other book suggest it would be a Million Year Development Goals (MYDG).

Yours Sincerely,

Dr. Ashish Manohar Urkude.





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PREFACE

WHY RESEARCH ON:

MANAGEMENT OF INDIGENOUSLY BUILT SMALL CAR MARKET IN INDIA WITH SPECIAL REFERENCE TO CUSTOMER BEHAVIOUR

1. THE HYPOTHESIS:

Indian engineers, businessmen, executives, and from students and knowledgeable customers to all the other decision makers can build the small cars which comes under Light Motor Vehicle section of RTO Rules, totally indigenously using all the indigenous resources, of the latest world standards; and can manage its perpetual success at all the levels in the global competitive market. Similarly, with the bench marking, Indians can achieve the same goal in the other allied fields too.

2. REASONS: *WHY INDIGENISATION OF SMALL CARS (LMV) WITH SPECIAL REFERENCE TO CUSTOMER BEHAVIOUR IS THE BEST POSSIBLE SOLUTION TO AVOID FUTURE SOCIO-ECONOMIC CALAMITIES IN INDIA:*

The Ministry of Heavy Industries and Society of Indian Automobile Manufacturers (SIAM) have carried out a study in which they have predicted (Times of India- 20th July, 2002) that, as Indian Gross Domestic Product (GDP) growth is 6.5% and industrial growth is at 8%, during 10th plan, i.e. during the period of 2002 to 2007 A.D. (SIAM- 2002 Survey) Car sales is going to touch one million mark where as the demand may increase to 1.5 million in the event of any further industrial growth.

So, increase in the number of car in India will require due attention to the following factors:

1. Remember, Multi National Companies (MNC) especially carmakers like General Motors, Ford, Toyota, Mitsubishi, have individual yearly turn over nearly one third of the total of all the Indian companies yearly turn over. In the national sense, in 1997, according (The Hindu- 7th July, 1997) Gross National Product



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(GNP) of India in USD was \$427 Billion (almost Rs. 2000000 Crores), and at Indian Stock Market Sensex at 5000 BSE acquires \$150 Billion i.e. 700000 Crores. Where as, Swadeshi Jagaran Manch in 2001, have stated in their booklet that, Japanese MNC Toyota has yearly turn over of more than \$132 Billions, Japanese Mitsubishi has yearly turn over of more than \$140 Billion, similar is the case with many more FORTUNE 500 companies which are working in India. FORTUNE 500 companies are the 500 topmost profit making companies in the world. (The Week- Jan-2001)

2. Through thorough Research and Development and various kind of motivations, at all the hierarchical levels, in all the possible departments in their organisations all the MNC carmakers try to dominate the world market.

3. Developing countries like India is looked as a highly potential market due to its one of the most populous and lucrative consumers. It is estimated that India is the second biggest small car market in the year, 2010 (Motor India Journal, May, 1996.)

4. MNC carmakers try to target these lucrative customers with result-oriented approach. Consumers are given high doses of concessions and advertisements. Even internal customers in the organization are motivated and encouraged with all kinds of monetary and other gains, for doing so. The Indian Express- In their editorial- Mexican Crisis- Jan 8th 2001 has stated that due to this phenomenon, only one or few organizations grow where as the sustainable development on the Indian side has hampered.

5. Where as, till these organizations arrived in India, Indian organizations like Premier Automobiles Limited (PAL) and Hindustan Motors (HM) tried to rely on their old and trusted car models. Auto India Monthly Magazine, May 1996, has stated, this false conceived tradition made PAL to close few of their plants due to heavy losses. Now a day, it is the case with many other heavy industries, and small-scale industries (SSI) too.

6. On one side MNC carmakers rely on their own human resources and machineries, but utilize the material resources of these targeted countries, thus MNC carmakers are exploiting the host nations. India is one



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among them. This has resulted into world known Economic crisis like Mexican crisis, and the latest Argentina crisis i.e. the total collapse of the Mexican and Argentinean Economy.

7. In the Daily Tarun Bharat, 29th May 2001, in his article, Mr. Kaushikkar, has stated that MNC invasion in many countries also resulted in the collapsing chain of the SSI to medium scale industries in India, China, Pakistan, South Korea, Indonesia, and other Asian and Latin American countries.

8. The huge unemployment level, big inflation in the Economy, huge job cuts, and other socio economic problems like reach becoming richer and poor becoming poorer, in the developing countries, are certainly due to this MNC carmakers other companies and their supporting machinery.

9. This problem of MNC car (LMV) invasion can make Indian economy in bad shape, if India does not take this indigenisation program very seriously. As, at present MNC are bringing small cars; next they will bring their other products too to capture the Indian highly potential and lucrative market. This will increase the unemployment, recession, dependency of technology and such other things in India. (Pamphlet from Aazadi Bachao Andolan- Wardha)

10. Thus, India is moving towards dependency because of this MNC car (LMV) invasion, from its Independent status.

11. It has been observed since time immemorial that any country, which is not, self sufficient in the latest Technology in communication, transportation and in the defence sector and also in the Socio-Economic Agendas always loses its self-reliance, self-sufficiency, and lastly everything it has, that too into the hands of greedy people who have unlimited demands to be fulfilled. All the MNC carmakers are best examples of these exploitation and parasite kinds of activities.

12. If taken in the way above mentioned, instead of getting exploited from MNC we may use our own resources for development of our own technologies. Why not Indian makes all the things they are doing under their MNC counterpart. (This is but a hypothesis)



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13. So, researcher can foresee, if implemented seriously Indian car manufacturing and thus indigenisation program will be supported by its Technical work force. India has the second biggest technical workforce in the world has been clearly mentioned in The Times- Magazine-USA- review on Pokharan Atomic Blast, Nuclear Neighbours in South Asia- June 1998.

If this project is implemented, will be the biggest employer in the world more than even the Indian Railways of India which currently the biggest employer in India. Thus, Mr. Keshub Mahindra of Mahindra and Mahindra Auto, India has predicted that after two decades Indian technology with its sheer cheap cost and versatility will rule the world.

14. The same infrastructure facility is required in the various other fields like manufacturing Electrical Generators, Electrical Motors, Elevators, Military Tanks, Military vehicles, Aeroplane, Medical Equipments, Household appliances, etc. Thus manufacturing small cars can become the major step in the field of Technology and in turn the self-reliance of the India. (This is the part of the Hypothesis)

15. The money will be spent in India with all kinds of transactions. Thus, the economy will remain vibrating all the times.

16. Mr. Rahul Bajaj in his interview on the T.V. in Star Plus, in April 2000, has optimistically stated that if cars, scooters, or any other vehicle are exported, naturally Indian companies will become multinational companies. He is expecting some twenty odd MNC from India dominating the world market, and few of them car companies and two wheeler companies too.

Thus with quality cars of India, which are built indigenously can bring laurels and hard earned foreign exchange as well.

17. It has been observed that most of the vehicles launched in India are not new products but are tested for few years, like Matiz, Santro, and Wagon-R may it be in other name. However, later on the spare parts of poor quality are dumped in the third world including India. These are the majority of people thinking in



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India. In the letter to the editor, May 2001, Overdrive, Mr. Sidhdharth, has claimed this with umpteen examples, and very thoroughly.

Anyhow, latest versions of cars are never launched in India, with improvements and old product is always sold in India. As, India does not have any strict anti dumping norms. Therefore, India must develop its all-new norms according to new standards to tackle new methods and technology.

18. Once, Indian market gets matured with the developed Technologies, which are perpetually improving. It will be having its own Laws, Acts, Wider amendments in laws, RTO rules, Patent laws, etc. which can form the wider base for all other future developments, in LMV and later on in the other allied fields too. This will be true indigenous set up of all laws, terms, and standards, etc. for the future trends.

19. Indians will put maximum contribution in R &D, too. Technology transfer, according to the Frontline-Monthly Magazine- June-1998, itself is a multibillion-dollar business in the world market to save this indigenisation is the best possible solution.

20. Even secondary car market in India for foreign cars made from MNC companies is quite significant. Overdrive- 1999- Survey stated that, it is of the order of Rs.250 Crores or \$50 million. Therefore, when Indian cars surpass this credibility of the cars this revenue loss will also reduce significantly.

21. It has been observed in Daewoo in Korea, Suzuki in India that at first attempt to start with the business these MNC carmakers collaborate with the local companies may it is at 50:50, but later on, they try to get the other half reduced. The Hitvada- 20th June 2002, in the article by anonymous person has stated that, otherwise, these MNC attempt any possible measure and management tactics to acquire that company fully. He has given example of Maruti's Indian bid has been reduced from 51% to mere 26%. Thus, The Telegraph, in its editorial in June 2002, has stated that, the Daewoo has succumbed to the battle with mighty Ford MNC from USA.





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22. Look at the advertisement of Qualis:

- i. The status symbol and Esteem attached with it them: 'Live the Qualis life'. Smooth as raw silk' attached to Hyundai-Sonata. Mercedes- Benz in an 'E-class of its own'. Josh machines from Ford the Ford-Ikon.
- ii. If such attachment of the status and esteem always go to the premium class cars with the MNC then the sell of 12000 cars per year loses: $12000 \times \text{Rs.}1000000 = \text{Rs.}12000000000/=$ i.e. \$250 million is siphoned out of India. This is according to the latest, March- April 2002, Economic Times- News paper review. Thus India is losing is upper class society to the MNC. So, the hypothesis is, once the small cars set up is done successfully, Indians can shift simultaneously to this premium cars segment, with minor changes in the plant set up. Then other similar set up for the other allied segment can also be done simultaneously. This also forms the part of the hypothesis.
- iii. So, the hundred percent premium car markets is captured by MNC through the following appealing aspects, which are collected from different sources:
 - a. Fast spreading information about company through Internet, TV Ad, Newspaper, Pamphlets, etc.
 - b. Fast spreading of product information, may it be 16 BIT computer, may it be hybrid car, may it be MPFI, may it be any other new development in the car it is projected with so much force that consumers have at least a look at it or may even have a test drive.
 - c. Some special feature about the product is highlighted in its specifications,
 - d. Consumers or even future customers are requested to get free literature which Indian companies can not afford,
 - e. In all the multibillion MNC, everything has been computerized, product design, development, suggestions, training of customers and employees, every organization



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transactions, sales and bidding, posting of order by customers, customer grievances, etc. and at higher pace through computerized methods decisions are implemented.

f. MNC are attracting customers with more such programs such as customer orientation, customer satisfaction, quality product and service for car consumers, supply chain management and integration, costing and performance of internal and external customers, improved design process for improving cost as well as quality and customer satisfaction, attaining six sigma and zero defect in every process, overhead cost reduction and expanding business reducing all overhead costs.

g. MNC are manufacturing many individual part, assemblies, sub assemblies, with perpetual increase in productivity with consistent quality improvement using TQC, TPM, Kaizen, JIT, SQC, waste reduction, mistake proofing, doing things right the first time, improving control rather than inspecting defects, so reducing rework and rejection, reducing inventories, improved and frequent operator training, immediate and collective quality problem-solving in quality circles or similar teams. These things are also highlighted while they sell the cars and make the customers believe their company and thus improving stock market position as well.

h. To satisfy customers MNC keep their productivity growth always higher.

i. In USA, these companies also keep the competitive edge higher than the other world standard so any time their own MNC enter into the competition at world level they perform well.

23. Due to higher wages than any where in the world, due to relative differences between the Dollar and that currency in the developing nation or the third world, MNC from USA and MNC many more developed countries, attract much of the intellectuals and highly skilled work force.

i. These employed people are paid for their high performances,





- ii. Rise in profit giving good results,
- iii. Giving very good suggestions,
- iv. Giving some internal spying future acts of competitive companies,
- v. Showing any skills which can give the organisation distinct edge over other competitors,
- vi. If research scientists give futuristic developments,
- vii. If some employees give tremendous breakthrough over chronic or temporary problems, etc.
- viii. Many times it has been observed that the whole team working on the decisive problem is awarded,
- ix. Many times the whole organization including shareholders is also given high share of the profit.

Thus, brain drain is triggered always if such things occur anywhere in the world. During 1994 to 1998 only Telco, MUL, PAL, HM lost more than one fifth part of the high skilled staff to the MNC. If it is happening with all the kinds of different companies then it's a very difficult situation. The companies in India had to send few employees to work with these car brands with whom they are collaborating. To know to and to get all the benefits, and advantages, what are been given in US, EU, Australia, and other industrial countries.

24. Table showing losses India is suffering due to lack of Indigenisation efforts:

SN	Field and Machinery Used/ purpose	Rs. Crores
A	Medical field	
1	X Ray Machinery	40
2	Whole Body Scanning Machine	20
3	Dental Machine	20
4	Eye Checking Machine	10
5	Magnetic Resonance Imaging	50
6	Artificial Anaesthesia Machine	10
7	Artificial Respiratory System	15
8	Ultra Sound Detector Machines	10
9	Artificial Kidney	10
10	Artificial Heart, etc.	20
B	Computer field	0
1	The Computer Chips	200



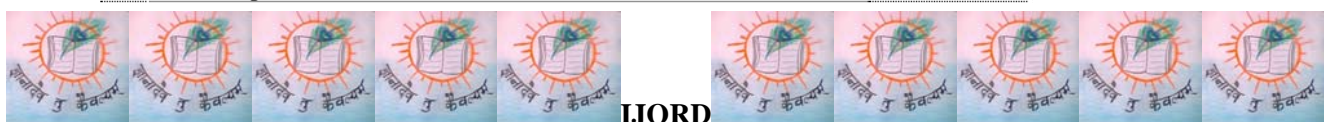


2	The Mother Board	250
3	The Key Board	2
4	The Printer	240
5	The Scanner	25
6	The Web/ Internet Camera	2
7	The Mouse	2
8	The Hard Disc	240
9	The Cathode Ray Tube	100
10	Whole Computer System	500
C	Heavy Machineries/ Technology	0
1	Earth Moving Machineries	25
2	Steel Plant Set up	20
3	Forging and casting machineries	100
4	Electricity Power Plant	1000
5	Aeroplane Manufacturing	25000
6	Air Craft Carrier, Ship building yards, Submarine	50000
7	Military Technologies	2000
8	Electronic goods manufacturing machinery	25000
9	Aluminium, Copper, Zinc, etc. Technology	25000
10	Food processing machineries	100
D	Automobile field	0
1	Engine of MNC cars	50000
2	Gear Box of MNC cars	1000
3	Driving Axle of MNC cars	500
4	Computerised fuel injection system	50
5	Steering System of MNC cars	50
F	Pharmaceutical Field	0
1	The Tablet making Machines	10
2	The Capsule making Machineries	20
3	The Wrapping Machineries	10
4	The Bulk Medicine Manufacturing Machines	20
5	R & D for new medicines on dreaded diseases	50
E	Other fields	0
1	Xerox Machinery	10
2	Calculator	10
3	Printing Machines	10
F	Household Machineries	0
1	Washing Machine	25
2	Air Conditioning	25
3	Television	25
4	Music System	25
5	Refrigerator	25
6	Mobile Telephones	25
7	Geysers/ Boilers/ Heaters	25
8	Mixer Grinder	25
9	Crusher	25





10	Oven	15
G	FMCG Machinerries	0
1	Soft Drinks plant set up	50
2	Cosmetics machinerries	50
3	Chocolates making machinerries	50
4	Hot Drinks	1500
5	Fruits Process Machinerries	100
6	Milk Products making machinerries	50
7	Machinerries for Glassware	50
8	Machinerries for Stationary and Books	50
9	Machinerries for Interior decorations	50
10	Machinery for manufacturing other hygiene products	50
H	Sports Goods	0
1	Machinerries for English Willow Cricket Bats	20
2	Golf goods machinerries	5
3	Video Games	50
4	Machinerries for manufacturing Foot Ball, etc.	10
5	Synthetic Track manufacturing	25
G	Chemical Industry	0
1	Textile Technology Machinerries	100
2	Sugar Technology Machinerries	100
3	Soap and Acid Technology Machinerries	100
4	Paint Technology Machinerries	100
5	Fertilizer Industrial Machinerries	100
6	Other Important Chemical manufacturing machinery	100
H	Military Systems	0
1	Army-	0
	a. Rifles	2000
	b. Tanks	100
	c. Howitzers	100
	d. Communications systems	50
	e. Mountaineering Equipments	10
	f. Cold Conditions Equipments and suits	15
	g. Missiles Systems	400
	h. Spareparts and other things	2000
2	Navy-	0
	a. Air Craft Carrier	100
	b. Navy Communications Systems	500
	c. Fighter Crafts like sea harrier or helicopters	500
	d. Speed Boats	10
	e. Submarines equipped with Missiles	2000
	g. Under water equipments for soldiers	10
	h. Spareparts and Other things	1000
3	Air Force	0
	a. Fighter Crafts	400
	b. Helicopters	200





c. Advanced Jet Trainers	200
d. Supporting Air crafts like AWACS, Refuelling, etc.	
e. Air borne Missile Systems	50
f. Spareparts parts and supporting equipments, etc.	500
4Other	1000
Total Losses India Suffered till today in Rupees Crores	195986
Rate of U. S. Dollar in Rupees	47
Losses in Billion U. S. Dollar (\$)	41.00

Interpretation of the table: These yearly figures are shown as per the respective departments in India. E.g. Military survey: Swadeshi Udan, Seminar-cum-Exhibition on Indigenisation of Indian Air Force Needs– Souvenir- 2000.

25. Remember, in the yearly review of Auto Car- Monthly Magazine- December-2001, it has been claimed by the Volkswagens that the Beetle is the most sold small car in the world and it is around 4 million, which comes out to more than \$4 Billion turn over till date. Does not it show the importance of the small car industry and its indigenous manufacturing?

26.Lastly but not the least, look at the military systems and vehicles including IAF fighter planes, Tanks, Howitzers, etc. you'll find that sources of their spares, sub assemblies and even moulds and castings have either been used much if are in India or there spare parts are available from the host country at a unaffordable cost. One fact must be kept in mind that the Engine in the car if maximized with certain dimensions makes what can be known as the turbo charged engine for the tank, or for the military trucks, or for the military Jeeps. Some more advanced feature like adding turbines etc. make the Aeroplane too. It is the case in the Naval Engine and other important Navy systems too. Therefore, the conclusion always is the total indigenisation of the car and these further systems.

Look at the chart India is loosing almost \$41 Billion as revenue every year, due to lack of indigenisation efforts.





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Thus, India's One Tenth of the GDP is wasted every year due to lack of indigenisation efforts.



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3. ADVANTAGES OF THE INDIGENOUSLY BUILT CARS OVER THE MNC FOREIGN-BUILT-BOUGHT CARS:

As this means conceiving a totally Indian made Car, which is designed and developed according to Indian conditions, systems, and environment.

Huge employment generation i.e. each individual car is made up of almost thirty thousand smaller to bigger parts. It is estimated that with each part there are two hundred odd jobs associated with them even if the car is not manufactured in India. Hence if we calculate the job potential it comes out to be almost eight million when the cars are manufactured indigenously.

Major step toward indigenisation will go to Heavy Machineries used in Steel plants, Power Stations, Household goods, Medical Machineries, etc.

There are more such advantage which are stated below collected from innumerable sources:

- a. More revenue generation in India itself,
- b. Flow of money and all other transactions are more in India only,
- c. Supporting industries get encouragement and hence huge amount of development in the Automobiles sector of the country; simultaneously other Mechanical industries also get developed.
- d. Huge industrial development as a bench marking increases. For example look at the history of development of cars made by Ford and GM and USA's industrial development, goes hand in hand.
- e. Self-reliance at the technological front, ex. Hyundai Conglomerate in Korea is manufacturing almost all latest mechanical and electronics devices in their own country. It started with small cars set up.
- f. Increase in standards and services in the supporting services, ex. Competition of quality services has changed the living styles of the EU countries and USA as well.
- g. Research and Development in this field motivates building higher end technologies.

There are three kinds of technologies in the world: Basic technology in which basic tools are developed, Secondary technologies in which cars, refrigerators kind of things are developed and the higher end



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technology like the space shuttle kind of things are developed. Thus when car set up is developed, as mentioned earlier this same technology is the base for the other higher end technology, like, Jet Engines, Space Shuttle, and etc. that can also be developed in future.

h. Patriotic feeling of contribution among the consumers, ex. Ninety percent Americans buy the car manufactured in USA, to get the patriotic feeling, 1996, Saturn Project survey of General Motors, USA.

i. Communication is easier if the technology is local, ex. As happened with the Tata-Indica, the local dealer, service stations, Engineers, complained about the damping and system of the car. With immediate effect, CEO responded with replacement kit. Excellent example of customer care. Thus, all the consumers got satisfied. This has added the ten thousand odd customers in the Tata-Indica car-selling list.

j. Service centre will improve their performances and gets boost for easier accesses. Ex. Till date Indians are far behind in the field of servicing and services sector. Once indigenisation is implemented, every other company will try to buy indigenous resources and thus demand for the indigenous resources will increase.

k. People with Technical know how of the technology, increases as happened with Bajaj-two wheelers, Tata Trucks, Mahindra and Mahindra Jeeps, etc.

m. Cheaper access to more and hence more consumers that are indigenous get added to the market of the car and hence allied services as well. Ex. In early days Indians had to import air-conditioning etc. but now indigenous air-conditioning fitted gives the better results.

Mr. Ratan Tat has rightly claimed, January 2002, Tata Indica monthly review, that, much the indigenisation lesser the cost. Therefore, Cost of the overall technology, cost of the Spareparts, Cost of the product the car is much less than the MNC made cars, or foreign made cars. Ex. It is estimated that every part imported costs more than half than indigenously made part, may it be Tyre or may it be air-conditioning, even the engine, or the gearbox.



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n. Due to easy communication access in the local language any serious problem with the car or the consumer can be dealt immediately, ex. Since last fifty years, it is observed that the local and indigenous technology spreads its wings faster. Therefore, even the roadside mechanic can rectify the problems.

o. Inside the national territory immediate action or implementations is possible with solid proof to implement it. This facility is not with MNC car manufacturer.

p. All local and national factors are considered while design and development of the cars ex. More factor of safety given to each and every part of the car may it be the doors, may it be engine parts, the wheels, etc. it will give more life to the car.

q. Profit to the indigenously built carmakers is ultimately used for further development of the product for benefits to the internal and external customers of the organization. This is exactly reverse in case of MNC carmakers, which try to set up plant in India. Ex. MNC carmakers put their profit in the expansion of the plant but with advanced machineries and with job cuts. This makes availability for local public with less decision power in the MNC car 's market. Other half of the profit is siphoned out of India. Therefore, no national obligations and little national services are followed by the MNC carmakers. Reverse is the case with the fully indigenously made cars will be.

r. Indigenous resources are used at every front of the indigenisation thus benefit is to every concerned person and the socio economic factor of the country. Many social, national obligations are looked after whenever there is indigenisation.

India can become self-reliant in the field of cars related technology. Even independences in the marketing and economic field can be achieved apart from independently Nation building criteria.

s. It is always said that 'Buying a MNC car is but buying dependence' as that money is siphoned out of India and the main parts are manufactured in the foreign land and for repairs you've to look out for the foreign hands belonging to the host nation and MNC car makers.



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t. With the advancement in the technology and the product, the basic raw material developing industries, like steel, brass, etc. have to upgrade their products or add new products in to their category. Thus, this total indigenisation of car program can trigger the enhancement of the other industries too.

u. Regarding service industries the servicing stations, the denting painting shops, the Spareparts shops, the electrical appliances shop, the Repairing shops, the engine overhauling shops and other dependent business will adopt the new techniques in this field.

v. Further more the suggestions from the mechanics' level will help in improvement of the indigenous product and processes.

w. Dealer network, Service station network, will get advanced infrastructures to give support to the new concepts in the market.

Insurance sector, RTO rules, Law sector, and other regulations will see new amendments and new wider range of developments.

x. Competition in developing new product and procedure among the vendors, SSI, ancillary units, Forging units, Casting units, Electronics units, Electrical units, other metallurgical units, painting plants, Tyre- tubes manufacturing units will enhance the products and their efficiency thus helping making indigenous car a true excellent product.

y. This indigenous car technology is the base for many products and processes, therefore, whenever there is a need, the same machinery can manufacture the emergency needs of military systems, the medical equipments or even the house hold appliances and even the big generators. Thus, in wider perspective India becomes self reliant with this adventure.

z. Financial institutions will develop new schemes to compete worldwide competition. Ex. Indian giants ICICI, SBI, and other indigenous organizations are coming out with low EMI schemes to lure the Indian





customers. Thus, more institutes that are Indian will get developed and will spread their horizons keeping the growth clock ticking.

And the last but not the least: One of the biggest advantages of the indigenisation is the encouragement to the R & D technical section will get. Many new versions of engines, electronics devices, gearboxes, carburettor, fuel injection pump, body of the car, etc. and many more patents, many more inventions and many more implementations will be there. There will be positive competition for betterment of technology development and its commercial implementation will boost the Technical sector. Even, proprietary organizations will be able to develop the advanced technologies.

4. MANAGEMENT INCLUDES:

In this Management of indigenously built small car market in India with respect to customer behaviour, Management includes:

- i. Planning of all the resources and activities,
- ii. Organising all the well planned activities,
- iii. Motivating the human resources to achieve the target of higher goals of indigenisation,
- iv. Coordinating all the activities to move on the well defined track,
- v. Getting Result at all the levels, and
- vi. Feedback of the product, process, services, etc. to get on the top, in the world car market in the coming future.

It includes Kaizen i.e. Continuous Improvement of product (small car), the sales services (before and after), and continuous improvement in the quality at every stage.





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It includes some more important things like, studying the History of the car Manufacturing for better implementations and keeping the record in the knowledge bank of the company:

a. For the first time in the history Mr. Henry Ford manufactured the Ford-T model car on the assembly line, hence history of car manufacturing is closely linked with the history of small car. For few years the company did not faced any challenge from the competitors. However, after 1950's there were as many as 10 giant organizations in the world, which could manufacture more cars than as many cars as Mr. Henry Ford could in 1930s.

b. In fact, GM became the biggest manufacturer of the cars in all the categories.

c. Volkswagen- Beetle became the most sold cars in the world. To be precise 45 million worldwide, till date.

Thus, this volume of sales of the Beetles shows that the small car (LMV) market forms the backbone of the Automobile Industry, in any country. Therefore, the management includes managing these amounts of huge resources.

d. After USA, Japan, UK, Italy, France, Russia, Korea, and later on even India could set up a plant as Hindustan Motors and PAL.

e. The next step is flexible plant set up for versioning.

f. In 1980's, Maruti has revolutionized the Car Market with the help of Suzuki Motors Japan. After CKD for few years, the Suzuki provided all necessary details, even blue prints, and manufacturing details for few parts to be manufactured in India.

g. The next step will be total indigenisation of small cars or claiming Built Operate Transfer (BOT) kind of procedure from the of the whole Maruti plant.

h. HM and PAL are already manufacturing Cars but failed to compete the strong and professional set up of Maruti-Suzuki and the TATA the Indian companies and all other MNC as well.

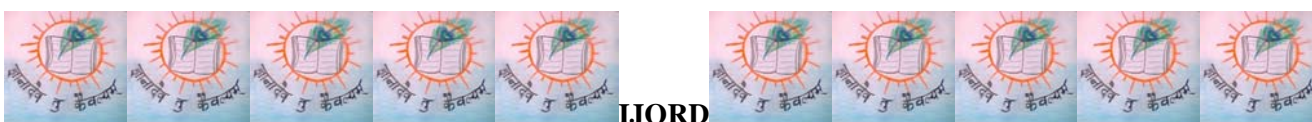


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- i. Apart from this, Engine with some twenty thousand odd parts in it and Gear Box with five hundred odd parts in it, which form the major part of the manufacturing, is still not manufactured fully indigenously in India, as it requires huge and intricate set up of the Indigenous Industry, with perpetual effort to keep product updated for its performance. Some, multi point fuel injection; fuel injectors, electronic devices, etc. are still not manufactured fully indigenously and hence imported from the MNC host countries. This will be given prior importance in the indigenisation of small cars.
- j. Every year India loses around Rs.100000 Crores of revenue due to lack of Indigenisation efforts. Especially in the Automobile field India loses around Rs.50, 000 Crores.
- k. However, Sundaram fasteners, which export few parts like Engine-Head Gaskets to the FORD Motors USA, and only few other manufacturers succeeded in doing so, due to various reasons.
- l. India has huge human resources in the form of Engineers and half a million skilled workers. Therefore little bit of Management is required to Indiginize these parts in various cars.
- m. Indigenisation means Right form the Designing and blue prints to the Development, then all sorts of Maintenance and Services are done through Indians.
- n. The Education Institutes, Industrial Organizations, Private research organizations, Government organizations related to this field move cohesively to attain the aim of indigenisation of LMV small cars. As they are convinced, that one car development needs a total developed Indian market and Industrial set up. Mining sector, Metallurgical sector, Steel plants, Aluminium plants, Copper plants, Forging Industry, Casting Industry, Plastic Industry, Rubber Industry, Glass Industry, Electrical Equipment Industry, Tyre and Tube Industry, Road Development Equipment, Road Architecture, Civil Engineering works like flyover, Fast track roads, Servicing Centres and equipments, Dealership network, etc. As automobiles form the backbone of the countries, this project of indigenisation has significant importance.

5. SOME DIFFERENCES IN THE DEVELOPED AND INDIAN CAR MARKET:





It is an independent survey:

It is the difference between the US, European Union and Japanese conditions for developing and driving a small car (LMV) on their roads with their Indian counterpart. The MNC do not develop their cars according to these conditions and bring the cars in the Indian market. Where as the indigenously built cars will have the distinct advantage of perceiving the car for the Indian conditions only.

The Table showing the difference:

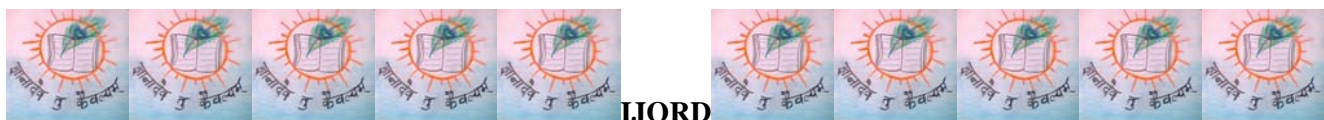
SN	Factors considered for Design & Development	Conditions in USA, Japan, Europe, Australia, And other advanced countries.	Difference in Indian Conditions
1	Temperature in degrees Celsius	-20 to +25 degrees Celsius	Range in India -20 to +50 degrees Celsius
2	Weather	Normally pleasant	Hot and dry weather not suiting these machines
3	Climatic condition	Cold to pleasant	Hot And Temperate
4	Humidity	More humid climate	Relatively dry climatic conditions.
5	Rains	No monsoon rains	Four months compulsory monsoon rains
6	Snow	Compulsory in winter	95% population do not exposed to snow
7	Road Conditions	Far Better than Indian	All terrain sinusoidal bumpy roads everywhere





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8	Load carrying tendency of people while going on tour	Compact as easy availability and access	They take lot of things as luggage as availability is restrictive than luxurious needs
9	Psychology of driving	Different cars for different purpose ex. For household purpose, for week end, for utility purpose, for office, etc.	For all purpose the same is used, of course, if its typical middle class Indian family.
10	Life of the vehicle decided	Maximum 8 years	Once bought it is supposed to be for the life time
11	Car owners Average Age Range	14 years to 65 years	25 years to 60 years of Age
12	RTO Norms for maintenance of vehicles	Very Strict for even wipers, mud guards, etc.	RTO norms are not so strict, many old vehicle even today don't have turning lights and mud guards etc.
13	Driving and Rules	Very Strict and different ex. Right hand drive, lanes on TOL roads, etc.	Average
14	Junk yards/ Scrap yards	Compulsory scrapping unless taken special permission to do so once prescribed life of car is over	No such rule even if RTO prescribes life of the vehicle to be almost fifteen odd years, but nobody throws away their vehicle.
15	Servicing and	Yearly contracts are there and	No such strict contracts except



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	Maintenance	consumers follow these norms to avoid any mishap.	in the warranty period, people do not follow these norms strictly.
16	Research and Development	Every month new version of car is there and upgraded rules to support and encourage the technological advances.	Absolutely no R&D in few of the plants in India. No encouragement and this there are people still driving 50 years old models in the form of Ambassador and PAL vehicles.
17	Quality Standards	GM, Ford, Toyota, Mitsubishi, Suzuki, Renault, Rolls Royce like companies have standards better than ISO & QS.	Indian Countries could reach these ISO and QS standards in 1990's. Many can reach the standards as comparable to these companies soon.
18	Technology	A huge gap has been developed between Technologically advanced and developed countries to the other countries.	May be India is left behind these countries but the 'All kinds of Experts' and skilled workers, Technocrats and Beurocrats and Executives will take India to this height within coming few years.
19	Service Equipments	Equipments used are very advanced and technology in them is the latest one.	MNC are bringing all these to India for faster working and thus Indian will develop these technologies very soon.





20	Spare parts	Heavy penalties for duplicate parts	Spurious parts are too many and government norms are not so strict.
21	Cost of Vehicle	Approximately, it is equal to of one-month salary even if taken as minimum wages act as a base.	No such criteria.
22	Yearly maintenances cost	Bearable though costly in Indian terms but US, Japanese can afford it, as it has become their habit, they have access for earning capabilities.	Even Lower middle class customers can't afford the maintenances cost of the cars.
23	Yearly Turnover of the companies	GM- \$550 Billion, Ford- \$500 Billion, Toyota- \$450 Billion, etc. even more than GDP all developing countries.	All companies together in India forms the turnover not more than even \$50 Billion Dollars.
24	Mentality for progressive Technology	Extremely high in all these countries and money to invest is also more than desired so immediate implementations many a times.	It is high in India but big shot businesspersons not ready to invest in unproven field of R & D work.
25	Transportation norms	Extremely strict rules and regulation.	Indian RTO are still in the process of developing the Traffic sense among every citizen.

6. PRESENT SMALL CAR MARKET THE WORLDWIDE TECHNOLOGICAL AND MARKET SCENARIO:





After Ford-T few more popular models like, Volkswagen-beetle, Maruti-Suzuki-Zen, Maruti-Suzuki-800, Wagon-R, Alto, Fiat-Uno, Mercedes ML-55-AMG, Rover 25, Clio, Fiat, Fiat Eco-basic, Tata-Indica, BMW Straight-line, Hyundai-Santro, Daewoo-Matiz, etc.

- i. Suzuki's Wagon-R is more popular in Japan,
- ii. Mercedes-Benz ML-55-AMG is more popular in Europe,
- iii. Volkswagen-beetle is the most sold car in this section,
- iv. Maruti-Suzuki-Zen manufactured with Japanese collaboration in India is sold in more than 36 countries in the world,
- v. Renault has run the first fully battery charged car in the world,
- vi. Eco-Basic is the first Hybrid (Battery-Petrol) commercial small car in the world,
- vii. Nitro is the first liquefied Nitrogen driven small car in the world.
- viii. India's, Tata-Indica is the highly potential and first Indian made small car using various assemblies and individual part from various Indian companies and MNC.
- ix. Where as, Sumo utility vehicle was the first vehicle fully designed in India by Telco.
- x. Clio is the first and the only car in this section, which is driven by women only.
- xi. Hydro the small car is driven on the Hydrogen fuel. Scientists are looking for better version and a wider acceptance of Hydrogen driven cars. Hydrogen is the most abundant fuel/ element in the universe and available in plenty on the earth.
- xii. Volkswagen-Beetle is running on the road with its very new look.
- xiii. Almost every year car manufacturer like GM, Ford, and Toyota, etc. come out with a new version of a car every after six months, such is the competition.
- xiv. Honda is conducting Car race in Australia every summer. The specialty of this race is but all the cars are designed and developed by the Honda and are Solar Battery charged vehicles.





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- xv. According to JD Power survey, Korea's Hyundai- Santro is the best-sold car in India in the year 2001.
- xvi. Many of the cars imported in India are in the CKD complete knocked down conditions in India. This include premium cars like Mercedes- Benz, Ford- Mondeo, Honda- City, Honda- Accord, Mitsubishi- Lancer, Daewoo- Matiz, Hyundai- Santro, Toyota- Qualis, Ford-Icon, etc.
- xvii. Of these, Daewoo-Matiz has wider base, almost in the One hundred and fourteen countries in the world, for its looks, fuel consumptions and for safety norms,

7. WHAT IS INDIGENISATION AND MANAGEMENT OF INDIGENOUSLY BUILT SMALL CARS?

A. It is nothing but Manufacturing the small cars (LMV) indigenously using all the indigenous resources, including:

- i. *Men*: Men for performing all important activities form planning, organizing, coordinating activities from main manufacturing plant and supporting vendors, SSI, MSI, sub plants, sub vendors for achieving target of making small cars of pre-planned numbers,
- ii. The *Machinery*: The machinery as far as possible will be made in India and maintained by the Indians.
- iii. The *Market set up* and the over all plant set up of the plant and the infrastructure will be cone by the Indians only using indigenous resources.
- iv. The *Material*: Material abundances and resources and consumer abundance is main cause the MNC carmakers come to India. Using same material Indian themselves can excel in this indigenously built car field. All-important iron and steel is abundant in India, brass, bronze, copper, aluminium, glass, rubber, are available in plenty and readily in every part of India.
- v. The *Money*: Whenever it is a need Indians contribute heavily. When convinced about the plan of these technical hype revolutions in the country lot of people have shown interest will come forward to do the job. They just are asking for the government support.



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vi. The all-important *Motivation* also should be from the Indigenous people of India the Indians. The government is getting convinced about the indigenisation matter as it has realised the over-dependency factor from MIG-21, MIG-27, etc. It has taken giant step towards indigenisation of Military services and is coming forward to do the same job in other fields of Automobiles, Medicines, Computers, and other important field. Here researcher has asked for the same things from the Ministry of Heavy Industries about the same task they are doing or if trying. He has asked the NOC to publish the losses India suffered due to lack of Indigenisation efforts.

B. One of the most important factors of this project is that the technology with which small cars (LMV) are developed, with the same technology with micro improvements, many other most important machineries and equipments are be developed.

Few examples can be: a. Electrical Generators, b. Dynamos, c. Elevator Brakes, d. Lifts and pulleys, e. Agricultural Tractors, f. Heavy Trucks, g. Dumpers and tippers, h. Medical appliances like hearts, i. pumps, j. X Ray machines, k. Washing machines, l. Cooking gas using LPG, m. Thermal plants, n. Boilers, o. other heavy machineries, etc. Infact the list is unending.

Thus, if India becomes self reliant in the field of small car (LMV) manufacturing, slowly but surely improved quality equipments will also be seen in other fields, as happened in USA, in European countries, in Japan and in Korea as well.

8. WHAT ARE THE ACTIVITIES THAT ARE TO BE PERFORMED BY THE INDIANS?

i. The Technocrats from R & D team to the Developers, and Manufacturers to the Maintenances men, and even the roadside garage men should be Indian.

ii. If Indians want to develop similar technologies as that of the EU, USA, Russian, Australian then Indians



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must also have one of the books translation section. This translation section will translate all the technological books those are to be developed in Indian context. This will give details about the technological design, drawing, development procedures, manufacturing processes, metallurgical details, intricacies of the in and out of the real technology. The German, USA, and other countries while developing their own weapons and other technologies, when books were not available adopted same thing earlier.

iii. At the same time the product, the car (LMV) must be kept up to date at the world standards at all the levels in the production and other procedures to gain profit and name world wide.

iv. In addition, the Beurocrats and the important Decision makers must also be Indians to look after the benefits and obligations towards the nation.

v. The political will and the financial commitment from the Government is most essential prerequisite in this indigenisation endeavour. Indian Government has to do the following job:

- a. Making a big issue of the indigenisation,
- b. Understanding the long term advantages,
- c. Introducing special fast service cell,
- d. Allowing special amendments in the RTO rules and Judiciary systems as well,
- e. Encouraging R & D firms, PSU, Private sector units,
- f. Encouraging Quality agencies unite together to overcome obstacles.
- g. Raising fund for the same,
- h. Encouraging Insurance and Banking sector,
- i. Making judiciary provision for the same.

9. WHAT ARE THE RESULTS OF BUILDING THE SMALL CARS INDIGENOUSLY ACCORDING TO CUSTOMERS BEHAVIOR?





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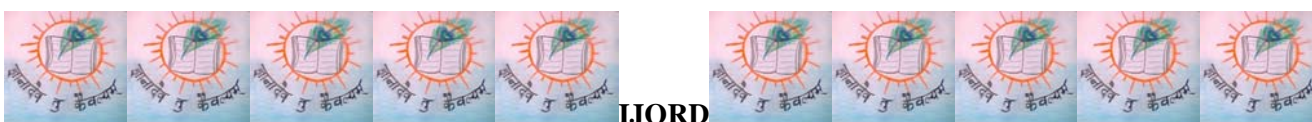
In the indigenisation of cars itself India can generate almost one million additional jobs. At every step of indigenisation we require skilled or unskilled work force i.e. while Research, Design, Drawing, Development, Manufacturing, Maintenances, Finances, Marketing, Dealer Networking, Customer service cell, for road side garages and service stations, etc. it needs Human Resources, Mobilization of huge amount of other Resources. Thus, there is perpetual motivation among the citizens of India and thus National Economy remains vibrant all the times.

10. WHERE THE INDIGENISATION MUST BE TARGETED?

Indigenisation can be targeted on the following areas:

1. Setting up of the plants for manufacturing and development of cars: Setting up of the plant needs machinery which India imports every time. This makes India loose billions of dollars over the foreign exchange. It also is but the bought up dependence or may be called as losing independence in socio-economic front. If right from the start Indians do, all the things indigenously taking help of indigenous companies. Encouraging indigenous companies to enter in this field to master it. E.g., BHEL, ARAI, TATA, Mahindra and Mahindra, Kirloskar, and others can be encouraged to enter in this field and gain advantages.

2. The Technology: MNC car manufacturer, manufacture the cars in the manufacturing plant situated in other country than India and bring it in India in SKD condition, that is, semi Knocked Down condition. These parts are then assembled in India, and then the product is then sold as small car. Hence, at the same time, there is no technology transfer. So, Indians must ask for Technology transfer from the MNC car manufacturers, and simultaneously must also try to develop on the experience of the human resources the cars better than the MNC cars in coming future.



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3. *Maintenances of the machinery:* The machineries need maintenance every time Indians imports it. Every time technicians are called to do maintenances from the host countries, which is from the head quarters of the foreign-based MNC car manufacturer and owner. Again, the country is made dependant by buying these machinery. Therefore, priority must be given to manufacture these manufacturing machineries.

4. *Manufacturing each and every part of the small car:* Indian organizations import spare parts every time. Besides wasting person-hours in keeping idle those machineries, India gets totally dependent on the parent company for that particular job performed by that particular machinery. Thus, it is nothing but a bought dependence on those MNC car manufacturers.

5. *Self-reliance:* In addition, to other aspects, in case of MNC cars the car owners are to depend most of the time on the authorized dealers as no roadside mechanic can correct if there is problem in the MNC cars. Along with it, the MNC sell costly Spareparts and the costlier services to the Indian customers.

6. *Avoiding self-exploitation under pressure:* The MNC car manufacturer allow the indigenous people in some jobs but they keep the important decision making executive posts reserved for the people belonging to their own countries. In the economics, it is called as the bonded labour and a total exploitation of the indigenous people of India. Therefore, Indians must also demand for these key positions or create a situation like top decision power must also be kept with the Indians while the cars are sold in India.

7. *Transfer of technology be encouraged or avoid importing:* Encourage, these MNC car manufacturers to build the cars using all the resources from India in India for few years and then transfer the whole plant to the indigenous Indians. Even it be called as Built, Operate, and Transfer i.e. on BOT basis for stipulated time.

11. WHY INDIGENOUSLY BUILT SMALL CAR ONLY? :

1. Go to Telco, go to Mahindra and Mahindra, go to MUL, go to Escorts, go to Ashok Leyland and lastly go through the CII Directory you will find that half of the Indian technological businesses are totally dependant



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on the Cars and Automobile sector only. Therefore, the aim of this project is total indigenisation of small cars (LMV). Similar techniques can be used with the benchmarking in the other allied fields too.

2. It means the product is manufactured wholly by the Indians and from the Indians but product is for the entire world.
3. It means the complete Set up of the manufacturing plant. The ancillary units, the vendors, and the sub-vendors are Indians located at every possible corner in India itself.
4. It means Indians have done the designing of various parts. Right from the screw to the big shafts are designed and manufactured in India by the Indians, and all the Indian and foreign buyers are enjoying the benefits from it.
5. All the parts from screw to the big assembly will be manufactured uninterruptedly. Though they are manufactured in thousands of different and distant locations situated at thousands of kilometres from the main plant, in India; still they reach the main plant Just In Time (JIT).
6. The Indians do the servicing and maintenances of the machines in the plant.
7. After that, Indians also do sales, the after sales services and maintenances. The mechanic and the Engineer can be a skilled person who is the owner or may be a person who is uneducated but a skilled owner of the roadside garage.
8. The latest techniques like KAIZEN, TQM, TPM, and JIT and with Quality standards like Zero Defect, Six Sigma, QS 9000, ISO 9000, and ISO 14000 can be applied.
9. It follows the norms mentioned for Ecological balance like Euro1, Euro 2 and Euro 3 or Bharat1 and Bharat 2, etc.
10. It follows all the technological safety norms. The car passes the endurance test for its all the parts. It also passes all the crash tests e.g. head on collision, oblique collision and horizontal crash. Its glass when crashed crumble into pieces which will not hurt the driver.



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11. Its tire when punctured the vehicle will not dash the side by vehicle. It will have a collapsible steering, etc.
12. It follows all the metallurgical norms for the metal selection.
13. The management upgrades its model as per the time and need, and helps the earlier versions to do so according to the latest market norms and International and parallel national standard.
14. The marketing set up is as such that whenever the customers face any problem he has the access within his reach. All the nearest service stations are infact all-purpose service centres for that particular brand of car.

12. TECHNOLOGY IN THE SMALL CARS AND PLANT SET UP:

For the safety of the world and to lure the customers, the manufacturers take very bold steps one of them is the Technological advancement. The Technology is developing at a very rapid pace everywhere in the world. Thus, the Scientists and the Engineers have brought the following changes in the small cars:

1. The manufacturing process has developed at a rapid pace. E.g. Earlier Suzuki used to assemble one car in several hours but now it takes only 19 seconds to do same job.
2. Robotics technology has given pace to the assembly line production of the car.
3. Painting technology has improved the metal version and the life of the car,
4. Tyre technology has improved the grip over the road and has helped to increase the speed of the car,
5. Fuel efficiency or average of the car has increased considerably.
6. Exhaust technologies has been improved to almost negligible emission. The catalytic converter of three stage type if fitted, reduces the harmful emission of Nitrogen Oxides (NO_x), Sulphur dioxides (SO₂),



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Harmful Hydrocarbon wastes (HC), etc. emissions to the prescribed norms in that country or even to the world wide standards.

7. To reduce the after accident hazards many small car makers have placed collapsible steering system or added the air bag at the top of the steering to protect the face and thoracic portion of the body, many added steel bars to various parts of the body of the car, shock absorbing bumpers are but the common phenomenon.

Latest news is, the computerized sensors are being provided to make a car accident proof.

8. There is Autopilot in the Aeroplane; scientists are successful in the cars also to provide a Autopilot capability. The car has been actually driven on autopilot i.e. there is no human driver present when the car is driven. The advanced computer and the sensors are very much successful in it. Of course, the remote always remains in the hands of the humans if there is such a case.

9. Wide ranges of fuels are now been used to run the cars. The gasoline or petrol, diesel, methanol, ethanol, hydrogen, gobar gas, ammonia, nitrogen, compressed natural gas (CNG), LPG, LNG, and many are still getting added to the list.

10. Electrical / Battery driven cars are on the increasing demand. Solar cars are driven successfully.

11. The Cars are designed automatically on the computers using software. You have to specify just the dimensions and within minutes, the whole blue print is ready. On the other hand, it took few years for thousands of Scientists and Engineers to do this kind of designing and development of blue prints.

12. The Global Positioning System (G.P.S.) and the Auto Pilot cars are on the verge of, to be launched into the market. Simply set the car to go to the destination on its computer, its autopilot with same technique as the Aeroplane drives the car in heavy traffic to its perfect destination.

13. The most advanced road car convertible to boat to move on the water, then made to fly in the air, then to go under water, is becoming possible in the test conditions.

Thus, there is no limit to the technical advancement in this field.





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13. THE COST DIFFERENCE:

For the same products when manufactured in India and USA we get the following cost difference and ultimately Indian customer has to pay it in India, due to huge difference in the Dollar and the Rupees difference in value.

THIS ALSO PROVES THE VIABILITY OF THE INDIGENISATION OF CAR PROJECT:

SN	Name of the few Part to be Manufactured in India	Manufacturing Procedure	Manufactured at MNC Prices in USA in Dollars (Rupees Appro.)	Manufactur ed at Indian Prices	Of car-parts MFG in India
1	Tyres	Special	\$100(Rs.5000/=)	Rs.1500/=	1. For Castings:
2	Tubes	Pulverizing etc.	\$15(Rs.750/=)	Rs.200/=	Experts advise:
3	Piston and Rings	Forging & Machining	\$200(Rs.10000/=)	Rs.9000/=	“Indian industrialists, to
4	Fuel Injector Assembly	Forging & Machining	\$1000(Rs.50000/=)	Rs.22000/=	compete with the global
5	Clutch Disc Assembly	Casting	\$700(Rs.35000/=)	Rs.30000/=	market keep your aim to manufacture
6	Carburettor Gaskets	Special	\$5(Rs.250/=)	Rs.200/=	all world class products. May it be Gears of G.B. or any other car parts”.
7	Injectors	Forging & Machining	\$25(Rs.2500/=)	Rs.500/=	
8	Spark Plug	Special dies	\$10(Rs.500/=)	Rs.60/=	2. For Forging
9	Brake Fluid	Ethylene glycol liquid	\$25(Rs.500/=)	Rs.200/Liter	manufactured parts: Experts feel





10	Rubber Seals/Washers	Special Pulverizing	\$2(Rs.100/=)	Rs.20/=	Indians should master in this field
11	Petrol Pipes	Casting	\$25(Rs.2500/=)	Rs.700/=	and must produce
12	Distributor	Special dies	\$50(Rs.2500/=)	Rs.1000/=	International
13	Electrical Wires	Drawing metal	\$2(Rs.100/=)	Rs.25/Meter	standard products.
14	Hose (Pipes)	Special method	\$100(Rs.5000/=)	Rs.2000/=	Metallurgical aspects will be taken care as it decides quality of the product.
15	Radiator Pipes	Casting	\$10(Rs.500/=)	Rs.100/=	3.For the Special
16	Bleeder pipes	Casting, machining	\$5(Rs.250/=)	Rs.20/=	Method Adopted for the
17	Wheels	Forging & Casting	\$200(Rs.10000/=)	Rs.5000/=	manufacturing: Experts feel that
18	Inlet Valves in Engine	Forging & Casting	\$50(Rs.2000/=)	Rs.1000/=	the method must be Indiginize
19	Valves in Tyre- Tubes	Forging & Casting	\$10(Rs.500/=)	Rs.100/=	to suit Indian conditions
20	Condensers	Special method	\$50(Rs.2500/=)	Rs.500/=	and according
21	Cylinder Head cover	Casting	\$100(Rs.5000/=)	Rs.1500/=	to that further research must be
22	Dynamo Pulley	Casting	\$50(Rs.2000/=)	Rs.800/=	Carried out and
23	V- Belts of Pulley	Special methods	\$25(Rs.2500/=)	Rs.250/=	product be Developed for total Indian Conditions.





24	Steering Box	Forging & Casting	\$25(Rs.2500/=)	Rs.1000/=	4. Experts are of the opinion that New methods, procedures, Alloys, etc. will be developed Once India start manufacturing.
25	Steering Gear	Forging & Casting	\$25(Rs.2500/=)	Rs.1500/=	
26	Nut	Forging & Machining	\$1(Rs.50/=)	Rs.5/=	
27	Screw	Forging & Machining	\$1(Rs.50/=)	Rs.5/=	
28	Exhaust Valves (Engine)	Forging & Casting	\$25(Rs.2500/=)	Rs.1600/=	

Interpretation of the Table:

All the values are the latest seen from the Catalogues, World Car Guide 2001- Daily Express, 47th Edition, Pedigree, UK, for all the companies in the world.

14. THE COST OF INDIGENISATION:

1. In Indian context, when each and every part of the car is compared with cut to cut intricacies in the car parts of MNC cars, it takes almost forty percent less charges for the same machineries with same quality at every phase of manufacturing the car and its distribution and in the other marketing procedures.

2. In the present scenario, because of the MNC cars deals, India is loosing almost One and Half Billion Dollars every year due to lack of transfer of technology and for not at all manufacturing the same cars in India. Even if Gear Box, Engine, and the Driving Axles of the cars are considered, the loss mounts to almost One Billion Dollars.

3. Thus, setting up R & D wing for the will be the first step. Indigenisation should be made compulsory, in all the Automobile Manufacturing organization in India. Next step would be giving targeted plan of action to Indiginize the whole car. Later on, other machineries and infrastructure set up can solve these problems.





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4. Finances required for the overall permanent set up of manufacturing requires one billion dollars. It is the same amount what India is spending every year on the import of the cars and car parts made by MNC from non-Indian companies. This is a permanent solution over the chronic crisis of dependency. This will be generating huge employment potentials and it will mobilize every kind of resources in the country.

Thus, it will be making India a pulsating economy in the world.

15. IS THE PROJECT VIABLE?

YES.

Certainly, when it comes as a challenge to the national pride Indians can make the whole car (LMV). Researcher can even claim for many breakthroughs in this field if Indians enter in this field. Indian can make relatively at cheaper cost than what MNC are doing. In India all the overheads, developing techniques always cost lesser than what the Western, Europeans, and Japanese charge.

Ex. a. The piston of an engine when manufactured in India with all the similar characters and quality materials always costs forty percent lesser than what MNC always charge.

Ex. b. The whole Engine costs almost one hundred and eighty thousand rupees. Whereas it's Indian counterpart when manufactured in India costs thirty percent less.

Ex. c. When Bridgestone Tyres manufactured in India its price got reduced to almost twenty five percent of its original price.

Ex. d. When India imported the Benzene Hexa-Chloride (BHC) and Dichloro-Difluoro- Trichloro-Ethylene (DDT) the insecticide, and other pesticides, it cost them more than a dollar per kilogram pack but when NOCIL manufactured it indigenously; a dollar was enough to sell a pack of five kilogram. A phenomenal decrease in prices was due to efforts of the Engineers and Agricultural experts NOCIL had. NOCIL went on



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to develop the indigenous machineries to manufacture their plant machineries as well. Therefore, why cannot the Automobile Engineers in India achieve the target of Automobile indigenisation?

2. When it was thought HR Development program and EDP or even to train and improve skills of the technicians, Indian spending are usually twenty five percent chargeable than what their Western and Japanese counterparts do.

3. India has almost half a million Technical associated work force to do the Indigenisation of Automobiles, may be highest in the world of Automobiles. If unemployed technical work force is used then it can become a strong work force of almost one million.

4. When asked many people has come forward to do the job. This includes the retired masters in the field of Automobiles who are ready to do honourably if the association is formed. These includes the technicians who were always in contact with the cars for repairing, overhauling, denting and painting, while replacing the parts and while doing their own innovative implementations. Few scholars but unemployed youth are ready to do wholehearted job if given proper training.

5. Lot of senior experts is calling it as a matter of life and death for the Indian Industries. Therefore, this project must be taken as challenge and monetary gains must given less importance than other long-term goals such as self-reliance in the field of Technology and Technical power. Otherwise, dependency will be a borrowed and on purpose bought gift for India via MNC profits in this sector.

16. THE MAJOR POSSIBLE INVOLVEMENT EXPECTATIONS:

United efforts of all the concerned Indian, especially efforts from:

1. Research Scientists: These able citizens of India will be carrying out research in the field of car development according to the Indian conditions at par with the international norms or may be even better than these international norms. They will collect, from every possible source, the data and knowledge needed to make the car run effortlessly, with minimum fuel consumption, and having very much lesser Preventive



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and Breakdown maintenances than what MNC cars needed to be done. It has been observed that all MNC vehicles are not designed for the overall tough Indian conditions than their host countries and/or western countries. They take into consideration some conditions like that of the roads that are perfectly even as in the case of developed countries. Many factors like hot and humid climate of the nation is not considered hence suffer heavy corrosion of the cars, etc. In all these scientists will technically give more Factor Of Safety to every part they design to suit the tough terrain and climatic conditions present in India. Research is required in following fields:

Design,

Drawing,

Product,

Marketing,

Commerce,

Costing,

Metallurgical,

Development,

Kaizen through TQM and TPM and

The other supporting services.

2. *Design Engineers:* Designers will consider more factors of safety for each and every intricacy in the designs of each and every part of the car than what the MNC and the norms maker have considered while running car on the Indian roads.

3. *Development and Manufacturing Engineers:* They'll take immediate decision for the development. They will develop the casts the moulds etc. and manufacture each and every part in India considering more factors of safety and with better alloys of metals developed in India better than the MNC car manufacturers.





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4.Plant and Machinery maintenances Experts, and Financial and HRD experts: They keep the indigenous car manufacturing plant always to the perfection to achieve the TQM, Kaizen, TPM, Quality of the product with prescribed norms and with highest the possible productivity from the Human resources and Machines. They will suggest all the things about how the plant must be designed to get maximum out put with minimum input of time, money, material, and human efforts. They will keep the same record while production is on as in a perpetual process.

5.Experienced Automobile Repair and maintenance Experts: They will convey all their experience while the car research is going on. These experts will tell the Scientists about the intricacies of the faults in every part of the car so that Scientists and Engineers together will take care of these faults being cut off or drastically reduced, while the car is at its initial phase of designing and development.

6.Knowledgeable Consumers: Ultimately beside repair mechanics and assembler in the plant the consumers and the drivers are the people who are always directly in touch with the product the car. Therefore, consumer survey will keep their small car product and its accessories' development updated by obvious reasons.

7.Interested Businessmen: These good citizens of India are interested simultaneously in the long-term goal of the nation and profits of the organizations. Though they took least interest in the R&D earlier, they realized that after 1995 A.D., R & D has become prior necessity for the organizations to keep consumers happy with the product and to survive in the world of competition. They will keep their small car product updated, and keep the internal and external customers happy to keep organization running on the well-defined track.

8.Financial Giants: ICICI, SBI, IDBI, will be funding the giant technical hubs and plants to be built for the overall development of the nation and the Indian society. They will also be providing loans at the lower rates to SSI, MSI, Vendors, Sub vendors, and ancillary units giving the JIT production to the main plant for the manufacture of the small car indigenously.



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9. *Industrial Associations* like MIDC, GIDC, and others will be giving support to develop the ancillary units and vendors and the sub vendors, SSI, MSI which in turn will support the major manufacturing plant for the just in time production of the Cars (LMV).





10.Look at the chart 1 and 2: If the Universities, Institutes, and the Industries go hand in hand Indians can achieve miraculous improvement with its knowledgeable people to perform the various important tasks.

CHART ONE: SHOWING UNIVERSITIES AND COLLEGES OFFERING AUTOMOBILE COURSES:

THE COURSES IN THE AUTOMOBILES CAN BE DIVIDED INTO THE FOLLOWING CATEGORIES:

SN	Course Title	Course Description and Kind of Training Offered.	Pre- Qualification Required	Hierarchical Rank and Position Offered
1	(ITI) ITI Diploma	Automobile Repairing Only.	SSC/10 th std.	Worker
2	(DE) Diploma Engineering	Automobile Engineering (Designing few parts and Repairs)	12 th or ITI	Mechanic
3	(BE) Bachelor of Engineering	Automobile Engineering (Advanced Designing, Developing and Repairs)	12 th or DE	Service Engineer
4	(ME / MTech) Master in Engineering/ Technology	Automobile Engineering (Advanced Designing and Advanced Developing)	BE or BTech	They do Actual Implementation of Designing and Development, which Ph.D. people plan.
5	(PhD) Doctor of	Specialized Topic in Automobile	MTech / ME	Planning for Research and





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	Philosophy in Engineering and Advanced Developing)	Engineering (Advanced Designing and Advanced Developing)		Development at Strategic Level.
6	(D.Sc.) Doctorate of Science in Engineering	Specialized Topic in Automobile Engineering (Advanced Designing and Advanced Developing)	Ph.D. in Engineering or equivalent honorary work	Extraordinary Contribution in Engineering with work, invention, or discovery.

SPECIAL MENTION: Industries also afford the Training course for the newly appointed employee in its organisation. This program ranges from a week to few weeks depending upon the requirement of the skills of the employee to be developed.

CHART TWO: SHOWING NUMBER OF COLLEGES, STRENGTH, FACILITIES, AND INTERNATIONAL RANKING OF THE COLLEGE:

SN	College	NCI	SOC	Colleges: Urban Area	Colleges: Rural Areas.	International Ranking
1	ITI Government	20	20	Good Facilities	Very poor facilities	Not Applicable
2	ITI Private	25	20	Good Facilities	Very poor facilities	Not Applicable
3	DE Govt. Polytechnic	10	30	Good Facilities	Very poor facilities	Not Applicable
4	DE Private Polytechnic	5	30	Good Facilities	Very poor facilities	Not Applicable
5	BE	5	60	Good	Very poor	Not



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	(Government + Private)			Facilities	facilities	Applicable
6	MTech (IIT)	5	60	Excellent facilities	Not Applicable	Excellent
7	MTech/ ME REC+ Private	20	8	Excellent facilities	Not Applicable	Good
8	MTech / ME Private Colleges	2	8	Good facilities	Not Applicable	Not Applicable
9	Ph.D. (IIT)	5	Not Specified	Excellent facilities	Not Applicable	Excellent
10	Ph.D. REC+ Government and others	20	Not Specified	Excellent facilities	Not Applicable	Excellent

INTERPRETATION OF THE CHARTS 1 AND 2:

1. ITI Diploma in Automobiles: It offers the 10th passed students the basic of the every kind of Automobile Repairing and Overhauling of the Engine. There are many colleges in this category government and government recognised as well.

2. Diploma in Engineering: This course is offered to the students who have cleared ITI or passed 10th standard or 12th standard.

3. Bachelor of Engineering: There are following colleges which offer this course in India:

- i. Vishwakarma Institute of Technology, Pune.
- ii. Bansilal Ramnath Charitable Trust, Pune.



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iii. Kasegaon Education society's College of engineering and Polytechnic Sakharale, Taluka Walva, District Sangli, City Sangli, Maharashtra State.

iv. Terna Institute of technology, Ternanagar, District Osmanabad, Maharashtra state.

v. Madras Institute of technology, Chennai, Tamilnadu state.

4. Master of Engineering/Master of Technology: Master of Engineering / Technology Degree is offered, when the student carries out some specified research in Automobile related topic.

5. PhD (Engineering): This is the highest degree offered to the candidate for research in the Automobile field over some specified specialized topic.

17. IMPORTANCE OF THE HIGHER UP INSTITUTES AND ORGANISATIONS:

Institutes like Indian Institute of Technology (IIT), and also Indian Institute of Management (IIM), Automotive Research Association of India (ARAI), Pollution Control and Research Association (PCRA), Institute of Engineers (IE), Indian Cost Accounting working Association (ICWA), Indian Finance and Cost Accountants (IFCA), Confederation of Indian Industry (CII), etc. and these organizations can do lot of breakthroughs individually, one of them can be as follows:

IIT Professors pursue lot of research with the help of students and assistants in the field of the automobile. These research-scholars must get the support to go ahead for implementations in the factories of the Indigenisation program. Similar is the case with hundred and fifty odd Engineering colleges. If the wild idea of designing and developing all the intricate parts of the Automobile united with the help of students as a part of final year project is implemented then whole of the project can be achieved in one year itself, provided all technical institution take part by division of parts done judiciously.

IIM management students and the Professors can give us the best viable project for this indigenisation program. As a research project for a full batch of Finance these scholars can give us viability of the each and every part of the small car, thus the future developers will have the ready made go ahead in the project.



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ARAI approves the Automobile products developed by the individual organizations or individuals in India with its final testing. The Engineers and the Scientists at the ARAI have shown interest in this kind of project when contacted and are ready to go ahead with this kind of challenging projects. They are ready to pass the well-designed car parts to the international norms.

PCRA will be approving the Engines from the cars with proper pollution control implementations. They will support all kinds of the Catalytic converter. They will also suggest the modifications to be done if the engine emission is not up to the internationally specified norms.

Institute of Engineers, All India Council of Technical Education (AICTE) will highlight the advantages of the Indigenisation and constantly give support through to this program through IE conducted courses, seminars, and journals.

ICWA the cost accountants will be focusing on how to optimise each and every part of the cars thus giving maximum benefit to everybody concerned with the small cars with maximum precaution of safety.

IFCA and the Chartered Accountant will be always keeping the Finances of the companies on the well-defined course of action in the annual budget with maximum productivity.

CII and Mechanical Engineering and Automobile associations will keep all the organizations together and make them prosper perpetually for the benefit of the nation and humanity.

18. WHEN CAN IT BE DONE?

If Indians start coming together for this common cause of Indigenisation program at there earliest the better it would be. As, in the market the car that gives consistent performance with early market capture generally dominates the car world. This has been the worldwide experience since last few decades, so Indians must come out with a grand small car with best design with the most factor of safety in all the parts with the most economic advantage to the Indian people and for others too while the Indians export it.

19. WHICH DEPARTMENTS NEED TO BE CONCENTRATED MORE?



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Master Plan: The best-planned and feasible time bound program to develop well-planned small cars.

The Individual Planning of each concerned organizations: The organizations taking part in this program must give their own plans. As the LMV are made up of almost 30,000 distinct parts, and each part requires its unique manufacturing set up which will be done by these organizations, may it be vendors, SSI, MSI, ancillary units, or sub vendors.

Where is first attention required: Special attention is given to the more factor of safety (FOS) to each and every part designed and developed by the Scientists and Engineers. FOS in short is the more durable part with tough metal used, with slightly more,

thought-out dimensions for the same parts, and having more life than the conventional international standard cars. These cars will be far more durable than all the MNC or even Indian cars.

20. WHERE IS THE SPECIAL ATTENTION REQUIRED?

Quality norms, International standards, and India's all terrain multi weather aspect be given special attention and followed well by each and every manufacturer. Availability of quality labs, performance checking labs, to check these criteria must also be given importance for making it as a well groomed habit to all concerned.

Research for the perpetual improvement of the product, procedure, internal and external customer satisfaction, product promotion be given due importance in the competitive world. Earlier this was not given importance in India. Therefore, to mould this habit in the Indians is needed special efforts.

Coordination of the Manufacturer, Dealer and Authorized Service stations, Scientists, Engineers of the main plant, Designers, Developers of the main plant, Finance and maintenance people is must at all the times, at all the professional levels.

Weekly Review, Monthly Review, Yearly Review, Emergency Team, Prize for the best suggestion for the continuous improvement of the small car and hard work associated and is expected from it.

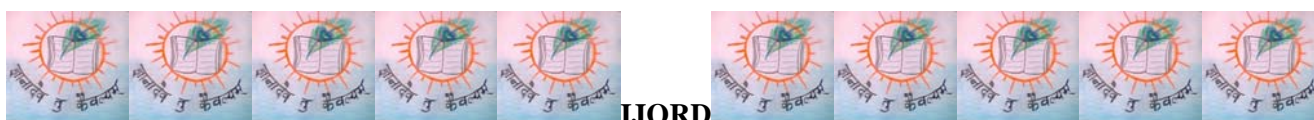
21. HOW CAN IT BE MADE POSSIBLE?



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- 1.This project must be given equal importance at par with any DRDO or any other emergency defence project on war front, by the Indians.
- 2.The knowledgeable people in this field of small cars should come together. They must realize the loss the nation is suffering due to over dependency in the field of cars on the other developed nation or on the highly exploitative MNC car manufacturers. The researcher made a survey in which he found that once the crux of the project is known many are ready to contribute to this project.
- 3.All the Indian businesspersons are talking about the taxes India imposes on the Indian parts. Instead, the MNC and all the foreign cars must be taxed more than their Indian counterparts. This will boost the morale of Indian carmakers and hence will boost the Indian economy as well.
- 4.The SSI, Vendors, and sub vendors that manufactures the Spareparts for the small car; or even the MNC heavy machineries manufacturing main plant also manufactures Spareparts for the other automobiles. Now a day maximum SSI has developed their abilities. SSI has the capabilities to develop any of the newly developed parts in any of the MNC car entered in the Indian market, within a year of its launch. Quite amazingly, these parts may have half the life than the original Spareparts but they also are sold at half the price than the original parts. Researcher asked these manufacturer about how they come to know about the 'know how' of the 'parent technology', the 'manufacturer claimed it to be the trade secret'. If such is the case then why should not India try for the total Indigenisation of the small car? He agreed and supported the program.
- 5.Look at the difference in the Prices of the Iron, Bronze, Brass, Copper, Aluminium, Plastic, Rubber, Glasses, Paints, Labour, Forging, Casting, etc. Everybody will find the huge difference in the Europeans, American, and the Indian Prices. When compared the prices of the same cars, which are manufactured in US, European countries comes down to almost half. Infact, on this date TISCO are the cheapest Steel





manufacturing empire in the world. (Hindustan Times- New Delhi- 10 December 2001). Almost same is the case with all the other metals and materials, that are required for the manufacturing of LMV.

6. When it was seen that Maruti cars, Hyundai cars, Daewoo cars, Ford cars, General Motors cars, etc. are manufactured in India the manufacturing cost reduced to almost half. Instead of SKD condition they are brought in India and then assembled in India, Indians must ask to manufacture the same cars in India and then sale them.

This will be the first step; next step will be the Technology transfer.

7. It has been observed that the host MNC countries keep their key decision makers from their own country thus if all the work is done by Indians is always been scrutinized by these men that work gets reduced to but the bonded labour. Thus it becomes a total exploitation of Indians using Indian Human resources these MNC are earning profit of Millions.

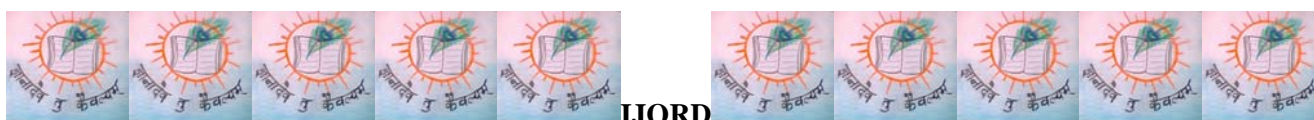
8. Therefore, Researcher has contacted many Indian manufacturers and they claimed that manufacturing the Car Engines would be the first step, so let it be done. *Therefore, researcher contacted Swadeshi Jagaran Manch, Azadi Bachao like organizations they have contacted the big bosses in the field of Engine manufacturing. One of the big businessperson has come forward and is claiming to start manufacturing within three years from 2004 A.D.*





22. Following are the Research Activities, as an independent survey, carried out to know the advantages of the efforts for the ‘Management of the indigenously built small cars with special reference to customer behaviour’:

S	Type of Research	Research about what?	Overall disadvantage to customers due to foreign built cars by MNC	Managing advantages to the customers of small car from India's Indigenously built small cars.
A	Business, Technical, Economic, & Corporate Research	1. Industry market characteristics and trends,	Many of the Indian factors are found to be neglected,	Indiginize small cars are built according to the latest trends in the world market but due importance is given while considering the Indian factors for safety and factor of safety due to mixed traffic India has.
		2. Acquisition, diversification studies,	Acquisition and diversification helps the MNC owners seating in the host foreign countries, hence affects the Indians.	Any kind of acquisition done by the Indian companies to enhance the indigenisation program must always help the Indigenisation of small cars program.
		3. Market share analysis	Any kind of piece of share the MNC gets is but loss to the Indians as it is but the dependency bought as discussed earlier.	More the market share in cars is taken by the indigenously built car more is the expansion of the economy at various fronts and more the advantages the customers get



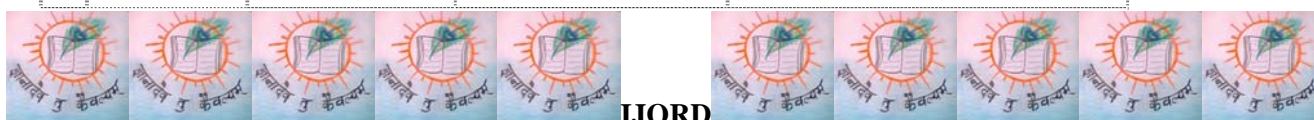


		<p>4.Internal employee studies: morale, communication, etc.</p>	<p>When, more the employees are trained they try for more market share thus helping the MNC for their profits and uplifting the product, productivity, proficiency, profit, performance, and customer satisfaction.</p>	<p>When, Indigenisation of small cars program train more the employees they will try for more market share thus helping the organization to grow its profits and uplifting the structure of the product, improving productivity, proficiency, profit, performance, and hence customer satisfaction which mostly will be Indians.</p>
B	Pricing	1.Cost Analysis	<p>Studies show that, Cost of the foreign built cars of any type will always be 40% more than their Indian counterpart with the same criteria. If taxes are levied then it will be almost twice as much as what Indigenously built cars will have.</p>	<p>In the total indigenisation of small car program every penny paid to develop the product and procedure and services of small car goes to the Indian citizen only. At every level Indian costs are much less than its counterpart American or European car products, services and its makers. May be it is even more when Rupee to Dollar conversion and tax levied are taken into considerations. Therefore, indigenisation increases the cost benefit to the Indian consumers.</p>





	2.Profit analysis	Where as the MNC carmakers grows their roots in that country by gaining growth and sustainable profit growth. Much of the part of profit is siphoned out of India. This profit utilized in growing company and increasing Hi-Tech machineries and reducing jobs for the Indian Indigenous people.	When profit of the Indigenous carmakers increases any further growth increases the job potentials, growth in the Indian market, technological advances, increase in the R & D investment hence futuristic growth. Some more market segment gets uplift. Consumer will get more benefits at the same prices what they are paying today.
	3.Price elasticity and competitive pricing analysis.	In the present worldwide recession in the market capturing the market, keeping the customers loyalty, more servicing facilities, affects the prices. The prices are it s lowest possible ebb, for the long run benefit of the organizations	Always maximum the Indian made parts in the small car lesser is the price. E.g. Tata-Indica the maximum Indiginize car is priced Rs. 3,29,000 where as its other counterpart at the same level is more by Rs.50000 at least. Thus, more the indigenisation of every part of the cars more will be the price benefits.





		involved in various tasks of cars sales and servicing.	
	4.Demand Analysis:	India is looked as highly potential market due to lucrative high population of consumers. So, various techniques are used to increase unwanted increase in demands.	Indigenously built cars will not only fulfil the demands but also improve the manufacturing capabilities of the Indian manufacturers. Dramatic improvement in the cars quality and number of manufacturing.
	a. Market potential,	a. Potentially people earning more than one million has tripled since last four years in India. Indian are brand loyal, so these MNC try to lure these people through various surveys to advertise their mutual benefits	a. Potential Market of these one million sells in the cars will also increase the abilities of other dependent avenues of cars.
	b. Sales Potential,	b. In the event of GDP growth of 6.5% and industrial growth of	b. Early Indians start manufacturing the whole cars indigenously earlier they will reach the manufacturing ability of one million per annum. Thus benefiting the Indian consumers. Similarly, market will show always-pulsating Indian economy.
	c. Sales Forecasts.		c. So, Government and the other decision makes must seat together and plan the future of Indian on this crisis and encourage indigenisation of the small car.





			<p>more than 8%, May be 10th five year plan</p> <p>increase in the sales concentrate more on</p> <p>potential of cars indigenisation of Technology of</p> <p>market will touch the small cars and allied fields. This</p> <p>demand of almost 1.5 will improve satisfaction level of</p> <p>million. At present, no Indian consumers with increase in</p> <p>Indian company can technological advances.</p> <p>manufacture so many</p> <p>cars in a year where as</p> <p>MNC can take</p> <p>advantage of it. Much</p> <p>loss to the Indians.</p> <p>c. Sales forecast</p> <p>shows that for the cars</p> <p>sales is going to</p> <p>increase and it may</p> <p>reach one million</p> <p>mark by the next five</p> <p>year plan of 2002 to</p> <p>200 7. Again, the</p> <p>MNC benefits will</p> <p>add the woes to Indian</p> <p>economy.</p>	
C	Product	1. Concept development and testing,	<p>MNC cars use various</p> <p>business techniques to</p> <p>help their so-called</p> <p>technologically</p> <p>advanced car concept</p>	<p>Concept of fully Indiginize cars or</p> <p>any other Hi-Tech product must</p> <p>be given very much importance. If</p> <p>not internal customers and</p> <p>consumers must demand for</p>





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		<p>grow. Many give test ride to the potential consumers and let them compare with the any other car product. The car that is already a successful product in the EU, Japan, or USA is brought in the Indian market but shows little benefits to the Indian consumers and conditions.</p>	<p>indigenisation. As ultimately mutual growth is the only way to sustainable growth of the country, which is possible through thorough indigenisation of cars only.</p>
	<p>2. Brand name generation and testing,</p>	<p>MNC actually make a contract with world famous Indian personality like happened with Hyundai-Santro, Shaharuk Khan was given contract, and Brand name has increased the sales due to his popularity. The advertise mentions that it is owned by this popular</p>	<p>Whereas if Brand name is generated by the Indian counterpart the benefits goes to the indigenous people only. Right from the Advertiser to the manufacturers and consumers are indigenous Indians. While testing and more testing improves the quality performances generating systems in the organizations. It gives more exposure to the Indian technocrats and the marketers. The next generation consumers get benefited due to these kinds of</p>



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		<p>melody icon of Hindi Cinema and is tested okay since its launch.</p> <p>Thus, the brand loyalty is generated.</p> <p>Their Indian counterpart can't spend same amount of money.</p>	<p>Brands. The organization also shows lot of respect towards the overall system.</p>
	3. Product testing of existing products,	<p>Where as the Daewoo-Matiz claims it has most number of safety Bars, Hyundai-Santro claims it has passed offset test, Tata-Indica claims it is the toughest car.</p>	<p>Tata-Indica forms the India's first car. Tata Engineering is the only company, which has its own testing facilities. Otherwise, every vehicle has to go to Ahmednagar or other test range. Thus competition has made Indians to develop its own product development facilities.</p>
	4.Competitive product studies.	<p>Every year all these car companies bring new product in the market. Customers has been kept in inferior complex to upgrade their vehicle or at least made to buy next version of the vehicle.</p>	<p>Tata Engineering has made this provision in their plants. Thus becoming real global competitor in the car market. They are selling at lower costs than the MNC do.</p>



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D	Distribution Network	1. Plant warehouse location studies.	Now a day all the vehicles are kept normally in the plants' main warehouses only. Suzuki and other MNC have big warehouses to accommodate cars more than 25000. Till today MNC has not given more importance to number of stratified locations in the distribution channel.	Tata Engineering also planned the inception of Tata Indica car very well in advanced and has made ware houses very well equipped. Infact it has the best Distribution Network in India. Number wise also Tata Engineering has the most number of stratified as well as localized distribution network.
		2. Channel performance studies.	As MNC has less number of exposures in distribution network, it takes a week to each the vehicles in the hands of customer, if the available stock is over.	Tata has never faced this problem since 1990, when they reached 300 small and big distributor numbers in India.
		3. Channel coverage studies.	There are only 22 distributors of Daewoo in India, 50 Hyundai distributors,	If local manufacturer like Tata Engineering produces the car then it gets more than 500 distributing destinations and roadside garages





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			302 distributors of Suzuki, 20 distributors for Ford and GM, too.	at almost at every 20 kilometres on the highways.
		4. Export and International studies.	MNC lead at this front but when it comes to pricing, they value their car at the international price tag thus Indian customer and Government suffers the most.	If Countrymen manufacture the car and export it the return from it gives the Government most valued foreign currency. If the product is very good then international acclamations gives boost to the overall export to other products too.
E	Promotion	1. Motivation research.	MNC are very experienced in this area of research. Not only monetary but also at all the levels internal and external customers are motivated for the achievement of further goals. Many a times customers have to pay price for it also.	Local manufacturers have started all the kinds of things MNC adopt but at lesser costs.
		2. Media research,	MNC adopt every new kind of thing to promote their product.	Indigenous companies do the same things but at the lower costs from every angle.



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		Price of course has to be paid by the customers only and at a higher rate, too.	
	3. Advertising effectiveness and Competitive advertising studies.	With the huge monetary backgrounds the MNC pay millions of rupees to the most valued personalities in that country. These personalities include Sachin Tendulkar, Amitabh Bachchan, Sahahruk Khan, etc. This makes the advertisement very effective.	Though the local companies cannot pay but they are trying to fill the gap between the MNC and themselves by adopting some revolutionary measures like new jingles, new music, new software, new models, catchy tunes, catching human moments of the prospective clients. Many ads became very effective thus increasing the killer instinct of the of the local firms to do better.
	4. Public Image studies.	Brand image of MNC vehicles like Opal-Astra, Ford, Mercedes, and Honda is well maintained in the pubic eye.	'Our own India car' with lot of service station and roadside garages. This is the public image of Tata-Indica.
	5. Sales force compensation studies,	In early days of its inception Suzuki dominated the car market with its all	Indian companies with their wide range of network of distributors, retailers, godowns, local technology, and indigenous



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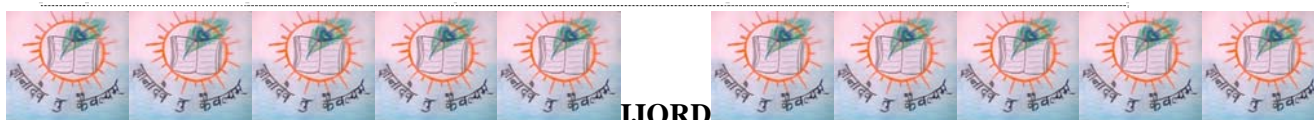


			possible effective productivity norms for every employee. The sales team highlighted only good qualities of their products but later on Indian public realized the high cost of maintenances.	people have acquired all the strategies adopted by the MNC. In few years all the work culture of the sales team will be having similar kinds of out put as that of any most effective sales force in the world can have.
		6. Studies of deals.	The deals ultimately leads to higher profit of the MNC leading siphoning of the finances to the home base of the MNC.	All the deals ultimately generate more profits and all lead to the employment generations, revenue up gradation, infrastructure development hence development of the society.
F	Buying Behaviour	1. Brand Preference.	Almost Rs. 5000 Crores is been siphoned out of India every year due to Brand names like Mercedes- Benz, Honda, Opal, Ford, Suzuki, Toyota, as the customers go for these vehicles on their trusted for years vehicles.	Tata- Indica was sold like any other popular brand in the market, due to Tata tag on it. Still Tata is the trusted name in India. With every Tata vehicle part there are two hundred plus employments related to it. So the mouth-to-mouth publicity for the Tata-Indica is astronomical in India due to its maximum utilization of indigenous resources.





	<p>2. Brand Attitude.</p>	<p>MNC organisations with their heavy research in the market and then targeting customer behaviour carry on advertisings campaign. This makes their brand image suiting to those kinds of people who are targeted. Thus Brand attitude is developed and thus only Ford-Ikon, Maruti-Esteem, Honda-Accord, Mercedes has achieved the success.</p>	<p>Slowly but with dint of hard work and perfect planning Tata Engineering is moving towards developing the brand image of Tata-India and also developing brand attitude of the customers, in India.</p>
	<p>3. Product satisfaction,</p>	<p>'Even the coin does not fall if it is kept on the top of the roof of the Merc', thus is the advertisement of the Mercedes. The services are also provided to these kinds of multimillion cars. Not only satisfaction but also</p>	<p>If it is the same satisfaction consumers will be getting from the Indian developed cars then that company is going to be phenomenal in the Indian Industry.</p>





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		Mercedes gives the most valued customers the delight from their cars.	
	4. Purchase Behaviour,	Due to limited dealerships customer has but few options to visit. Still MNC compensate this shortfall with at home services. Thus the car with the best brand image having the best kinds of services in the market. Obviously it is a costly affair than the more indigenous car.	Even Indianised cars cost less. So obviously the indigenisation will cost relatively less price. So the car with international quality and supporting services will obviously be developing its brand image in the world car market. In the Catalogue of the 2001- Daily Express- World Car guide 2001- 47 th Edition; Tata-Indica has got the recognition as an Indian car with International Quality, due to sheer hard work of the Indian people and recognition of the Indian car buyers.
	5. Brand Awareness,	Pre-launching advertisement gives advantage to the customers as they get every details of the car. Every Brand tries to prove their brand the best. Thus they expose each other and	With proper advertising Tata engineering has given advantages to the customer: <ol style="list-style-type: none"> easy purchasing, Most number of connecting link in India, Fair price of the product, Time saving due to dealer available at the nearest



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	customers are location,
	benefited most. But e. The best Quality product,
MNC have managed	f. Educate internal and
this factor well in	external customer with
India.	patriotic fever, and thus reach
	every corner of the country
	through mouth-to-mouth
	publicity.

22. LET US KNOW ULTIMATELY WHY CUSTOMER BUYS A INDIGIONUSLY BUILT SMALL CAR?

Anybody who has provision for money to buy a car and is bitten by a bug called:

- i. Time Management,
- ii. Status, esteem, and position,
- iii. Class consciousness,
- iv. Career consciousness,
- v. Life pattern,
- vi. Comfort of family,
- vii. Family car,
- viii. Weekend family car,
- ix. Car with advanced gadgets,
- x. A patriotic bug bite,

And if it becomes the need of that customer he buys the car.



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23. WHAT ARE THE EXPECTATIONS ABOUT THE INDIGENOUSLY BUILT CAR PRODUCT?

1. Every customer feel that he should get out of car as fresh as he got into the car.
2. To fulfil this criteria car must have suitable aesthetics, ergonomics, comfort, most needed gadgets and equipments and technology.
3. It must fulfil the safety, technological, and legal norms of the province where ever it is driven.
4. It must have provisions for present and future built ups and developments if required.

24. WHY SPECIAL REFERENCE IS TO BE GIVEN TO CUSTOMER BEHAVIOUR ONLY:

With the explosion of the Tele-Communication and Network Systems in the world the era Internet and fast services, customer awareness is now reached at its peak in the graph.

Due to following reasons, the MNC and the Big Companies in India are way ahead of their tiny competitors, as they are doing these kinds of things to attract customers at every second of the day. This shows that car industry will be guided and ruled by the king customers:

1. Organisations are providing fast courier, quick delivery services, dial-and-enjoy the home delivery to their customers, E.g. Mercedes-Benz cars, Daewoo-Matiz cars, etc.
2. Taxing effect through the advertising explosion on TV, Movie Theatre, Hoardings, Cable Network, etc. customers feel its effect, E.g. You will find our service centre at every corner in India a MUL advertise at every five minutes in the cricket match.
3. Customers are provided some kind of message trough Pamphlets, Newspapers, Catalogues, Receipts with full of the product and services. E.g. Hindustan Lever and their soaps
4. Seminars, customer interactions services, customer awareness drives, free services, etc. E.g. MUL is conducting free services camp since few years for their all kinds of car segments.



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5. Various schemes like bring few customers and get discount, Festive discount, etc. E.g., TATA-Indica has given extended two years free service offer to a customer who brought five customers and more.
6. Technology awareness drive to prove the upper hand of their Cars, E.g. In the SPICE campaign Daewoo-Matiz convinced their world wide customers that their car is the best in the segment and they received the prize for it and that is why they have reached in more than 122 countries in the world. Many bought the Matiz and thus helped it to grow in India as well.
7. The demand for the other segment of car got reduction and these small cars from the MNC and the MUL and TATA got big demands. Infact the PAL had to close its few plants. Thus if you care for the customer the customer grows your business.
8. The Rolls rice people give their customers the car they demand and the way they want. Similar demand is there in US and the Japan now a day.
9. The upper middle class segment in India, which includes all kinds of professionals like Engineers, Doctors, Lawyers, Architects etc. are demanding better services at the cheaper cost who so ever give them this service they go to that product E.g. MUL Zen is most preferred product of the Anaesthetics (doctors) and Lawyers as they can carry their important recourses along with them anywhere they want.
9. Hereafter, Technology will be developed on the customer's demands and as a part of competition.
10. The customer complaint about the suspension system of the Tata-Indica made them to replace those parts on war front within a month or so.
11. The History shows that the customers can make your product grow in the market or even they can throw you out of the market as happened with the Montana cars in India.
12. Now a day, more and more profit-motivated companies are also is more and more customer-care-retain-grow kind of companies.



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13. One of the companies has gone even further it exchanges its old car after three years with new one and that too if maintained by its engineers then sales its new version at half of its costs. Every year in Diwali, Christmas these exchange old cars with new one offer attracts more and more consumers every year.

14. Encouraging customers always give better result. Therefore, constant touch with the customers and their expectations keeps the LMV/ car organization on toes. It also keeps organisation ahead of its competitors.

15. Every person who drives the car, related to car business and even the roadside person is also a customer. This is because whether he is rich or poor he is marketing the car by his gestures. E.g. Whenever Merc is seen everybody on the road makes a road for it right from the cyclist to the Maruti car driver. This is because Merc is symbol of Rich and Top class family. This gesture also gives the owner special feelings.

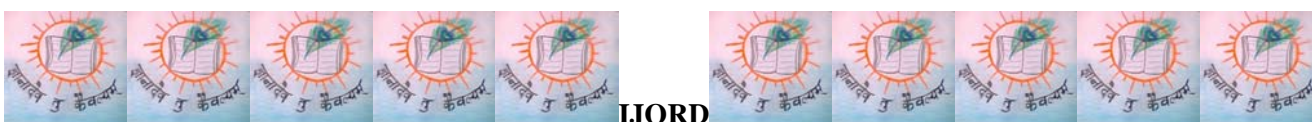
16. According to the Society of Indian Automobile Manufacturers' Association of India (SIAM), by the end of 2006 A.D., Indians will have annual turn over of one million cars per year. By the end of this decade, it is expected that every one in five family will have a car in India.

25. CONCLUSION:

It can be summarised in the form of following points-

Management of the developing small cars indigenously according to latest and futuristic needs with respect to customer behaviour in India, is a need of the hour and a viable job, it can be achieved by:

1. Using all the Indian indigenous resources,
2. Special attention be given to the customer behaviour as in future, king customer will be detecting the terms and condition in the field of technology and the service industry as well,
3. Allowing benchmarking to develop other industries in India,
4. Generating huge employment potential and thus allowing the socio economic growth of the country.
5. Making Indian economy and Indian technological front a self-reliant look to strive in better fashion in the future.



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6. Bringing laurels to the nation by giving the world the world-class product.
7. Giving the best example of producing remarkable results if the nation uses all its resources cohesively and acts in a synergy.



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CHAPTER 1: INTRODUCTION

Topic No.	Topic
Part A	Why Managing indigenously built of small car?
Part B	What can be the first step?
Part C	Indigenisation of small car with respect to customer behaviour.
Part D	Is the project viable?
Part E	A big question- Is there any demand for the indiginisation?

Part A. Why Managing Indigenously built small cars (i.e. indigenisation of small car technology and services):

1. It means developing the technology and services in India itself: Technology requires lot of research and development. Technology development requires sincere involvement many scientists, engineers, finance personnel, and strategically government contribution.

2. It means Indians are indigenising small cars using their own resources, i.e.

- Man and Management: It means development of most important resources of the country called the human resources. Many Managers, Engineers, Chartered Accountants, Materials Manager, Marketing Managers, Designers, Research and Development Scientists, etc. will be developed in the whole process which ultimately becomes an asset to the nation in long run.
- Material: It means utilising all the required minerals and other material, which will be developed and manufactured in India in Indian companies for the benefit of the India by the Indians.





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○ Money: Money will be circulated in Indian market. If cars are exported then foreign currency will be added. As it is estimated by Society of Indian Automobile Manufacturers Association (SIAM) that by 2010 A.D. India will require one million cars and with huge Rs.110 billion money transactions would surpass the current Rs.12 billion.

3. It means less dependency: Whenever a customer buys a commodity made by MNC the part of its profit directly goes to that company owned by the civilian situated in that foreign country.

4. It means avoiding borrowed dependency: Whenever a car is bought, the customer and the seller in India has to depend on the original spare parts made by the parent MNC. So, Indigenisation will revert the process.

5. It means avoiding exploitation of Indian resources by any foreign system.

6. It means using Indian resources for the benefits of Indian consumers.

7. It means avoiding siphoning of Indian money out of India: Whenever consumer by the car the money is actually siphoned out of India at every step of servicing, repairing, replacing spare parts.

8. It means developing a parent organisation, which has following independent departments devoted to the exceptional tasks of:

- a. Planning,
- b. Organising,
- c. Coordination,
- d. Motivation,
- e. Production,
- f. Marketing for total customer satisfaction,
- g. Result and feedback collection for continuous improvement in work culture, production,



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productivity, quality, improvement of profit, internal and external customer delight at the following levels:

- Strategic Level,
- Upper management level,
- Middle management level,
- Lower management level,
- Workers level.

9. It means developing vendors and / or Small Scale Industries (SSI): Small cars have almost seventy thousand parts and sub parts fitted in it. If a small scale ancillary unit is developing one part each then it set up of more than half of seventy thousand odd SSI in India.

10. It means development of India. As each of these unit generate huge job potential, market potential. (Please see the table – Business dependant on the car industry)

11. It means breakthroughs in some more technologies like generators, dynamometers, engines, space technologies, medical technologies. As, these technologies have some kind of equipment used in their technology, which have some similarity in any of the sub assembly of the car developed in India.

12. The profits generated by the MNC are in the range of multi billion dollars. So, in long run they capture market and get hold of the economy of that country. If India is to keep out of these shackles of MNC it has to develop its technology to remain independent. This can be achieved through Indigenisation only.

13. India is well equipped with all its rich resources when it comes to man, money and management. So experts believe that if indigenisation is started it will definitely be achieved in a predetermined time. What is required is but a boost from the government and a union of the technocrats and the bureaucrats.

Part B: What can be the first step?





Research and Development at all fronts can be the best possible First Step:

In general man loves moving on the well defined less ambiguous, less thorny track irrespective of wastage of resources.

In past around the world, so many organisations have vanished in to unseen as they could not face the new challenges before them. They could not adopt and adapt new techniques according to new environment. They missed the bus of change due to some reason or other.

It was a wake up call for the Indian market and especially the organisations when floodgates for the Multinational Companies (MNC) were thrown open in the year 1994, and in the primary stage itself Coca cola, Pepsi, Suzuki, Opal, GM, Ford, Daewoo, Hyundai, Toyota, etc. giant MNC started capturing the market in their own respective fields.

Only those companies survived which had strong basic structure and united internal customers and matured external customers. So only those industries survived which got them fit into within the competitive global scenario.

As India wants to survive in this all these tides, it has to develop its present system to the extent that, at any time in future it will be able to face any sort of problem and competitions as well.

It certainly not means that present Indian brains are not doing all these kinds of thing but it is certainly inadequate, it has been proved, as there are no specialised brains working fulltime for this purpose. As the people working in other departments have their own limitations to devote completely for this job.

So, how can be the new things be made possible in the field of :

- a. System be developed,
- b. Production be enhanced,
- c. Productivity be improved,
- d. Machineries be developed,





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- e. Work culture be developed,
- f. Total Quality Management and Kaizen- Continuous Improvement be targeted,
- g. Total internal and external Customer Satisfaction is achieved?

To start with, the best solution is to start independent Research and Development (R&D) as a first step.

In the present world market, to remain world class, R & D can do following things:

- a. It can become brain and heart for the company, which is developing indigenous small car.
- b. It can pump all new knowledge and techniques in the organisation.
- c. It can maintain knowledge bank for all the times,
- d. It can solve day to day problems,
- e. It can solve some chronic problems,
- f. It can solve some only once in a life time kind of problem,
- g. It can unearth some hidden problem,
- h. It can solve some frequent problems,
- i. It can predict some future problem in advance for which the internal and external customers can keep themselves ready with befitting solution over it,

R & D can also carry out special projects involving:

- a. Cost reduction project,
- b. Technology upgrading to fulfil all the environmental norms,
- c. Quality improvement,
- d. Internal and external employee and national level, skill development,

These R&D efforts can lead the indigenisation project of the small car development to adopt:



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- a. Continuous Improvement-Kaizen,
- b. Total Productive Maintenance (TPM),
- c. Total Quality Maintenance (TQM).

This ultimately will show the constant and perpetual development of the internal and external customers and the organisation involved in it till the ultimate goal of indigenisation of car is achieved with matured sense.



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**Part C:****Indigenisation of small car with respect to customer behaviour:**

1. Earlier when few technocrats and technicians knew technology, it was manufacturer dictated market. Customers had no choice.
2. Also there were few companies manufacturing the cars, so customers used to depend on those few carmakers only.
3. But in the present car market lot of manufacturers are been added from India and form other countries too and so it has become a severe competitive multipolar market.
4. In the era of explosion of communication and information technology, and increase in the number of expert engineers and technicians almost every customer know the technological aspect benefiting to them. Even smaller fault is exaggerated and so all companies behave consciously as it may lose their all-important customer to the competitors.
5. In present market customers liked to be treated well by the producers and services providers. Customers have less time in their hectic life so they buy satisfaction through their cars. Customers will keep that company in the market, which will treat them as a king.
6. Instead of adopting a car built for the western conditions in India and modifying for the Indian conditions. Indian customers are demanding a car built for their own unique multi terrain multi climatic and diverse weather conditions for the special Indian sub continent customers.
7. In the western countries customers are dictating the technology about what they want from the next version of their car. Thus customers are dictating the terms of the future technologies.
8. Consumer satisfaction through technology development can be achieved by developing Indian Indigenous technology. Indian consumers have different demands for Indian conditions, which are in turn, are different than the Japanese and Western consumers. This has special importance as

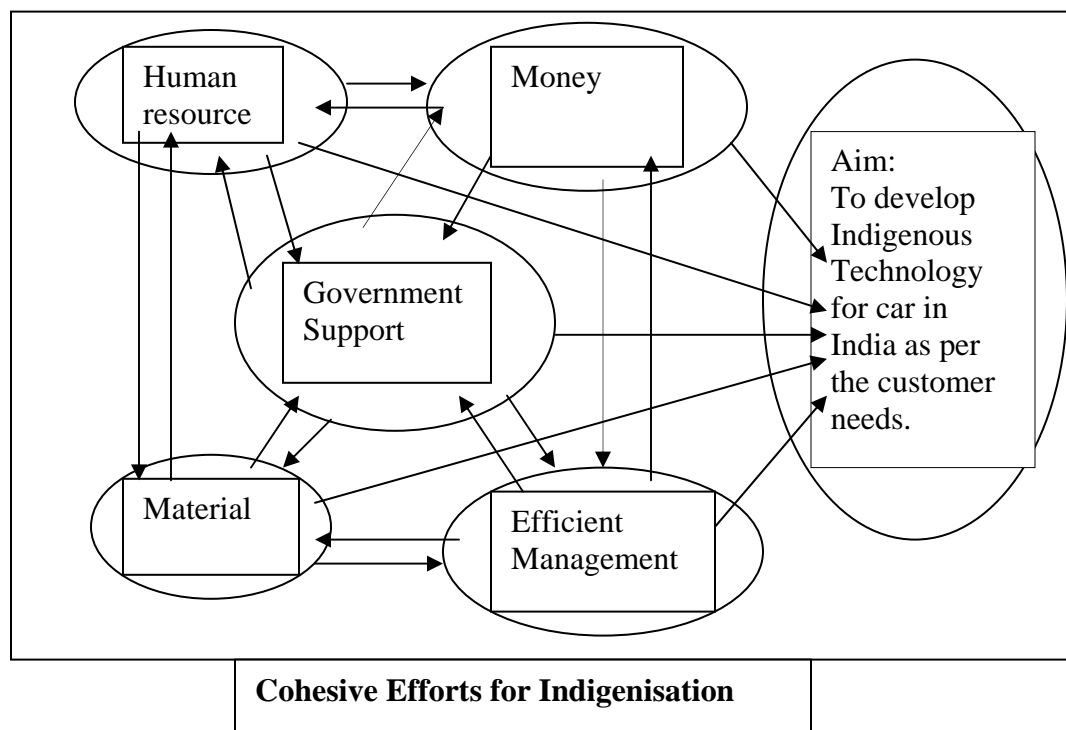




the vehicles those are recently brought into Indian market are designed and developed according to Japanese, Western European and American conditions.

9. The time is not away when customers will ask for alternative fuels like Solar Battery run cars, Hydrogen fuel cars, safety capsule cars, auto pilot cars, fully computerised cars, etc. So these MNC are developing these technologies.
10. Here lies the crux of customer behaviour. So up gradation of the Indigenous technology in India forms the very important aspect other wise it will have to face the consequences.
11. Consumer is the king in the present car market what ever Rowels Rice customer expect from their producers similar expectations are coming from common customers, may it be at services front or at the technological up-gradation front.



Part D:**Is the project viable?****Interpretation of the diagram:**

Its **answer is certainly a big YES** when the project is developed with the cohesive efforts of all the concerned people. Even simple calculations show that if revue outflow on the cars related matter is saved for the two plus years India can develop its entire new technologically advanced small car. As mentioned above cohesive symbiotic efforts are needed that's all. Only thing needed is government must make it an issue may it be political, financial, employment generation or what ever it may be, but should take care to implement it immediately and properly.

Indians have all the following resources required for this purpose in plenty:

- a. Human resources,
- b. Effective Management, and
- c. Material.

**Table 1: The project viability is discussed in a table below:**

	<i>in India</i>	<i>one time project</i>	<i>Phased manner project</i>
1 Human Resources			
a. Engineers	Yes	Yes	Yes
b. Scientists	Yes	Yes	Yes
c. Managers	Yes	Yes	Yes
d. Technicians	Yes	Yes	Yes
e. Servicemen	Yes	Yes	Yes
f. Businessmen	Yes	Yes	Yes
g. others	Yes	Yes	Yes
2 Material			
a. Metals	Yes	Yes	Yes
b. Glass	Yes	Yes	Yes
c. Electronics Components	Yes	Yes	Yes
d. Electrical Components	Yes	Yes	Yes
e. other	Yes	Yes	Yes
3 Government Support			
a. Financial Support	Partial	If Provision is made next 5 year plan	Yes
b. Tax Concessions	Partial	Yes	Yes
c. Exising norms	Partial	Yes	Yes
d. Other helps	Yes	Yes	Yes
4 Money			
a. Support for SSI	Yes	Yes	Yes
b. Support for Ancillaries	Yes	Yes	Yes
c. Taxes Levied to be less	Partial	Yes	Yes
d. Other helps	Yes	Yes	Yes
5 Efficient Management			
a. Strategic Management	Yes	Yes	Yes
b. Middle level Management	Yes	Yes	Yes
c. Lower Level Management	Yes	Yes	Yes

Financial aspect:



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1. It is estimated that for the development of SSI for thirty thousand parts the turn over required is Rs.50000 Crores.
2. The fully indigenous technology development cost is estimated to be Rs. 50000 Crores.
3. The Government norms for this whole project can be eased only after its viability is tested. Encouraging factor in this project is that special provision is made for Collaborative efforts to develop the cars. The MNC has to invest Rs.48000 Crores (\$100 million) whenever it the collaborative plant is set up in India. Earlier till 2001 it was almost 1 Lac Crores (\$200 Million). Thus even smaller parts and subassemblies can even be developed in India with collaborations on if possible Built Operate and Transfer basis or with Transfer of Technology.
4. The project is viable only if the cars are indigenised in a phased manner.
5. Private firms are moving towards full indigenisation for their car. Tata Engineering have achieved maximum of it, which is almost 80%. For remaining 20% Tata Engineering has made provision of Rs.18000 Crores. MUL has achieved 65% but no such proposal of full indigenisation has been published, though in coming future it may be take over by the Indian firm as a Privatisation bid by the government.
6. The components requiring special attention in car sector are Engine, Gearbox, Fuel Injection system, Carburettors and few electronic components, which are still not fully indigenised. These components in turn are made up of few thousand small parts. So lot of money go out of India whenever a minor part among these components is repaired or replaced. This sum goes to Rs.25000 Crores annually.
7. Over the costly spare parts India loses additional Rs.10000 Crores annually.
8. There is no provision made for technology transfer. So, MNC carmakers are here in India for only profit making business. MNC sell has their proportion of almost 51% in India. Here also India



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loses, Rs.17500 Crores. Out of 6 Lac odd cars sold in India more than 50% of its profit goes to foreign countries. As at present all the Indian carmaker cannot manufacture more than two lac cars per year.

9. Government of India has made special provision for loan up to Rs.5 Lac for SSI development in 2001 Budget, and in 2002 Budget Government has reduced levied taxes for technical collaborations.
10. Due to Technical exposure of working with the MNC cars many bureaucrats and technocrats got used to with all the present technology and systems and has developed themselves up to international norms. Human resources thus need no major training for the new technology except for some frequent training if required. So huge remuneration is saved. This sum comes out to be in the range of Rs.500 Crores for the training of the MNC cars technical skills in India.





Thus for Viability of this project it required that Government and Technocrats, Bureaucrats and other concerned systems should work cohesively. Together only they can achieve the aim of developing cars according to Indian customers needs in India itself. It will save Rs.30000 Crores per year for India.

Table 2:

Some possible solution to the Problems in Total indigenisation:

SN	Problem of	Arising due to?	Respective Suggested Solution
1	Huge Investment	1.Complicated Technology	1. India has experts in development.
		2.Giant Technological Set-up	2.Division of Assemblies to Develop, ex. Vendors, Ancillary units, SSI, MSI, etc.
		3.Resourse	3.India has all resources in abundance
		4.Set up of Plant	4.Government and Institute must convince about the future profit to Investor
		5.Set up of Infrastructure	5.Many will come forward with good plan if Convinced by taking into confidence
		6.Awareness	6.If all the Indian Institution come together it is but a easier job for awareness drive
		7.Political Will	7.The most important part in India. So all Technocrat and bureaucrats must make it an issue.
2	Resources	8.Developing Technological Force	8.Here experts can develop the unemployed Technical force to become a mighty force
		1.Expert Human Resource	1.Since last few decades many Automobile Experts have developed, take help from them.
		2.Expert Technocrats	2. It is in the range of almost one million in India- from expert Mechanic to Scientists
		3.Expert Beurocrats	3.Bajaj, Telco, Mahindras, Kirloskars, Sundarams, Bharat, Escorts and many more are there.
		4.Expert Trainers	4.This force is present in the range of hundred Thousand In India.
		5.Location	5.The best will be Nagpur. Advantage being its central location.
		6.Expert Builders	6.Ircon, Rites, HB, ACC, L&T, etc. are always ready.
		7.Plant Machinery Experts	7.Mahindras, Telco, BHEL, etc. have experts who are well recognised by the whole world.
		8.Money	8.Special Provision must be made in the five year plan for indigenisation.
		9.Skilled Labour	1.Eighty percent of the required skilled





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		labour already present in India others will be developed on job.
--	--	--

Interpretation of the Table:

Following can be the Solutions over the problems in Total indigenisation:

1. If this project is developed, as a one-time project, then it requires huge amount of investment. Then it is possible only when, special provisions are made in the next five-year plan of India.
2. The best possible solution is if the project is developed in a phased manner. In this the collaborations are allowed for some stipulated time period. Like built operate and transfer method in other areas, the technology must also be allowed to be brought in India provided it is transferred in one decade.
3. Developing few parts indigenously and achieving total indigenisation in the coming five years.
4. In the wildest of ideas generated one best possible solution can be deciding once and for all by all the colleges and institutions and industries in India about development of this project. A part each will be given to certain number of engineering colleges, to industrial units and they have to develop the prescribed task within stipulated time frame. The task can be only design of a tiny part to small organisation and developing big casting can be the task to the big organisation. Only for the prototype, these criteria will be implemented thus giving lot of exposure to the students to the management levels of various institutions. This will make a tremendous atmosphere and lot of enthusiasm will be developed among the students and young blood. Everybody will come out with something new and this will be stored in the super computer and will be utilised at proper time while implementation. This can take from few days to few months a challenging exercise it can be. But it will be a fruitful exercise for the faster development of indigenously built small cars.

PART E:

A BIG QUESTION- IS THERE ANY DEMAND FOR THE INDIGINISATION?



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TABLE 3: Sales figure of three major small cars in the year 2000 and 2001.

OBSERVATIONS AND ANALYSIS OF THE TABLE:

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image as the best organisation in India. It provides the best services to all their customers thus now it is becoming a cynosure in the eyes of the MNC.

It also proves the heavy demand of the small car market.

7. *Conclusion: Thus Indian customer is demanding an indigenous car developed according to Indian customers demand and Indian conditions.*

Special Comments on future small cars demand predicted by SIAM:

1. In the Auto car India, September 2001, issue it mentioned that Tata-Indica has very top ranked potential to capture India market as it is the only car which is not borrowed from the International market from the foreign country but conceived in the Indian minds and is getting shape and structure according to the Indian needs. Though its all parts are not totally manufactured in India still they have been put on according to the demands of the Indian conditions.

2. Further Analysis with all the companies giving so many models will give us the that Indian customers have a demand of these kinds of models in near future.

Take an example of a MNC Hyundai Motors.

Hyundai is the Korean organisation manufacturing cars in Korea and also in various other countries having a base there.

Hyundai manufactures following kinds of car models and have touched almost every segment of car industry:

- a. Family car- Santro,
- b. Mid size car- Accent-Discover total Peace of mind,,
- c. Power paced machine for racing and sporting outlook- Accent Tornado,
- d. Luxury Sedan- Sonata Gold,
- e. Tuscani,





- f. Accent Rally car,
- g. HCD-6 ultra modern car,
- h. Terracan,
- i. Matrix,
- j. Elantra. Etc.

4. It is the case with Suzuki, Toyota, General Motors, Ford, Daewoo, Mercedes, Mitsubishi, and other automobile giants in the world.

5. At same time these MNC carmakers are bringing new models with totally new concept every year.

6. MNC have strong R & D set up to do this.

7. MNC are looking at India as the worlds' most lucrative car market in coming future.

8. MNC has increased their sell every year in India.

9. Now, look at the phenomenal growth and the demand of the Indian car market's demand for the cars.

10. Look at the hierarchy of the Indian customers for growing to further car syndrome; it clears that luxury cars sports cars, coupe, estate, sedan, kinds of cars will have stupendous demands in Indian car market in near future.

11. SIAM i.e. Society of Indian Automobile Manufacturers Association, have illustrated that in 2006, India will have turn over of almost one million cars per year. Out of these definitely eighty percent will be small cars only. As look at the chart of sales, India requires almost twelve thousand cars of luxury car segment. These are mainly manufactured in parent country of the MNC. Which costs almost Rs.2400 crores, in 2002. This will be around 200000 cars per year in 2006.

- This calculation further shows this figure to be almost Rs.5000 crores.
- That is significant sum of money.
- This also proves all these MNC made cars are siphoning money out of India.





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- If five years budget is made for these companies it can prove in future it can give a severe jolt to the Indian Economy.
- This also proves if in case these cars are manufactured in India they are going to give Indians reach dividends in future.
- This also proves Indian car indigenisation requires a significant boost.
- This also proves that there is heavy demand for Indigenisation, as these are the cars which Indian reach class society are buying and with rise in population this reach class is going to be significant in number.
- 80% of one million-car demand, by 2006 if GDP of India is 6% and above, is small cars demand. This figure is 800,000 and the turn over is Rs.110 Billion will be attained. This sum of money is four times bigger than the money required to set up a ultramodern set up to manufacture indigenous car in India.

12. So, if India has to grow its manufacturing capabilities for the quality car, and that too according to the growing market needs, which is influenced heavily by the customers needs and customers' services and customers' satisfaction.

Anyhow one million-car turn over what does it indicate? Also, Rs.110 billion by the 2010 is something that Indian Government cannot just overlook. It shows that Indian car market is second biggest in the world. So, it shows the growing demand for the small cars and it also supports the setting up of many indigenisation small car units in India. It also supports the cause of total indigenisation of small cars with respect to customer behaviour.

So the answer to 'is there any demand for indigenisation of small car with respect to customer behaviour' is:

Yes.



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2. REVIEW OF LITERATURE

Content of the Chapter 2

Topic No.	Topic
Part 1	India's first generation cars.
Part 2	India's second-generation cars.
Part 3	Present performance survey of cars on Indian roads.
Part 4	Growth of the cars sells in India.
Part 5	Manufacturing Details of the Indian cars

Part 1: India's first generation cars:

Ambassador by the Hindustan Motors and Fiat-Premier Padmini by the Premier Auto limited were the only two Indian car-manufacturing companies. Thus, there were only these for the Indian customers till Maruti-Suzuki entered the pulsating Indian car market in 1980's.

Earlier in 1942, Hindustan Motors (HM) launched the Ambassador the most popular car of India as being well built according to the Indian road conditions. It is the ruggedly built for all terrain conditions of the India. It has big acquiring space. Indian customers give very much importance to durability of the product, and Ambassador has all the characteristics to fulfil customers' demands. So, Ambassador is still surviving in the Indian Car Market. Though its sales remained constant till date, still its percentage share in the present car market got reduced drastically.





On the other hand, PAL-Fiat is also a tough car with somewhat less seating capacity as compared to the Ambassador. It is more compact than Ambassador. The organization also gave the similar services like the HM-Ambassadors did.

In this hegemony of Ambassador and Fiat-PAL four wheelers bipolar market in India, for four long decades buyers did not have any choices in this small car segment.

There used to be long delivery periods of vehicle even if after paying the full advance. Consumers used to wait for at least a year to get their already booked vehicles. Customers could not get the cars even if they were ready to pay double the price of the vehicle.

Therefore, all the time sellers dictated the terms and the conditions in the market. The after sell services were also been dictated by the authorized service stations.

First revolution in the four-wheeler small car market took place in 1980's when Maruti-Suzuki (Maruti Udyog Limited-MUL) entered with the well-planned set up of authorized service stations and dealer networks.

Part 2: India's second-generation cars:

This revolution had a big impact on the Indian vehicular market.

HM-Ambassador and PAL-Fiat tried to catch the pace of Maruti Udyog Limited endeavours.

Later on in 1994, honourable finance minister of India Dr. Manamohan Singh with his Globalisations crew opened the floodgates for many more Multi National Companies (MNC) car manufacturers.

By this time MUL had spread its roots in the Indian car market, HM-Ambassador kept its sustainable growth.

Tata is the biggest brand name in India. Tata Engineering in the 1998 entered into the car market with Tata Indica as self-proclaimed most indigenous vehicle in the Indian market. By the end of 2002 A.D. Indian





market, have more than a dozen small carmakers India's Indigenous as well as the carmakers as the Multi National Companies (MNC).

Similarly, in the two-wheeler segment conditions were not different. Bajaj with its adopted Vespa-Scooter model ruled the Indian roads, till Hero Honda hit the roads and captured much luring two wheelers market. Over all review shows that it was monopoly of Bajaj two wheelers. In the peak of the cases, Bajaj two wheeler customers had to wait for more than five years. Whereas Hero Honda is making waves in the market as it has sold its one-millionth vehicle within the span of one decade. So, Bajaj two-wheeler organisation expanded its segment by fragmenting it to mopeds, scooters, motorbikes, and customers' response was overwhelming. Hero-Honda was also a popular motorbike within the customers in its segment.

Thus, with advancement in time the market for four wheelers as well as two wheelers never remained sellers market but it has become a buyer market. Because of this a continuous improvement in the quality of the product is required along with the reasonable cost. Similarly after sells services are also required. With the consciousness of the customers for quality the introduction of ISO-9000-2000, ISO-14000 and QS-9000 came into practise in all the big companies, which is very important to compete in the market.

Part 3: Present performance survey of cars on Indian roads:

Now a day, the companies' motto is not to sell the car but to sell the satisfaction. Thus, the customer's delight and satisfaction are main concern of the companies. The following companies are manufacturing the small cars, which are widely used on the Indian roads, as shown in Table 1.

TABLE 1: Market Share of Cars in India as on 1st March 2002. [1]: Reference- Overdrive Magazine.



SN	Organisation /Abbreviation	Collaborat ion	Model 1/ Year of launch/ Present Price Rupees In Lac	Model 2 Year of launch/ Price Rupees In Lac	Model 3/ Year of launch/ Price Rupees In Lac	Model 4/ Year of launch/ Price Rupees In Lac	Market Share in yr. 2000: No. of cars sold	Market Share in Yr. 2001: No. of cars sold
1	Hindustan Motors/ HM*[2]	Mitsubishi/ Eicher, etc.	Ambassador/ 1957/ 4. 53	Contessa/ 1988/ 5. 31	Lancer/ 1998/ 8. 71		27792	23031
2	Premier Auto limited/ PAL-Fiat *[3]	Fiat	Uno/ 1994/ 4. 00	Sienna/ 2000/ 7. 87	Weekend/ 2001/ 7. 90	Palio/ 2001/ 5. 13	21000	7200
3	Maruti Udyog Ltd./ MUL *[4]	Suzuki	Omni/ 1984/ 2. 56	Maruti 800/ 1988/ .3. 5	Maruti- Zen/ 1994/ 4. 50	Esteem/ 1995/.5. 92	363200	349770
			Baleno/ 1999/7. 65	Alto/ 2000/ 4. 00	Wagon R/ 2001/ 4. 90	Versa/ 2001/14. 00		
4	Hyundai India Ltd. *[5]	Hyundai	Santro/ 1998/ 4. 24	Accent/ 2000/ 7. 25	Sonata/ 2002/16. 00		84004	72780
5	Daewoo *[6]	Daewoo	Ciello/ 1994/ 6. 00	Matiz/ 1999/ 4. 33	Nexia/ 2001/ 6. 87		54034	24747
6	Tata Engineering *[7]	Hitachi, etc.	Indica/ 1998/ 3. 34	Sedan/ 2002/ .6. 50			63089	49876
7	Mercedes Benz *[8]	Mercedes	E class/ 1998/ 33.00	S class/ 2000/ 52. 76	MB class Van / 2001/ 15. 00	C 180/ 2001/ 22. 80	3609	4801



8	Escort Ltd. *[9]	India Ford	Ikon/ 1998/ 7. 75				17868	12484
9	Kirloskar/ Toyota *[10]	Toyota	Corolla/ 2001/ 14. 00	Camry/ 2001/ 22.00	Daihatsu- Sirion/ 2002/ Rs. 12. 00			2200
10	General Motors/ *[11]	GM GM	Opel Asrta/ 1994/ 10. 88	Opel Corsa/ 1999/ 7. 50			3057	8703
11	Honda Motors *[12]	Honda	Accord/ 1988/ 15. 00	Siel/ 2000/ 7. 85	City/ 2001/ .9. 88		12012	13212
						Total Sales	638000	590000

Interpretation of table:

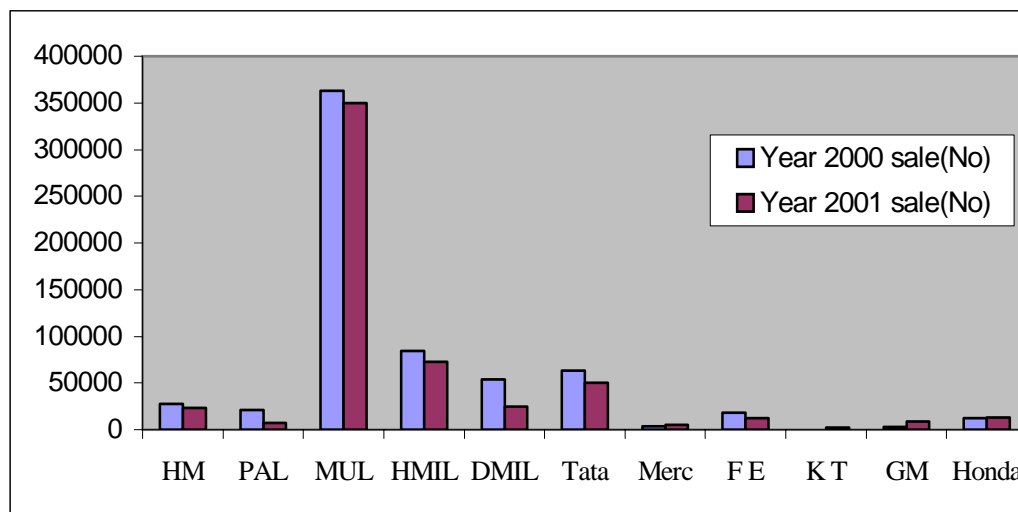
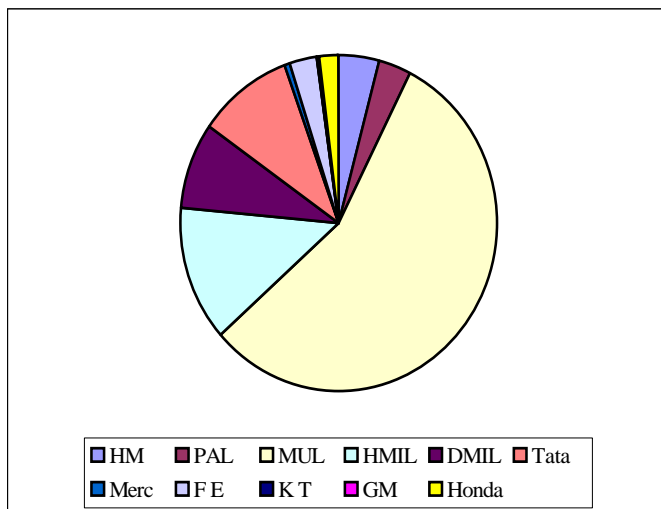
Note 1: Number in the bracket '[1, 2, etc.]' denotes the reference listed at the end of thesis, ex. Economic Times dated 17th March 2002, and Monthly Magazine Autocar-India, January 2002.

Note 2: There are even subclasses in this table which are not included in it. Like car with a. c. version, diesel version, petrol version, luxurious electronics fitted version, etc.

From Table 1, it can be observed that there are in all eleven major organisations in India, in a competitive car market. It can be observed from above data that out of these companies, only MUL have introduced eight different models within the span of 18 years (1984 to 2002). In contrast to this, PAL has introduced only four models within the span of 52 years (1960's to 2002) and HM has introduced only three models within the span of 60 years (1953 to 2002). **Table and Graph Associated with it:**



Company Name	HM	PAL	MUL	HMIL	DMIL	Tata	Merc	F E	K T	GM	Honda
Year 2000 sale(No)	27792	21000	363200	84004	54034	63089	3609	17868	0	3057	12012
Year 2001 sale(No)	23031	7200	349770	72780	24747	49875	4801	12484	2200	8703	13212
% sell in 2001	4.05%	1.27%	61.49%	12.79%	4.35%	8.77%	0.84%	2.19%	0.39%	1.53%	2.23%



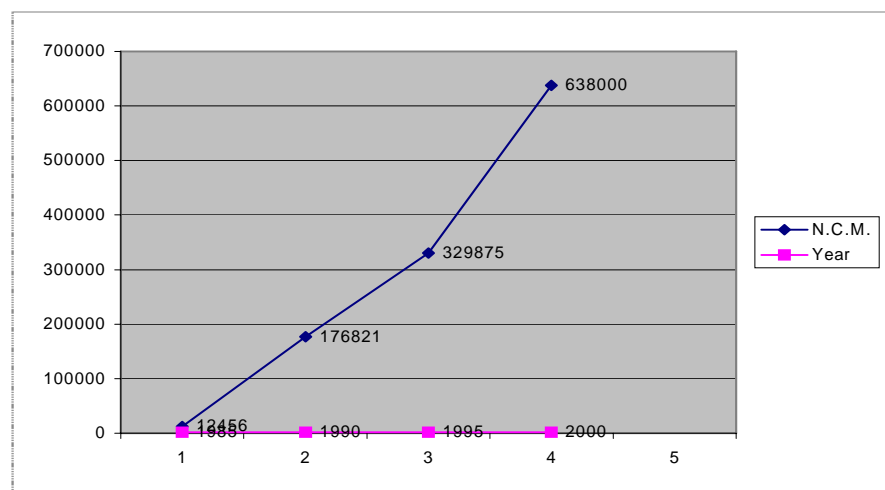


Interpretation of the Table and the Graph:

It can be clearly seen from the Table 2, that MUL is having 61.49% highest share in the market. This is because of the continuous improvement and market surveys to check the requirements of the consumers and do the necessary modifications as per their needs, which is very essential in today's competitive market. Still, many more car manufacturers are interested in introducing their cars in the Indian market.

Part 4: Growth of the cars sells in India:

From Table 3, it can be observed from above data that selling of cars in India has risen from 1985 (102456 units) to 2000 (638000 units). This is represented in the Figure 2 below: (*Reference: Monthly Magazine-Auto India- August 1997*)





Interpretation of the graph:

Thus, the trend is increasing. Since 1985, the demand and supply of the small cars is increasing with extreme curve. This shows that there is a future scope for the cars in the growing market. So, it is very much essential now a day to concentrate on the needs of the customer and develop the cars accordingly.

In, 1985 it was only in the range of one hundred thousand. But now it has become six times of that and in the 2010 A. D. Sales will touch one million mark is what has been predicted by SIAM.

Actually the growth is parabolic showing tremendous increase in the cars demand. Avenues to earn money have increased due to industrialisation of many sectors in India.

Middle class is estimated to touch almost 600 million in the year 2006 A. D. out of them one million can afford to by a car by that time.



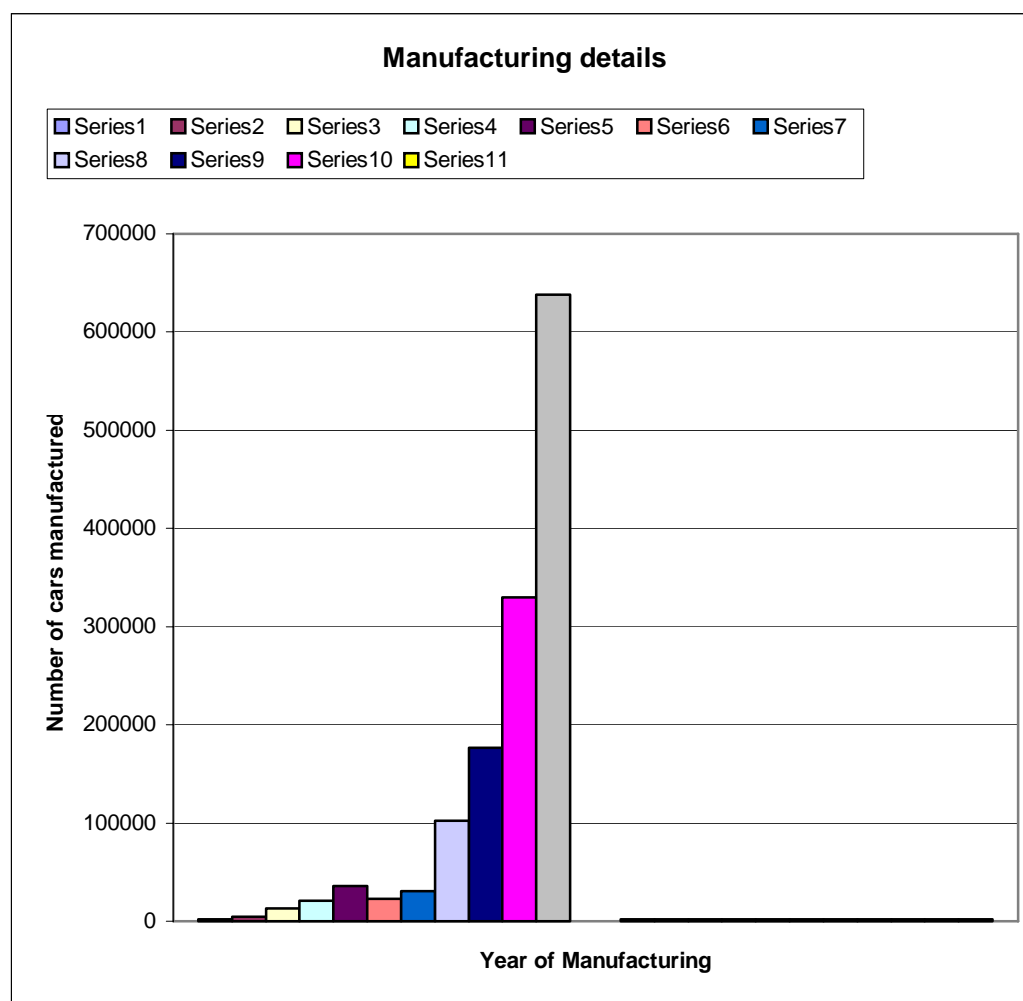


Part 5: Manufacturing Details of the Indian cars:

Now let us see how many cars were manufactured in India since 1950 till the 2000.

The trend clears the pathway for the indigenisation of small cars with respect to customer behaviours. The phenomenal growth in the car industry and customer demands is seen in the **Table below: Manufacturing details of cars in India since 1950 to 2000.**

Car mfg	1800	4500	13000	21000	36000	23075	30538	102456	176821	329875	638000
Year	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000
Series	1	2	3	4	5	6	7	8	9	10	11





Interpretation of the Graph:

1. There is steady rise in the car supply than its demand, till the year 1985, can be seen.
2. With increase in production in the Maruti Udyog, 1985 saw first above one hundred thousand (One Lac) per year productions, and matching sells figures.
3. With almost all the major car MNC in the world entered into the Indian car market in 1993, car manufacturing touched the two hundred thousand (Two Lac) production figures a year due to extreme competition.
4. With implementation of Fifth pay commission and increase in salaries of the executives, and as a demand for status symbol satisfaction, car manufacturers touched Three Hundred thousand figures a year.
5. In 1996, it touched four lacs and in 2000 the cars manufacturing figures touched the over six lacs mark.

Maruti with its excellent servicing centre network, Mercedes with complete delight, Ford with world class cars, Daewoo with the best technical car, Hyundai with complete peace of mind car and services, Tata engineering with Tata Brand and Quality services has also tried to relinquished the demand of Customer Satisfaction.

This aspect of customer satisfaction and steps to be taken by car manufacturer to achieve this one is discussed in Chapter No.3.



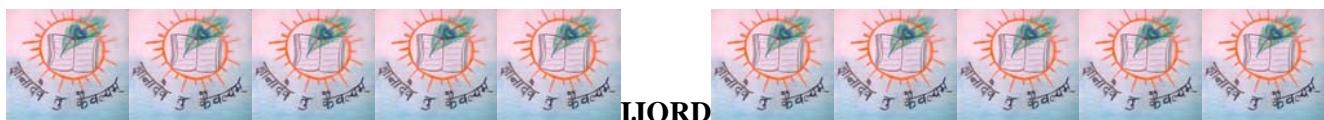


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CHAPTER 3. CUSTOMER EXPECTATIONS IN THE M.N.C. DOMINATED MARKET

Content of the Chapter 3

Topic No.	Topic
Part 1	An Eagles eye view of awakened and alert Indian customers.
Part 2	Strategies Adopted by MNC: First Phase: Market Research and R & D at every level.
Part 3	Second Phase: Planning and healthy budget
Part 4	Third Phase: Attracting internal and external customers.
Part 5	Fourth Phase: retaining customers.
Part 6	Fifth Phase: Trying for total Customer satisfaction.
Part 7	Present Outlook of the Indian consumers.



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An Eagles eye view of awakened and alert Indian customers:

Customer word has developed a thorough meaning now a day. Customer means internal customers of the companies i.e. employees and shareholders and those involved in the companies everyday affair where as external customers means the consumers who are using the products of that organisation.

In 1980's PAL and HM lost its big share to MUL. After 1994, with the effect of globalisation, MUL lost its big share to companies like Hyundai, Fiat, and Daewoo. After 1998, these all companies lost their share to Tata Engineering. But still Indian consumers feel that there is a huge share that (Multi National Companies) MNC has captured in the Indian car market.

The competition probed by the MNC car manufacturers was too high. Indian grand-old carmakers like PAL and HM could not face it with there monotonous activities. Because of this, in 1998, PAL had to close few of its units in Pune, Mumbai, and Thane industrial sector.

From the following aspects consumers started feeling that MNC exploit the Indian Resources well to the core. Though they did not know thoroughly, why?

Later on, studies revealed that many of the MNC adopt following strategies to capture not only Indian market but also other markets in the world. It's not a blame game to any country or any organisation, it's a statistical analyses and facts and figures. I've also worked in MNC's but observation and facts speaks volumes. The example of Ford, who made 55 volumes almost 55000 pages study before entering the Indian Market is known fact, in which Ford not only analysed the education system but also the health system and government systems that have direct impact on their business.





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STRATEGIES ADOPTED BY MNC:

FIRST PHASE: MARKET RESEARCH AND R & D AT EVERY LEVEL:

The MNC are mainly based in USA, Japan, Korea and West Europe. They carry out pre-launch market research.

The research includes-

- ❖ Macro Economic survey of the country,
- ❖ Micro Economic conditions of the competitors,
- ❖ One of the MNC study revealed the consumer expectations and their buying behaviours in market where MNC that is trying make its presence felt. Following points make it clear about the preparations MNC carry out while studying personalities of that market. They study:
 - Habits of majority of consumers,
 - Buying behaviour of most of the consumer in that period of time,
 - Is the kind of car consumer demanding is been marketed?
 - What is the approach of life of most of the consumers?
 - What is the consumer attitude in particular buying behaviour?
 - In broader perspective how many kinds of consumers the market has?
 - Then how to tackle many kinds of personalities and persuaded to buy our car?
- ❖ Faults in the competitors,
- ❖ Media support and Advertising systems of the existing competitors,
- ❖ The services and the Dealers network of the indigenous organizations and the other MNC competitors,
- ❖ Collaborations to be made if any,
- ❖ Survey of Technical know-how and the educated human resources or skilled workers availability,



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- ❖ They check the resources to carry on the business successfully including man, material, machinery, money, and mentality to buy their product.
- ❖ They do presale survey of the existing product and the post sale feed back as well. So, that there product may be launched successfully. In this category MNC takes the broader perspective of the market. They try to know the intermediate market needs as well, look at the table.

Table 1. Shows Intermediate Market Buyer's Needs in the small car market:

Organizational Needs	Personal Needs
1. Delivery reliability	1. Personal security
2. Quality in relation to price	2. Recognised status
3. Post sale installation and assistance.	3. Acceptance of other organisational members.
4. Variety of product offerings	4. Achievements on the job.
5. Efficiency of purchased items	----

Interpretation of the graph:

R & D at every possible level is carried out which affects the small car market.

- ❖ Government norms are also taken care.
- ❖ MNC carry out survey of buying behaviour of the consumers in that country. It has been observed that the studies include following factors in the table:



**Table 2: Factors affecting buying behaviour of small car consumers in that country:**

Cultural	Social	Personal	Psychological
Culture of that country	Reference group	Age and life cycle stage	Motivation
Sub cultures	Family	Occupation	Perception
Social Stratification	Roles and Status	Economic Circumstances	Beliefs and Attitudes
--	--	Life style	Learning
--	--	Personality self concept	--

Interpretation table:

Customer satisfaction means the level of a person's felt state resulting from comparing a product's perceived performance in relation to the person's expectations.

MNC before entering into the market know in details the total psychology of the customer in the country they are going to do business, right from the personal to the social level. This study of consumer behaviours helps them target their customer in a better fashion.

SECOND PHASE: PLANNING AND HEALTHY BUDGET:

To go further we must know that these MNC have yearly turnover of more than Gross National Product (GNP) of many countries. In The Hindu, 8th May 2000, GNP of India has been given to be USD 427 Billion.





Now let us see the turn over of these MNC car making organizations:

- General Motors (GM) of the USA has yearly turn over of USD 135 Billion.*[1]
- Ford Motors of USA has yearly turn over of USD 130 Billion.*[2]
- Toyota corporation Japan has yearly turn over of USD 98 Billion,*[3]
- Mitsubishi Japan has yearly turn over of USD 95 Billion,*[4]
- Mercedes Benz of Germany has yearly turn over of \$80 Billion.*[5]

Considering this vast experience and the amount of profits these organizations can shake the economy and car market of any country.

Similarly, these MNC spend almost five percent of their annual budget on the advertising of pre-launch and on post launch campaign as well.

Many MNC like GM, Ford, Pepsi, Coca-Cola, etc. sponsor many of the major events in the country where they work or launch their product specifying clearly the advantages of their product over others, may it be even false claim, but to capture market they adopt new and innovative methods. It has been observed that these MNC rule the economy of many countries as well, or otherwise that countries' economy loses its shape and size. E.g. Economy of Mexico buckled under pressure of MNC in 1996 and for the same reason Economy of Argentina crumpled in the year 2001.

Thus, MNC make their presence felt every time in every field, small car business is one among them.

1. There are companies who make the things happen.
2. There are companies who watch what is happening?
3. There are companies who wonder what has happened.

THIRD PHASE: ATTRACTING INTERNAL AND EXTERNAL CUSTOMERS:





- To, capture the market the MNC adopt any of the managerial activities and any of the tricks adopted earlier or the new one suiting to that present situation.
- The carmakers like Mercedes, Ford, GM, etc. have very high remunerations and perquisite packages for their employees. It can lure any talented mind.
- Target oriented achievement award is but a common phenomenon in MNC in the event of any big expansion of their previous base. Any individual achieving it is always been presented with hefty sum and other advantages to that employee as well.
- These were only the dream perquisites for the employees and the technicians in India earlier.
- To retain good internal customers these MNC go at any stretch. Many MNC has offered the shares up to 1% stake to as many as 20 odd good technicians in the computer organizations. Many offer a house with all five star facilities including swimming pool and the luxurious cars with petrol. Many offer Medical reimbursements, book allowance, newspaper allowance, laptop computer allowance, etc. The surprising fact is many Indian employees got lured with these facilities and left their earlier government employed job as they compared the sum earned to the amount paid at MNC in a year in their whole life. Such is the glamour, money and attraction MNC put in the job offered for their companies.
- When we study these MNC in details we find that they have one or more common organisational objective among the following:
 - a. Maintenance of industrial leadership,
 - b. Services to customer,
 - c. Growth,
 - d. Long run profit increase,
 - e. Favourable public image





- f. Diversification of corporate activity,
- g. Employee welfare and satisfaction,
- h. Securing a balance between Government, domestic and foreign business,
- i. Enlargement of size of market,
- j. Developing new technology to benefit customers, etc.

FOURTH PHASE: RETAINING CUSTOMERS:

This forms the very important step. It is the step in which the multinational carmakers like GM and Ford from USA and Toyota and Mitsubishi from Japan give their customers new model of the car every six months.

- MNC carmakers bring out a totally new version of a car or an advanced version of that car in the market.
- The old version of car is given special concessions to upgrade the newer facilities.
- Many a times new version of car has very attractive features and customers are given special discount to sell the old version and to replace it with new car model.
- Thus resale value concept is aptly utilised.
- These multinational carmakers are spending huge amount of their annual budget, on the Research and Development (R&D) i.e. GM spend almost 7% of their annual budget, Ford spends 3%, Honda 5%, Mitsubishi 3%, Mercedes 7%, and so on.
- The workers are given incentives and awards for the development in any sector of the car manufacturing, sell, process.
- Infact look at the marketing objectives of all these MNC they have at least one among the following marketing objectives for which they strive the most:
 - a. Establishing new customers,





- b. Develop new product with high quality of customer satisfaction,
 - c. Develop new kinds of services,
 - d. Decrease the cost of services to customers,
 - e. Increase the public awareness of the company activities,
 - f. Increase the awareness and availability of product,
 - g. Servicing and retaining old customers,
 - h. Welfare of hardworking marketing department,
 - i. Establishment of an image for the firm, division or product.
 - j. Move from consumer satisfaction to consumer delight, etc.
- Whereas, in India HM and PAL are running their 1940's model. The R&D spending are almost negligible since last half a century.

Now these companies have also realised these facts and are upgrading themselves up to this standard set by these MNC carmakers.



**FIFTH PHASE: TRYING FOR TOTAL CUSTOMER SATISFACTION:**

- These are the days of customer care. Customer is a king. The carmakers like Hyundai, GM, Ford, Mitsubishi, Toyota, Daewoo give value for the customer money at every step. Infact they try for the Total Customer Satisfaction (TCS). The Mercedes people actually sell delight to their customers. To, elaborate this, it is necessary to look at the services given by these organisations. The services given for the Preventive Maintenances include periodical servicing of the car, periodical check up and replacement of the parts.
- The services given for the Breakdown Maintenances are phenomenal. These organisations give twenty-four hours services to these emergency needs; which includes accidental services as well.
- Every time customers are given home delivery option.
- The timely deliveries of the serviced cars make customers feel they are really the bosses.
- Financial help is also given for buying and yearly maintenances.
- Thus, in this phase every giant MNC follow the kind of model, which is predicted below. They target customers and fulfil their needs till that customer gets the satisfaction or even MNC try for total customer satisfaction even customer delight as in case of Mercedes-Benz and Rolls Rice.

Look at the diagram what exactly MNC adopt while targeting the customers.



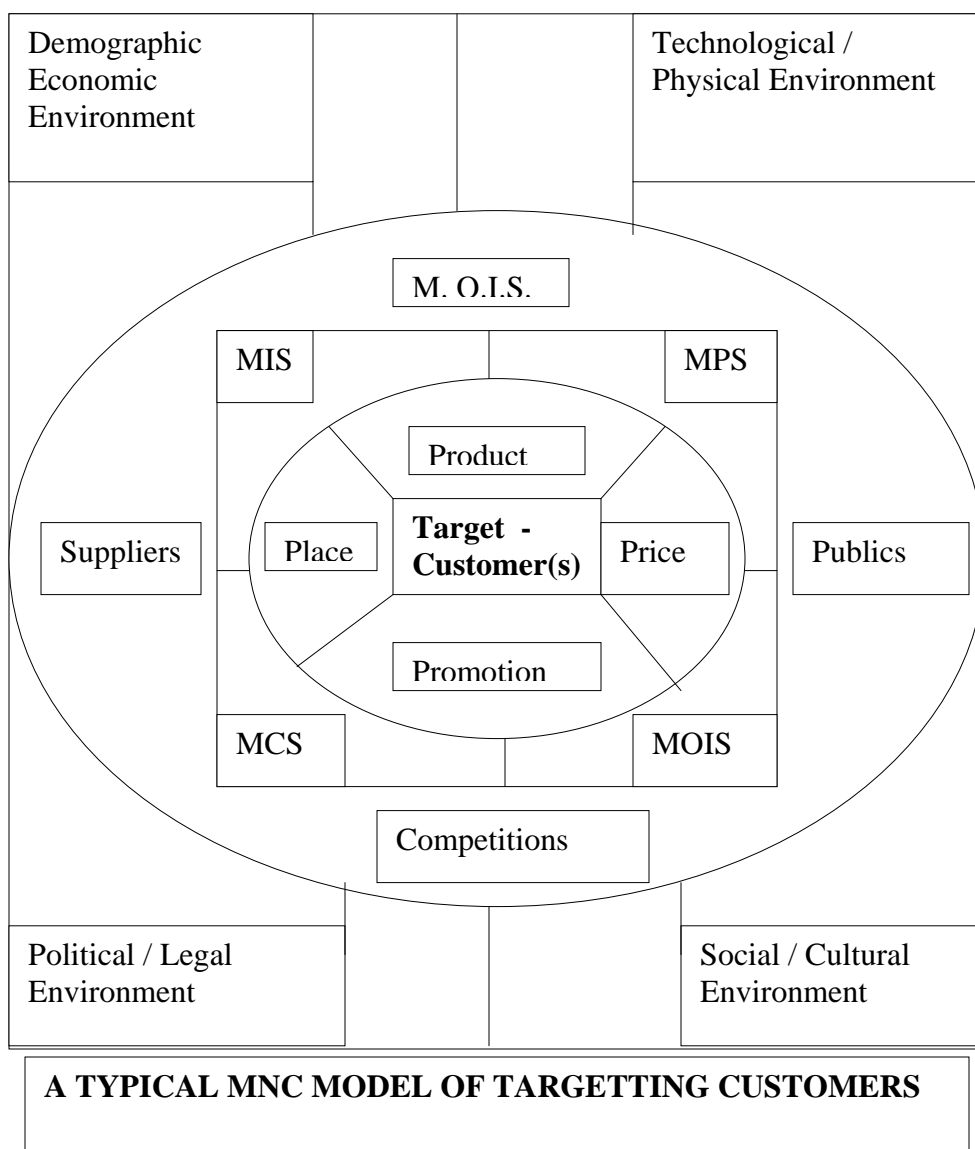




Diagram Description: Please read, MIS = Management Information system,

MPS = Marketing Planning System, MOIS= Marketing Organisation and Implementation System, MCS = Marketing Control System.

Diagram Interpretation:

Look at the importance given to customers by the General Motors Inc. USA.

As shown in diagram customer is the centre of focus and customer satisfaction is the prime target of the organisations. All the four P's Product, Price, Place, and Promotion that is the marketing mix is targeted towards this only. Organisations adopt an interrelated MIS, MCS, MPS, and MOIS, to arrive at better marketing mix. The MNC adapt and adopt all these at micro as well as macro level of its strategy of working. Hence they are successful in international market.

- The Resale activities are also done by MNC for their own cars.
- Replace old car with the new version option by the MNC really make them invincible in the market anywhere in the world.
- Customers get what they expect at every level of their life associated with their car.
- Many middle class professionals like Chartered Accountants, Doctors, Engineers, Pharmacists, Professors, Shop owners, are given three years contract of free servicing.
- Thus, Multinational Companies have realised the following importance of customer satisfaction over a period of time and their business since their inception:
 - a. Faithful customers lead to higher profit margin,
 - b. Satisfied customer result in contended employees,
 - c. Retaining customer is cheaper than acquiring them,
 - d. Product may change but customer will remain for longer time,
 - e. Only a satisfied customer will stay with the company,





f. In modern days, providing services to customer is more important than selling products.

Present Outlook of the Indian consumers:

1. Though the share acquired by the MNC carmakers is huge still Mr. Ratan Tata the CEO of the Tata Engineering and Mr. Keshub Mahindra the CEO of the Mahindra and Mahindra predicts that it is but a temporary phase. In long run the scenario will be totally different.
2. Many of the Suzuki cars owners feel that Japanese cars cost less. But, the costs of spare parts are high compared to the cost of Indian indigenously made cars and spare parts as well. For example, Headlight of the Maruti-Suzuki cars are sold at whopping Rs.300/= where as the Tata-Indica headlight bulb cost only Rs.40/= a huge cost difference.
3. With every six months new version of the cars are added by the MNC carmakers. So their customers who are mainly middle class are made to feel that every after three year his car is outdated. No customers want this inferiority complex as every commodity bought at such a huge sum in India is supposed to be a lifetime acquirement in the house.
4. Even after the costs are reduced every now and then and excise duty is reduced still all the MNC made cars cost more by 40% higher than the cost of the Indian made cars. E.g. Tata-Indica costs Rs.313500/= where as Daewoo costs Rs.414000/=.
5. MNC carmakers invest huge amount in the Robotics, Automation, and Computerisation while developing the cars and Manufacturing. Thus, the most conscious consumer in India has realised that it is but a total exploitation of all the Indian resources. Thus the all-important customers feel that they will also get exploited in the long run.
6. In a huge survey carried out recently the MNC car buyers have decided to shift to the Indigenously made cars provided the indigenous carmakers give the same kind of services to these customers.





Especially mentioning the Indian indigenous companies are trying hard to achieve this competition level and so customers have started the shift to these indigenous cars.

7. Consumer behaviour shows that in this car market consumer is but the king, the boss. Loss of one customer is but the loss of many more in the explosion of the Information age.

The day is not away when the consumer will dictate the terms about how the car should be, which engine it must have, which colour his car must be painted, which gear box his car must have, which steering system car must have, which shape the car must be given, etc. Whatever the services rich Rolls Rice owners are getting may be in future the common car owners will also get. It will be a big revolution in the car market.

8. Car consumers in India have started speaking about siphoning of money out of India by the MNC carmakers.

9. Few consumers feel that buying a MNC foreign made car is but buying a dependency on that country. As every now and then consumer has to look for the product from that hub country.

- a. In a broader perspective Indigenisation of each and every part of the product gives the Indigenous Technocrat, Management personnel, Services personnel of the cars will make the Indian consumer get their value for the money and satisfaction at lower price.

- b. This means the job prospects for the Indian jobseekers will increase. All the resources will revolve in India only. If exported it will bring all-important foreign currency to India.

- c. Keshub Mahindra and Rahul Bajaj feel that within the span of two decades few of the Indian Indigenous carmakers will become huge multinational organisations.

- d. The technology developed by Indians supposed to the cheapest in the world. E.g. Car made buy Tata Engineering is the cheapest in its class, Satellites developed by DRDO are the cheapest in the world, Super Computer developed buy the CDAC is the cheapest in the world, and so on.





11. One survey revealed that all the Indian consumers are expecting totally Indian made car to dominate the Indian car market. Customers are also expecting the services at much cheaper rate than the MNC charge for the same activity. As customers feel that to satisfy consumer expectations, the MNC charge hefty sum of money, which Indian middle class and majority car owners cannot afford after some time limit.





4. WHY INDEGINISATION OF SMALL CAR ONLY?

Content of the Chapter 4

T. N.	Topic
1.	The Hypothesis of why indigenisation of small cars only,
2.	Interpretation of hypothesis,
3.	Advantages of developing Indigenous car with respect to customer behaviour,
4.	Concerned shown by the big players,
5.	Experts' Opinion- survey Report,
6.	The challenges and opportunities
7.	Major Reasons of Domination of MNC in the Car market
8.	Solutions suggested to tackle Giant MNC dominated market
9.	Major players in the R & D for vehicle in India
10	Industrial Associations in India attached to the automotive sector
11.	Exercise Needed,
12.	Checking Are the resources available?
13.	Warning.
14.	The Exceptional Efforts are needed at the Technological Front.
15.	The Root cause,
16.	Using expertise of the Existing Automobile Industry of India,
17.	What are the results of Indigenisation of small car technology?
18.	These Befitting Examples prove the need and the advantages of the small car indigenisation,
19.	What are the efforts needed in this context?





20.	Few more steps, which can be followed, are given below.
-----	---

1. THE HYPOTHESIS OF WHY INDEGENISATION OF SMALL CARS ONLY?:

The Super Computer forms the most complicated technology in the field of Electronics. This in turn is the latest branch of Science. Where as Automobile is an older Technology which Indians have digested and assimilated since last fifty years. So, if India can manage breakthrough in the latest branch of Science then why cannot in the basic and important old form of science? They can they should and they will. They can manage to carry out Research and Development in the small cars according to the Indian customers' needs and according to the Indian conditions, they can Design and manufacture the Automobiles right from the Engine, Gear Box to the Tyres and also manufacture them at par with Americans and Japanese cars as well. The Indians can manage to pursue this task by utilising all their indigenous resources to satisfy the small car customers' needs at all fronts from individual to national and humanitarian level.

OR

Indian engineers, businessmen, executives, and from students and knowledgeable customers to all the other decision makers can built the small cars which comes under Light Motor Vehicle section of RTO Rules, totally indigenously using all the indigenous resources, of the latest world standards; and can manage its perpetual success at all the levels in the global competitive market. Similarly, with the bench marking, Indians can achieve the same goal in the other allied fields too.



**2. DESCRIPTION OF THE HYPOTHESIS:**

Please remember, this form of Small Car Automotive Technology also forms the basics of many other technologies right from manufacturing Heavy Machineries and Space Shuttles kind of Vehicles to the most advanced Medical Technologies. Henceforth, Bharat can enter successfully into every other possible field of Higher End Technologies.

Here, Researcher firmly believes that the small car can become a smaller part of this giant project of Technological Advances and self-reliance of Indians.

Since his student age, researcher is interested in developing and manufacturing indigenous Indian cars with using all Indian Resources. Researcher firmly believes that Indian Scientists, Engineers and Managers, Businessmen and Consumers can develop their own technologies using their own resources any time if they wish and if they come together. Now, may be, this is the write time to start this venture.

3. Advantages of developing Indigenous car with respect to customer behaviour:**Table 2:**

SN	Real Advantages to the nation if the car is properly built indigenously
1	Flow of money towards India
2	More Revenue Generation due to repeat orders, due to customer satisfaction.
3	Employment Generations are in millions
4	Huge Industrial Development
5	Self Reliance at the Technology Front form the basic to the higher end.
6	Supporting Services get the moral booster
7	Research and Development supports higher end Technology
8	Patriotic Feeling among the users
9	Communication is much easier if the technology is locally made
10	Service Centre Network has easier access
11	Development of Technically Skilled people is faster as happened with Bajaj
12	Cheaper access of the Car to more and more people
13	Cost of spare part is lesser than the foreign made cars
14	Complaint if any can be conveyed immediately in the national language.
15	Immediate action and implementations inside the nation.
16	All local country Factors considered while developing the vehicle





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17	Profit to indigenous company is utilised inside for further development
18	Timely availability of reliable spares, related technology and services by Indian Indigenous technicians
19	It can achieve cost reduction and ensure timely supply of parts and components Through encouraging domestic manufactures and supplier may Just In Time.
20	Saving of Foreign Exchange
21	Developing more advanced technology in car sector which can be used else some other allied fields as well
22	Contribution towards expansion, diversification, R & D and stricter Quality norms among the domestic industries.
23	India having huge domestic resources and expertise in every field. Indigenisation of small cars with respect to customer behaviour will mobilise these resources.
24	Circulation of money inside India only

Interpretation of Table: It is an independent survey.

1. The small car customers supposed to be most quality conscious, service conscious, and time conscious so when Indigenous resources with indigenous product provide them these they will feel the King customer consciousness. So more Indigenous customers will buy the same car and thus circulation of the money inside the country will give tremendous boost to the Economy.
2. Genuine efforts of the Manufacturer and the supplier, service industry, R & D sector, Quality and Finances will be strong enough developed to compete the MNC domination in the market.
3. Even MNC took more than forty years to get on to these stages.
4. If few parts are suffering Quality aspect then they will be taken care of and will be made to the befitting soon with the efforts of Research and Development.
5. More awareness programs like seminars, pamphlets distribution, Research and Development projects, advertisements, monthly reports, articles in the journals, etc. can make every kind of customers including those who only once watch the advertisement can improve the required indigenisation program a boost.
6. All old and new measures for cost effective technology building like Total Quality Management,



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Reengineering, Business Process Reengineering, Operation research, will be generate interesting industrial results.

7. Standardisation of the cost estimation and pricing will give the transparency in the industry.

8. Joint effort of the SSI, MSI, will bring cohesiveness in the industry increasing bench marking and exchange of ideas through practices and thus improve the industry.

9. Government and the industrial bodies will seat together and solve the problems as if it is the national problem.

10. Huge employment generation will be there as each part out of thirty thousand odd parts of the car can generate almost two hundred odd jobs and thus generating at least a million jobs. This is discussed later.

11. Service industry will get the boost.

12. Vending and sub vending will percolate the technology know how among the local and indigenous people thus even road side garage can repair the car in emergency.

13. Huge foreign exchange will be saved as a part of indigenisation all resources will be Indian only. So circulation knowledge and money and services will be of Indian origin only.

14. Customers and hence Indian citizens will be of prime concerned in this project.

15. Fast services means more customer satisfaction.

16. Profit generation will be percolated in the society or may be invested in other projects, which will have ultimate destination India only.

17. As local strategic managers and board of director means indigenous people on the higher posts and even at the worker level will benefit the indigenous people only.

18. Least exploitation of Indian resources from the foreign body.

Let us see more views on this from the bosses in this field who are masters in their field.

4. CONCERNED SHOWN BY THE BIG PLAYERS OVER THIS ISSUE:





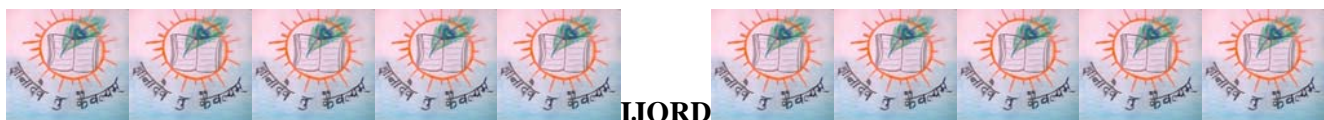
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Reference:

1. Indigenisation of IAF conference OCTOBER 2000- 2001, Ahemedabad.
2. Excerpts from program conducted on Swadeshi i.e. Indigenisation, from various Daily News papers.
3. Advertisement of various auto industries like Mahindra and Mahindra, and Tata Engineering.

TABLE 3. CONCERNED SHOWN BY THE BIG PLAYERS

S. N.	NAME OF THE BIG PLAYER	INDUSTRY & OCCUPATION	HIS REMARKS OVER INDIGINISATION WITH RESPECT TO MARKET FORCES/ BENEFIT TO NATION/ CUSTOMER BEHAVIOUR.
1.	Mr. Ratan Tata	M.D. Tata Engineering	He has claimed Tata were the first to start indigenisation in the steel and has invested in 2001, almost Rs.1600 crores to indigenise his company's small car Tata Indica.
2.	Mr. Keshub Mahindra	M.D. Mahindra and Mahindra	He has claimed that when U.S.A. was invaded by the Japanese car giants all the big players in U.S.A. like GM, Ford came together and fought till they win the war of indigenisation of small car and giving boost to their indigenous product. Same thing is expected from Indians too.
3.	Air Chief Marshal Mr. A.Y. Tipnis	Chief of Indian Air Force (IAF)	He categorically states that concept of self-reliance and self-sufficiency is need of the hour for the Indian Industries. The reason being Indians have the most modern weapon but not indigenous and every now and then it has to look for the foreign help.
4.	Mr. Kasturirangan	Former DRDO chief	He claimed that in the present political scenario, economics of liberalisation, globalisation, the vision of indigenisation should be looked from the broader outlook. This gives the boost other supporting industries in India. He also wants that every indigenisation partners should come together to overcome the obstacles right from Research and Development

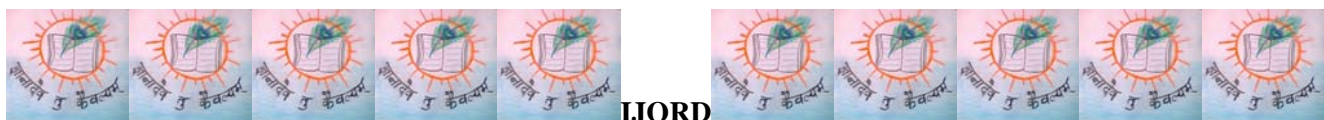


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			to post manufacturing services.
5.	Mr. Padmanabham	Indian Army chief	He had a vision in the hitherto in predominance of indigenisation through reverse engineering should be overcome by indigenisation with de-novo designs, incorporating advanced state-of-the-art, technology. He stressed especially on the Tank technology and other supporting technologies.
6.	Mr. Naval	Director of Automotive Research Association of India (ARAI)	He is most concerned about the funds. He pointed out that political will for the funds building or financial commitments from the Government is also most essential part of the indigenous endeavour.
7.	Admiral Nadkarni	Chief of Naval Staff	Navy chief pointed out that during indigenisation of frigate building Indian navy began, ideally at the induction of all the new technology itself – the grand collaborative efforts first and developing technology later. Now India is self reliant in this technology and has built INS-Delhi, INS-Mumbai, etc.
8.	Mr. Vadhra	Escorts India Ltd.	Indigenisation will enable modernisation of indigenous resources and technology and timely availability of the manufactured vehicle in India itself.
9.	Mr. Kirloskar	Kirloskar India Ltd.	Indigenisation of advanced machinery including small car engine, will avoid concentration of Economic power.
10.	Mr. Munjal	CEO Hero Honda, Honda Motors	Indigenisation of vehicles in India will generate lot of employment in India. Indian Engineers and others would not find it difficult to find new jobs in the market.
11.	Mr. Firodiya	Kinetic motors Ltd.	He said it will give reasonable rate of return on the Capital.
12.	Mr. S.S.Gupta	Air Marshal Of IAF	He finds it to be an opportunity of micro level interaction between IAF and the Mechanical Engineering and Automobile Industry, which will open new vistas for developing a mutually



			beneficial relationship and will go long way in achieving the goal of self- reliance
13.	Bharat Ratna Dr. A.P.J. Abdul Kalam	Scientist and Now President of India	<p>He is the biggest supporter of indigenisation of Technology in India. When asked he strongly put forth his vision about indigenisation:</p> <ol style="list-style-type: none"> 1. To use weapons which are in the middle of their life of are at the fag end India needs to develop its own indigenous weapon systems, 2. Big weapons' spare could be bought only from foreign sources at exorbitant cost, so it has forced India towards its indigenisation program, 3. To develop technology of complex and high valued items India needs to design and develop some simple technology first. 4. In the 21st century Operational efficiency, reliability of technology, sustenance of Indian Industry, and indigenisation are the key words to lead the nation towards the prosperity and world leadership.
14.	Mr. Rahul Bajaj	M.D. Bajaj Auto Ltd.	<p>He claims that Bajaj has already indigenised the Two wheeler sector and he is of the opinion to indigenise totally the small car sector as more middle class consumers are moving towards the small cars.</p> <p>Then he also mentioned that this will lead to more improvement in fast moving consumer goods sector, small scale industry, cottage industry, middle scale industry, leading to more job generation and more fluent marketing dynamics. Thus Indian economy can be stabilised.</p>
15.	Dr. P. V. Desai	Ph.D. in Management and UNDP Fellow	<p>He believes it is the indigenisation, which is the perfect, reliable, and quality substitute to the import of weapon system and other technology. He further states that widespread growth of indigenous economic</p>





			wealth of India having long lasting assets and results.
16	Mr. Mohanti	Command Indigenisation Officer, Maintenance command Nagpur.	Indigenisation leads to: a. Development of Customer care centre, Maintenance centre, manufacturing centre, which ultimately leads to help in dispersal of economic activity, b. It remove regional imbalance, c. Leads to proper distribution of wealth, d. Stratified distribution of industrial area, e. Offering a good spring board for new breed of entrepreneurs, f. It acts as a catalyst of overall development of the economy of the country.
17.	Mr. George Fernandez	Defence Minister in Indigenisation program at Nagpur	Indigenous products should have high security of sales and must have high freedom from marketing plus sales related problems in its own land.





Interpretation of the Table reveals the Objective of the above topic:

1. The main objective of the indigenisation of car industry with respect to customer behaviour is multi purpose. It is aimed towards

- a. Self Reliance in the prescribed field,
- b. Development of the domestic industry,
- c. Saving foreign exchange for the same technology and in turn earn foreign exchange by exporting the indigenous product here the car,
- d. Cost reduction,
- e. Mobilisation of the resources,
- f. Generating the employment potential,
- g. Helping the economy to develop.

5. EXPERTS' EXPECTATIONS – INDIPENDENT SURVEY REPORT:

Table 4: Growth in the Car Industry indicates the nation's Economical and Technological growth?

SN	DO YOU AGREE on the following aspects about the CARS?	YES	NO	REMARKS
1	Car Industry is still the biggest in the world?	YES		
2	India can Design, Develop; Manufacture its own car with its own resources?	YES		
3	US industry thrives on car industry?	YES		
4	India can develop at faster growth rate, if it can produce its 100% own cars?	YES		
5	India can generate most employment through complete set up of own car industries?	YES		
6	US have contributed most in the Research and development of the car industry?	YES	NO	50% Japan
7	Italy has the best designers in the car industry?	YES		
8	Continuous improvement in the Quality has upgraded the car industry?	YES		
9	Better versioning in the car industry is still possible in the car world?	YES		Price concern
10	Should Various impact tests be made compulsory in India?	YES		
11	Should Strict Quality tests be conducted every year in India for every car segment?	YES		
12	Should the Service industry in car segment be upgraded?	YES		Very much
13	Will you expect a completely computer controlled Autopilot driven car in future?	YES		
14	"Car is the best invention of man"?	YES		
15	Complete set up of car industry forms the basis of higher end space-technologies?	YES		
16	Automobiles form the backbone of Transportation Industry?	YES		
17	Number of small cars shows the Economic growth in middle class people?	YES		
18	Small car is mostly driven by professionals like Doctors, Lawyers, Engineers, etc.	YES		
19	Executives must be provided with car and fare or car and petrol facilities?	YES		





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20	Cars having price more than Rs.5 Lacs, have less chances of growth in India?		NO
21	Like Japan India can also manufacture Quality cars in India itself?	YES	
22	In coming 20 years India can have at least one Car Giant like GM, Ford, Toyota?	YES	
23	Should Engineering and Management people come together to develop Industries?	YES	
24	Should India develop Cooperative Car Industry for Indigenisation of Cars?	YES	If it's basic need
25	Should Unemployed youth be utilized for the Indigenisation of car Industry?	YES	Engineers
26	Can Public Sector Industries develop the better cars in India?	YES	Like BHEL
27	Price of a car in US is equal to lowest salary of one month in US?	YES	
28	Can the prices of the cars in India be brought to the level the US has?		NO
29	Should Hyundai, Daewoo and other MNC cars be 100% Indianised?	YES	Must
30	MNC should be allowed to manufacture cars only if they Transfer the Technology?	YES	
31	Indian cars can capture Chinese and Third World car market?		NO China Price
32	RTO, DTO must be very strict while allotting the Licenses for the cars?	YES	Must be.
28	Traffic manners, licensing and the car must be directly linked?	YES	
29	Should alternative fuels like Methanol, CNG, LPG, be allowed in the cars?	YES	
30	Should the car industry and other industries be given special privileges?		NO
31	Should any restriction be brought on importing cars to increase domestic cars sell?	YES	
32	Should the Indian car industry be thoroughly revived?	YES	
33	Should the Indian car and transportations norms be revised?	YES	
34	Should the Indian road conditions and the signals be synchronised?	YES	
35	Should the Indian Traffic Management be revised and Motor vehicle act be revised for the new technology?	YES	
36	Indian middle class has increased from 300 million, can't one tenth buy car?	YES	

Interpretation of Table:

The table is quite elaborative and self-explanatory. It covers almost every point related to car industry market and customer and traffic, and the nation's economy.

Experts believe in thorough revision and modification of the car industry and related matters and they believe in India's strength of survival of the weakest and growth of the toughest economy in the world, through this indigenisation of car program.

6. THE CHALLENGES AND OPPORTUNITIES:

Let see the present technical and marketing side of the Indian Car Market:

Until Nineteen Eighties, there were only few cars in the Indian Market the Ambassador by Hindustan Motors



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and Fiat or Premier Padmini from PAL.

Since Maruti-Suzuki cars entered with well-planned set up of service stations and supporting network, the car market has totally changed for the first time in India.

Next time not only Indian Car Industry but also the Industrial world changed a lot the time when GATT got final 'yea' for implementation from Indian 'yea' and from many countries in the whole world.

The results of 'these kinds of implementations of open economy show the world the Mexican crisis'. Mexican Economy totally collapsed due to the heavier losses in the industrial sector may be mounting to whopping \$56 Billion.

This was the same time when many more MNC added woes to this factor and destabilized the grandfathers of Indian Auto Industry. Infact Premier Auto Ltd. (PAL) had to close few of its plants in Mumbai, as they could not compete the professional and result oriented approach of the Maruti-Suzuki and later on from many more MNC.

Thus it has become a challenge and an opportunity as well to compete with these kinds of market forces.

1. It is a challenge to meet the uncompromising level of quality, time bound delivery of sales and services,
2. It is also an challenge and opportunity to become a indigenous manufacturer of car components independently and increase revenue of the country thus gaining status in the society,
3. It is challenge and opportunity to develop testing and using equipments to the world standards,
4. It is challenge and opportunity to grab local resources to meet the world standards,
5. Challenge and opportunity for new entrepreneurs to enter in this field with latest Research and development unit as a heart and brain of the organisation.
6. Challenge and opportunity to develop next generation force to lead the nation towards prosperity at all the levels.





7. It is challenge to tap upcoming three hundred million strong middle class income group of India. The Week- TN Sofres Mode Survey in December 2001 has come out with this fact and it will touch 600 million by the end of 2007 A.D.

7. MAJOR REASONS OF DOMINATION OF MNC IN THE CAR MARKET:

- a. Through R & D at all the fronts may it be product, process, resources, technologies and consumer in the car market, these companies improve all their resources at all possible front at every possible moment.
- b. Then these MNC try to dominate the market using money power, by highlighting their product and services through all possible sources of heavier advertisement doses to the public. Researcher must mention here but the known fact that many of the MNC have yearly turnover more than the GDP of many countries. Indian context turnover of General Motors the largest Automobile Company in the world has 2001 figures show that its yearly turn over is even more than half of the GDP of India.
- c. Where as the companies, for example PAL, tried to rely on the age-old product and services with absolutely no R & D and nothing new in their cars and services for more than few decades.
- d. The globalisation is set up by World trade Organisation through GATT has opened the floodgates for MNC into India when in 1991, India accepted to enter into these kind of trade practices due to agreement.
- e. There is a unequal competition among MNC car companies and the Indian. Indian car companies have turn over of one billion yearly, where as that is the profit General Motor's has registered during 2001. General Motors (GM) is having yearly turn over of more than \$130 Billion.
- f. In the globally based competitors Indian companies are tiny enough to as compaired to the MNC.
- g. The Indian corporate sector for four decades prior to 1991 operated in a protectionist environment with little experience of real competition.





- h.** The cost of capital of Indian business is higher than MNC due to the reason that real interest rates within the country have been much higher than those prevailing outside India.
- i.** Because of immense financial strength, Ford, Toyota, Suzuki, Mitsubishi, GM are not only in position to bear losses for considerable time than any Indian company.
- j.** MNC like GM, Ford, Toyota, Suzuki, Mitsubishi have enough muscle power to force out the Indian partners from joint ventures and grab control of their companies.
- k.** Indian companies continue to suffer from their earlier regimes of controls. For example, restructuring and downsizing Indian companies not easy as labour laws do not allow doing so in India. As against this MNC start their enterprises with modern technology and labour.
- l.** In some areas, the Indian state has pursued the policies that have clearly discriminated in favour of MNC. For example, in power sector, the state has offered the counter guarantees to MNC for fast track projects without providing similar concessions to the Indian enterprises.

8. SOLUTION S SUGGESTED TO TACKLE GIANT MNC DOMINATED WORLD MARKET:

Indigenisation of the Car Industry committee, must start R & D in every field and take everybody concerned into confidence, with Supporting Services and the Car Market as whole through using all indigenous resources, which are abundant in India, as early as possible.

Simultaneously, higher end technologies can also be made self reliant in India through indigenisation starting with this project. The Table once again is useful here.

Table 2: Some possible solution to the Problems in Total indigenisation according to the customers' needs:

SN	Problem of	Arising due to?	Respective Suggested Solution
1	Huge Investment	1.Complicated Technology	1. India has experts in development.
		2.Giant Technological Set-up	2.Division of Assemblies to Develop, ex. Vendors, Ancillary units, SSI, etc.
		3.Resource	3.India has all resources in abundance
		4.Set up of Plant	4.Government and Institute must convince





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			about the future profit to Investor
		5.Set up of Infrastructure	5.Many will come forward with good plan if Convinced by taking into confidence
		6.Awareness	6.If all the Indian Institution come together it is but a easier job for awareness drive
		7.Political Will	7.The most important part in India. So all Technocrat and bureaucrats must make it a issue.
		8.Developing Technological Force	8.Here experts can develop the unemployed Technical force to become a mighty force in future.
2	Resources	1.Expert Human Resource	1.Since last few decades many Automobile Experts have developed, take help from them.
		2.Expert Technocrats	2. It is in the range of almost one million in India- from expert Mechanic to Scientists
		3.Expert Beurocrats	3.Bajaj, Telco, Mahindras, Kirloskars, Sundarams, Bharat, Escorts and many more are there.
		4.Expert Trainers	4.This force is present in the range of hundred Thousand In India.
		5.Location	5.The best will be Nagpur. Advantage being its central location.
		6.Expert Builders	6.Ircon, Rites, HB, ACC, L&T, etc. are always ready.
		7.Plant Machinery Experts	7.Mahindras, Telco, BHEL, etc. have experts who are well recognised by the whole world.
		8.Money	8.Special Provision must be made in the five year plan for indigenisation.
		9.Skilled Labour	1.Eighty percent of the required skilled labour already present in India others will be developed on job.

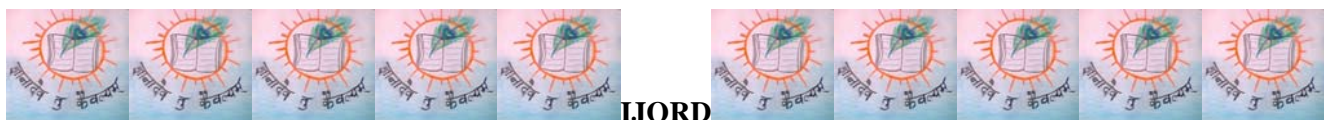
Interpretation of the Table:

The problems and the solutions suggested are pragmatic and have been implemented successfully in some countries as almost everybody was related someway or other to car industry.

9. MAJOR PLAYERS IN THE R & D FOR VEHICLE IN INDIA:

TABLE: 3: SHOWING SOME OF THEM:

R & D Institutes & Organizations Associated with Automobile & Mechanical Industries in India		
SN	Name of the Institute	R & D Specialization
1	Central Mechanical Engineering Research Institute(CMERI)	R & D Services in the field of Mechanical Engineering
		Address
		Mahatma Gandhi Road Durgapur



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2	Automotive Research Association of India (ARAI)	Automobile Testing and Research Head of India.	Pune
3	Pollution Control Research Of India (PCRI)	Pollution Control Research	Delhi
4	Telco	Automobile R & D	Pune and Tatanagar
5	Mahindra & Mahindra	Automobile R & D	Mumbai
6	Kirloskar Brothers	Mechanical R & D	Kirloskarwadi, M.S.
7	Bajaj Auto Ltd.	Automobile R & D	Pune
8	National Environmental Engineering Research Institute (NEERI)	Auto-Industrial Pollution Control	Nagpur
9	Bharat Heavy Electrical Ltd.	R & D in Mech-Electrical	Delhi, Bhopal
10	Tisco	R & D in Metallurgy of parts used	Tata Nagar.
11	ACC Castings	R & D in Castings of Auto-Parts	Nagpur, etc.
12	MRF tyres and tubes	R & D in Auto tyres and tubes	Chennai
13	CEATE tyres and tubes	R & D in Auto tyres and tubes	Mumbai
14	Bharat Forge Ltd.	R & D in Forging of Auto parts	Pune
15	Sundram Fasteners	R & D in Fasteners	Chennai
16	Castrol India Ltd.	R & D in Lubricating Oils	Chennai
17	Kinetic- Honda	R & D in Two Wheeler Technology	Pune, Ahemadnagar
18	Neptune India Ltd.	R & D in Automotive	Delhi
19	Birla Tyres	R & D in Tyres	Delhi
20	ACMA	R & D in Automotive Systems	Delhi
21	CII (Confederation of Indian Industries)	Encourages R & D in this field	Delhi
22	Tata- British Petroleum	R & D in Lubricating oils	Tata Nagar, Pune.
23	Escorts India	R & D in Two Wheeler Technology	Delhi
24	Ashok Leyland	R & D in Trucks and Buses	Chennai
25	Maruti Udyog Ltd. (MUL)	R & D in Cars segment	Delhi

Interpretation of the table:

These players are some of the possible solution providers, for our car indigenisation as they are some way or other are related to vehicle manufacturing in India.

10. INDUSTRIAL ASSOCIATIONS IN INDIA ATTACHED TO THE AUTOMOTIVE SECTOR:

TABLE 4. SHOWING C.I.I. LISTED ASSOCIATIONS: REFERENCE CII DIRECTORY:

SN	Association Name	Products & Services	Address
1	Association of Indian Automobile Manufacturers	Automobiles, Tractors and Vehicular Engines.	Army-Navy Building, 148, M.G. Road, Mumbai-400023
2	Abrasive Manufacturers Association of India	Abrasives for Machineries	Pallikarnai, Chennai-600302
3	All India Electric Motors Manufacturers Association	Electric Motors for Machineries	Annie Besant Road, Worli, Mumbai, 400018



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26	The Indian Ferro Alloy Producers Association	Automotive and for other purpose Ferro Alloys	14, Karve Road, Mumbai, 20.
27	Tinplate Manufacturers Association	For all kinds of Petroleum Containers and Tanks.	6, Netaji Subhash road, Kolkata, 700001.
28	Tractor Manufacturers Association	Agricultural Tractors, etc.	23, 26, Lodi rd. Delhi, 3.
29	Association of Indian Automobile Manufacturers	All kinds of Automobiles	Pune
30	Central Mechanical Engineering Research Institute	R & D Activities in the field of Mechanical/ Automobile field.	MG Road, Durgapur
31	Jalandar Foundry Association	Services to Foundry companies	Kapurthala rd, Jalandar
32	Rajkot Engineering Association	On No profit No loss basis it provides raw material to SSI	Bhaktinagar Industrial Estate, Rajkot- 360002.
33	Southern India Engineering Manufacturer's Association	Engineering Manufacturing	PO Box-3847, Coimbtore-641018.
34	Thane Manufacturer's Association	Industrial Association of Thane District	Wagle Estate, Thane-64.
35	The Indian Institute of Foundry men	Association of Foundry men	4/2, Middleton road, Kolkata, 700071.
36	Tirupur Export Association	Exporting Co. Association	Tirupur, Tamilnadu.
37	Vatva Industrial Association	Indu. Asso., GIDC, Ahemdabad	Vatva-GIDC, Ahemdabad, 382445
38	The Institute of Engineers (India)	Association of Indian Engineers	8, Gokhale Rd, Kolkata, 20.
39	Federation of Indian Export Organization (FIEO)	Ministry of commerce for Export Promotion	Cuffe Parade, Mumbai, 400005

INTERPRETATION OF THE TABLE:

These associations pump lot of energy always in their respective fields and areas by conducting lot of awareness programmes for the fruitful purposes. Thus they are always useful in car indigenisation program with respect to customer behaviour.

11. EXERCISE NEEDED:

Thorough survey of the Indian Car Market and the conclusions are drawn after the detailed survey and heavy discussions with the bosses in their field.





Researcher took five thousand odd samples. The research sample range is quite huge and varied having interest in this field. The samples taken are from Masters in the Research Associated Field of this topic, may them be the Scientists to the roadside Mechanics and Housewives. Samples are Engineers in the plant, from the service stations, or the big garages. Samples are Managers of MNC Cars Manufacturer. Samples are Future Customers, other Consumers, and Dealers in the Car Market. Lastly but not the least, the names not to be mentioned, the consumers of the PAL the manufacturer themselves are also specially targeted samples of the PhD Research studies.

Now, researcher firmly believes that it is high time that all Indians must come together and start the exercise of building their own cars higher end technologies and military vehicles and systems relying on it, as if they are on the war front.

12. CHECKING ARE THE RESOURCES AVAILABLE?

TABLE 1: SHOWING RESOURCES AVAILABILITY OR CAN BE DEVELOPED IN INDIA:

SN	RESOURCE	AVAILABILITY
1.	Human Resource	Yes. Every year enough graduates form Engineering. Commerce, Management fields.
2.	Material	Yes. Look at the following table.
3.	Technology	Can be developed as we have experts but R & D is needed.
4.	Finances	Can be raised. Look at the solutions provided.
5.	Infrastructure	India is on the verge of being called Infrastructure advanced country in the world.





Interpretation of table: 1. Indians having expertise are ready to offer their service in this project; only thing needed is tapping their energy and expertise as soon as possible.

2. All the material resources are available in plenty in India to conceive the India's own car.



Table 2: Material Availability: Reference CII Directory:

Survey for - Few Materials Required for Manufacturing Car Parts					
SN	Material required for	Required for	Location of the	Available	Can India
	Car Manufacturing	Which car part?	Part in the Car	in India	Develop it?
1	Cast Iron	Engine Block, etc.	Engine, etc.	Yes	Yes
2	Alloyed Steel	Gears	GB, etc.	Yes	Yes
3	Brass	Rings, etc.	GB, etc.	Yes	Yes
4	Copper	Connecting rod, etc.	Engine, etc	Yes	Yes
5	Plain carbon steel	Frames, etc.	Frames, etc.	Yes	Yes
6	Rubber	Rubber seals, etc.	Brakes, etc.	Yes	Yes
7	Ferrodo Lines	Brake shoe liner	Brakes, etc.	Yes	Yes
8	Glasses	Windshield glass, etc.	Glasses, etc.	Yes	Yes
9	Special cloth	Furniture , etc.	Seats, etc.	Yes	Yes
10	Ethylene Glycol	Coolant	Radiator	Yes	Yes
11	GB Oil	GB, Differential, etc.	GB, Differential, etc.	Yes	Yes
12	Engine Oil	Engine Block, etc.	Engine	Yes	Yes
13	Grease	Clutch, GB, etc.	Transmission system	Yes	Yes
14	Lubricating Oil	Engine parts, etc.	Engine, GB, etc.	Yes	Yes
15	Petrol	Engine	Engine	Yes	Yes
16	Diesel	Engine	Engine	Yes	Yes
17	Other fuel	Like CNG, etc.	Engine	Yes	Yes
18	Aluminium	Engine, Body, etc.	Engine, Etc.	Yes	Yes
19	Plastic	Lamp cover, etc.	Lights cover	Yes	Yes
20	Fibre glass	Body, Seats, etc.	Body of the seats	Yes	Yes
21	Polyethylene sheets	Sunscreens glass	Glasses	Yes	Yes
22	Tin covers	Protection to lamps	Light covers	Yes	Yes
23	Raincoat cloth	Car cover	Covering the car	Yes	Yes
24	Zinc Lubrication	Leaf plates	Leaf Springs	Yes	Yes
25	Primer	Metal Plate	Metal Sheet Body	Yes	Yes
26	Paint	Body of the car	Metal Sheet Body	Yes	Yes
27	LCD Screen	Dash board	Dash Board	Yes	Yes
28	Silicon Chips	Electronic Devices	Electronic Devices	Yes	Yes
29	Nylon Tyres	Tyres	Tyres	Yes	Yes
30	Special Rubber	Tubes	Tubes in tyre	Yes	Yes
31	Special Alloyed Steel	Tappet valves	Engine	Yes	Yes
32	Freon Gas	For a.c.	Air Conditioner	Yes	Yes
33	Solar cell	Solar Batteries	Solar cars	Yes	Yes
34	Acids etc.	Car Batteries	Cars	Yes	Yes
35	Ceramic etc.	Catalytic Converter	In front of Silencer	Yes	Yes
36	Tin alloy	Silencer Body	Silencer	Yes	Yes
37	Cushion	Inside Seats	Seats, etc.	Yes	Yes
38	Halogen Bulbs	Lights Night vision	Body	Yes	Yes
39	Glow indicator	Panel	Dash Board	Yes	Yes
40	3D Radium Plates	Bulb covers	Light covers	Yes	Yes



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41 NiChrome plated sheets	Gap fitters	Doors, Lights, etc.	Yes	Yes
42 Leather or Ropes	Safety Belts	Seats, etc.	Yes	Yes
43 Special Alloyed Metal	Torsion Bars	Suspension system	Yes	Yes
44 PVC coated wires	Electrical devices	All devices	Yes	Yes

Interpretation of the Table: 3.

1. There are experts who can develop these technologies with their experience in this field.
2. About finances special provision in the five-year plan or raising security bonds, etc. can be the possible solutions.

13. WARNING:

Please remember, if this Remedy suggested is not implemented, very soon the consequences will be very harsh.

The consequences can be like; at present, few Indian giants have closed their businesses and may be more will also follow the same path. Similarly, there may be a case on the Military front especially with Indian Air force. IAF will have the Fighter planes but devoid of spare part to fly them.

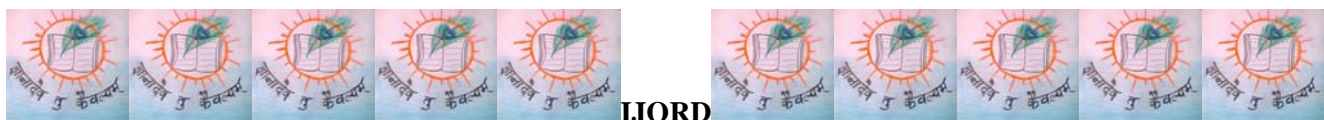
The Indian economy will suffer a major jolt life of the technology will end and may it be facing the economical downslide as well at the same time. Like happened with the INS Vikrant, India does not have funds to raise to develop such a complex technology and expertise as well. So let us start as early as possible.

14. THE EXCEPTIONAL EFFORTS ARE NEEDED AT THE TECHNOLOGICAL FRONT:

As you know, car industry forms the very basics in the Technology Sector to build Higher-end Technologies. To make idea crystal clear, researcher must mention here that, may it be anything like Space Technology, may it be Military Warfare or FMCG or Medical Technologies, the car technology forms the very basics of all these.

Only One Example will be sufficient to clear this idea.

Let us take *an example of the Automobile Engine*, which requires knowledge of more than many branches of



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Science, Arts and Commerce.

To develop Automobile Engine knowledge of Basic Kinematics, Dynamics, Rotational motions, Translation motions, Reciprocal motions, Fluid Mechanics, Fluid Dynamics, Theory of Machines, Engineering Cost Management, Foundry Engineering, Castings, Forging, Metallurgical Engineering, Machine Design, Engineering Drawing, Materials Management, Artistic Skills, and the list is unending; but *please remember Bharat has all the kind of skilled people in abundance. Let us also see why the researcher feels that if Bharatiya develop the Automobile engine then Bharat can take a giant step towards indigenisation and self-reliance.*

15. THE ROOT CAUSE:

The root cause of this phenomenon can be conclude from the discussion with following experts:

1. Contacting the masters at the strategic level in the Automobile industry,
2. Discussing with the middle level management
3. Discussing with the experts who are always in contact with technology,
4. Scientists,
5. The roadside mechanics.

They all suggest that if a product is built in India indigenously people know in and out of that product technology. Whenever a problem arises these people when contacted and discussed with the experts can give the best possible solution. So Indigenisation forms the best solution over these sorts of problems.





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TABLE 3: SIMPLE VIABILITY TABLE BY THE EXPERTS:

Reference: October 2001: Magazine- Auto Car India:

SN	CAR PART – RS.	ZEN	SANTRO	MATIZ	UNO	INDICA
1	Fuel filter	133	154	149	185	123
2	Headlight Assembly	1390	1600	1500	2185	1175
3	Tail-Light Assembly	800	700	680	1068	646
4	Door Mirror (Right)	795	886	810	970	777
5	Door Mirror (Left)	795	886	810	1330	475
6	Warranty Period*	12 months	12 months	12 months	12 months	18 months

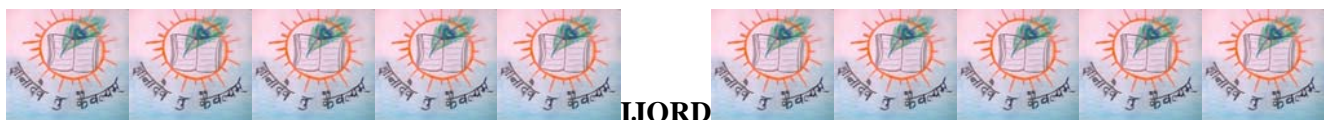
Special Note: Even partially Indigenously built car like Tata-Indica is giving more warranty period than the rest of the cars, as at the competitive prices they can afford what MNC can't.

16.USING EXPERTISE OF THE EXISTING VAST AUTOMOBILE INDUSTRY OF INDIA:

TABLE 4: ORGANISATIONS INVOLVED IN AUTOMOBILE INDUSTRY IN INDIA:

SN	Organisation Name	City of Location	No. of Vendors	No. of Ancillary units
1	TELCO	Pune	250	250
2	ESCORTS	Faridabad	150	78
3	KINETIC	Aurangabad	78	40
4	MAHINDRA & MAHINDRA	Mumbai	158	201
5	MARUTI SUZUKI U.L.	Delhi	180	150
6	PREMIER Auto Limited	Mumbai	120	75
7	HINDUSTHAN MOTORS	Indore	60	50
8	FIAT	Mumbai	80	68
9	TVS-SUZUKI	Chennai	120	25
10	BAJAJ	Pune	80	25
11	ESCORTS-YAMAHA	Faridabad	51	40
12	HYUNDAI	ShriPerumbudur	40	35
13	DAEWOO	Surajpur	28	34
14	MITSUBUSHI-HM	Indore	--	100
15	HONDA	Chennai	--	--
16	FORD-ESCORTS	Delhi	40	100
17	MERSEDESE	Pune	--	--
18	TOYOTA-DCM-KIRLOSKAR	Pune	--	100

Interpretation of the table:



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1. Look at the number of ancillary units and vendors the each automobile is providing. This huge number describes the motive behind the indigenisation.
2. Number of employment generated is highest and comparable to mining and railway sector in India.
3. Automobile Industry in India is almost a half-century-old and thus expertise in others can be utilised while indigenising the small car.

17. WHAT ARE THE RESULTS OF INDIGENISATION OF SMALL CAR TECHNOLOGY?

For this we shall consider only three main units in the car, which India is not manufacturing, and the amount of loss India is suffering at financial front and losses to other resources.

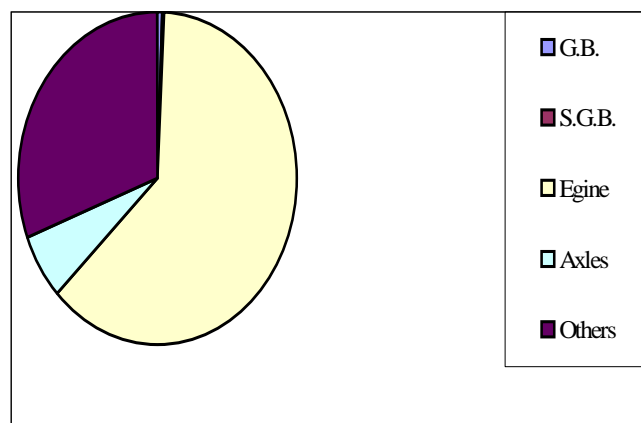
Table 5 and Graph:

Analysis of the parts of the cars Indians presently manufacture:

Independent survey report:

Part name	G.B.	S.G.B.	Engine	Axles	Others
number of parts	200	100	20000	2000	10000

Long Form:
G.B. =
Gear Box,
S.G.B. =
Steering Gear
Box.



Interpretation of the table:

1. Out of these thirty thousand plus parts India is manufacturing only others section at present with world standard for some domestic vehicles.



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2. Thus on the other half India is losing almost Rs.25000 crores every year.

Table 5: Independent survey Result of implementation of the small car indigenisation project:

S N	Machin e unit of the Car	Number of Parts in it	Present Situation	If India starts Manufacturing it	Result of the Implementation of this Indigenisation Project
1	Engine Unit and whole Assem bly	10000+. (Ten thousand plus)	Bharat not manufacturing more than five thousand parts required in Indian and MNC cars.	There will be as many as parts as number of SSI, Vendors, Ancillary Units, Dealers, Service Stations, Garages, and Supporting Services.	1. There will be mobilization of resources. 2. Direct Employment generation per part is around two hundred, i.e. overall, generation of around two million at least. 3. Supporting services will generate around eight million jobs. 4. Revenue loss of Rs. Fifty Billion i.e. \$1 Billion, as Foreign exchange will be saved every year. 5. <u>Divert the same money to our indigenous set up; Bharat will be self-reliant in every field of technological base.</u> As
2	Gear Box Unit and Whole Assem bly	500+ (Five Hundred Plus)	Bharat not manufacturing even half of the parts required for the gear box in many of the MNC cars	There will be as many as parts as number of SSI, Vendors, Ancillary Units, Dealers, Service Stations, Garages, and Supporting Services will be developed	1. There will be mobilization of resources. 2. Direct Employment generation per part is around one hundred, i.e. overall, generation of at least one million jobs. 3. Supporting Services will generate around eight million jobs. 4. Revenue loss of Rs. Twenty Five Billion i.e. \$500 million as Foreign exchange will be saved every year. 5. Divert the same money to develop our own Automobiles and Bharat will be self-reliant in the automobile technology.
3	Rear Axle Assem bly	100+ parts	Same as G.B. above.	Same as G.B. above.	Same as above mentioned Gear Box.





Interpretation of the table:

1. Please remember that the Engine and the Gear Box are the major components of the Car or any other Automobile. They together need a set up of the industries that ultimately can manufacture ultimately ninety percent of the basic parts of the machineries existing on the earth. May it be a small screw, a nut or may it be complicated parts like carburettor and fuel injectors and their sub parts. As we have seen in the befitting example part of this chapter.

2. Every distinct parts needs distinct and unique kind of industrial set up.

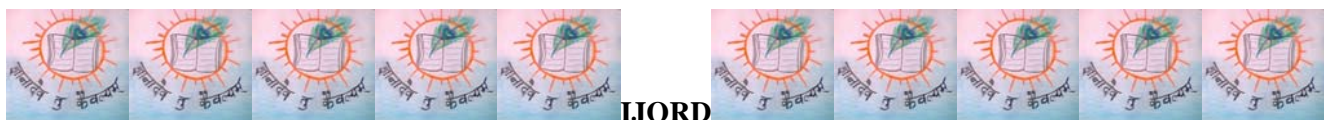
3. A car has almost thirty thousand components right from the small screw to the body and axles.

18. THESE BEFITTING EXAMPLES PROVE THE NEED AND THE ADVANTAGES OF THE SMALL CAR

INDIGINISATION:

Let us see examples in the charts in details, why at all the Car Engine forms the major component of the basic technology for the following cases:

- a. The Engine of the car also forms the basis of the power generation from the Generators, which manufacture the alternating current of Electricity that is used in every household devices and devices of the industrial houses,
- b. The Dynamos for the direct current,
- c. The Compressor for the air conditionings and cold storage devices,
- d. Hydraulic devices used in power lifting or braking,
- e. Pneumatic devices used for the lifting, elevating and braking,
- f. The Elevator Technology also based on few techniques used in the Automobile Engines,





- g. X Ray machines use this technology,
 - h. All the Electricity manufacturing Power plants, Atomic Reactors, and all Vehicles,
 - i. Medical Devices like artificial hearts and Anaesthesia Doctors use the kind of devices, which use this technique,
 - j. The technique in the Gas Cylinder, Mixer Grinder, and such all-household devices also use some or the other similar kind of technique or kinematics as used in the Automobile Engines,
 - k. Part time Generators and Dynamos used in the houses, machineries and the big industries,
 - l. The pollution control measure taken for the exhaust fumes from the Automobile Engine also forms the basic of Environmental Technologies used in varied fields of the Industries such as Powerhouses, etc.
- So there is no end to this listing.

19. WHAT ARE THE EFFORTS NEEDED IN THIS CONTEXT?

1. In India for taking any giant step like this, it has to become a major issue. May it be political issue, socio-economic issue and the ethical issue! Therefore, it is expected from honourable members of the society who know the seriousness of this problem that they must take this issue to the every citizen of this country.
2. All businesspersons must be convinced that R & D at all levels is need of the day.

At every stage and every step R & D with respect to product, procedure, design, marketing, after sell services, is must. Then feedback and Kaizen in this field will bring improvements in this field. In coming future this knowledge bank will be useful in other industrial sectors as well.





3. The efforts from the Education Institutes, The Business Organizations, The Political will, The Banking Sector, The Industrial Development Corporations and Institutes like MIDC, CII.
4. One more step taken can be the new and old Entrepreneurs are to be made more aware about the advantages of the indigenisation.

20. FEW MORE STEPS, WHICH CAN BE FOLLOWED, ARE GIVEN BELOW:

1. Provisions must be made so that Management, Commerce, Arts, Home Science, Architecture, Engineering students will be given compulsory contributing internship towards nation as a practical project as part of curriculum after they complete their final year of graduation. If Doctors have one-year compulsory internship of one year, then why can't these students also have?
2. The Government can give concession to SSI for manufacturing the above-mentioned parts of Automobile and the higher end machineries. Government will favour policies those will offer counter guarantees to the Indian SSI, MSI and parent companies of Indigenous origin for fast track projects without providing similar concessions to the MNC.
3. MIDC, GIDC, CII, IE (I), FICCI, IDBI, ICICI, SBI etc. should make special provision for this and must conduct lot of seminars and meets and awareness drives to get more advantages from this all important project of indigenisation of small cars according to Indian customers' demand and Indian conditions.
4. All the higher authorities must realize the need of indigenisation. As in India this forms the very important factor to mobilize the resources to such very good and giant projects.
5. Students to the Consumers all must realize that indigenisation means using their own resources for their own development for their own cause and thus helping their own nation and helping themselves as well.
6. Let everybody get convinced that if at all these people survive then only nation will survive.
7. Remember USA, Japan has biggest carmakers and more than half of the resources in USA and Japan are directly or indirectly related to the Automobile and Car Market.





8. Though India is not manufacturing the complete car now, still half of the businesses and industry in India listed in CII directory are some way or the other, are based on the Automobiles and Car market.

9. Thus, if Indians manufacture their own indigenous cars they'll be able to make more advanced machines very soon and thus will encourage the other businesses as well.

Other factors such as the technology advances the other commodities and market gets an automatic boost.



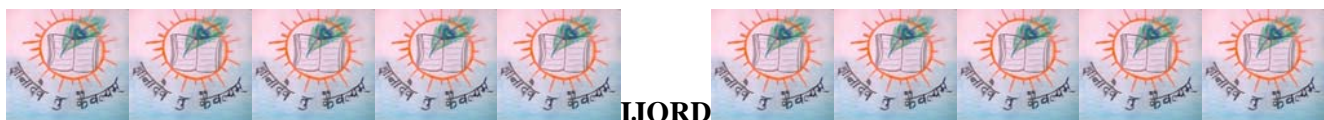


5. MANUFACTURING HIGH QUALITY SMALL CARS AT LOW COST

Content of the Chapter 5

T. N.	Topic
1.	Issue in Implementation of small car indiginisation with respect to customer behaviour
2.	Similar kinds of Problems were faced by the US car industry
3.	American Answer to Global competition: Quality Indigenous Cars
4.	Conclusions drawn from Saturn pilot project
5.	How General Motors achieved it?
6.	Why Japan was leading the market?
7.	High Quality Low cost
8.	The cost of quality
9.	Research and Development in Management Systems and Behaviour – the GM approach
10	Relationship between Quality and Return on sales
11.	Relationship between Quality and Return on Investments
12.	Importance of Customer Value system and TQM associated with it
13.	Can Indians achieve the same?

1. ISSUES IN IMPLEMENTATION OF SMALL CAR INDIGINISATION WITH RESPECT TO CUSTOMER BEHAVIOUR:





The world knows that India is the only developing country in the world having developed its own space technology, Super Computer technology, Missile Technology, Atomic technology, and son and so forth. So following issues are of major concerns in developing indigenous cars with respect to customer behaviour:

Table 1:

Showing the problems faced by the indigenisation in other fields and possible solution over it:

Issue No.	Issue Description occurred during	Solution for
	indigenisation of other products	indigenisation of small cars w. r. t. customer behaviour
1.	In some fields in India Prototype once developed was not up to the standards and final product was of also of poor quality by the vendor.	Develop the prototype and final product of higher quality by all means.
2.	Domestic suppliers do not keep the delivery schedule up to the mark. There are no smooth operations of repair and maintenances.	Domestic suppliers must realise the dire need of the day.
3.	Repeat order means lot of profit. So vendors have quoted unreasonable prices on this issue. They claimed unreasonable cost escalations, which were unjustifiable.	Vendors must have long-term goals rather than earning on only one contract.
4.	Some suppliers have supplied limited but very high quality parts due to inadequate financial resources,	Adequate number of parts must be supplied just in time





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		by the vendors.
5.	MNC manufacture the parts of cars in millions, where as Indians are still in thousands. So vendors cannot afford to manufacture less number of parts.	Small Scale Industry development is the best possible solution.
6.	Engine, Gearbox, Axles require higher precision and higher quality material, according to BIS, QS, ISO, JS standards to develop indigenous products.	Indian industries must gear up for the TQM, TPM, and other Quality norms.
7.	Adequate data and technical specification of the car part to be manufactured must be provided to the manufacturer in time with all the specifications and details. It could not happen earlier.	Adequate Design data, specifications, should reach just n time or prior to first warning.
8.	TQM, TPM, Quality is not taken seriously by the Indian industry, especially the seller vendors.	Indians must become serious while designing and developing small cars.
9.	Service stations in India must realise that customer relationship has the highest priority.	Realise 'customer is the king' for the India.



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**Interpretation of the table:**

The issue discussed are genuine and solutions suggested are more practical and result oriented in the Table.

2. SIMILAR KINDS OF PROBLEMS WERE FACED BY THE US CAR INDUSTRY:

In 1992, US automobile manufacturers and General Motors (GM) in particular lost its \$23.5 Billion share to Japanese Car manufacturers like Honda, Nissan, and Toyota. Later on, GM had to close 142 units in US. In Detroit itself, GM closed at least dozen of its units.

GM being global market leader till that incidence analysed the situation. An Engineering and Management Research predicted the following problems:

1. Repeated poor quality of product to the customers,
2. High prices to all the services,
3. High pressures dealers from Detroit,
4. The problems between Management and Labour made their relations very tense,
5. Japanese car manufacturers were providing Quality product and services that too at very low cost.

Therefore, consumers started loving Japanese products.

6. Besides this, deregulated global competition had offered customers choices in many industries. If customer did not like Lincoln, the customer could choose among Cadillac, Mercedes, BMW, Lexus, and Infiniti. However, thirty years ago the only choice was Cadillac the GM made car.

3. AMERICAN ANSWER TO GLOBAL COMPETITION: QUALITY INDIGENOUS CARS:

Therefore, the General Motors (GM) Strategic Management crew decided to set up the brand new company and named it Saturn. Saturn was the pilot project to overcome the losses suffered in 1970's and 1980's by the US car market due to invasion of Japanese and German cars.





Saturn's specific mission was to "market vehicles developed and manufactured in United States that are world leaders in quality, cost and customer satisfaction through the integration of people, technology and business systems and to transfer knowledge, technology and experience throughout General Motors."

This was costly, ambitious pilot project and a risky undertaking by GM. GM invested whopping \$5 Billion in Saturn project.

Within two years of its late-1990 start-up, Saturn became an obvious success.

Its cars were ranked third in a 1992 J.D.Power Customer Satisfaction Survey, which was based on:

1. Saturn's nearly impeccable Quality,
2. Low prices. Infact, the prices of other cars in the top five were almost three times higher than Saturn's prices.
3. No-haggle pricing by dealers and
4. Improved Productivity norms.

Specially mentioning here for the first time Productivity Norms were clearly defined and seriously implemented in the Saturn Car project of General Motors in US. This led to a price war between all the competitors. First two years of its inception the Saturn sell dominated the car market and Saturn Cars reached at the third spot in US all time sells chart.

Saturn defined Productivity of the production system is analogous to the efficiency of a machine, just as it is desired to increase the efficiency of a machine; it is also aimed at to raise the productivity within the available resources.

Thus, *Productivity = Quality Production / Quality Resources Employed*.

It will increase if the production increases without adding to the resources employed.

So the following steps were taken to improve Productivity of Quality Products:

- i. Improving basic process by R & D in every field of Resources Management,





- ii. Saturn provided more and improved physical need of producing which required investment in,
 - a. Highly trained technical staff,
 - b. Infrastructure assets, and
 - c. Advances Technology in plants and equipments.
- iii. Saturn simplified and improved the product and reduced the variety as well. It gained great Economic benefits from standardisation and the reduced range of products to a reasonable minimum.
- iv. Saturn improved the methods of operations so that the same Car can be manufactured in lesser time. It used Work Study, Critical Path Method, Total Productive Maintenances, etc.
- v. Lot of suggestion were called from the employees to improve organisation, planning, control, quality of the product and services, so as to reduce the resource waste and to reduce time wasted on such activities.
- vi. As mentioned earlier Saturn increased manpower effectiveness at all the levels – taking from top-level executive to the most recently joined apprentice.

These were the reasons; Saturn's dealers were selling an average of 100 cars each month, more than any other brand sold in the United States.

Table 1: J.D.Power Customer Satisfaction Ratings for top Five Automobiles: 1992

SN	Automobile Make	Customer Satisfaction Rating
1	Lexus	179
2	Infiniti	167
3	Saturn	160
4	Acura	148
5	Mercedes-Benz	145





6	Industry Average	129
Source: "Saturn: GM finally Has a Real Winner," Business Week (August 17,1992): 87.		

Interpretation of Table:

From nowhere the Saturn could capture the third spot in the market by sheer will of the organisation.

Saturn dealerships were ranked by automobile dealers as the most valuable dealership to own in 1993. Six weeks before the 1992 model year was officially over, the Saturn dealers sold out of cars.

In spring 1992 Saturn started to ship cars to Taiwan.

In 1993, Saturn was operating near capacity with three shifts and was planning to export right-hand drive cars to Japan.

In early 1994, Saturn reported its first-ever profit and lobbied GM for funds to start another plant.

One survey revealed the following strategy adopted in the Saturn project by GM. It was during the profit target Saturn management realised that this policy be adopted. At a glance it is given in the form of table indicating various controlling measure and it's up and down order of control.

Table 2. Marketing Cost Control plan adopted by GM in its Saturn project at a Glance:

Kind of Control	Major Responsibility of	Purpose/ Reason of control	Method of Control
1. Annual – Plan Control	Top Management and Middle Management	To examine whether the planned results are being achieved	a. Sales Analysis, b. Market-share analysis, c. Sales to expense ratios, d. Financial analysis, e. Total customer Satisfaction tracking.





2.	Marketing	To examine and	Profitability by:
Profitability	Controller	pin pointing	a. Product,
Control		where exact	b. Territory, Customer,
		company is	c. Segment,
		making and	d. Trade channel,
		losing money.	e. Order size,
			f. Customer.
3.	Line and staff	To evaluate and	Checking Efficiency of:
Efficiency	monument	improve the	a. Sales force,
Control	marketing	spending	b. Advertising,
	controller	efficiency and	c. Sales promotion,
		impact of	d. Distribution.
		marketing	
		expenditures.	
4. Strategic	Top management	To examine	* Marketing effectiveness
control	and marketing	whether the	rating instrument,
	auditor	company is	* Marketing audit,
		pursuing its best	* Marketing excellence
		opportunities	review,
		with respect to	* Company ethical and
		market, products,	social responsibility review.
		and channels.	





INTERPRETATION OF THE TABLE: Thus, GM adopted some revolutionary techniques of cost control and achieved the pre-determined objective.

4. CONCLUSIONS DRAWN FROM SATURN PILOT PROJECT:

GM took initiative while it planned the Indigenous world-class car-Saturn Mission to combat the MNC cars invasion in the US car market.

1. Saturn showed that GM could produce cars to global standards, with:

a. The Best Quality:

It can be achieved by the systematic Control of various factors against it. So, it depends on proper utilisation of resources like material, tools, machines, type of labour, working conditions, measuring instruments, etc.

b. Less Price:

With systematic plan or approach best quality can be achieved with minimum cost of production hence optimum cost for the final product for the customers.

c. Customer Satisfaction:

It was effective system for integrating the Quality Development, Quality Maintenances and Quality Improvement efforts, of various Quality Circles or Groups in the organisation. It enabled the production and services at the most economical levels, which allowed the full satisfaction of the customers.

With above criteria GM and hence US companies regained customers who had been lost to BMW, Mercedes-Benz, Honda, Nissan, Toyota and the other Japanese, German and other European competitors.

2. Saturn also showed that to be a world class, it takes both long-term, executive-level commitment to superior customer value and systemwide team approaches with suppliers, dealers, and workers.





3. Saturn and hence US company GM achieved great quality through increased employee input into managerial decisions, as well as higher level of employee training, to make low priced indigenous cars at lowest possible price.

5. HOW GENERAL MOTORS ACHIEVED IT?

Further studies show that before launching this mission GM carried out lot of R & D and Benchmarking in particular, to get desired result.

The main functional and competitive benchmarking GM highlighted on their board and then adopted are given below:

B1.Lands' End: Principles of doing business.

B2. The great Japanese Secret: Building a chain of customers.

B3. a. Functional benchmarking ex. Xerox adopting L.L.Bean's order entry and billing system.

b Competitive bench marking ex. IBM studied and emulated how Microsoft designs new software for PCs.

B4. Implementation in many Japanese companies: Deming, Juran, Ishikawa, Crosby for high quality at low price.

B5. P.A.C.E. approach to Sea Ray Boats made by Brunswick Corporation (July 1991).

B6. Interntional Quality Studies by Ernst and Young on percentage of businesses whose departments always or almost always translate Customer Expectations into the design of new products and services.

Let us study what are these important factors those have changed future events of GM and indigenous US car market.

B1: Lands' End: Principles of doing business-





Principle 1: We do everything we can to make our product better. We improve material and add back features and construction details that others have taken out over the years. We never reduce the quality of a product to make it cheaper.

Principle 2: We price out product fairly and honestly. We do not, have not, and will not participate in the common retailing practice of inflating mark-ups to set up a future not genuine “sale”.

Principle 3: We accept any return, for any reason, at any time. Our products are guaranteed. No fine print. No arguments. We mean exactly what we say: GUARENTEED.PERIOD.®

Principle 4: We ship faster than anyone we know of. We ship items in stock the day after we receive the order. At the height of the last Christmas season the longest time an order was in the house was 36 hours, excepting monograms, which took another 12 hours.

Principle 5: We believe that what is best for our customer is best for all of us. Everyone here understands that concept. Our sales and service people are trained to know our products, and to be friendly and helpful. They are urged to take all the time necessary to take care of you. We even pay for your call, for whatever reasons you call.

Principle 6: We are able to sell at lower prices because we don't buy branded merchandise with high-protected mark-ups; and because we have placed our contracts with manufacturers who have proved that they are cost conscious and efficient.

Principle 7: We are able to sell at lower prices because we operate efficiently. Our people are hard working, intelligent and share in the success of the company.

Principle 8: We are able to sell at lower prices because we support no fancy emporiums with their high overhead. Our main location is in the middle of a 40-acre cornfield in rural Wisconsin. We still operate our first location in Chicago's Near North tannery district.

[Source: Lands' End Inc. Annual Report (1992)]





B2: The great Japanese Secret: Building a chain of customers.

Japanese management rely on Quality, JIT, TQM, TPM, Reengineering, Equipment policies, and in development of broad view. It is just a matter of adopting continuing programs of cross training and cross functional shifts of people. That is why broad view remains as the great Japanese strength.

[Source: Building a Chain of Customers: Linking Business Functions to Create the World class Company, New York Free Press (1990): 130.

B3. Benchmarking.

Even the greats like IBM, Xerox, adopt good policies from others in any kind of business.

- a. Functional benchmarking ex. Xerox adopting L.L.Bean's order entry and billing system.
- b. Competitive bench marking ex. IBM studied and emulated how Microsoft designs new software for PCs.

B4. Implementation in many Japanese companies: Deming, Juran, Ishikawa, Crosby for high quality at low price.

B5. P.A.C.E. approach to Sea Ray Boats made by Brunswick Corporation (July 1991).

Sea Ray has put together a program/ a policy called P.A.C.E. – People Achieving Customer Expectations.

They have put it in the following fashion that appealed the General Motors Corporation:

In a very real sense, quality is a closed loop, beginning and ending with the customer. The quality process starts when we seek to understand what it takes to satisfy customers in our marketplace.

Quality then goes full circle:

- a. We define specifications to meet the customer's requirements. We manufacture products and develop the services necessary to satisfy those requirements.
- b. Then we go back to customers and get feedback, "How are we doing? Did we meet your





expectations? ? How can we serve you better? What improvements and innovations would you like to see from us?”

So you see, in pace setting company, quality must mean more than just a product characteristic. Rather it is an attitude that “the customer is king.” That belief must permeate the entire company, driving every decision and involving every employee. When quality improvement becomes truly ingrained in the corporate culture, error rates and defects plummet. Productivity and customer satisfaction mushroomed.

The goal of P.A.C.E. program is to continuously improve the quality of our products and to enhance our ability to satisfy the customer.

B6. International Quality Studies by Ernst and Young on percentage of businesses whose departments always or almost always translate Customer Expectations into the design of new products and services. This was another inspiration for the General Motors for its Saturn project.

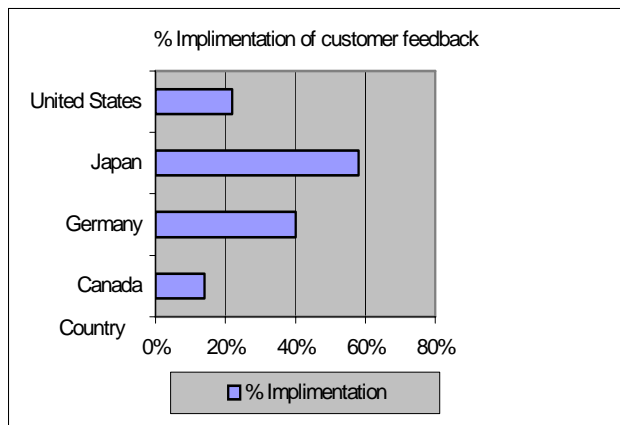
6. WHY JAPAN WAS LEADING THE MARKET?

REFERENCE: GM SURVEY REPORT





SN	Country	%Implimentation
1	Canada	14%
2	Germany	40%
3	Japan	58%
4	United States	22%



Interpretation of the table and graph:

Japan was still leader in the implementations of R & D.

Here GM found that customers' feedback was thoroughly implemented in the quality Japanese products and hence they were ruling over the minds of their US customers. Infact much of the US car share was getting diverted to quality cars manufactured by the Japanese. Both GM and Ford had lost almost 10% of their market share by the time they realised its havoc in 1994.

Ex. Till 80's the aerodynamic design of the cars was a higher thought in US market so Impalas were still running on the US roads. Whereas, Japanese had already replaced those big looking sharp edge designed cars with Sedan or even smaller version of cars with smooth edgeless aerodynamic shapes.

Here, GM carried out further studies over developing basic fundamentals of the organisation for implementation in their Saturn project, in which they were highly successful.

The main aim of the project was how can mangers and their organisation yield superior quality at low cost?





7. HIGH QUALITY LOW COST:

W. Edward Deming is sometimes called the father of the Japanese and American quality movements. He made a seminal contribution to business strategy and practice when he showed how high quality and low cost can go hand in hand.

Joseph Juran, Kaoru Ishikawa, Philip Crosby, and all taught the new logic of higher quality and lower costs. Prior to this analysis of Deming, Economists argued that quality, or any feature of a product, costs money. It was wrongly conceived fact of the US Economists, Engineers and Managers that better the quality of the product, the higher the cost of the product. Since many managers relied on ‘inspection after production’ to achieve high quality the Economists were correct in observing that quality costs money. But it does not need to be that way.

So they studied how the Japanese could achieve it? Naturally Deming was to be studied thoroughly.

W. Edward Deming’s logic:

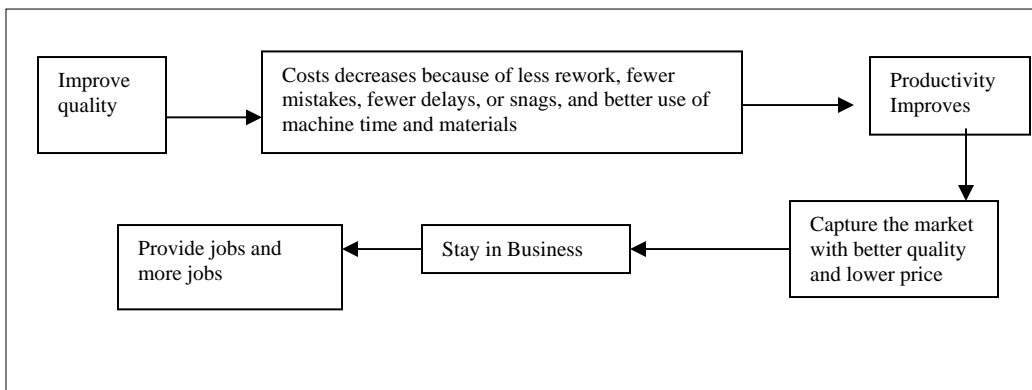


Figure from the book – “Out of Crisis”: The Pervasive role of Quality.

Interpretation of the diagram:

The logic predicted in the diagram:

1. Higher the quality lowers the cost.





2. Quality is not an after production inspection business. He said, “Cease dependence on inspection to achieve quality. Eliminate the need for inspection on mass basis by building quality into the product in the first place.”
3. Quality is a strategy that must permeate an organisation throughout its business activities.

The results Deming achieved:

Earlier idea that high quality can be achieved at low cost was a watershed in business operations. After Deming's above predictions the world market is totally different:

1. Today organisations pay highest attention to design the product to eliminate recurring defects in production.
2. Firms also design-manufacturing processes so that operations are performed without errors.
3. Firms also manage systems to eliminate the cause of defects.
4. Organisations also try to improve the products or services and the processes to yield even greater value to customers.
5. Organisations pay due attention to the cost of quality- or to the cost of poor quality.

8. THE COST OF QUALITY:

The cost of quality is the cost incurred in producing poor-quality products and services. It includes:

1. The costs of scrap,
2. The cost of rework,
3. The cost of warranty repair,





4. The cost of inspection,
5. The cost of Quality related maintenances.

These costs are sometimes expressed as a percentage of cost of goods sold.

1. In an earlier era many firms experienced a cost of quality from 15% to 30%
2. Firms that implemented Total Quality usually experienced dramatic declines in the cost of quality of 90% or even more.
3. Whereas some firms, through continuous improvement of the products or services and the process, some firms relentlessly drive the cost of quality towards 0%.

Only then has become affordable quality as a realisable goal. This is the reason why with lower cost and higher quality, the firms can provide more value to customers.

(This is how GM and Saturn in particular achieved their goal of better quality and lower price for technology and customer care.)

The world's best example for low cost of quality product is given to be of Capsugel Company.

It is a division of Warner-Lambert. The company is involved in making hard gelatine capsules for the worldwide pharmaceutical industry.

Capsugel Company has been lowering its cost of quality by one-half every five years. It does this primarily by eliminating inspection after production.

This was one of the inspirations for General Motors' Saturn project.

In an earlier process the firm employed over 100 inspectors per plan:

1. To inspect the product twice.
2. Redesign of the systems, including selecting a few suppliers based on quality,
3. For continuous process improvement,
4. For Training of new behaviour, and





5. Towards Attention to customers,

These five guidelines helped Capsugel accomplish the reductions in the cost of quality for hard gelatine capsules.

9. RESEARCH AND DEVELOPMENT IN MANAGEMENT SYSTEMS AND BEHAVIOUR – THE GM APPROACH:

Earlier GM limited their Quality approach that Deming, Ishikawa and the other Quality Guru started.

This approach was quite different from Total Quality adopted in during implementations of few strategies and systems. Other approaches like customer value determination system and new product development system also had its importance. The reason given can be in the international competition, it is always necessary to understand the primacy of the customer. With the deregulated global competition customers' choice has its due importance.

In the present US market if customer does not like a Lincoln, the customer can choose among Cadillac, Mercedes, BMW, Lexus, Infiniti, Audi, Honda, Toyota, etc. But few decades ago customers had only one choice and that was Cadillac.

In the present Indian market similar case is there. If customer does not like Fiat or Ambassador, he can choose Maruti-800, Maruti-Zen, Maruti-Alto, Maruti-Wagon-R, Hyundai-Santro, Daewoo-Matiz, Fiat-Palio, Tata-Indica, etc. But a decade ago customers had only two options Fiat and Ambassador. Even in there are multiple choices in the bigger and luxurious cars segment. They are Tata-Sedan, Tata-Indiva, Maruti-Esteem, Maruti-1000, Maruti-Baleno, Honda-Accord, Honda-city, Toyota-Corolla, Opal-Astra, Opal-Corsa, Mercedes-Benz-S, Mercedes-Benz-E, Hyundai-Sonata, Daewoo-Ciello, and alike. Thus choices seemingly have no end.

So, in these conditions customers demand high quality and low price with higher value of customers' services.

1. Managers had to heed the customer in this international competitive era or had to face bankruptcy.





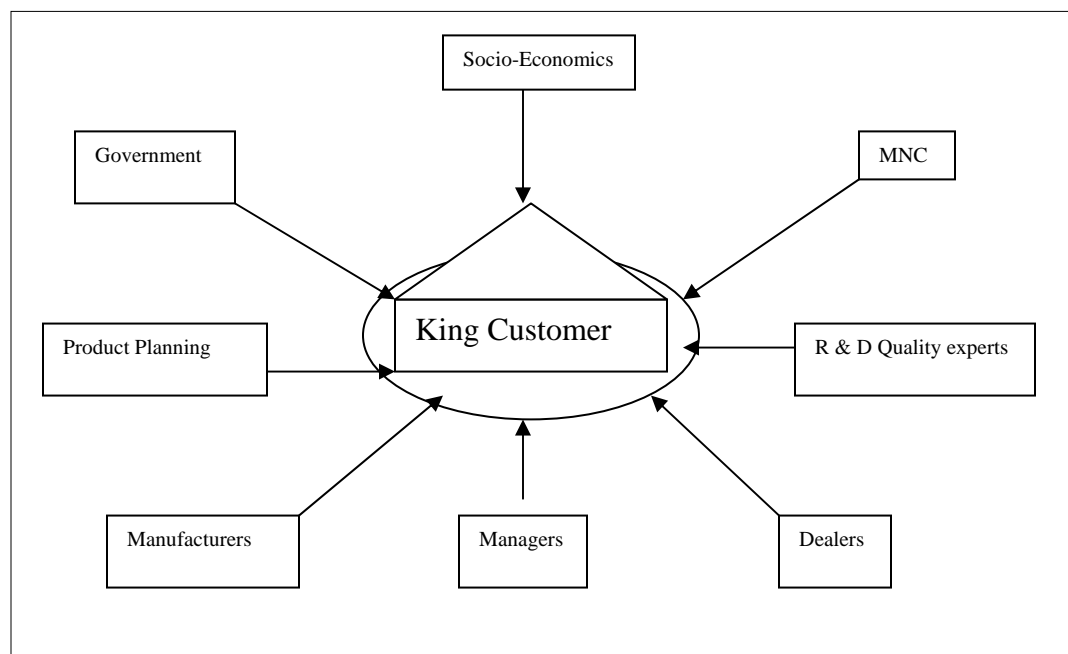
Such were the stricter measures taken by the GM Strategic planner.

2. American Quality Foundation made the following bold statement concerning the importance of quality as

a business strategy: “Quality improvement is the fundamental business strategy of 1990s.



No business without it will survive in the global marketplace.”



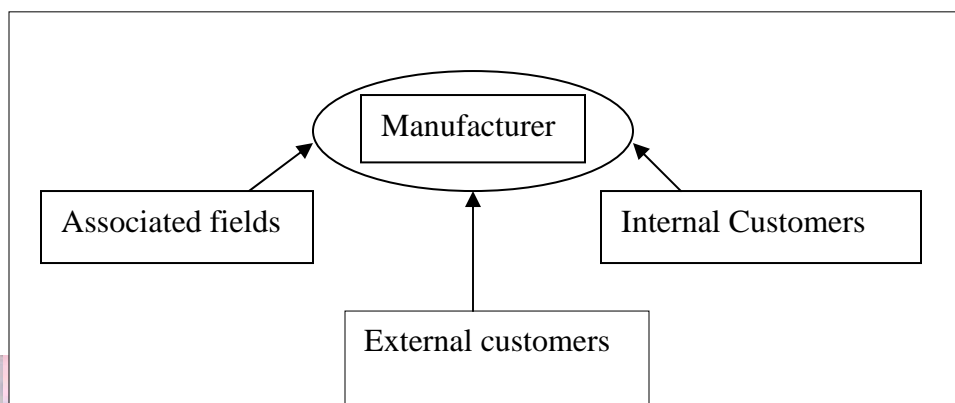
Customer is the King– Post 1990 era Pamphlet by GM

Interpretation of the figure:

General Motors suffered a severe jolt as customers shifted to Japanese cars and almost rejected the GM cars.

Thus everybody in the GM could come to the conclusion that in the multipolar global high quality market competitions make the customer the boss of the situation and hence required to be treated as a king.

But prior to global competition the domestic manufacturers had dictated the terms and conditions, the prices and other associated things.





Manufacturer used to dictate terms and conditions

Interpretation of the diagram:

In the earlier markets when less players were there manufacturer used to dictate the terms and conditions in the market.

But latest market trend shows that customer needs and demands that made big impact made everybody in the market feel its importance. It is always said that lot of things have changed due to global competition.

3. In the later half of the last decade of the twentieth century, Total Quality (TQ) became a dire need Business Strategy. The concept of customers had changed a lot. No longer customers were looked as the sales target of short duration. Marketing concept of longer and good relation with customers got extreme importance in the market.
 - Managers had to deliver value to every customer by adopting or developing different managerial systems.
 - Total Quality by all means focused first and foremost on consistently satisfying customers and needs.
 - Competitive strategy got a severe impact. As major mindset difference between customer-value strategy and competitive strategy was that if every time GM delivered the quality product to the customers, the competitions were left in the dust.

Earlier when competitors were given very much importance GM faced following *disadvantages*:

- a. Naturally GM lost its much focus on customers.
- b. It began conflict with the purpose of business strategy, which is to serve customers' needs.





- c. Many a times company lost it's "first be in market to introduce", thus it was destined to pursue a follower strategy, which was not at all tolerable for the GM.
- d. There were below average financial returns,

Where as focussing on the competition made GM find various ways to find improvement in their systems through the activity of bench marking.

a. Functional benchmarking: Studying and possibly emulating the best processes and the systems in the world whether form own industry or in another industry may it be even from competitors.

b. Competitive benchmarking: Analysing what the best competitors or leading companies in the industry are doing in order to discover the products, processes, and the practices that satisfy customer needs. Competitive benchmarking of processes is the prime area for focussing on competitors.

- Other approach was giving more than what customer wanted. It was especially important as women in US increasingly started owning the cars that suited them the most.
- "Total Customer Satisfaction", "Customer Delight" or "Exceeding customer expectations" is the motto of many companies worldwide. These terms also express the firms are going beyond what the customers demands today to keep the customer as a customer tomorrow.
- Few times car companies did highlight high performance, high quality, mail-order clothing retailer, which provided all the important services and the value and worth of their money.
- When other small companies started showing dedication towards their customers GM made significant changes in their customer approach by even adopting strategies like Business Process Reengineering.



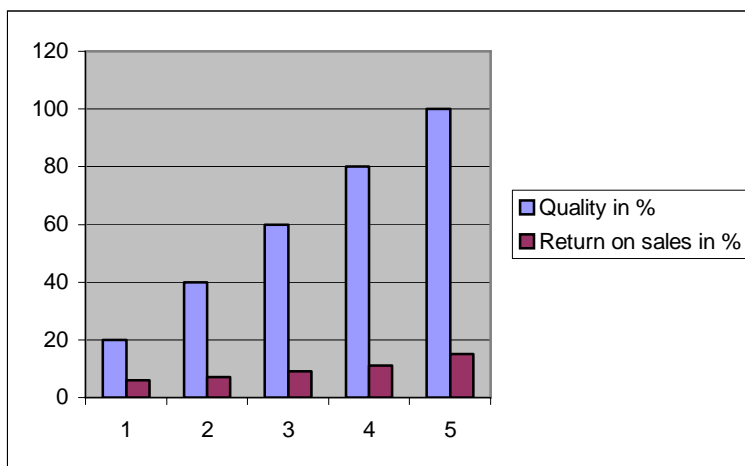


- *Shareholders and Owners* of the firm. TQM with its focus on the customers could produce superior long-term financial value for the owners. During 1993 and 1995, the companies who were listed in the Malcolm Baldrige National Quality Award were only those who had adopted management practices experienced an overall growth in the corporate performance, it included GM' s Saturn.
- Better the quality better the profitability became the basic fundamental. Its positive result can be seen from the following data analysis: It is calculated in terms of return on investment with following data.

10. Relationship between Quality and Return on sales:

Reference: GM' s Saturn Report:

Quality in %	20	40	60	80	100
Return on sales in %	6	7	9	11	15



Interpretation of the Graph and the table:

Improvement in the quality of the cars brought return on sales to its maximum and sales improved by fifteen percent.

People don't want the car with step-by-step increase but they want the product consisting of the total





new generation car with lot of facilities and comforts packed in one car.

This was the strategy adopted by the Japanese that ultimately Saturn also started in effect.

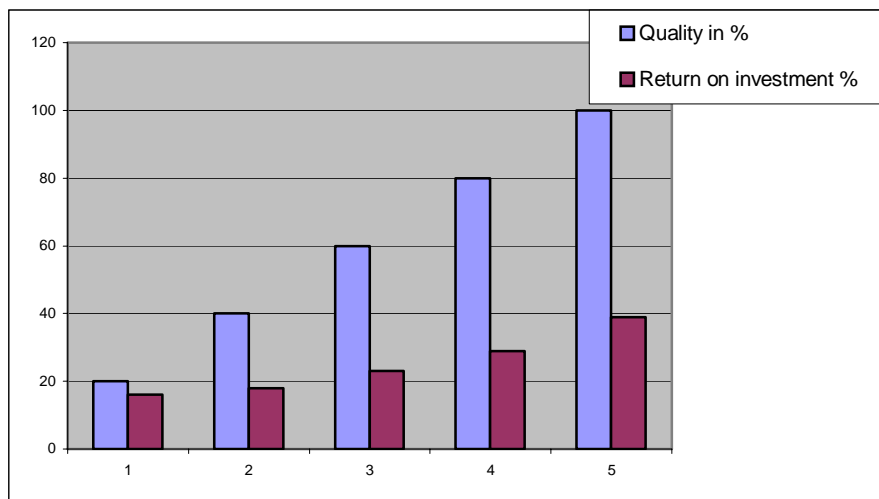




11. Relationship between Quality and Return on Investments:

Reference: General Motors' Saturn Report.

Quality in %	20	40	60	80	100
Return on investment %	16	18	23	29	39



Interpretation of Graph and Table:

Quality and return of investment are two sides of one coin and ROI touched almost forty percent, which was phenomenal.

Thus the car companies who adopted TQM practices achieved:

- e. Better employee relations,
- f. Higher productivity,
- g. Greater customer satisfaction,
- h. Increased market share, and
- i. Improved profitability.

After this success to keep company on path of success various firms adopted some new measures few of which are given in brief.





12. Importance of Customer Value system and TQM associated with it:

1. Customer Value: Providing value to customers is more than simply eliminating defects. Customer value has many dimensions and must be systematically determined in the firm's products and services.
2. Multiple dimensions: Deming, Juran, Ishikawa, Crosby, and others taught the business world that it could deliver high quality with lower cost to the customers simultaneously. They made Quality that delivered customers more than what they expected.
3. Value Realised and Value sacrificed: Value can be either positive or negative. Because either it can be realised or it can be sacrificed.
 - a. Realised Value: It is the value that the customer receives. It can include comfort, image, ease of use, reliability, consistency, enjoyment, and a host of other characteristics.
 - b. Sacrificed value: It is the value that the customer gives up. It can include time, money, energy, frustration, worry, and a number of other components. So, a two dimensional view of customer value has been proposed. Both dimensions have multiple components.
 - c. It has been estimated that a satisfied customer will tell three other potential customers of his or her satisfaction. However, a dissatisfied customer will tell seven other potential customers of his or her dissatisfaction. So it has become important for managers to pay attention to the value sacrificed by that could lead to dissatisfaction.
4. Best Net value: The difference between value realised and value sacrificed is called net customer value or simply net value. A comparison of net value for all competitive firms in the industry determines the best net value, thereby giving the firm a target. The business strategy and objective is to move the firm's customers to a position of higher value realised and lower value sacrificed so that the best net value in the industry is offered. Frequently, managers make organisational decisions





based on saving money. However, customers' need other than price reduction has been proved by this method.

5. New product development system: New product development systems in TQM firms are good examples of the use of cross-functional systems to create and deliver value to customers. The new product development system frequently utilise personnel from most of the functional areas in the company to work together on the design of the new product.

In few of the Japanese and German firms, teams of research, design and development, manufacturing and marketing guide prototypes from the labs to market include experts as well as customers as team members.

GM, Ford, adopted this only after 1990's.

6. Quality Function Deployment (QFD): A technique being used more often today to ensure that the design of new products and services is based on customer criteria is QFD.

QFD is customer-driven design system that attempts to achieve early coupling between the requirements of the customer, marketing, and design engineering.

- a. This technique starts with Customer criteria
- b. Translate them into product,
- c. Provide services requirement measures.

Ex. In India small cars with high power, tough body, with good network of authorised service stations, high fuel efficiency, good aesthetics and ergonomics, but less price of product spare parts and services will always do well. Hence, Tata-Indica has become a successful product in the domestic car market.

7. After severe competition been posed by the German and the Japanese firms US industry including GM, Ford faced severe attack from the customers. Some industries were decimated in the 1980s.





Some companies lost thousands of customers and retrenched into smaller-size organisations. Many companies were brought under one banner called TQM to improve their competitiveness. TQM associated them with high quality, low costs, short cycle time, regained market share, and increased long-term profitability due to customer loyalty to the company.

Thus, Total Quality Control and Total Customer Satisfaction were the tricks US companies adopted when they faced severe competition from the MNC.





13. CAN INDIANS ACHIEVE THE SAME?

YES.

1. Indian Car industry is more than 50 years old. It has seen all kinds of ups and downs in the business.

All the companies by now have their own well-defined well-focused set ups. They can focus on the technical front on the following technology:

Table 1: Where R & D is needed in India?

Technical Factors of cars on which Research and Development is needed in India			
S N	Where R & D is needed	FACTOR on which R & D is needed	Research findings why R & D is needed on these in India: Reasons / Comments / Remarks
A	Body of the car	Shock Absorber	Indian climatic & road conditions cuts short the life of this MNC part
		Streamline body	Air and Rain Resistance is almost unavoidable in Indian climate.
		Safety Measures	To Pass all dash tests in accidents is must in Euro Standards.
		Coats in Painting	Corrosion resistance paints and coatings needed in the competition.
		Night vision lights	All terrain roads in India and lack of night lamps and road signal.
		Doors and Door locks	These form the Most problematic part in Indian cars.
		Wind Shield Wipers	Improper wiping is done at present in varying climatic conditions.
		Back lights & Brake lights	Fusing these lights is a common phenomenon in India, research needed
		Panel & reading meters	On Panel / Dash Board most of the car's data must be visible.
		Emergency Needs	Air Bag, Message sending, Safety measures
B	Transmission	Automatic Transmission	Changing Gears very often.
		Alloys used	Breaking of Gears, Propeller shafts, etc.
		Lubricating Oils	Present oils must be brought to the international standards.
		Wheels	Improvement is needed on balancing front.
		Tyres	Quality of the material and standard needed
		Tubes	In this much improvement is needed
		Locking Nuts & Bolts	Age old nuts and bolts are still used
		Clutch	50 years old design is still used in India
		Constant Variable Tr.	No car in India yet running on CV Transmission
		Steering System	Needs Improvement in the Indian context.
C	Gear Boxes	First and Second Gear	Much improvement is needed in Indian cars
		Top Gear	Due to road conditions and other factors
		Overdrive	Saves Lot of efforts and fuel consumption
		Synchromesh Rings	Indians are yet to make good quality rings
		Gear Shifting Mechanism	Second biggest problem in India
		Automatic Gear Shifts	Gear Shifting can be avoided in Gear boxes
		Gear box lubrication	Improvement is needed in India as temperature range is -





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			50 to +50
		GB Servicing a year	In India, it is yet to make a start at maintenance front.
		Alloys used in Gears	Metallurgical Improvements need of the hour.
D	Engine	Cylinder Wear & Tear	Whole mechanism differ with conditions so needed research.
		Piston	Combustion Chamber is the Power Chamber
		Piston Rings	Pollution due to unburnt gas leaks.
		Tappet Valves	Most problematic in Diesel Engines.
		Rocker Arm	Few problems heard due to this.
		Cam Shafts	Metallurgical, Mechanism needs improvements
		Crank	Improvement is needed in Indian Contest
		Crank, Cam Mechanism	Improvement is needed in Indian Contest
		Fuel Injecting Mechanism	Perfect Combination is yet to be found.
		Combustion Timing	MNC vehicles misfires in Indian Contests
		Catalytic Converter	Heavy Pollution through exhaust gases can be avoided
E	Fuels and Alternative Fuels	Mixture with Petrol	Unleaded Petrol misfires, detonates
		Diesel	Diesel forms the major automobile fuel in India
	and Alternative	CNG	200 Tonnes of CNG produced at Bombay high everyday
	Car Segment	LPG, Gobar Gas, etc.	It is feasible to run car on these fuels.
		Hydrogen as a fuel	Most abundant fuel and least pollutant. So need of the day
		Solar Car	Petroleum is getting extinct but Sun will last longer.
		Battery Car	Research on long lasting Batteries is need of the day.
		Air Car, Water Car	Future needs of the car are Air borne and water borne as well.
		Some other fuel	Liquid Nitrogen as fuel in the car.
		Auto pilot-GPS car	Computer guides the car takes help of Satellites for position.
		Fuel Consumption	Many organizations are trying to get maximum average from cars.
		Alternative Materials	China clay piston, Fiber glass body, etc.

Interpretation of the Table:

All these technologies have been refined by the MNC to reach the quality they are giving so Indian must start early and reach the pinnacle as they reached in other sector with speed.

Also, all the companies have some or other kind of collaborations between them and some parent company those have developed their automobile machineries, units, assemblies and sub assemblies by MNC.

2. By now all the ancillary units, subunits, SSI, MSI, which are supporting the main plant for productions of the car, have developed themselves to the world standards.



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3. Here we shall see the examples in other field where India has already achieved this and then compare it for our small car indigenisation purpose.
- a. In the cycle Industry Hero cycles have achieved it much before and now they are leading cycle manufacturers in the world.
 - b. In the refrigeration industry,
 - c. In the most of the common medical equipments,
 - d. In the agricultural industry Indian organisations have achieved total indigenisation because of total customer satisfaction (TCS) and Total Quality Management (TQM).
 - e. India has successfully developed the most advanced kind of Super computers, with limited resources with well-defined time period and at cheaper costs,
 - f. In the Fast Moving Consumer goods (FMCG) India has achieved what any other countries cannot even dream of achieving it. India is totally self reliant in this kind of market. Even the toughest of though American McDonald, Kentucky Fried Chicken (KFC) could not disturb the hold of these local Indian companies.
 - g. Dr. Cherian, in the Operation flood, Indians could achieve the self-reliance in milk and milk products through sheer will power.
 - h. In the operation green, that is “Harit Kranti” started by Dr. M. S. Swami Nathan, made India self reliant in the field of food industry with extra tons of wheat, rice and cereals. In an extreme case in 2001 A.D., Indians produced so much of wheat and rice that they were short of godowns.
 - i. In the sugar sector India is the fourth best in the world.
 - j. India is almost on the verge of mastering the Space technology and research related to it and also the Military technology and research for total indigenisation.





- k. There are many more such fields where India has achieved significant breakthrough in those sector either through technology or through proper development of work culture and developing the ground forces.

Similarly, within the stipulated time Indian Car companies can achieve the same what the Americans had achieved. Even some experts like Mr. Keshub Mahindra, of Mahindra and Mahindra predict that there will be at least one company, which will be dominating the world car market in near future due to its quality technology at cheaper cost.





6. ENGINEERING ECONOMY AND INSTALLMENT FINANCING

Content of the Chapter 6

T. N.	Topic
1.	What is Engineering Economy?
2.	Basic concept of engineering Economy
3.	Cash Flow Diagram (CFD)
4.	Nominal and Effective Interest Rates
5.	Basic of Instalment Financing
6.	Basic Method for making Engineering Economy studies
7.	Internal Rate of Return Method
8.	Instalment Finance for the car
9.	Study of the Latest Finance Packages Offered
10	How Finance schemes work?
11.	New Plan suggestion to the Indian companies/ Product Development

1. What is Engineering Economy?

In the present market conditions every other day every organisation comes out with the new idea of growing customer base. Which include every kind of incentives and benefits. Engineering Economy can evaluate what exactly is involved in the venture customer is interested in.

Here the Engineering Economy provides systematic evaluations of the equivalent worth of benefits from





proposed venture, in relation with the cost associated with it.

It provides both enough information and systematic evaluated data to:

- a. The Management and
- b. The Customers, to take the decision whether the capital to invested or not in the present venture.

2. Basic concept of engineering Economy:

Engineering Economy studies involve the commitment of capital, expressed in the form of money, for a period of time, such that the effect of time on the money must be considered.

Money in any form always has time value.

A rupee today is worth more than a rupee one year from now because of the interest it could earn.

Engineering economy mainly deals with comparing the alternative options, or proposals by reducing them to an equivalent basis that is dependant upon:

1. The interest rate,
2. The amount of money involved,
3. The timing of the monetary receipt/ disbursement,
4. The manner in which the interest or profit on invested capital is rapid and the initial capital recovered
i.e. interest can be simple or compound.

Notations used for interest calculations:

First:

For Simple Interest:

P= Principal Amount lent to be borrowed,

N= Number of Interest Periods,





i = Interest Rate per interest period,

I = Total Interest Earned.

Second:

For Compound Interest:

i = Interest Rate per interest period,

N = Number of Compound Interest Periods

P = Present Sum of Money, (the equivalent worth of one or more cash flows at a relative point in time is called the present),

F = Future sum of money (the equivalent worth of one or more cash flows at a relative point in time is called the Future),

A = End-of-period cost flows in a uniform series continuing for specified number of periods.

3. CASH FLOW DIAGRAM (CFD): -

Cash flow diagram are the rupee transactions that 'trade hands' or represents opportunities during whatever study period is being considered for an alternative. These diagrams are strongly recommended to situations in which the analyst needs to clarify or visualise what is involved when flows of money occurs at various times. The usefulness of these diagrams is analogous to the use of the free-body diagrams for the engineering mechanics problems.

Conventions used for drawing Cash Flow Diagrams:

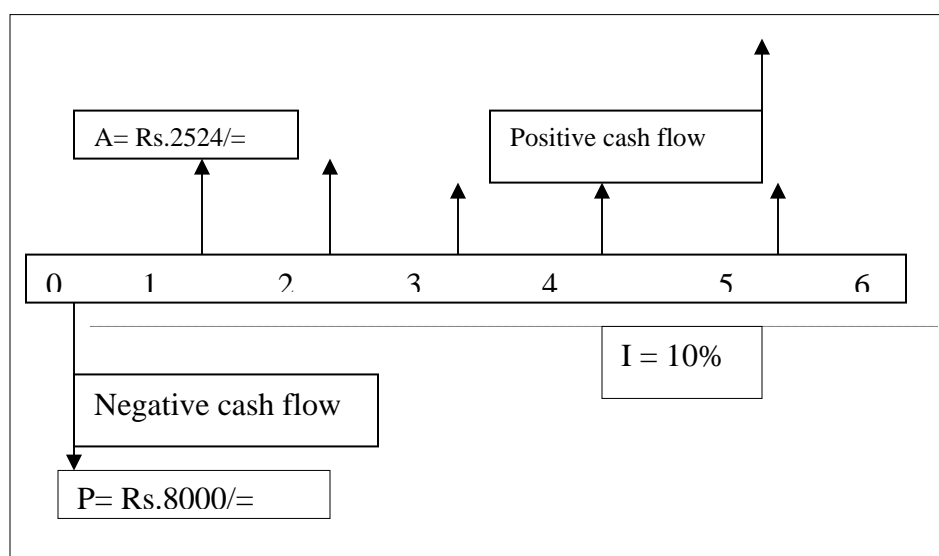
1. There is a horizontal line, which is time scale with progression of time moving from left to right. The period or the year labels are applied to intervals of time rather than points on the time scale. Only if specific dates are employed should the points in time rather than intervals are labelled.





- The arrow the cash flows. If a distinction needs to be made, downwards arrow represent disbursement (i.e. negative cash flows or cash outflows) and upward arrows represent receipt (i.e. positive cash flows or cash inflows).
- The cash flow diagram is dependant on point of view e.g. the below the new cash flow are drawn as seen by the lender. If the direction of all arrows had been reversed, the diagram would have been diagrammed from the borrower's point of view.

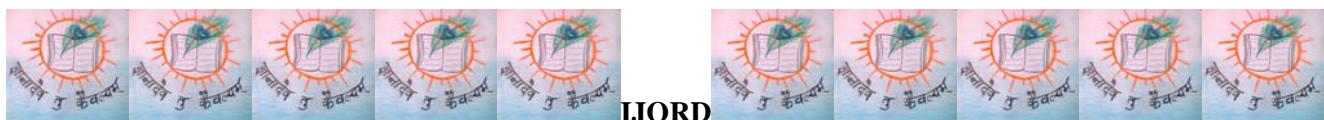
Example: Cash Flow diagram (CFD):



Interpretation of the diagram: The diagram shows the positive and the negative cash flow, which is explained later.

Interest Calculations Formulae:

To find	Given	Factor by which to multiply	Name of the Factor	Symbol of the functional factor
<i>For Single Cash Flows:</i>				
F	P	$(1 + i)^n$	Single Payment	$(F/p, I\%, N)$





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			Compound Amount	
P	F	$1 / (1 + I\%)^n$	Single Payment Present Worth	(P/F, i%, N)
<i>For Uniform Series (Annuities):</i>				
F	A	$(1 + i)^n - (1 / i)$	Uniform Series Compound Interest	(F/A, i%, n)
P	A	$[i(1 + i)^n] / [(1 + i)^n - 1]$	Uniform Series Present Worth	(P/S, i%, n)
A	F	$i / (1 + i)^n - 1$	Sinking Fund	(A/F, i%, n)
A	P	$[i(1 + i)^n] / [(1 + i)^n - 1]$	Capital Recovery	A/P, i%, n)

Interpretation of the Table:

Using following convention:

i= Effective interest rate per interest period,

n= Number of interest period,

A = Uniform series amount which occurs at the end of each interest period,

F= Future worth,

P = Present worth.

The table gives us the description of the cash flow.

4. Nominal and Effective Interest Rates:



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When the compounding of the interest is compounded only in a year then it is called nominal interest i.e. the basic annual rate of interest is known as the nominal rate. It is represented by 'r'.

But when it comes to actual annual rate on the principal it is something greater than this because of the compounding that occurs more than once in an ear.

This actual on exact rate of interest earned on the principal during the year is called effective rate.

The effective interest rates are always expressed on an annual basis, unless specially stated otherwise.

It is represented by 'i'.

So, effective rate, $I = (1 + r/M)^M - 1$.

$$= (F/P, r/M, M) - 1.$$

Where M = Number of compounding period/year.

The effective rate of interest is useful for describing the compounding effect of interest earned on interest within year.

5. BASIC OF INSTALMENT FINANCING:

When a series of deferred equal periodic cash flows in the substituted for a single (lump-sum) cash amount, as when merchandise such as an automobile is purchased, a modification of the ordinary annuity frequently is used.

A finance charge is made upon the total amount owed at the beginning of the loan instead of only upon the unpaid balance such a charge is of course not in accord with the true nature and the definition of interest. The true interest rate being charged is really more than always the shown in the figure. This forms the principal of instalment financing.



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6. Basic Method for making Engineering Economy studies:

All the Engineering economy studies of capital projects should conduct the return that a given project will or should produce. The fundamental behind this study is whether a proposed capital investment and its associated expenditures can be recovered over time in addition to return on the capital that is sufficiently attractive in view of risks involved and alternative uses of limited funds. This is explained by the time-money relationship.

As the pattern of capital investment, revenue or savings cash flows and the cost cash flows are different for different projects; there are different methods for making this study. They are as given below:

Type 1: Equivalent Worth Method-

- a. Present Worth Method (P.W.),
- b. Annual Worth Method (A.W.),
- c. Future Worth Method (F.W.).

Type 2: Rate of Return Method-

- a. Internal Rate of Return Method (I.R.R.),
- b. External Rate of Return Method (E.R.R.),
- c. Explicit Reinvestment Rate of Return Method (E.R.R.R.).

But to evaluate most the projects internal rate of return method (I.R.R.) is most widely used.

Now, the mechanism of this I.R.R. is described in details.





7. Internal Rate of Return Method:

This method is also known by the names such as-

- Investor's method,
- Discounted Cash Flow method,
- Receipts verses Disbursement method, and
- Profitability Index.

This method solves the interest rate that evaluates the present worth of an alternative's cash *inflows* (receipts on savings) to the present worth of cash *out flows* (expenditures, including investments). The resultant interest rate is termed as the "internal rate of return (I.R.R.)". For a single alternative, the IRR is not defined unless both receipts and disbursements are present in the cash flow pattern.

Expressed in general, the IRR is the i' % at which:

N

$$\sum_{k=0}^N R_k (P/F, i\%, K) = \sum_{k=0}^N E_k (P/F, i\%, K)$$

$k=0$

$k=0$

R_k = net receipt or savings for the k 'th year.

E_k = net expenditures including investments for the k 'th year.

N = Project life.

Once ' i ' has been calculated, it is then compared with MARR i.e. (minimum attractive rate of return) to assess whether the alternative in questions is acceptable if ' i ' > MARR the alternative is acceptable; otherwise it is not.

From the question we have to determine the ' i ' at which the net present worth is zero. Hence IRR is the value of ' i ' at which:





N

$$\sum_{k=0}^N R_k (P/F, i\%, K) = \sum_{k=0}^N E_k (P/F, i\%, K) = 0;$$

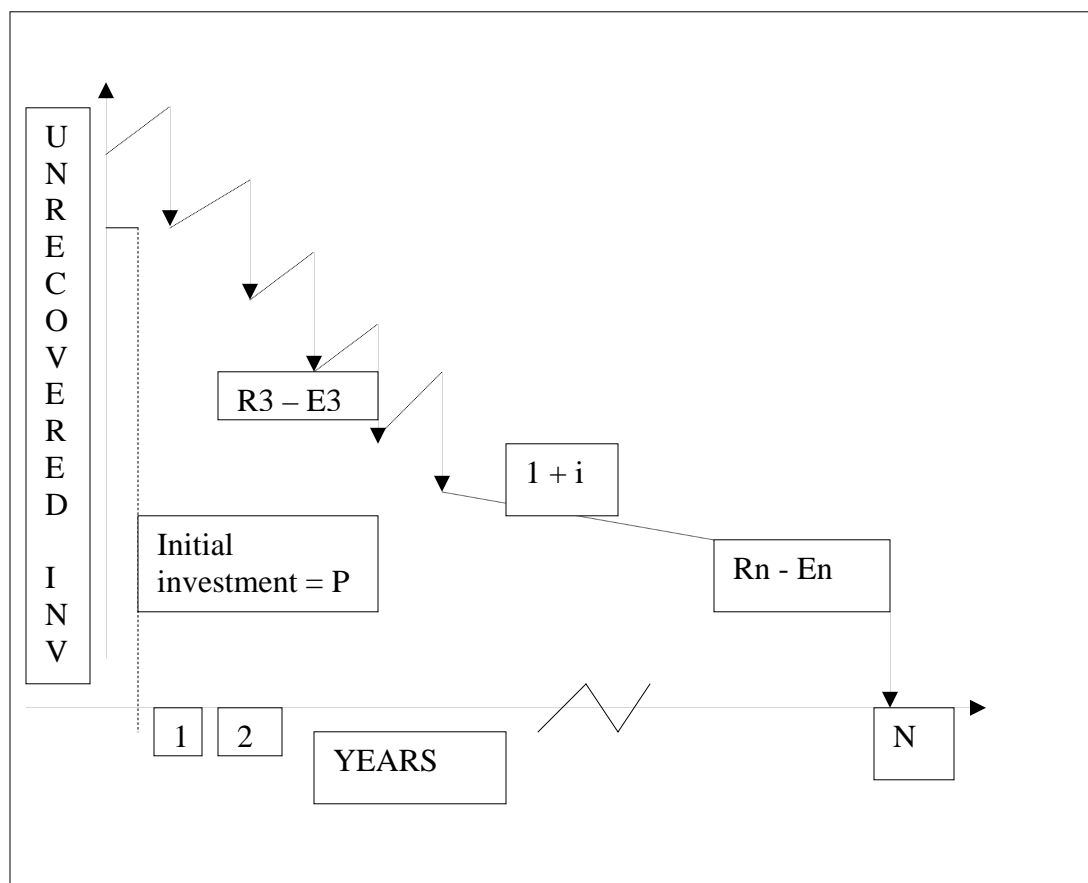
$$k=0 \quad k=0$$

Another way to interpret the IRR is through an unrecovered investment diagrams it shows how much of an original investment in an alternative is still to be recovered as a function of time. In the diagram the downward arrow represents returns ($R_k - E_k$) for $1 \leq K \leq N$ against the unrecovered investment and the dashed lines indicates the opportunity cost of interest or profit on the beginning of the year investment balance. The IRR is that value of 'i' in the diagram that causes the unrecovered investment balance to exactly equal to zero at the end of the stud period (i.e. year N). It is important to notice that 'i' is calculated on the beginning of year's unrecovered investment through the life of a project rather than on the total initial investment.





Based on it is the following diagram:





Interpretation of the diagram:

The diagram shows us the diminishing unrecovered investment as the maturity of business is reached.

The method of solving all the above equation normally involve trial and error method of calculations until the 'i' % is found or can be interpolated.

8. INSTALLMENT FINANCE FOR THE CAR:

At least a dozen of companies are in the Indian Car market.

The Indian Financers among them are:

1. Sundaram Auto Finance,
2. Anagram Auto Finance,
3. Bajaj Auto Finance,
4. Apple Auto Finance,
5. ICICI Car Loans,
6. Cholamandalam Investments and Finance Company Ltd.,
7. HDFC Car Loans,
8. Tata Finance,
9. Hyundai Finance,
10. State Bank of India Car Finance,
11. Maruti Finance, etc.





The Multinational Banks or Car Financers among them are:

1. Standard Chartered Car Finance,
2. GE Countrywide, and others.

9. Study of the Latest Finance Packages Offered:

In the event of Inflation and deflation in the market every other company is coming out with its own finance company. Now a days, Bajaj Car Finance, Maruti Car Finance, Hyundai Car Finance, ICICI Car Finance, HDFC Car Finance, Tata Car Finance, and other competitors are coming out with more and more luring offers for the customers.

As stated earlier Allianz Insurance and other foreign companies have turn over of more than all our banks yearly turn over we have in India.

Where as at the premier car segments dominance of the GE Finance, and Standard Chartered is clearly seen. As, Tata has launched its Sedan, and Maruti and Tata have launched their own Finance companies definitely the future belongs to Indian companies.

As many a times the middle manager level once get a promotion they are given the perquisites for the car maintenances so they shift from smaller cars to the middle level cars. At this time the executives prefer the best offer from the finance companies.

10. HOW FINANCE SCHEMES WORK?

Here few finance packages are systematically dissected to know in details.

Example 1. Sundaram Auto Finance:

This Company offers schemes to its customers in the following way:

- a. Margin Money Scheme,
- b. Security Deposited scheme.





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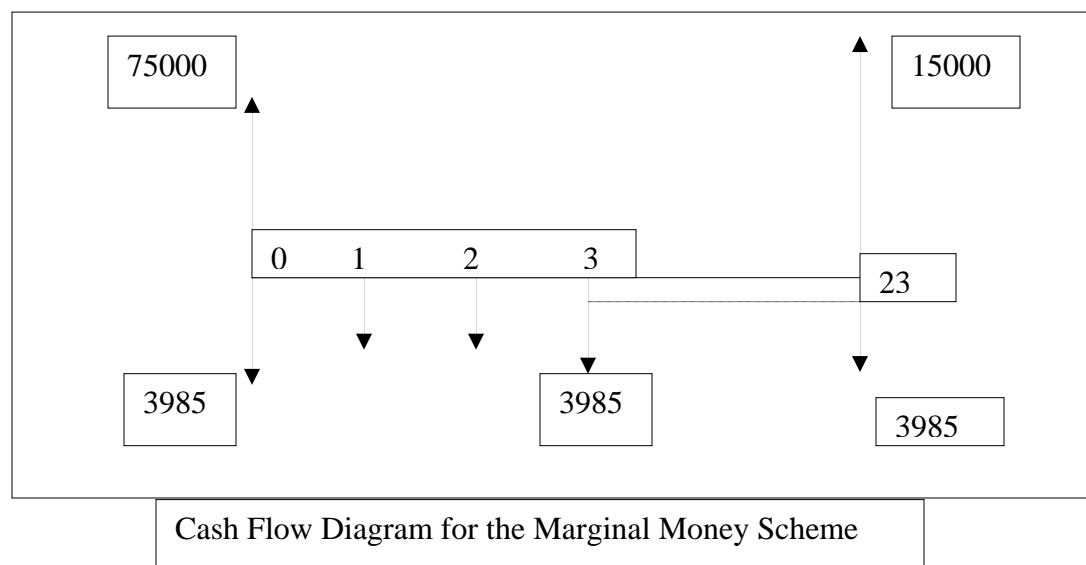
a. Margin Money Scheme: Sundaram Auto Finance:

Table

PERIOD	FLAT RATE PER ANNUM
12	12.80%
18	13.45%
24	13.75%
36	14.10%
48	15.00%

Cash flow diagram for the Margin Money Scheme:

Table:



b. Security Deposited Scheme: Sundaram Auto Finance:



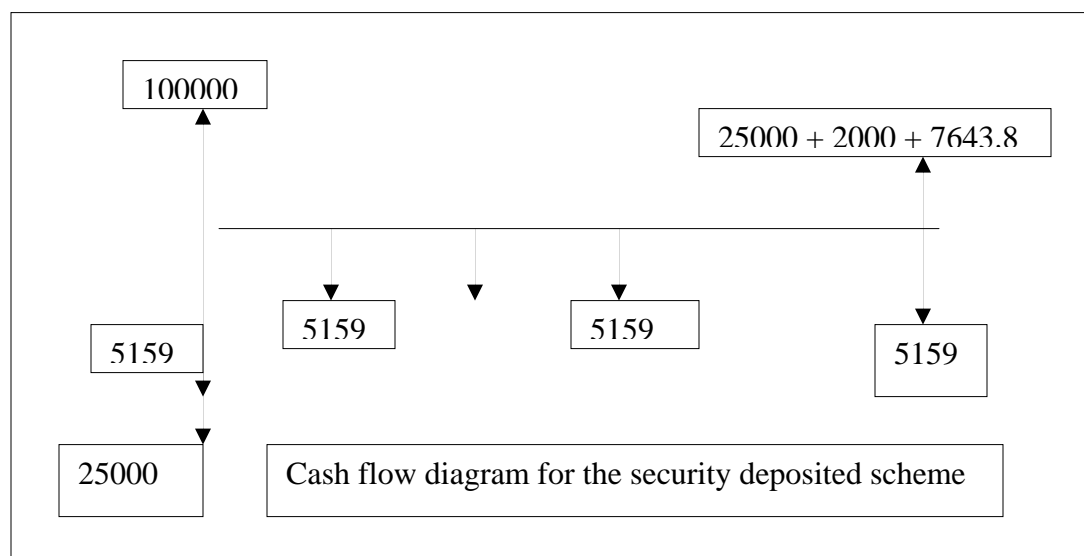
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PERIOD	SECURITY DEPOSIT	FLAT RATE PER ANNUM
36	25%	12.29%
36	20%	12.75%
36	15%	12.95%
24	25%	11.90%
24	20%	12.50%
24	15%	12.90%

Cash Flow diagram for Security Deposited Scheme: Sundaram Auto Finance:

Here, Rs.5159/= is the instalment paid per one hundred thousand (one lac) of the total sum to be paid to the bank. Where as the Rs.25000 is the security deposited per one hundred thousand (one lac).





E.g.2 Anagram Auto Finance:

This company offers *Ana-wheels – Car finance scheme*, which is divided into three different types:

I) Advanced Instalment Scheme,

II) Security Deposited Scheme,

III) Down Payment Scheme.

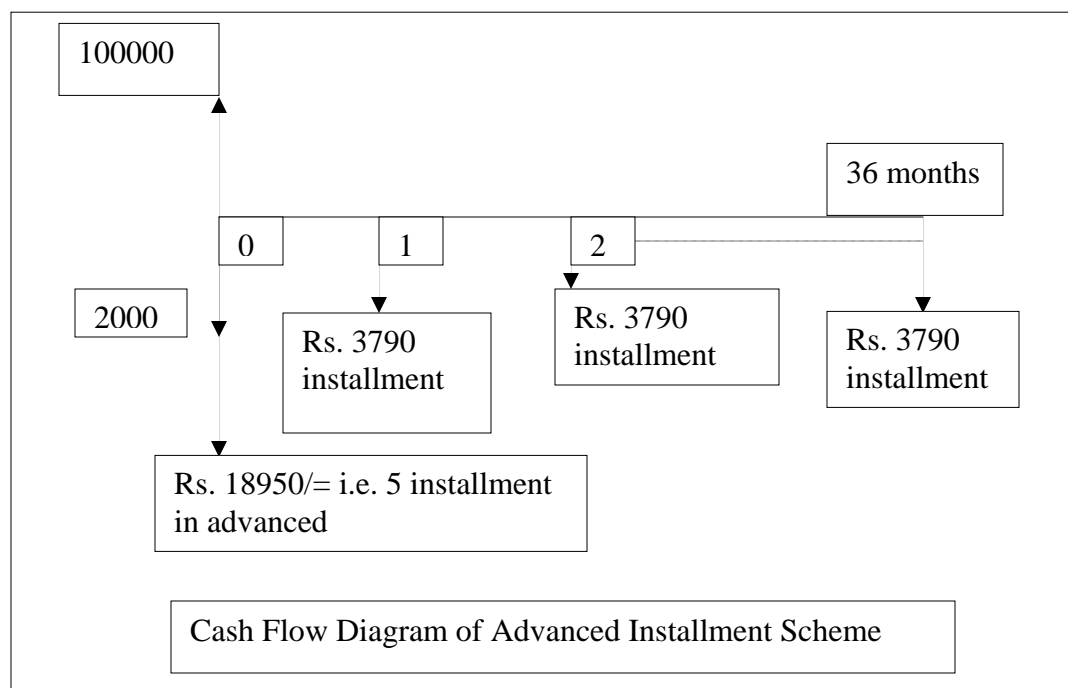
- I) *Advanced Instalment Scheme:* The format of this scheme is like you have to pay 2% of your amount to be financed as a Management fees. Then you've to pay the instalment per Rs.1 lakh, rest of the details is given in the table given below:

Period (In months)	Number of Instalments In advanced	EMI Rupees	IRR Calculated/ Arms
24	04	5105	2.5%
36	04	3790	2.5%
48	04	3144	2.5%

EMI= Equal Monthly Instalments,

IRR= Internal Rate of Return.



Cash Flow Diagram of Advanced Instalment Scheme: Anagram Auto Finance:**II) Security Deposited Scheme of 100% Finance:**

This scheme works as below:

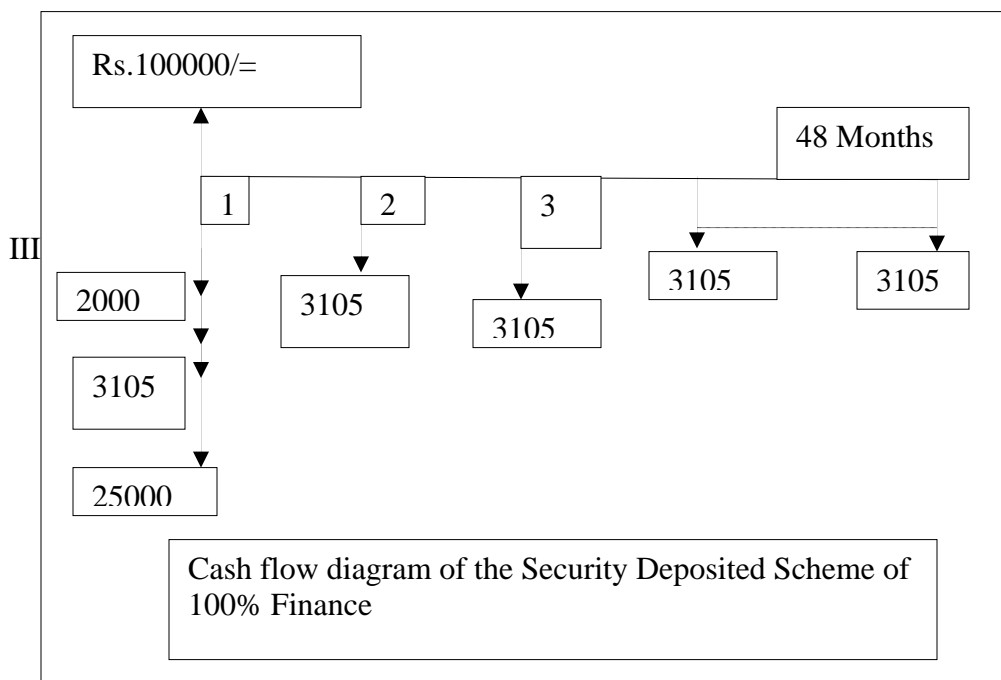
- Management Fees- 2% of the total amount to be financed,
- Security Deposited- 25% of the car cost,
- Interest payable @14% Compounded interest at quarterly,
- First instalment to be paid in advanced (per Rs.1.00 Lakh as a standard).



Rest of the details of instalments are given in the table.

Period in months	EMI in Rs.	IRR Calculated Monthly
24	5090	2.52%
36	3753	2.52%
48	3105	2.52%

Cash flow diagram of the Security Deposited Scheme of 100% Finance:





III) Down Payment Scheme of 75% Finance:

In this scheme the payment is done like below-

- a. Management Fees- 2% of the amount of fees to be financed,
- b. First instalment is payable in advanced (Per Rs.1 Lakh).

Rest of the things are given in the **Table of EMI and IRR calculated in advanced.**

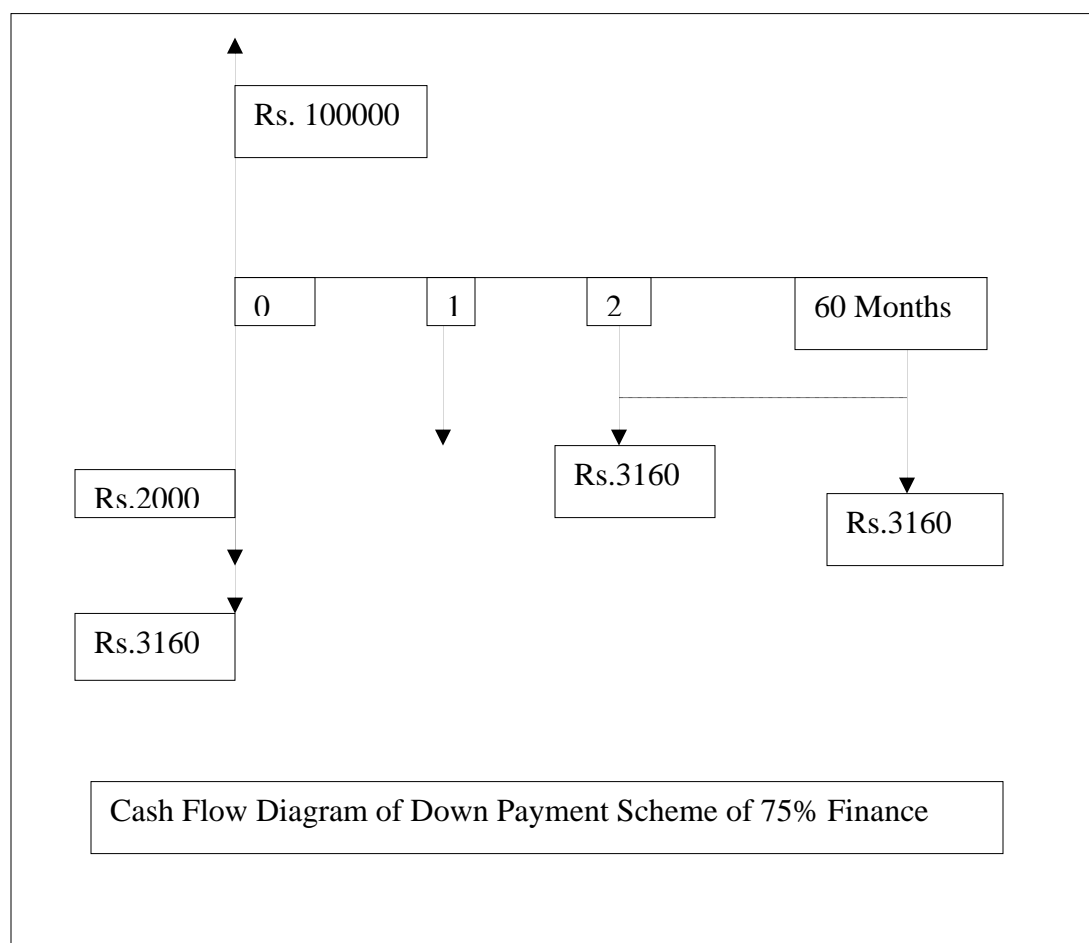
Table:

Period in Months	EMI in Rs.	IRR calculated for Monthly scheme
24	5456	2.66%
36	4142	2.61%
48	3513	2.59%





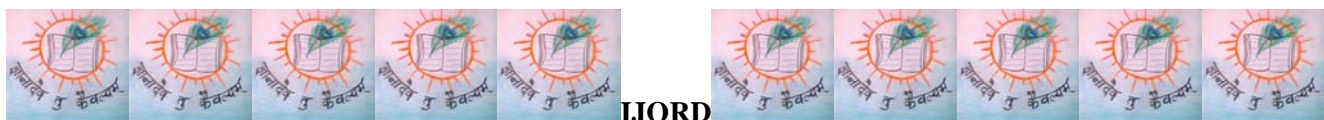
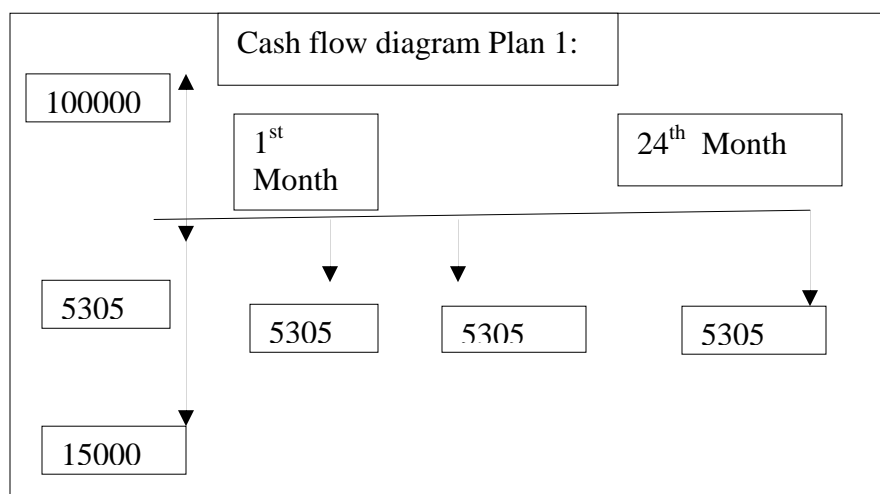
A self explanatory -Cash Flow Diagram of Down Payment Scheme of 75% Finance:



**E.g. 3:GE Countrywide Car Finance Scheme:**

Under this scheme the company has two plans -

1. Processing fees – 1% of the amount financed,
2. First instalment to be paid in advanced,
3. Prompt payment rebate – 2% per annum (of amount fixed),
4. Security deposit – Payable at 16% Compounded interest annually EMI as per table (For Rs. Per Lac).

Figure:**Plan Number 1:****Cash flow Dia:****GE countrywide**



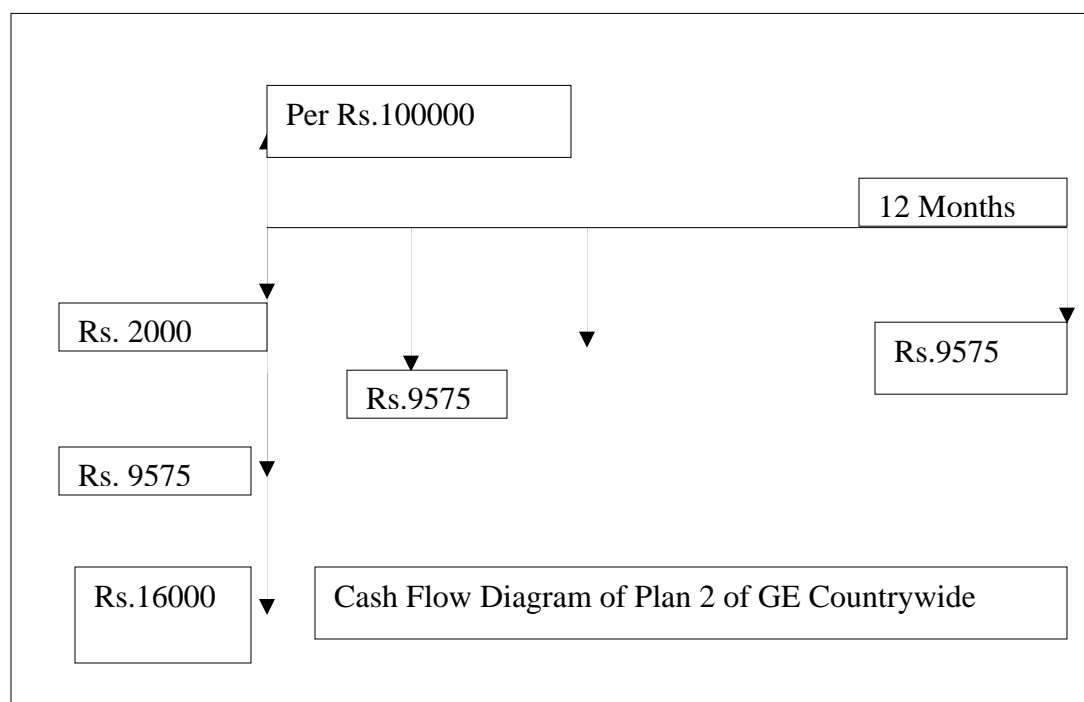
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Plan number 1: EMI and IRR along with Security Deposited Option:

GE Countrywide: A self explanatory Table:

Security	Period in months and IRR Calculated					
Deposit	12	IRR	24 Months	IRR	36 Months	IRR
in %	Months	in %	EMI	in %	EMI	in %
EMI						
10	9460	42.24	5366	38.47	4020	36.86
15	9405	43.57	5305	40.43	3955	38.1
25	9290	49.19	5184	42.3	3825	39.79
30	9233	54.11	5224	44.75	3762	41.08

Plan Number 2: Self explanatory Cash flow diagram GE countrywide:



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Self-explanatory EMI Calculations (Rs Per Lacs) Table:

Period in Months	Advanced Equal Monthly Instalments (EMI)		
	1	2	3
12	9575	9380	9207
24	5490	5375	5265
36	4150	4060	3980

11. NEW PLAN SUGGESTION TO THE INDIAN COMPANIES/ PRODUCT DEVELOPMENT:

The Hottest offer among them has been the offer of the Car Finances of Hyundai Santro, Maruti Finance, Cholamandalam Finance, and HDFC car loans up to 80%, along with one or two of the following options:

- a. First year Comprehensive Insurance of the Car Free,
- b. Free personal accident insurance up to Rs.5 lacs,
- c. Co-passenger insurance up to Rs.4 lacs,
- d. Free air travel insurance of Rs.15 lacs,
- e. Extended 3rd year Warranty,
- f. One year Household Insurance free,
- g. 0% Interest Rate Scheme,
- h. Old vehicle Exchange offer,





- i. Lowest Equal Monthly Instalments,
- j. With Lowest possible down payment.

And some other additional offers like free Music system, Free Club membership, etc.

But not a single Financer has offered all these qualities or half of these qualities in their schemes. That is what customers are expecting in the present consumer oriented car market, more benefits at lowest possible and affordable costs. In this segment Indian Finance companies are trying to match the foreign national banks and other financiers and the insurance companies.

This scheme is competent enough with the present market, and in return when put into practice can yield us same kind of profit, which other companies are fetching.

It is attractive enough to catch customer attention and competitive as well as profitable.

First Totally New Scheme: *Buy a Car at 7% Interest Rate in Two years:*

1. No Security deposited required,
2. No Processing fees required,
3. No Management fees required,
4. No Service Charges required.

At 7% Rate, this scheme looks very attractive and is also not given by any financer in the market. This will generate lot of enthusiasm among lot of customers.

How the scheme will work?

It is as easy as any other scheme.

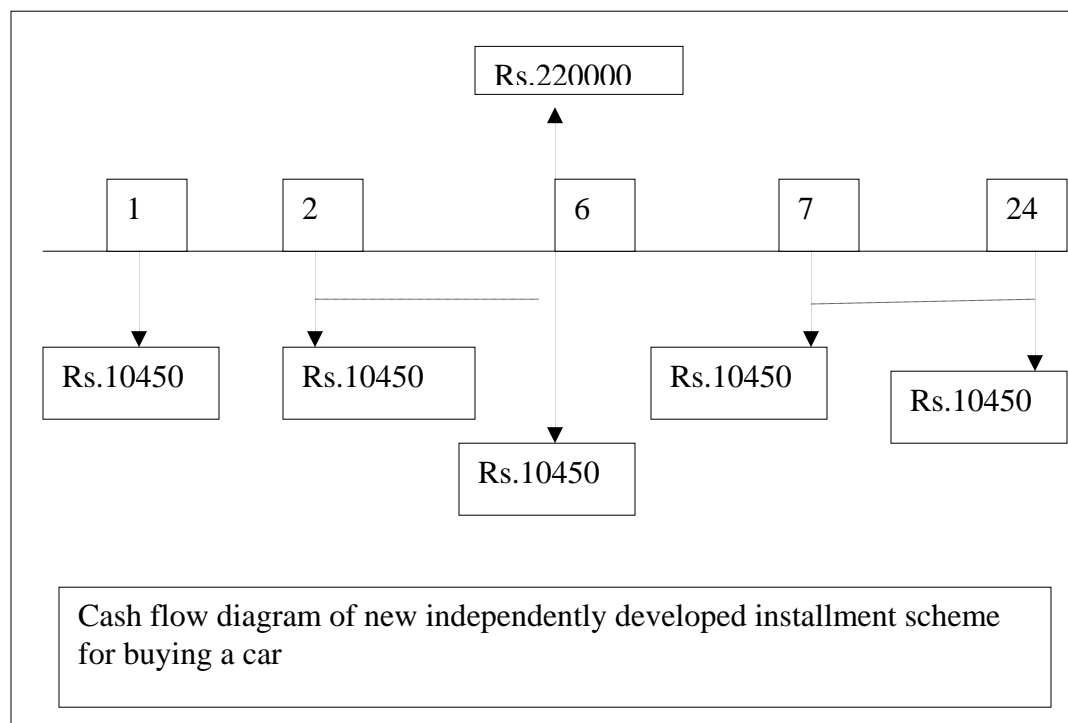




If customer is vying for Rs. 2,20,000/= loan for buying a car, he'll be paying Rs.10450/= per month for only 2 years.

The self-explanatory **cash flow diagram** for this kind of scheme can be shown like below:

Figure: Of the newly developed Auto Finance Scheme:



Now thorough studies will reveal that the calculation of 7% interest gives actually 30% earning approximately

Alternatively, if customer does not want to pay instalment every months he can pay 7 instalments in advanced and can take away his car at home.

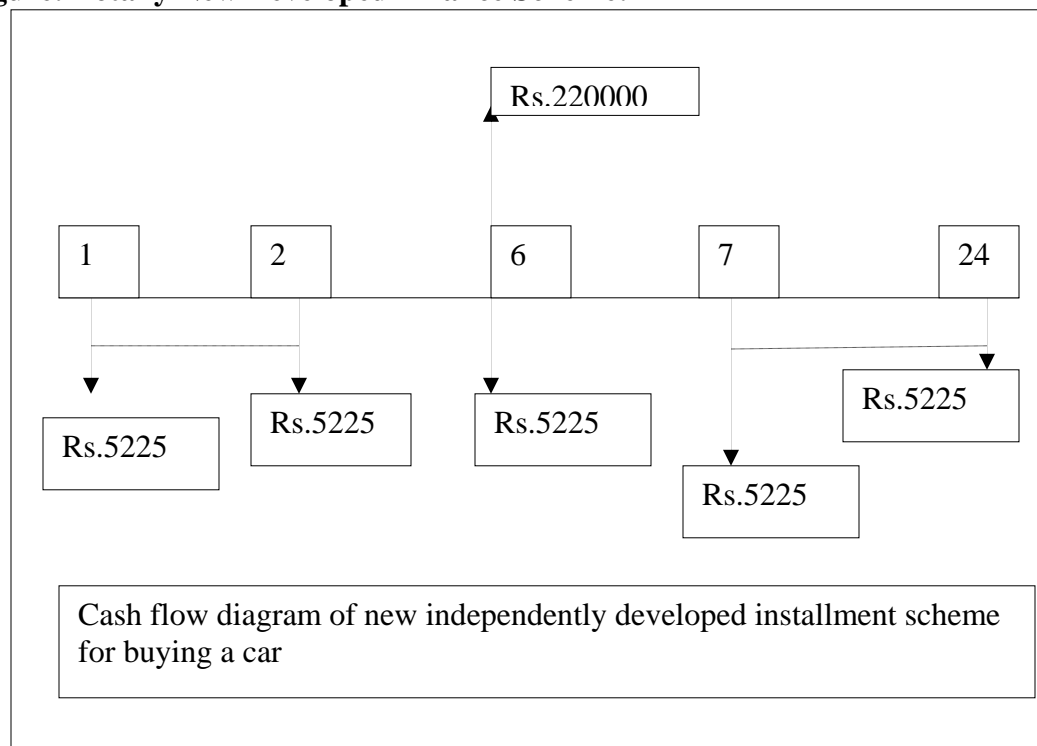




Second Totally new scheme: *Buy a car at 7% rate in Four years:*

The cash flow diagram for this kind of scheme can be shown like below:

Figure: Totally New Developed Finance Scheme:



Here, thorough studies will reveal that the calculation of 7% interest gives actually 15% earning approximately may less by 2 % to 3% than the market rate. But the scheme seems to be so attractive that the customers will jump on this scheme and those will be mainly Managers and other professionals who get around Rs.5000/= almost per month as Petrol or Vehicle allowances, which is significant in number in India.





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Third Totally New scheme: Avail Insurance Coverage with Car Finance:

In this very attractive scheme there is an added advantage of covering accident claim insurance premium along with the car finance.

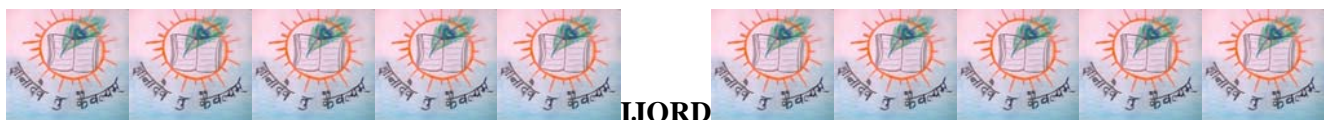
It is obviously a security deposited scheme.

It works like this:

1. Management Fees: 2% of the amount,
2. Security Deposit: 25% of the cost of the Car,
3. Interest payable o security deposit: @14% compounded interest annually,
4. First Instalment payable in advanced,
5. 12% flat rate interest,
6. EMI is calculated per lac.
7. Payment extension up to 36 months.
8. Can claim: Pay just Rs.56000/= and take the car home.

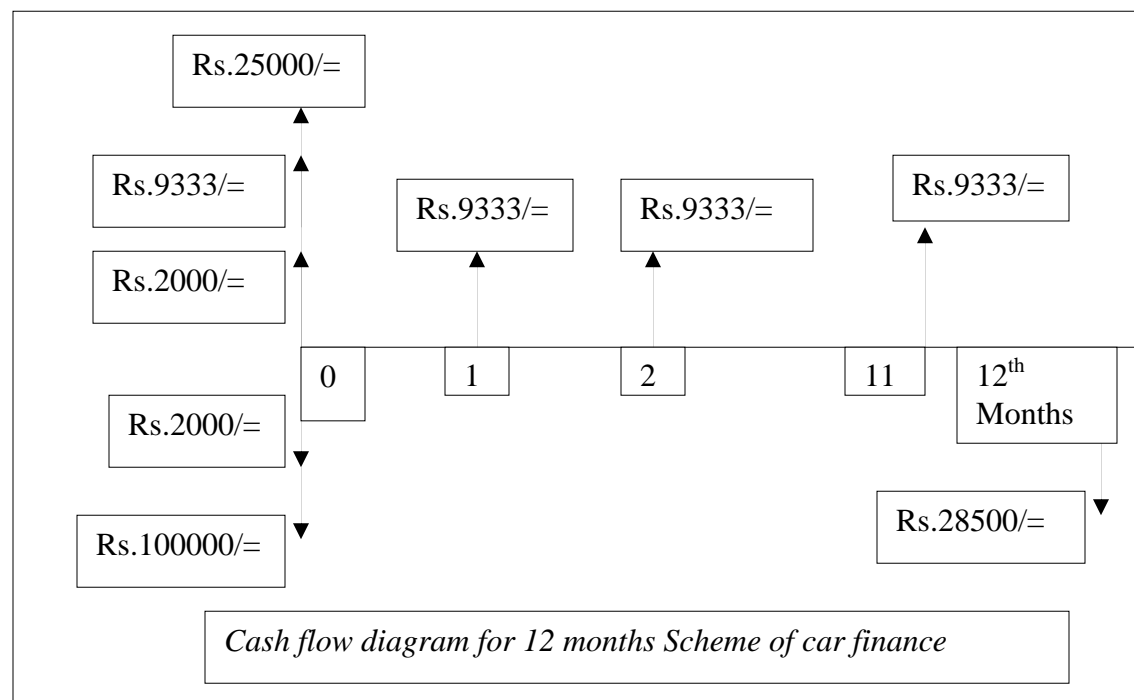
Table showing EMI/ Month:

Period in Months	EMI (Rs) paid / Month
12 months	Rs. 9333/=
24 months	Rs. 5166/=
36 months	Rs. 3777/=



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Now, the **CFD of totally new designed scheme for 12 months period of time** is shown below:



It seems from the scheme that it is not a special scheme as compared to other schemes in the market but it the variable which covering the insurance as well, which has hidden cost. Thus a profit generation is a match with the other schemes.

The trick in this scheme is benefit to the Financer as well as the Customers. If by chance the customer dies due to the accident. Then the financer will automatically claim the finance instalments left from the customer as per the pre planned agreement with the customer and the Insurance Company.



CHAPTER 7. UPGRADING SKILLS

Content of the Chapter 7

T. N.	Topic
Part A	An Eagle's Eye View on Present education Scenario
Part B	How to improve present classroom teaching methods?
Part C	Application of TQM in Improving Skills
Part D	Internal and External Customer Education
Part E	Role of Higher Institutes and Organisations

PART A:

AN EAGLE'S EYE VIEW ON PRESENT EDUCATION SCENARIO:

If the Universities, Institutes, and various Industries go hand in hand, Indians can achieve miraculous improvement with its knowledgeable people to perform the various important tasks. *Ultimately this human resource force, with upgraded skills, is going to be the heart and soul of the development.* So, now let us see the present technical skill providing education and organizational system of India.

Chart One:

Showing Universities and Technical Institutes and Colleges Offering Automobile Courses: Reference Maharashtra Government Guide: 1995.

The courses in the Automobiles are divided into following categories:

S N	Course Title	Course Description and Kind of Training Offered.	Pre-Qualification	Hierarchical Rank and Position Offered
1	(ITI) Indian Technical Institute, Diploma	Automobile Repairing and complete engine overhauling.	SSC/10 th std.	Worker
2	(DE) Diploma	Automobile Engineering (Designing few parts and	12 th or ITI	Expert Mechanic



	Engineering (BE) Bachelor of Engineering	Repairs) Automobile Engineering (Advanced Designing, Developing and Repairs)	12 th or DE	Service Engineer
3	(ME / MTech) Master of Engineering/ Master of Technology	Automobile Engineering (Advanced Designing and Advanced Developing)	BE / BTech	They do Actual Implementation of Designing and Development, which Ph.D. people plan.
4	(PhD) Doctorate in Engineering	Specialized Topic in Automobile Engineering (Advanced Designing and Advanced Developing)	MTech / ME	Planning for Research and Development at Strategic Level.
5	D.Sc. Doctorate of Science in Engineering	Innovative and Creative discoveries or invention in the field of Automobiles.	Ph.D. or That big level of work.	Devotion to this field.
6				

Chart two: Showing Number of Colleges, Strength, Facilities, and International Ranking of the Colleges.

Reference: Maharashtra Government Guide for the technical education, Nagpur.

S N	College	NCI	SOC	Colleges: Urban Area	Colleges: Away from the City Areas.	IR
1	ITI Govt.	20	20	Good Facilities	Very poor facilities	NA
2	ITI Pvt.	25	20	Good Facilities	Very poor facilities	NA
3	DE Govt. Polytechnic	10	30	Good Facilities	Very poor facilities	NA
4	DE Pvt. Polytechnic	5	30	Good Facilities	Very poor facilities	NA
5	BE (Government + Pvt) Automobile	5	60	Good Facilities	Very poor facilities	NA
6	MTech (IIT)	5	60	Excellent facilities	Not Applicable	Excellent
7	MTech/ ME REC+ Govt.	20	8	Excellent facilities	Not Applicable	Good
8	MTech / ME Pvt. Colleges	2	8	Good facilities	Not Applicable	NA



9	Ph.D. (IIT)	5	NS	Excellent facilities	Not Applicable	Excellent
10	Ph.D. REC+ Govt	20	NS	Excellent facilities	Not Applicable	Excellent
11	D.Sc. (IIT, Universities)	20	NS	Excellent facilities	Not Applicable	Excellent





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Notes for the description:

In the chart please read: IR= International Ranking,

NCI= Number of Colleges in India,

SOC=Strength of College,

Pvt. = Private,

Govt. = Government,

NA= Not Applicable, and

NS= Not Specified.

Special Comment for the content of the Chart:

1. ITI Diploma in Automobiles: It offers the 10th passed students the basic of the Automobile Repairing and Overhauling of the Engine and the whole of the Automobile.

2. Diploma in Engineering: It is offered to the students who have cleared ITI or passed 10th standard or 12th standard.

3. Bachelor of Engineering: There are following colleges which offer this course in India:

- a. Vishwakarma Institute of Technology, Pune.
- b. Bansilal Ramnath Charitable Trust, Pune.
- c. Kasegaon Education society's College of engineering and Polytechnic Sakharale, Taluka Walva, District Sangli, City Sangli, Maharashtra State.
- d. Terna Institute of technology, Ternanagar, District Osmanabad, Maharashtra state.
- e. Madras Institute of technology, Chennai, Tamilnadu state.

4.Master of Engineering/Master of Technology: Master of Engineering / Technology Degree is offered, when the student carries out some specified research in Automobile related topic.

5.Ph.D. (Engineering): Doctor of Philosophy in Engineering: This is one of the Degrees offered to the



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candidate for research in the Automobile field over some specified specialized topic.

6. D.Sc. (Engineering): Doctor of Science in Engineering: This is the highest degree and a kind of authority offered to the person for his outstanding inventions, discoveries or creativity in the field of his studies in this case the Automobiles.

PART B:

HOW TO IMPROVE PRESENT CLASSROOM TEACHING METHODS?

LACUNAE IN PRESENT EDUCATION SYSTEM:

1. Whenever, you visit the classroom in any engineering college or any other college you will find following lacunae due to the lack of harmony within the teachers and the students:

- a. Total ignorance of modern technology, ex. Go to any Municipality school and village level colleges, and observe it,
- b. Very poor communication,
- c. Very poor eye contacts while interaction,
- d. Deficiency of confidence among educator and the students,
- e. Adopting only traditional teaching methods in most of the school education and system.

2. Education that is more sort of bookish and is meant for the sake of qualification.

3. Emphasis on memorizing than on the concept and application,

4. Control and monitoring systems are too weak to provide full time studentship,

5. Less sensitive to changes in technology and business environment,

6. It is suitable western culture and business industries only,

7. Rising materialism and individualism in the society with changing culture,

8. Role models are absolutely missing.





9. There is no consideration of Spiritual, Psychological, further Intellectual needs of the students and the faculty members.

SOLUTIONS SUGGESTED:

Christian Argaris, of Jossey Bass Inc., in 1993, in his revolutionary speech, 'Knowledge for Action' said that in the present era organisations need the skill up gradation programme in which, actionable knowledge that individuals can use to create organisations of any type, in which the search for valid knowledge, a commitment to personal responsibility and stewardship, and a dedication to effective action and learning are paramount.

Education system be given rejuvenation in the following manner:

1. Setting Aims of teaching are listed below:

- a. Enlighten the soul and developing overall living according to the spiritual scripture as practiced in everyday life in India,
- b. Disseminating knowledge,
- c. Enhancing student's capacity to use ideas and information,
- d. Amplify the students' ability to test ideas and evidence,
- e. Develop capacity of students to plan and manage their own learning,
- f. Improve students ability to generate new ideas,
- g. Improve personality of students.
- h. Improve logical thinking among students,
- i. Improving social responsibility,
- j. Developing Wisdom,
- k. Cultured and Civilised behaviour,
- l. Desire and potential of self realisation,





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- m. Team efforts and sportsman spirit,
- n. Presence of mind and improving reflex action,
- o. Adaptability in any circumstances and Politeness,
- p. Confidence building,
- q. Communication ability,
- r. At least one skill must be developed for the future.

2. Improve Theoretical Approach of teaching in the colleges by:

A. Improving Preliminary Method:

Referring various practices adopted in various other systems in the world can do it. There are few methods, which can add vigour to this method are listed below:

1. Adding a Yoga session in the curriculum. Every student has to under go some typical practices, which improves his efficiency and adds satisfaction level of the institute and organisation by leaps and bounds.
2. Adding the exercises as done in stress management session in various organisations.
3. Adding spiritual practices of various religions according to his or her religion

e.g. Muslim will read his Namaj before his session and after the session, Hindu will pray his God, Christian, Jews and Buddhists will follow their kind of path before the session begins every day. This adds a special touch to the every kind of work those people involved in to the act prescribed.

Many organisations in the world have tried and implemented one or many such kinds of methods and reaped the fantastic results in to their institutes or the organisations.

In Japan Zen education is the must for every education Institute and no student can avoid this education. Zen means Dhyan in Sanskrit and which ultimately means meditation. If Japan can do it and get the stupendous results then why can't the Indian organisation do? So, try to improve this preliminary methods first can be the better-drawn conclusion.



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Not only this system is better in education institute but also in Industrial organisation also it proved to be giving better results. China has implemented it in sports as well.

So some kind of Yoga or spiritual touch can bear the desired results, and thus has become must in the present hectic and turmoil life of the individuals and the organisations.

4. Convincing one and everyone about the importance of TQM and Quality. Letting them know the following advantages and multiple dimensions of the Quality and grooming them from the futuristic point of view.

The Multiple Dimensions of the Quality:

1. Conformance to the specifications	7. Durability
2. Performance	8. Serviceability
3. Quick Response	9. Aesthetics
4. Quick-change Expertise	10. Perceived Quality
5. Features	11. Humanity
6. Reliability	12. Value

B. Improving Diagnostic Methods by:

- Creating interest in students,
- By discussing importance of the subject,
- Discuss important topics,
- Start with historical background and some interesting achievements and interesting events.

C. Improving Telling methods by focusing active participation of students while:

- Introducing new topic,
- Reviewing work,





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- Summary of the work,
- Delivering inspirational talk,
- Giving illustrative discussions,

D. Improving simple Lecture method by adopting new skills:

- Methods to motivate,
- To clarify professional and technical know how,
- To review,
- To expand contents.

E. Improving Discussion Methods:

- Improving formal discussion and
- Informal discussion by adopting.

Here useful exchange of free talk and opinions can improve skills of the students required for the following purpose:

- For laying plan of new work,
- For sharing information,
- For making future decision for the important action.

F. Problem Solving Methods:

- a. Inductive Approach,
- b. Deductive Approach,
- c. Analytical Approach,
- a. Synthetic Approach.

G. Assignment Methods:

- a. Preparatory assignment,



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- b. Study assignment,
- d. Revision Assignment,
- e. Remedial assignment,
- f. Unit or sub-divisional assignment.

H. Teacher Supervised Methods:

- a. Self-reliant independent effort to read, to prepare and to write on a specified topic,
- b. Double period plan,
- c. Daily extra period plan,
- d. Library study plan,
- e. Flexible supervised study plan.

I. Method of Seminar from an Expert to enhance skills of the targeted students:

- It gives sound knowledge,
- Students gets exposed to Latest technology,
- System gets on the well-defined track.

J. Method of implementing extracurricular activities:

- It is effective when you want to change mood and style of learning and teaching,
- Interaction method,
- Exchange of view without knowing learning process.

G. Demonstration Method: Most useful in Scientific and Professional courses

- Information,
- Training,
- Knowledge,
- Interactive.



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3. Using Specific Methods:

- Project Method: This method motivates students to bring out very good self-creation from the students.
- Heuristic Method: 'I discovered it, I find it' so I'll create a good thing only. It this kind of method.
- Play-way Method: Focusing on the required facts and neglecting the rejection. This method is the shortest cut to learn. It involves: a. Local survey, b. Debates, c. Discussions, d. Symposium, e. Dramatisation, f. Club and societies, g. Projects, h. Competitions, i. Cultural Activities, j. Social Services, k. Camping, l. Games, m. Community Books, n. Miscellaneous.

4. Use of different Audio Visual aids and advanced Technologies:

1. Over Head Projector (OHP),
2. Slide Projector Methods,
3. Double OHP methods,
4. Radio-Plays,
5. Video taping,
6. Television Programme method,
7. Instruction Methods,
8. Compact Disc Methods,
9. Computer Technology Methods.
10. Combination of many of the above technologies.

5. Improving Teachers: These are the days of improving the skills of the learned and the elderly people than younger generation. As technology and knowledge explosion has created a huge generation gap.

- a. Teachers must be groomed for the Physical parameters, which give 15% effect on his teaching. The parameters like dress code, posture, writing abilities, speed of teaching, imagination, habits, eye





contacts, interest, interaction, language skills, expression, irritation, impression, character, emotional skills, positive thinking.

b. Teachers must be made aware about percent of effect that Biological parameters present i.e. 25% on the students in front. These parameters are learning power, confidence, fear, self-study, positive thinking, mental level, honesty, sharpness, voice, physical fitness, tolerance, character, and flexibility.

c. Scientific parameter from the most important aspect now a day as it gives 60% of the impression on the students. It includes, way of initial lecture, time management, student management, student-cantered lecture, teacher-centre lecture, student-teacher-cantered, type of topic, material in the topic, presentation, satisfaction and justification, closing of lecture, impression of students, changes of behaviour.

6. Students must be encouraged: Teachers must encourage students for the following:

- a. Regular study,
- b. Interest in teaching,
- c. Sound knowledge,
- d. Sound nature with maturity,
- e. Positive thinking,
- f. Flexibility of nature as per need,
- g. Honesty in evaluation,
- h. Sound character,
- i. Aware of latest technology,
- j. Maintain equilibrium between teacher and learner.

7. Table showing Paradigm shift of Teaching: Reference: website: www.education.com and a Research paper on effective classroom teaching methods by Mr. Gupta, Mr. Gaud, Mr. Gokhale- Monthly Indian Journal of Pharmaceutical Education, June, 2002, :





Attribute	Traditional Paradigm	New Paradigm
Knowledge	Is transferred from teacher to students.	Jointly constructed by students and faculty.
Students	Passive vessel to be filled by knowledge of faculty.	Active, constructor, discoverer, transformer of own knowledge.
Purpose of Faculty	Classify and sort students.	Develop students' competencies and talents.
Relationships	Interpersonal relationship between faculty and students and among students themselves.	Personal transaction among students and between faculty and students.
Context	Competitive and Individualistic.	Cooperative learning in classroom and cooperative teams among faculty.
Assumptions	Any expert can teach.	Teaching is complex and requires considerable international class of training.

PART C:

APPLICATION OF TOTAL QUALITY MANAGEMENT (TQM) IN IMPROVING SKILLS:

Quality is just a conformance to the specifications. In Education Scenario, it is related to Quality of Education imparted and its methodologies.

Recent Developments and rapid change in technologies demand improvements at every level of education. It is the need at the employee development program as well. Thus right from the student level to employee level





the quality approach at every level of work should be imbibed in the minds. It is possible with right kind of motivation in education and up gradation of skills is adopted in a following revolutionary manner.

1. Excellent Courseware: First and the most important requirement of the TQM in the Skill enhancement of employees or improvement in education system are the best form of Courseware. With the best courseware the job of teaching or knowledge updating becomes easier. Many a times the point wise written courseware brings positive results than the big textbook or lengthy texts in software.

The value addition is seen if we get:

- a. Infrastructure design: Interactivity, cognition, Conceptual change, contents, use of multimedia its fruitful application and adaptability add sting in the system.
- b. Software Design: Reliable Technical Interactive software has given fantastic results to the higher end industrial giants. This method can also be useful in the other forms of the education or the employee development program.
- c. Contents of the courseware: It must be very precise, accurate, and fluent in navigation and presentation. Consistency with learning objectives adds vigour in the quality-learning objective.

2. Gap may be bridged between Expectations and Results: It is due to following aspects we are finding some unusual happening in the present day education and business systems-

- a. Education has undergone a radical change from providing knowledge-based education to the need based education.
- b. Perception and attitude have gone a sea change.
- c. Response time and reliability have been seen improving,

3. Top notch higher performance institutions and organisations like IIT, IIM, Tata Engineering, Infosys, Wipro, GM, Ford, Hyundai, Daewoo, Toyota, etc. have already implemented a integrated traditional and good functioning system and are trying to undergo sea change in implementing this kind of system after a





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thorough R and D. This will improve administration, R & D; to fight global competition with positive frame of mind. Therefore these Institute need to focus on the improvement of following aspects:

- Number of students per computer,
- Participation of number of students/ employee in the research paper presentations,
- Faster improvement in the laboratory or the on job services or the practical session.
- Staff students ratio, or employees and the coach ratio,
- Improvements in the satisfaction index of students in the college,
- Improvements in the index of internal and external customer satisfaction,
- Percentage of passing/ First class/Distinctions,
- Ranking in the university/State/National/International level,
- Number of research paper published per faculty per year and their recognition by National and International level authorities,
- Research Grants obtained by the faculty and their completion in schedule time,
- Number of continuing programs conducted per year.
- Improvement efforts in normalised quality index of teaching,
- Training imparted to the faculty per person per year,
- Number of consultancy projects taken up per year and funding,
- Number of funded projects received per year with funds available,
- Number of Books written by the faculty per year and their acceptance by the Students/ Faculty,
- Productivity index in the organisation,
- Number of community oriented programmes per project per year,



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- Time taken for the clearing a file in the department and institution,
- Number of industry and institute interaction program per year.
- Involvement of Industrial Experts in imparting education and their Frequency Of Visits,
- Addition in infrastructure facility per year,
- Systematic improvement in the office- standardisation of process carried out per year with least movements and lead-time.
- Number of Information technology tools in use per students.
- Grading system and their periodic updates,
- Collection in library Books, Periodicals, Journals, etc. and their additions per year,
- Attendance of students in theory and practical.
- For employees devotion to their job.
- Extra efforts taken by the teachers to upgrade the low ranked students,
- Number of Tutorials / Tests conducted and their assessments with positive result oriented discussions.
- Reading room facilities in exam time in late hours,
- Healthy atmosphere and positive atmosphere among students and teachers in the Institutions.
- Healthy atmosphere and positive work culture in the organisation.
- Placement of students in R & D and in Industry,
- Number of R & D institutes and industrial organisations visiting per year,

4. Special Efforts needed in India over the following aspects to get the desired result:

- Awareness at its peak level,



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- Starve for the excellence and achieve it by a quality circle at management, college/department level,
- Appropriate goals like zero defect should be set and achieved,
- New comers must be given the best awareness programme,
- Periodic progress reports must be published and corrective measures must be taken,
- Kaizen- the continuous improvement should be a common focus,
- Every contribution must be encouraged to achieve desired results,
- Staff department and each element like workshop, smithy shop, laboratory, library, Teaching and supporting staff, should be given points/score and these should be displayed on the board and also communicated to one and all in the organisation. This will keep the ideals known to all. Further more healthy competition can bring out the scope for improving.
- Self assessment can be given a high priority,
- Developing leadership quality be given due importance,
- Introduction to the modern and latest techniques of supervision be adopted most immediately,
- The barriers between the departments must be thinned and individual rivalry be absolutely avoided,
- Pride of excellency be given highest recognition,
- Strict implementation of Academic programmes must be achieved,
- Improvement of Quality must be the motto of the Top Management,
- Strict implementation of control factors,
- Future targets must set up with consultation of every department and individuals,
- Proper recognition to every kind of suggestion,
- Holistic approach in Institution,
- Continuously aligned and linked education system,
- Radical changes in structural and sound property,





- Every member must be made accountable.

5. Mandatory Factors for Success in skill enhancement or improvement in education system using

TQM:

- a. Autonomy of the all departments in deciding and implementing better practices,
- b. Cooperation, involvement and team efforts of every person attached to this project,
- c. Willingness of the superior performer – laying down specific instructions and ensuring its adoption,
- d. Inclination and willingness of the follower group in effective implementation.

6.Results of implementation of TQM:

The results are astronomical wherever the TQM was adopted in the industrial sector whether in Japan, USA, even in India. So if the education and employee **skill development** programme is given the well-planned mould of TQM it will give results in the manner.

- a. Appropriate student's and/ or employee's expectations and performance appraisal,
- b. Kaizen- Continuous improvement becomes a strategic objective.
- c. Improves the Quality of the teaching and learning and hence improvement in the desired results.
- d. Consistency and inbuilt reliability,
- e. Close monitoring of improvements and future needs,
- f. Splitting and objective setting for long term and short term plans,
- g. Faster Corrective Results based on employees' and / or students' feed back.
- h. Possibilities of reward sharing on the improvements those were earlier affected.
- i. Character building is also improved as Productivity improves due to high rate of transparency.
- j. Healthy competition among every one concerned to perform well results in achieving desired goal of continuous improvement in the skill improvement of the students and / or employees. The students





and / or employees of course can be internal and external customers. Hence resulting in the customer delight.

PART D:

INTERNAL AND EXTERNAL CUSTOMER EDUCATION:

Remember the words used here are internal customers and external costumers have typical modern meaning:

1. a. Internal customers mean the employees and the workers in the organisation working in the Manufacturing unit. Every now and then they are to be always trained. The aim of worker's education is to enable the workers to put his fingered on problems confronting him in his social group; he must acquire a certain culture so that in his capacity of an individual, he can locate his proper place. He must understand both his position in the enterprise as well as the role of the enterprise itself within the general framework of national and economic development. The education mainly content:

- Organisation built toward a symbiotic and cohesive unit with humanitarian approach to attain productivity and develop work culture,
- Solving Economic and Social problems and helping in welfare of the society,
- In one more aspect it deals with the positive leadership development with skills to impart all his might towards developing his colleagues to attain the objective of the organisation and the national goal.

It is done using all the aspects mentioned in the earlier topic of upgrading the skills using so many kinds of techniques. This upgrading is done though proper education with following intention:

This education to these internal customers will be
1. Systematic
2. Documented





3. Periodic
4. Purposeful

This study will evaluate the following facts, figures, and ideas for improvement of
1. The Organisation
2. The Management support
3. Performance of Machines, systems and equipments
4. Future goals

Some age old reliable techniques and methods of education and training to upgrade skills will be assisted with the modern techniques as mentioned above. These improvised techniques will be like:

- a. On job training by giving proper instructions,
- b. Vestibule training instructions like creating on job situation n classroom,
- c. Demonstration and Examples method,
- d. Simulation Method in which actual job condition are created,
- e. Apprenticeship Method while creating art like skills,
- f. Classroom method in which
 - o Lectures,
 - o Conference,
 - o Group discussions,
 - o Case studies,





- Role playing,
- Programmed Instructions,
- T-Group Training consisting of associates, audio-visual aids, planned reading program, etc.

This education to upgrade skills with new look will be occurring definitely at certain level of the factory positions:

- At the top level management with strategic outlook will be trained to train the trainer who are going to be the actual teacher for the whole program,
- Actual trainers get the training from these top level strategic trainers,
- Finally the workers among themselves will decide with responsibility to conduct their training and equip them with the skills, for the prescribed task or the tasks.

b. Internal customers also mean shareholders and those directly or indirectly related to production or services of the organisation. They are to be made aware about the various facets of the organisations whenever it is needed, through:

- Group discussion,
- Television shows,
- Advertisements,
- Correspondence courses,
- Sending on time letter,
- Showing films,
- Through Radio programs,
- Seminars,
- Class room lectures,





- Study tours,
- Factory visits, etc.

2. External customers means the consumers who are using the product for the

Satisfaction of their small car as a commodity needs. This part is seen in details in the customer relation management.

PART E:

ROLE OF HIGHER INSTITUTES AND ORGANISATIONS:

They should present before the others their image as the role model for Indian Institutes and other Business Organisations.

Institutes like IIT, and also IIM, ARAI, PCRA, Institute of Engineers, ICWA, IFCA, CII, etc. and Industrial organizations can do lot of breakthroughs as follows:

- a. IIT Professors pursue lot of research with the help of students and assistants in the field of the automobile. If these research-scholars get the support to go ahead for implementations in the factories of the Indigenisation program. Similar is the case with hundred and fifty odd Engineering colleges. If the wild idea of designing and developing all the intricate parts of the Automobile united with the help of students as a part of final year project. Then whole of the project can be achieved in one year itself, provided all technical institution take part by division of parts done judiciously.
- b. IIM management students and the Professors can give us the best viable project for this indigenisation program. As a research project for a full batch of Finance these scholars can give us viability of the each and every part of the small car, thus the future developers will have the ready made go ahead in the project.





- c. ARAI approves the Automobile products developed by the individual organizations or individuals in India with its final testing. The Engineers and the Scientists at the ARAI have shown interest in this kind of project when contacted and are ready to go ahead with this kind of challenging projects. They are ready to pass the well-designed car parts to the international norms.
- d. PCRA will be approving the Engines from the cars with proper pollution control implementations. They will support all kinds of the Catalytic converter. They will also suggest the modifications to be done if the engine emission is not up to the internationally specified norms.
- e. Institute of Engineers, AICTE will highlight the advantages of the Indigenisation and constantly give support through to this program through IE conducted courses, seminars, and journals.
- f. ICWA the cost accountants will be focusing on how to optimise each and every part of the cars thus giving maximum benefit to everybody concerned with the small cars with maximum precaution of safety.
- g. IFCA and the Chartered Accountant will be always keeping the Finances of the companies on the well-defined course of action in the annual budget with maximum productivity.
- h. IDBI will give:
 - Financial Assistance,
 - Special Assistance to backward areas to get few projects from this project,
 - Will provide refinance facilities through I.F.C.I., I.C.I.C.I. and other financial institutes.
 - Assistance to small scale sector, and hence SSI,
 - Through this project Indian government will balance Regional Development,
 - Will introduce soft loan scheme along with IDBI, IFCI, ICICI for this project,





- Will introduce Development assistance fund for this indigenisation of small car as per the customer expectations.
- Will introduce other promotional activities by setting up department of special task like.
 - Technology Department,
 - Market research Department,
 - Promote this activity in the Northeast region like backward area.
 - Will improve tempo of indigenisation of small cars and hence supporting industries,
 - Will provide other supports
- i. CII and Mechanical Engineering and Automobile associations will keep all the organizations together and make them prosper perpetually for the benefit of the nation and humanity.
- j. FICCI, SIDBI should organise such kinds of program more often than present day scenario and that too at lower costs. This will require lesser input than what ultimately it will achieve as big shot output in longer run.
- k. The organisations Banks and other financiers should come forward for the loans facilities for the adventurous youth with some kind of experience, degree, or some kind of background to start the industry related to the small car.
- l. There should be proper collaborations of all the technical, management and Industrial houses to implement the breakthroughs in the small car technology.
- m. Boosting the buying and selling of only Indian made technologies can be the solution to give the rise in Market fluency. This can only be possible if all the Indian organisations show some kind of patriotism above all kinds of material attractions. This was possible in Korea, Japan, and USA, then why not in India. So a huge awakening among the masses and classes buying the indigenised small car is need of the hour. Right from the CII, FICCI, MIDC, VIA, ARAI, PCRI, Tata Engineering,





Bajaj, Hero, Mahindra and Mahindra, must advertise for it and with cooperative efforts strive for it.





CHAPTER 8. KING CUSTOMER'S IMPACT ON SMALL CAR INDIGINISATION

Content of the Chapter 8

T. N.	Topic
Part 1	Customers' response to present car market
Part 2	Feed back from the customers on present car market
Part 3	Experts' View
Part 4	Preparing for the Future Trends according to the Demands of the customers

PART 1.

CUSTOMERS' RESPONSE TO PRESENT CAR MARKET:

Customer is the prime target and is the most important link of the in all these activities. His yes can make the turn over of One million rupees in the market and his no can be equally devastating to the market what so ever the reason may be.

So, it becomes important to know his buying motives, needs, and his behaviour studies in the market.

Let us see the buying behaviour first. Mr. Sherlekar, Mr. Prasad and Mr. Victor define buying behaviour of the customer as, "*all psychological, social and physical behaviour of potential customers as they become aware, of evaluate, purchase, consume, and tell others about the products and services.*" It involves:

- Individual process
- Group process,
- Post purchase evaluation and satisfaction level,





- d. It include communication, purchasing, and consumption behaviour,
- e. Social Environment,
- f. It includes both consumer and industrial buying behaviour.

Now, Buying motives are defined as those influences or considerations which provide the impulse to buy, induce action or determine choice in the purchase of goods or services. These include Product motives and Patronage motives like emotional and rational motives.

We will go by technology motive first.

1. PRESENT CAR TECHNOLOGY:

Let us see the present car market in India and compare the four most sold cars in India.

Let us start with most visible part of the car the technology. *Remember it is estimated by Indian Car Industry that if GDP is more than 6% India will have turn over of 1 million cars per year from 2007.*

Table 1: Showing technical specifications of the four most sold cars in India:

Reference: Independent Pamphlets from each of the car company given below:

1. GENERAL SPECIFICATIONS:				
DIMENSIONS	HYUNDAI- SANTRO	DAEWOO- MATIZ	TATA-INDICA	MARUTI- ZEN
Length in mm	3495	3495	3660	3495
Width in mm	1495	1495	1625	1495
Height in mm	1590	1505	1485	1405
Wheelbase in mm	2380	2340	2400	2335
Ground	172	170	170	165

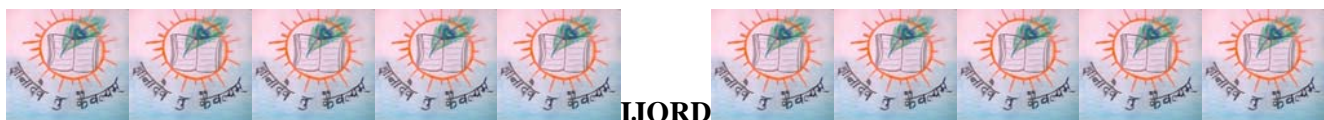




Clearance- mm				
Kerb Weight- Kg	780	770	850	752
Front Track- mm	1250	1315	1295	1260
Rear Track- mm	1210	1300	1256	1240
Front Seat	Bucket type	Bucket type	Bucket type	Bucket type
Rear Seat	Moulded type	Foldable type	Bench seat	Bench seat
Capacity	5 persons	5 persons	5 persons	5 persons

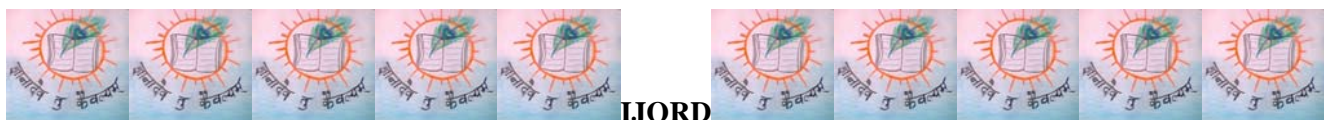
2. TECHNICAL SPECIFICATIONS OF THE ENGINE

ATTRIBUTE	HYUNDAI- SANTRO	DAEWOO- MATIZ	TATA-INDICA	MARUTI- ZEN
Type of engine	Inline 12 Valve SOHC with MPFI system	MPFI with 8 bit computerised electronic engine management system	Water-cooled conventional carburetted engine.	Aluminium engine with SOHC water- cooled.
No. of	4 in line	3 in line	4 in line	4 in line





cylinders				
Cylinder Capacity	999 Cubic cm	796 Cubic cm	1405 Cubic cm	999 Cubic cm
Maximum Output	55 bhp @ 5500 rpm	52 bhp @ 6000 rpm	60 ps @ 5000 rpm	50 bhp @ 6500 rpm
Maximum Torque	8.4 Kg m @ 2500 rpm	7.3 kg m @ 3500 rpm	10 s n m @ 2500 rpm	7.2 kg m @ 4500 rpm
Idle rpm	900 +/- 100	900 +/- 100	800 +/- 100	800 +/- 100
Ignition timing	BTDC 5° +/- 2° at 900 rpm	Not available	Not available	100 + 10 @ 800 rpm
Compression Ratio	8.7: 1	Not available	9: 1	8.8: 1
Fuel Delivery	Fuel Injector	Fuel Injector	Carburettor	Carburettor
Valve Gear	3 valves per cylinder	2 valves per cylinder	2 valves per cylinder	2 valves per cylinder
Firing Order	1-3-4-2	1-3-2	1-3-4-2	1-3-4-2
3. CLUTCH				
Clutch type	Single friction	Single friction	Diaphragm type	Diaphragm





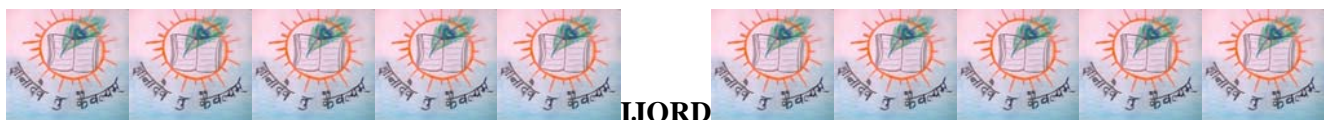
	plate, Diaphragm type	plate, Diaphragm type		m type
Clutch operation method	Mechanical Type	Mechanical Type	Mechanical Type	Mechanical Type

4. TRANSMISSION

Transmission type	Synchromesh mechanism with two overdrive	Synchromesh mechanism with overdrive	Diaphragm type	Diaphragm type
Transmission Operation	Manual Operated	Manual Operated	Manual Operated	Manual Operated
Number of Gears	5 Forward and 1 Reverse	5 forward and 1 Reverse	5 Forward and 1 Reverse	5 Forward and 1 Reverse

5. SUSPENSION

Front Suspension	McPherson strut with stabilizer bar, offset coil spring, hydraulic	McPherson Struts	Independent wishbone type with McPherson strut, and Anti-roll bar	McPherson strut
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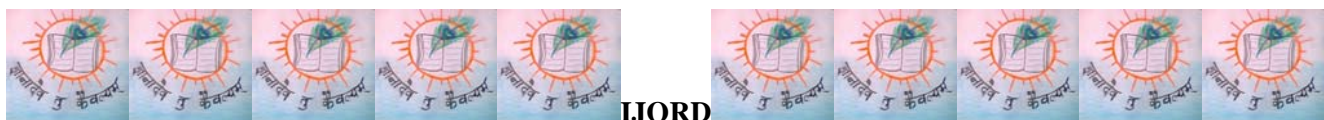


	dampers.			
Rear Suspension	Torsion Beam Axle, 3 link coil springs, hydraulic dampers	Isolated Trailing links	Independent, semi- trailing arm with coil spring mounted on hydraulic shock absorbers	3-linked axle with isolated trailing arms, coil springs and gas filled shock absorbers.

6. STEERING SYSTEM

Type	Rack and Pinion	Rack and Pinion	Rack and Pinion	Rack and Pinion
Operation Method	Power Assisted Steering System	Manual Operation	Manual Operation	Manual Operation
Turning Radius	4.5 meter	4.5 meter	4.9 meter	4.9 meter
Safety Provision	Collapsible Steering column	Collapsible steering column	Collapsible Steering column	Collapsible steering column

7. BRAKING SYSTEM

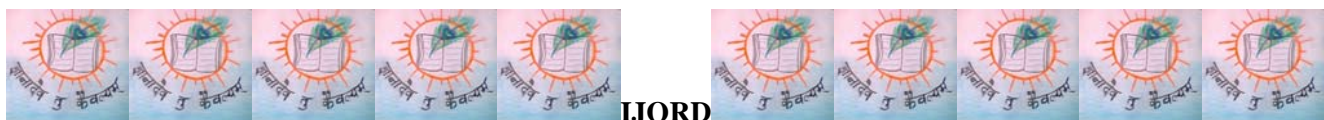




Type	Vacuum Assisted Booster type	Diagonal Circuit type	Dual Circuit, diagonally split, vacuum assisted with PCR valves	Booster assisted dual circuit
Front Brakes	Floating type with ventilated disc brakes	Disc brakes	Disc brakes	Disc brakes
Rear Brakes	Self adjusting leading and trailing drum brake	Drum Brake	Drum brake	Drum brake
Parking Brake	Mechanical brake acting on rear wheel	Mechanical brake acting on rear wheel	Mechanical brake acting on rear wheel	Mechanical brake acting on rear wheel

8. OTHER DIFFERENCES

Rear Bumper	Rigid Bumper	2-stage bumpers which protect the body work and the passenger cabin	Rigid bumper	Rigid Bumper
Safety Norms	Santro has	The Matiz has	The Indica	Not





	passed front impact test at 60 kmph.	passed the 40% offset crash test. Most of the accidents occur within 40% of the front portion.	confirms to current European Safety norms for frontal impact.	available.
Mileage	16 to 17 kmpl	16 to 17 kmpl	15 kmpl	13 kmpl
Maximum Speed	130 kmph	144 kmph	140 kmph	120 kmph
Fuel Tank Capacity	35 Litres	35 Litres	37 Litres	35 Litres
Tyre Type	Radial	Radial	Radial	Radial
Tyre size	155 / 70 R-13	155 / 70 R-13	155 / 70 R-13	145 /70 R-13
Cost of Cars	Starting with Rs.3.05 Lacs	Starting with Rs.3.04 Lacs	Starting with Rs. 2.54 Lacs	Starting with Rs.2.97 Lacs

Description Note: The long forms of the all the table contents are given below.

SOHC = Single Over-Head Cam, MPFI = Multi Point Fuel Injection,

mm = Millimetres, Kg = Kilogram, m = Meter, bhp = Brake Horse Power,





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rpm = Revolution Per Minute, kgm = Kilogram meter, ps = Pascal Second,

Snm = Seconds Newton Meters, cc = Cubic Centimetres,

BTDC = Bottom / Top Dead Centre, Kmpl = kilometre per litre.

Interpretation of the Table:

1. This is the Technical comparison of Hyundai- Santro, Daewoo-Matiz, Tata-Indica, and Maruti-Zen. All the dimensions are specified below the table with dimensions description.
2. There is not a single car in this segment in India, which gives customer a kind of delight, which Mercedes or Rolls rice is giving so there is an ample scope for targeting the indigenisation.
3. Not a single car in this segment gives most comfortable ride to the customers. Every customer demands from an Indian developed car that he must feel the same freshness as at a time he rides the car should be felt at the time he gets out of the car. So also proves the requirement of indigenously developed car technologies.

2. PRESENT SERVICES:

Next part is the services the companies providing to the customers. In this all the companies are at par with each other in some segments while Maruti-Suzuki and Tata Engineering have the edge of most services stations in India.

Tata engineering has brought the first vehicle in India though not totally indigenous but which is perceived for the Indian conditions and for the Indian consumers. It has seen the most phenomenal growth in India.





PART 2. TOTAL FEED BACK FROM THE CUSTOMERS ON PRESENT CAR MARKET

CUSTOMER RESPONSE TO THESE SPECIFICATIONS - J.D. POWER SURVEY DECEMBER 2001.

TABLE 2: PROBLEMS FACED BY CUSTOMERS IN EACH KIND OF CAR IN INDIA:

Self descriptive Survey of 100 vehicle for each car in each segment		
Name of the car and Organization	Short Form	Problems / customer / Vehicle/ Year
HM / Mitsubishi Lancer	ML	124
Honda City	HC	151
Daewoo Matiz	DM	153
Hyundai Santro	HS	193
Fiat Siena	FS	202
Opel Astra	OA	210
Maruti Esteem	ME	230
Ford Escort	FE	264
Maruti 800	M800	313
Industry Average in India	AVG	319
Fiat Uno	FU	320
Mahindra & Mahindra Armada	MMA	323
Maruti Zen	MZ	324
Maruti Omni	MO	391
Tata Sumo	TS	395
Tata Indica	TI	396
Tata Safari	TSF	456
HM Ambassador	HMA	602

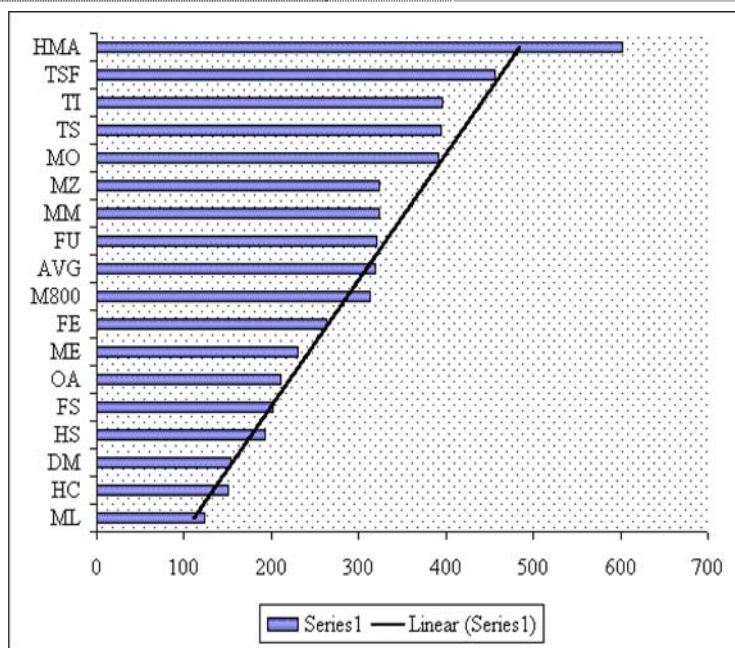
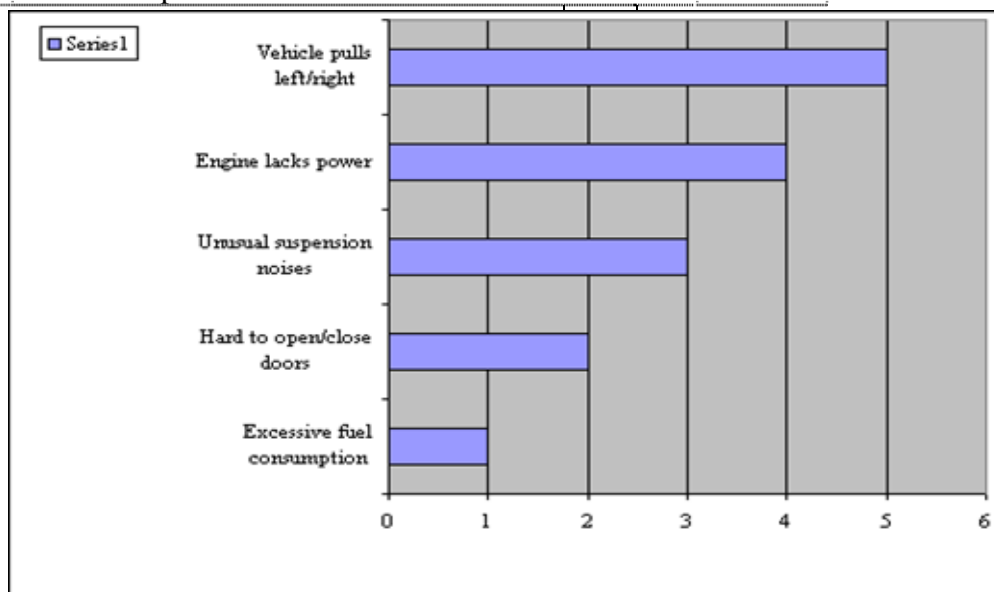


Table 3: Top 5 Problems Reported in India with respect to Cars: J. D. Power survey, December 2001.





SN	Problems in simplified form	Rank
A See Graph: Series 1: Small Cars		
1	Excessive fuel consumption	1
2	Noisy brakes- squeak/squall/groan/grind	2
3	Hard to open/close doors	3
4	Manual Gearshift hard to operate	4
5	Gaps/Poor fit of vehicle exterior	5
B Mid-Size Cars		
1	Excessive fuel consumption	1
2	Hard to open/close doors	2
3	Unusual suspension noises	3
4	Engine lacks power	4
5	Vehicle pulls left/right	5
C Multi Utility Vehicle		
1	Excessive fuel consumption	1
2	Unusual suspension noises	2
3	Brakes are noisy: squeak /squall /groan /grind	3
4	Hard to open/close door	4
5	Water leak problem	5



Interpretation of both Graphs and tables: As vehicles are mainly designed and develop for the European, American, Japanese and Korean conditions they lack in above performances in India. Special Research and Development is required on this.



Table 4: Survey of Cars: First Hand Report from Consumers:**J.D. Power, December 2001.**

On Fuel Consumption of cars		
SN	Name of the car	Fuel consumption (KMPL)
1	Opel Astra	9
2	Tata Safari	9
3	Honda City	10
4	M & M Armada	10
5	Tata Sumo	10
6	Fiat Siena	11
7	Ambassador (HM)	11
8	Mitsubishi Lancer (HM)	11
9	Maruti Esteem	11
10	Ford Escort	12
11	** Daewoo Matiz	13
12	** Fiat Uno	13
13	** Hyundai Santro	13
14	Maruti Omni	13
15	** Maruti Zen	13
16	Industry Average	13
17	** Tata Indica	14
18	** Maruti 800	15

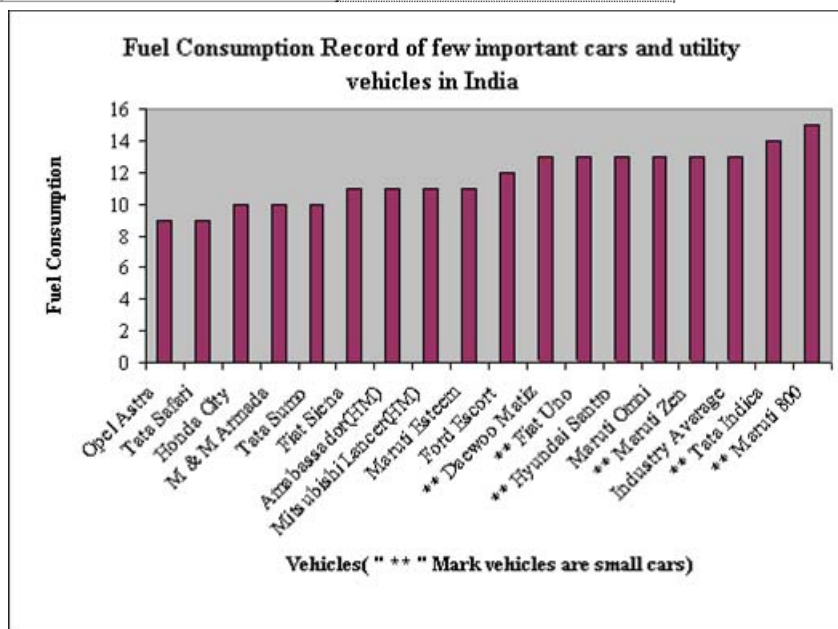


Table and Graph Interpretation: Here Tata Engineering is giving engine of good average considering the demand of the Indian customers and its employees.

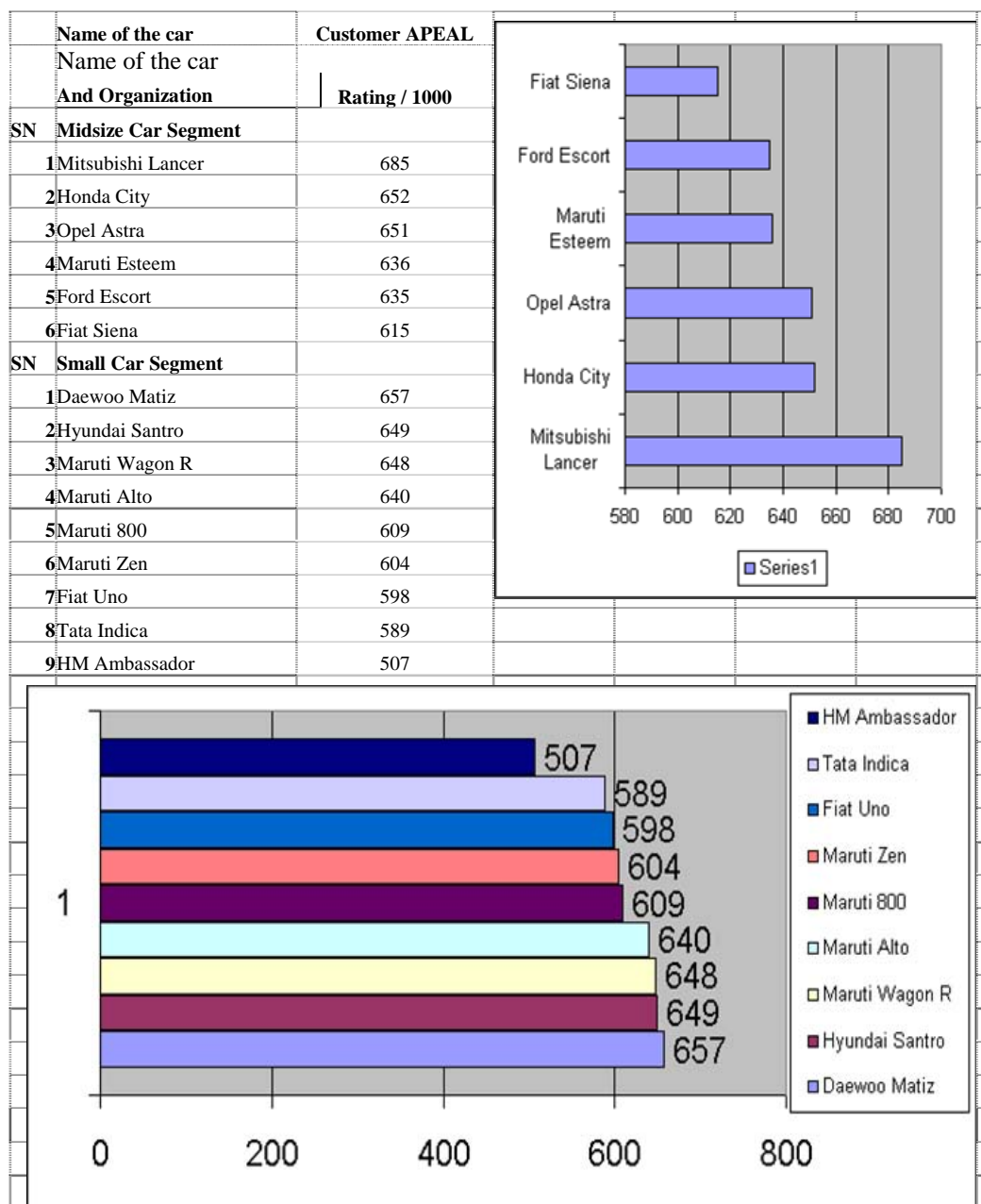
**Table 5: J.D. Power, 2001, Survey and independent survey –****Showing Indian Customers' Likes and Dislikes in the small cars:**

Survey of: Customer Likes and Dislikes Ratings in Small Cars with 25 samples each									
SN Features	Indica	Matiz	Santro	Zen	Uno	M- 800	Amb'sdr	Alto	Wagon R
1 Ride / Manoeuvrability	D	A	A	B	B	C	E	A	B
2 Handling	D	A	A	B	B	C	E	A	B
3 Braking	D	A	A	B	B	C	E	A	B
4 Features	C	A	B	B	B	B	D	B	A
5 Controls	B	A	A	A	B	B	C	A	A
6 Seats	A	A	A	B	B	C	B	B	B
7 Sound System	A	A	A	B	A	A	C	A	A
8 Vehicle Exterior	C	A	B	A	C	B	E	B	B
9 Vehicle Interior	B	A	A	A	B	B	C	A	A
10 Transmission	C	B	B	B	C	B	B	B	B
11 Engine	C	B	C	D	B	C	D	C	C
12 Fuel Consumption	A	C	B	A	C	B	D	B	B
13 Cockpit	E	B	C	C	C	C	E	C	B
14 Instrument Panel	E	B	C	C	C	B	E	C	C
15 Vehicle Styling	E	A	B	B	C	B	E	B	C
16 Comfort	C	A	D	C	C	B	C	C	C
17 Services	A	C	C	A	B	A	C	B	A
18 Spare Parts	A	D	D	D	D	D	A	D	D
19 Convenience	B	B	D	B	C	B	B	C	B
20 Maintenances	B	C	C	B	C	B	B	C	C
21 Resale Value	D	C	D	C	D	C	D	D	C
22 Satisfaction Index	C	C	B	C	D	C	B	C	C
23 Dealer Network	A	D	D	D	C	D	C	D	D
24 Service Station Network	A	D	D	A	C	A	C	A	A
25 Selling/ buying Experience	D	B	B	B	C	B	C	B	B
26 Explanation at delivery	C	B	B	B	D	B	C	B	B
27 Price Evaluation	C	A	A	B	C	B	C	C	C
28 Loan Facility	B	B	B	B	C	B	C	B	B
29 Delivery Timing	B	C	C	B	C	B	C	B	B
30 Sales Person knowledge	C	A	C	B	B	B	C	B	B
31 Post-Delivery Contacts	C	A	A	C	D	A	D	C	C
32 Customer Care Cell	B	B	B	B	D	A	D	C	C
33 Given Test Drive?	A	A	A	A	A	A	A	A	A
34 Looks	B	A	B	B	C	B	B	A	B
35 Overall Technology	C	A	B	B	C	B	C	B	A
36 Continuous Improvement	A	B	B	B	B	B	E	B	B
37 Resource Management	A	B	B	B	B	A	C	B	B
38 Indian Makes	A	E	E	D	E	D	A	E	E
39 Technology Transfer	A	E	E	D	E	D	A	E	E
40 Interest other than profit	A	E	E	C	E	C	A	E	E



Interpretation of the table number 5:

A: Excellent, B=Very Good, C= Good, D=Average, E= Dislike.

Table 6: Survey of Car Model-wise, after Customer drives it and tells the result:

Interpretation of Graph and table: This is the Survey conducted by J.D.Power in 2001 and displayed in Autocar Magazine December; 2001. Ratings are conducted at par with 1000 marks scale.

This clearly indicates that India must develop its midsize car as early as possible indigenously.

Table 7: Indigenous R & D needed on the following intricate points of the car:

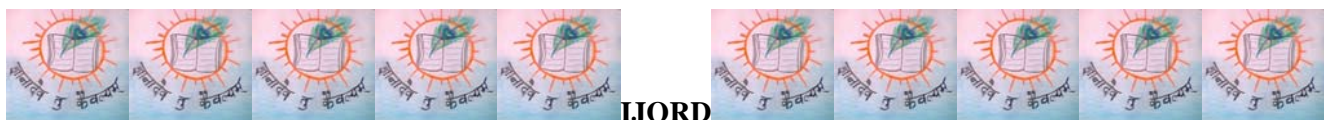
Factors of cars on which Research and Development is needed in India				
SN	Where R & D is needed	FACTOR on which R & D is needed	Who are Doing it?	Research findings why R & D is needed on these in India: Reasons / Comments / Remarks
A	Body of the car	Shock Absorber	MUL, Tata	Indian climatic & road conditions cuts short the life of this MNC part
		Streamline body	Telco, MNC	Air and Rain Resistance is almost unavoidable in Indian climate.
		Safety Measures	MNC, Tata	To Pass all dash tests in accidents is must in Euro Standards.
		Coats in Painting	MNC	Corrosion resistance paints and coatings needed in the competition.
		Night vision lights	MNC, Tata	All terrain roads in India and lack of night lamps and road signal.
		Doors and Door locks	MNC	These form the Most problematic part in Indian cars.
		Wind Shield Wipers	MNC	Improper wiping is done at present in varying climatic conditions.
		Back lights & Brake lights	MNC	Fusing these lights is a common phenomenon in India, research needed
		Panel & reading meters	MNC	On Panel / Dash Board most of the car's data must be visible.
		Emergency Needs	MNC	Air Bag, Message sending, Safety measures
B	Transmission	Automatic Transmission	MNC	Changing Gears very often.
		Alloys used	MNC	Breaking of Gears, Propeller shafts, etc.
		Lubricating Oils	MNC	Present oils must be brought to the international standards.
		Wheels	MNC	Improvement is needed on balancing front.
		Tyres	MNC	Quality of the material and standard needed
		Tubes	MNC	In this much improvement is needed
		Locking Nuts & Bolts	MNC	Age old nuts and bolts are still used
		Clutch	MNC	50 years old design is still used in India
		Constant Variable Tr.	MNC	No car in India yet running on CV Transmission
		Steering System	MNC, Tata	Needs Improvement in the Indian context.
C	Gear Boxes	First and Second Gear	MNC	Much improvement is needed in Indian cars
		Top Gear	MNC	Due to road conditions and other factors
		Overdrive	MNC, Tata, MM	Saves Lot of efforts and fuel consumption
		Synchromesh Rings	MNC	Indians are yet to make good quality rings
		Gear Shifting Mechanism	MNC, Tata, MM	Second biggest problem in India
		Automatic Gear Shifts	GM, Ford	Gear Shifting can be avoided in Gear boxes
		Gear box lubrication	BP.	Improvement is needed in India as temperature range is -50 to +50
		GB Servicing a year	GM, Ford	In India it is yet to make a start at maintenance front.
		Alloys used in Gears	GM, Ford	Metallurgical Improvements need of the hour.
				Whole mechanism differ with conditions so needed research.
D	Engine	Cylinder Wear & Tear	GM, Ford, etc.	
		Piston	GM, Ford, etc.	Combustion Chamber is the Power Chamber
		Piston Rings	GM, Ford, etc.	Pollution due to unburnt gas leaks.
		Tappet Valves	GM, Ford, etc.	Most problematic in Diesel Engines.
		Rocker Arm	GM, Ford, etc.	Few problems heard due to this.
		Cam Shafts	GM, Ford, etc.	Metallurgical, Mechanism needs improvements



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		Crank	GM, Ford, etc.	Improvement is needed in Indian Contest
		Crank, Cam Mechanism	GM, Ford, etc.	Improvement is needed in Indian Contest
		Fuel Injecting Mechanism	GM, Ford, etc.	Perfect Combination is yet to be found.
		Combustion Timing	GM, Ford, etc.	MNC vehicles misfires in Indian Contests
		Catalytic Converter	GM, Ford, etc.	Heavy Pollution through exhaust gases can be avoided
E	Fuels and	Mixture with Petrol	GM, Ford, etc.	Unleaded Petrol misfires, detonates
	Alternative Fuels	Diesel	GM, Ford, etc.	Diesel forms the major automobile fuel in India
	and Alternative	CNG	ARAI, etc.	200 Tonnes of CNG produced at Bombay high everyday
	Car Segment	LPG, Gober Gas, etc.	ARAI, etc.	It is feasible to run car on these fuels.
		Hydrogen as a fuel	GM	Most abundant fuel and least pollutant. So need of the day
		Solar Car	GM, Honda, Renault, Audi, etc.	Petroleum is getting extinct but Sun will last longer.
		Battery Car		Research on long lasting Batteries is need of the day.
		Air Car, Water Car	Honda tried	Future needs of the car are Air borne and water borne as well.
		Some other fuel	JFKL	Liquid Nitrogen as fuel in the car.
		Auto pilot-GPS car	GM	Computer guides the car takes help of Satellites for position.
		Fuel Consumption	GM, ISUZU, etc.	Many organizations are trying to get maximum average from cars.
		Alternative Materials	Isuzu, etc.	China clay piston, Fibre glass body, etc.

Interpretation of the Table: This is an independent survey. Thus are these are independent findings as an Automobile Engineer. These are the areas to be developed well, to get exceptional results in the Indian conditions and the circumstances and the psychology of the Indian customers. If given due importance India can lead the R & D sector as well. This will bring the whole car sector into Indian focus. It will boost the R & D in other technologies too. Bench marking will increase a healthy competition in the India market. Next table will clear why R & D is needed from the Indian all whether and all terrain condition point of view.



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**Table 8. Independent Survey of Customers' Actual Expectations in the small car market:**

SURVEY OF 100 CUSTOMERS FOR: EXPECTATIONS OF CONSUMERS IN SMALL CAR MARKET IN INDIA		P.G.
SN	Factor	Service Expectations from consumer of the small car.
1	From The Manufacturer	1. Timely Manufacturing and Supply of the Car to get timely delivery.
		2. Listen to the Dealer Response from customers or take it in regulation.
		3. Dealer is a bridge between Manufacturer & the real boss is Customer. Aware?
		4. Dealer is whole and sole for the king customer in that region so keep updated record.
		5. Increase in R & D implementation in every sector to compete in the market.
		6. Remember millions of lives depend on the giant car factory of yours.
2	From Authorised Service Centres	1. Quality service if needed like '24 hours service- call and we are there to help you'.
		2. Avoid using substandard spare parts in the cars.
		3. Make a yearly plan for regular customers.
		4. Engine tuning and less pollution car must be given the top priority.
		5. Maintaining good rapport with the customers as of often contacts.
3	Vendors	1. Must use standard metallurgical/substance material.
		2. Must let reach the finished product Just in time the schedule of manufacturer.
		3. Let R & D be the continuous processes for vendors the main plants have.
		4. Be competitive at world standard as both rely on reputation of each other.
4	Ancillary Units	1. Give the Assembly of parts to the main plant at pre-planned time.
		2. They must have R & D and they should follow the world standard.
		3. Let the main plant have the say after dealers' suggestion.
		4. They must have their own R & D and Quality norms in the competitive world.
5	National Government	1. Transportation be made more swiftly and with least cost
		2. Let imported car be made impossible to enter in the market
		3. VAT, Excise duty, Custom Duty be made as low as possible.
		4. Encourage the positive and ethical business environment.
		5. Fuel prices must be kept under control to avoid any further price rise.
6	From other Small car Consumers	1. Servicing be made directly from the dealers and authorised service stations only.
		2. Buying genuine parts only from the dealers.
		3. Complaint if any must be made to dealers or directly to the manufacturer.
		4. Regular Servicing keeps the car up to date and avoids breakdown failures.
		5. Before selling first contact dealers for any scheme and then go to the used car market.
7	From Transport Agency	1. Time schedule is must to be followed.
		2. Communication must be maintained properly while transportation
		3. Minimum excuses for timely delivery of vehicles.
8	From Unauthorised Service Centres	1. Use Genuine parts only.
		2. Maintain Quality Service as comparable to the authorised centres.
		3. Avoid comparisons with Indian and MNC Money managements.
		4. Maintain good rapport with the dealers.
		5. Engine tuning and pollution less car must be given top priority.
9	From Spare parts Dealers	1. Avoid for the first time and last time selling fake spare parts.
		2. Nothing spreads faster than the quality service as the dealers do.
		3. Complaint immediately about anything to manufacturer & main dealer.
10	From Local	1. Sales Tax, Octroi, and Taxes are made affordable.





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	Government	2. Small cars and Two wheelers always form the backbone of employments.	A
11	The Petrol Pumps	1. Using unadulterated petrol must be an ideal of working.	B
		2. Quality Lubricating oil must be added.	B
		3. Quality GB oil must be sold; greases used also must be genuine.	B
		4. Increase awareness about environmental aspects.	A
12	From Garages	1. Be sincere enough to keep good relationship with the Manufacturers, etc.	A
		2. Avoid spurious parts once and for all times.	B
13	Advertisers and Newspapers	1. Dealers sell thousands of vehicles so once in while something may happen	B
		Which is highlighted very often in the newspapers and advertisements- Aware?	
		2. Both Advertisers and Newspapers must avoid this phenomenon.	B
14	From Insurance Companies	1. Pay the timely dues to the customers, after making the entire enquiry from all.	C
		2. Surveyor, Police, Doctors, RTO must have better communications between them.	A
15	From RTO, DTO	1. Dealer and RTO if work together Car delivery becomes easy.	A
		2. With License, First Aid, RTO Rules, Police Rules be made compulsory prerequisites.	C
		3. Expecting Compact License like credit card but more descriptive using latest techniques.	C
		4. Lot of awareness drive must be made in public for small car and two wheelers.	A

Present Grades in the above table (P.G.): A= Very Good, B=Good, C= Needed Improvement.

Interpretation of the Table: Customers are going to buy and maintain the cars only if all these conditions are satisfied otherwise the small car market would get saturated from the middle class Indians in less than a decade.

Table 9: Independent Survey of An Indigenous Designers' Expectations on how the small car design should be:

Requirements of the Small Cars in India			
SN	Factors must be taken into care	US needs	India needs
1	Design with more FOS as tougher conditions than US	FOS is less	FOS is more
2	Temperature Range form -20 to 50 Degrees Celsius	Lesser high temperature	Mostly higher temperature
3	Uneven Road Conditions	A rare occasion	Most frequent happening
4	Metallurgical strong parts of the car are needed	Normal	Stronger than normal
5	Extreme Climatic conditions variations	No	Yes
6	Extreme Weather conditions	No	Yes
7	People prefer rough and tough all terrain vehicle	These are classes	One in all car is preferred
8	Looks are important but life time durability is also more important	No such criteria	For 90% important factor
9	Service Stations must be within each ten km. Range	No such criteria	Has to consider
10	People prefer branded vehicle	Yes	Yes
11	Mileage is important factor as fuel is costly	Fuel is Cheaper	Costly Fuel
12	Population moving on roads is more on roads	Less population	More population
13	Requirement is for frequent change in gears factor	Not considered	Has to consider
14	Frequent change in Clutch as more wear and tear	Average	Yes



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15	Oils are developed mainly for colder conditions by MNC	Temp. -20 to +30 Celsius	Temp. -40 to +50 Celsius
16	Engine is mainly designed for Japanese, European, US norms	Cold conditions	High temperature
17	Servicing Equipments must be cheaply available	As per the Norms	Yet to reach norms
18	Road side garage forms the important factor in long drives	Well equipped garages	Not well equipped garages
19	Quality Standards of vendors and ancillary units.	Very high precision	No such case
20	Cost of Spare parts forms the important factor.	Average factor	Important factor
21	Once bought Indians make it life long commodity.	No such thing	Case with 90% Indians
22	Research and Development is negligible in India.	R & D- very fast.	R& D negligible
23	Average Americans change their vehicle after three years.	Yes	No such case
24	Norms applicable to every part of the vehicle.	Very strict	Not so strict
25	Yearly maintenance contract concept yet to come in India.	Concept is here	Yet to come
26	Car owners average age range	14 to 65 years	25 to 60 years
27	Expertise for every kind of job	Experts are there	All rounder is preferred
28	Competitive standards for company and vendors are same.	Yes	Big gap is there.
29	One monthly payment of the US citizen is but the cost of car.	Yes	Not so cheaper
30	Life of the car is prescribed to be eight years maximum.	Yes	Minimum 15 years expected
31	Special heater, wipers, GPS system is must in Snow.	Yes must.	Only in Hilly Areas its must
32	Turbo charger must in mountain region like Himalayas.	Must in all cars	Not compulsory
33	Catalytic converter is compulsory.	Compulsory	Less strict norms,
34	Strict environmental norms	Yes.	Yes.

Interpretation of the Table: As per the experts of all the needs FOS i.e. Factor of Safety forms the most important factor along with the environmental norms. As Indians prefer the most durable commodity these factors are going to decide market in near future.

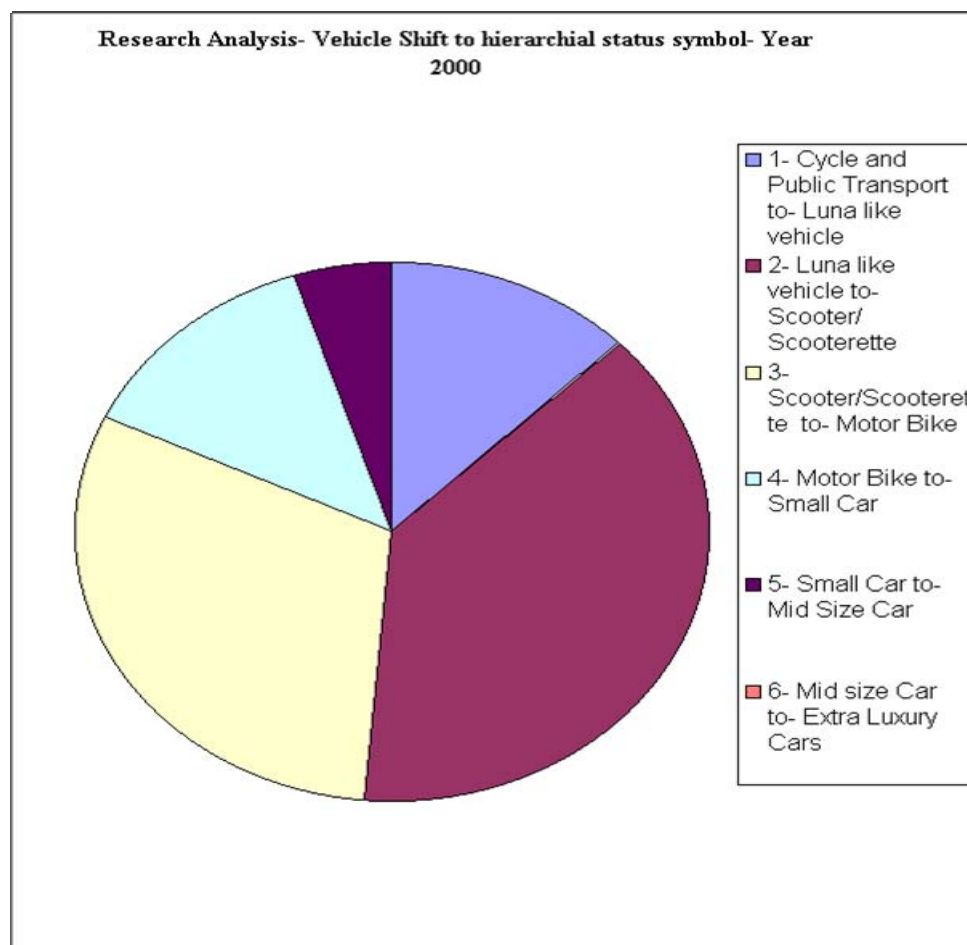
Indian customers are more interested in a car as a life long commodity than changing it every few years, and even if maximum of them cannot afford it. So, developers will have to think of a car with the minimum maintenances and rugged body.



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Table 10: and Graph showing Shifting to Higher Vehicle Syndrome In India:**Graph taken from The Week, Monthly Magazine-December 2001.**

Shifting to Higher vehicle syndrome in India- 2000 Research Analysis				
SN	Earlier mode Of Transport	Shift to next In a Hierarchy	% Up	Vehicles Sell-2000
1-	Cycle and Public Transport to-	Luna like vehicle	5	100000
2-	Luna like vehicle to-	Scooter/ Scooterette	15	500000
3-	Scooter/Scooterette to-	Motor Bike	12	100000
4-	Motor Bike to-	Small Car	5	500000
5-	Small Car to-	Mid Size Car	2	20000
6-	Mid size Car to-	Extra Luxury Cars	0.0005	5000

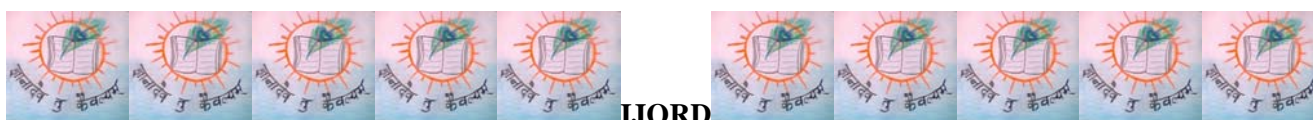


**Interpretation of the Graph and table;** Look at the points 4, 5, 6.

- Though 6th point is very small i.e. 0.00005% still it is increasing by 5000 in number and in luxury cars segment it is yearly turn over of Rs.250 Crores.
- Middle car segment has Rs.140 Crores yearly turn over, and
- Small car segment comes out to be Rs. 1500 Crores, yearly turn over.

Table 11: India's well-known Solutions providing R & D Institutes in Auto sector:**Reference: CII Directory:**

R & D Institutes & Organizations Associated with Automobile Industries in India		
SN	Name of the Institute	R & D Specialization
1	Central Mechanical Engineering Research Institute (CMERI)	R & D Services in the field of Mechanical Engineering
2	Automotive Research Association of India (ARAI)	Automobile Testing and Research Head of India.
3	Pollution Control Research Of India (PCRI)	Pollution Control Research
4	Telco	Automobile R & D
5	Mahindra & Mahindra	Automobile R & D
6	Kirloskar Brothers	Mechanical R & D
7	Bajaj Auto Ltd.	Automobile R & D
8	National Environmental Engineering Research Institute (NEERI)	Auto-Industrial Pollution Control
9	Bharat Heavy Electrical Ltd.	R & D in Mechanical-Electrical
10	Tisco	R & D in Metallurgy of parts used
11	ACC Castings	R & D in Castings of Auto-Parts
12	MRF tyres and tubes	R & D in Auto tyres and tubes
13	CEATE tyres and tubes	R & D in Auto tyres and tubes
14	Bharat Forge Ltd.	R & D in Forging of Auto parts
15	Sundram Fasteners	R & D in Fasteners
16	Castrol India Ltd.	R & D in Lubricating Oils
17	Kinetic- Honda	R & D in Two Wheeler Technology
18	Neptune India Ltd.	R & D in Automotive
19	Birla Tyres	R & D in Tyres
20	ACMA	R & D in Automotive Systems
21	CII (Confederation of Indian Industries)	Encourages R & D in this field
22	Tata- British Petroleum	R & D in Lubricating oils
23	Escorts India	R & D in Two Wheeler Technology
24	Indian Institute of Technologies	R & D on all specifications
25	Ashok Leyland	R & D in Trucks and Buses
26	Maruti Udyog Ltd. (MUL)	R & D in Cars segment





Interpretation of table and Special Comment:

1. Government should allow the private R & D Institutes and should recognise their work.
2. Institutes like IIT, Regional Engineering Colleges, BIT, Other Engineering Colleges carry out huge project work every year, but hardly any project gets its actual implementation in practice. So in wildest idea all the Engineering students of Mechanical, Automobiles, Production and allied branches should develop in a span of five years each and every part of a car as a final year project and thus India will be self reliant in the field of every kind of engineering development.

Table 12: Survey Comparative performance rating of all the small cars in India.

Reference J.D. Power survey 1998, 1999, 2000, 2001, 2002.

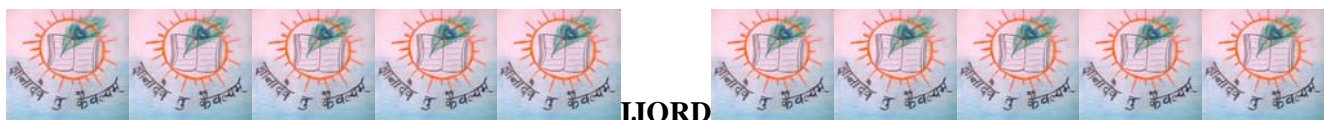
Survey for Comparative Actual Performance Rating Study of small cars in India during servicing period.											
SN	Performance for features	Indica	Matiz	Santro	Zen	Uno	M- 800	Amb'sdr	Alto	Wagon R	FEATURE
1	Manoeuvrability	D	A	A	B	B	C	E	A	B	1
2	Performance in Rough Handling	A	A	A	B	B	C	B	A	B	Liking Grades
3	Braking performance	D	A	A	B	B	C	E	A	B	A Excellent
4	Tyres performance	C	A	B	B	B	B	D	B	A	B Very Good
5	Controls performance	B	A	A	A	B	B	C	A	A	C Good
6	How seats are working	A	A	A	B	B	C	B	B	B	D Average
7	Sound System/ A.C. working	A	A	A	B	A	A	C	A	A	E Disliked
8	Damage to Vehicle Exterior	C	A	B	A	C	B	E	B	B	
9	Damage Vehicle Interior	B	A	A	A	B	B	C	A	A	2
10	Transmission system damage	C	B	B	B	C	B	B	B	B	Please
11	Engine performance	C	B	C	D	B	C	D	C	C	Remember
12	Performance of brakes	A	C	B	A	C	B	D	B	B	Researcher
13	Cockpit looks/ Inside car looks	D	B	C	C	C	C	E	C	B	Has taken
14	Instrument Panel performance	D	B	C	C	C	B	E	C	C	50 Samples
15	Effect of Vehicle Styling	C	A	B	B	C	B	E	B	C	Per Car from
16	Comfort ability from car	B	A	D	C	C	B	C	C	C	Mumbai, Pune
17	Service: dealer/service station	A	B	B	A	B	A	C	A	A	And Nagpur
18	Spare Parts Damage & Rates	A	D	D	D	D	D	A	D	D	
19	Convenience shown by car	B	B	D	B	C	B	B	C	B	3
20	Maintenance spending	B	C	C	B	C	B	B	C	C	DNA =





21	Resale Value of the car	D	C	D	C	D	C	D	D	C	Data Not
22	Satisfaction Index of buyer	C	C	B	C	D	C	B	C	C	Available
23	Dealer Network for the car	A	D	D	D	C	D	C	D	D	
24	Service Station Network	A	D	D	A	C	A	C	A	A	
25	Performance of the Axles	B	B	B	B	C	B	C	B	B	
26	Performance of the Body	B	B	B	B	D	B	C	B	B	
27	Price Evaluation till date	C	A	A	B	C	B	C	C	C	
28	Monthly instalment dues	B	B	B	B	C	B	C	B	B	
29	Delivery Timing after servicing	B	C	C	B	C	B	C	B	B	
30	Gear Shift Performance	C	C	B	B	C	B	C	B	B	
31	Response to contacts made	C	A	A	C	D	A	D	C	C	
32	Customer Care Cell	B	B	B	B	D	A	D	C	C	
33	Regular check ups	A	A	A	A	A	A	A	A	A	
34	Damage to the Looks	B	A	B	B	C	B	B	A	B	4
35	Overall Technology	B	A	B	B	C	B	C	B	A	For no.46
36	Continuous Improvement	A	B	B	B	B	B	E	B	B	Long Form
37	Utilisation of Space in car	A	A	A	A	A	A	A	A	A	A Automotive
38	Satisfying Indian Makes	A	E	E	D	E	D	A	E	E	P Performance
39	Patriotic Feeling	A	E	E	D	E	D	A	E	E	E Execution
40	Gain of co. other than profit	A	E	E	C	E	C	A	E	E	A And
41	Is it better than others?	A	A	A	A	A	A	A	A	A	L Layout
42	Expect any retrofitting	Yes	No	No	No	No	No	Yes	No	No	JD Power Survey
43	Stock Market Position	A	C	D	A	C	A	B	A	A	The Hitvada
44	Sales Satisfaction Index/100	89	105	102	102	90	102	91	102	102	JD Power Survey
45	Problems per 100 vehicles	396	153	193	324	320	313	602	320	320	JD Power Survey
46	APEAL / 1000 scale	589	657	649	604	598	609	507	DNA	DNA	JD Power Survey
47	Owners Reported Mileage	14	13	13	13	13	15	11	13	13	JD Power Survey
48	Actual Torque (Kg/100 cc)	7.9	9.1	8	8	7.8	8	8	7.8	7.9	
49	Car Toughness at all fronts	A	C	C	C	C	C	A	C	C	
50	Value for money	B	B	B	B	C	B	C	B	B	
51	Potential from your car?	A	B	B	B	B	B	C	B	B	
52	Safety feelings in heavy traffic	A	B	B	B	B	B	A	B	B	
53	Performance of Doors	B	A	A	A	A	A	B	B	B	
54	Actual Ride Performance	B	B	B	B	B	B	B	B	B	
55	Performance in Indian condition	B	C	B	B	C	B	B	B	B	

Interpretation of Table:





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2. Alto, Matiz, Zen, Indica, Maruti-800 are the best performing cars in India.
3. But all the cars have different needs for different category of consumers.
4. These ratings are decided on the actual performance of these cars.

Table 13: Study of Provisions for Resale Value Factor as on 30th March 2002. Source: Mahalaxmi Motors, Nagpur.

S.N.	Make	Year of	Price	Loan	Loan to	Tenure	EMI	Interest Rate:
	Most sold	Manufacturing	Rupees	Provision	Price %	of Loan:	In	Reducing Rate
						Months	Rs.	and at Flat Rate
1	Maruti 800	2001	205000	141000	69	60	3619	18.5% and 9%
		1999	181000	124000	69	48	3676	18.5% and 9%
		1998	160000	110000	69	36	4005	18.5% and 9%
		1996	121000	83000	69	18	5415	18.5% and 9%
2	Maruti Van	2000	181000	124000	69	60	3185	18.5% and 9%
		1998	155000	106000	69	36	3859	18.5% and 9%
		1997	125000	86000	69	24	4377	18.5% and 9%
3	Esteem	1996	211000	145000	69	18	9286	18.5% and 9%
4	Maruti Zen	2000	261000	180000	69	60	4620	18.5% and 9%
		1999	271000	186000	69	48	5517	18.5% and 9%
		1997	211000	145000	69	24	7274	18.5% and 9%
		1996	185000	127000	69	18	8135	18.5% and 9%
5	Indica	2000	265000	182000	69	60	4676	18.5% and 9%
		1999	191000	131000	69	48	3883	18.5% and 9%
6	Uno-diesel	1999	225000	155000	69	36	563	18.5% and 9%
7	Santro	1999	275000	189000	69	48	5601	18.5% and 9%
8	Matiz	1999	225000	155000	69	48	4594	18.5% and 9%
9	Opel Astra	1996	260000	179000	69	18	11464	18.5% and 9%
10	Cielo	1996	151000	104000	69	18	6661	18.5% and 9%

Note: EMI = Equal Monthly Instalment.

Interpretation of the table: Around the world the vehicle having the best resale value is supposed to be technically the most fit to buy and drive extensively.

1. Of all the small cars Maruti-Zen, the Opel-Astra, and Hyundai- Santro form the best cars in this category, as they have the best resale values.
2. There are many companies offering flexible financial offers as per the customer needs and so are trying to capture car market at this front as well.



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Table 14: Resale value factor: Condition of car after one year:

Reference: Independent Survey and Overdrive Magazines.

Every aspect looked for class of every small car for its Resale value after observed in almost twenty-five cars of each category after **one year**: Please read grades as *A= Good condition*, and *B=Needed some improvement* in the quality by the manufacturer and while indigenisation must taken care while the time of inception only.

As many customers can offer second hand cars. The condition applied here is no accident or dash by foreign body, and maintained well throughout the year without any major replacements.

Table 14: Showing what was checked while buying the small car second hand?

S. N.	Aspect	Checked for	Tata- Indica	Hyundai- Santro	Maruti- Zen	Daewoo -Matiz
1	Boot Badge	Name	A	A	A	A
2	Rear End	Damage	A	A	A	A
3	Wheels	Wear	A	A	A	A
4	Windows	Damage or fitting	A	A	A	A
5	Interiors	Worn	A	A	A	A
6	Door panel	Gaps	A	A	A	A
7	Paint	Shade or corrosion	A	A	A	A
8	Windscreen	Damage	A	A	A	A
9	Suspension	Proper Shock	A	A	A	





		Absorption				
10	Engine	Condition of every major parts	A	A	A	A
11	Lamps and Electrical system	Cracks in glass and intensity of light with proper wirings	A	A	A	A

Interpretation of Table:

1. After checking this only thing remained was paper work i.e. checking for the legal documents, insurance policy, taxation book, Registration book, etc.
2. Most important aspect is taking a test drive, which indicated, that_Mitsubishi Lancer, Opal Astra, Mercedes have there own class and the Santro, Matiz and Indica are yet to reach that level. After one year they show sign of one-year-old car.
3. The car with best resale value was Maruti Zen, then Santro, and then lastly the latest among them the Tata-Indica.
4. So while customers are demanding cars at par with above Daewoo-Matiz and comparable to Mercedes, the indigenisation according to customers needs have ample scope. It will definitely reap reach dividends in future.





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42	Car Export Import Agency	X		Other vehicles also need this
43	Car Parts Manufacturer and Supplier	X		Other vehicles also need this
44	Automobile Accessories	X		Other vehicles also need this
45	Efficiency Improving Accessories Agency	X		Other vehicles also need this
46	Car Security Parts Developers	X		Other vehicles also need this
47	Car Security Parts Dealers	X		Other vehicles also need this
48	Alternative Fuel Unit Developers Agency	X		Other vehicles also need this
49	Authorised Alternative Fuel Pump Station	X		Other vehicles also need this
50	Authorised R & D Centre For Cars	X		Other vehicles also need this
51	Running Magazines on cars	X		Other vehicles also need this
52	E-Commerce Transactions in the Cars	X		Other vehicles also need this
53	Transaction Agency in the Stock Market	X		Other vehicles also need this
54	Conducting Automobile Programmes on TV, etc.	X		Other vehicles also need this

Interpretation of table:

1. Volkswagen-Beetle, almost four million, is the most sold car in the world. If you take an average of price per car to be \$2000, it comes out to be \$8 Billion. Thus small car market can shake the economy of any country. Such is the power of this product.
2. Almost 60% of the list of manufacturing industry in the Confederation of Indian Industry (CII) is related to Automobile Industry. Business Class of India takes this point into importance. Thus boosting the car market.
3. Thus, generation of the employments is the highest in the world within small car sector. As each of above mentioned business generate huge employment potential. It is estimated that a car is made of 30000 parts. And each part of small generates 200 individual employments. This becomes $30000 \times 100 = 3000000$ i.e. 3 million people are working directly or indirectly with the car market in India. In addition to it different companies have their specialised technicians, which gets added to it and becomes a solely important industry.
4. It is believed that Battery, Dynamometer, Generator, Bulbs, Glass, Steel Plates, Paints, Rubber, Nylon, Robotics, electrical equipments, electronic gadgets, Lathe and other kinds of machinery used for car



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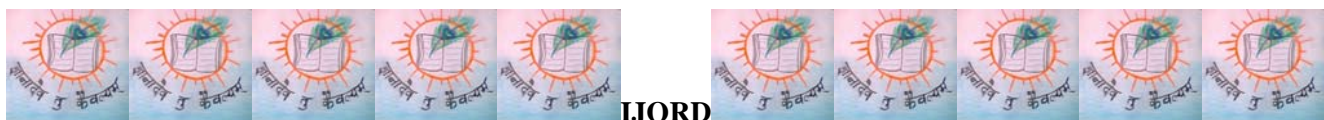


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development forms the basis of all the technologies in the world. Thus if we develop this small car indigenously then it can make India a technologically advance country in the world.

Table 16: Survey result of Comparative Maintenances cost of the small cars in India: (Reference all the magazines and independent survey):

SN	NAME OF THE CAR	PREVENTIVE MAINTAINANCE	YEARLY COST (Rs)	BREAKDOWN MAINTAINANCE	COST Rs.	FULLY EQUIPED CAR PART	COST
1	Maruti Zen/800	General Servicing	3000	Engine	150000	AC	25000
		Body of the car	5000	Gear Box	55000	Music System	25000
		Special Servicing	4000	Tyres & Tubes	15000	Power Steering	18000
		Required Repairing	3000	Fuel Injectors	2500	Work Assisting	40000
		Miscellanies	2000	Lights & Glasses	2000	Accessories	30000
		TOTAL	17000	TOTAL	224500	TOTAL	138000
2	Tata Indica	General Servicing	2100	Engine	135000	AC	25000
		Body of the car	3000	Gear Box	40000	Music System	25000
		Special Servicing	2000	Tyres & Tubes	15000	Power Steering	18000
		Required Repairing	2000	Fuel Injectors	1000	Work Assisting	40000
		Miscellanies	2000	Lights & Glasses	2000	Accessories	30000
		TOTAL	11100	TOTAL	193000	TOTAL	138000
3	Daewoo-Matiz	General Servicing	3000	Engine	165000	AC	25000
		Body of the car	8000	Gear Box	60000	Music System	25000
		Special Servicing	4000	Tyres & Tubes	15000	Power Steering	18000
		Required Repairing	3000	Fuel Injectors	1500	Work Assisting	40000
		Miscellanies	2000	Lights & Glasses	2000	Accessories	30000
		TOTAL	20000	TOTAL	243500	TOTAL	138000
4	Hyundai-Santro	General Servicing	3000	Engine	155000	AC	25000
		Body of the car	7000	Gear Box	60000	Music System	25000
		Special Servicing	4000	Tyres & Tubes	15000	Power Steering	18000
		Required Repairing	3000	Fuel Injectors	1200	Work Assisting	40000
		Miscellanies	2000	Lights & Glasses	2000	Accessories	30000
		TOTAL	19000	TOTAL	233200	TOTAL	138000
5	Maruti Van/Omni	General Servicing	2100	Engine	150000	AC	25000
		Body of the car	2000	Gear Box	55000	Music System	25000
		Special Servicing	2000	Tyres & Tubes	15000	Power Steering	18000
		Required Repairing	3000	Fuel Injectors	1000	Work Assisting	40000
		Miscellanies	2000	Lights & Glasses	2000	Accessories	30000
		TOTAL	11100	TOTAL	223000	TOTAL	138000
6	Ambassador-HM	General Servicing	2100	Engine	140000	AC	25000
		Body of the car	1000	Gear Box	45000	Music System	25000
		Special Servicing	1000	Tyres & Tubes	15000	Power Steering	18000
		Required Repairing	3000	Fuel Injectors	1200	Work Assisting	40000
		Miscellanies	2000	Lights & Glasses	2000	Accessories	30000
		TOTAL	9100	TOTAL	203200	TOTAL	138000
7	Maruti Alto	General Servicing	2100	Engine	150000	AC	25000
		Body of the car	2000	Gear Box	55000	Music System	25000



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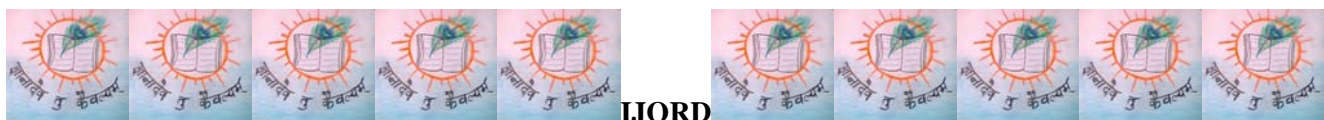


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	Special Servicing	2000	Tyres & Tubes	15000	Power Steering	18000
	Required Repairing	3000	Fuel Injectors	1000	Work Assisting	40000
	Miscellanies	2000	Lights & Glasses	2000	Accessories	30000
	TOTAL	11100	TOTAL	223000	TOTAL	138000
8 Maruti Wagon R	General Servicing	3000	Engine	155000	AC	25000
	Body of the car	7500	Gear Box	60000	Music System	25000
	Special Servicing	4000	Tyres & Tubes	15000	Power Steering	18000
	Required Repairing	3000	Fuel Injectors	1200	Work Assisting	40000
	Miscellanies	2500	Lights & Glasses	2000	Accessories	30000
	TOTAL	20000	TOTAL	233200	TOTAL	138000
8 Fiat Palio Latest Car	General Servicing	5000	Engine	200000	AC	25000
	Body of the car	8000	Gear Box	65000	Music System	25000
	Special Servicing	4000	Tyres & Tubes	15000	Power Steering	18000
	Required Repairing	8000	Fuel Injectors	1200	Work Assisting	40000
	Miscellanies	5000	Lights & Glasses	2000	Accessories	30000
	TOTAL	30000	TOTAL	283200	TOTAL	138000

Interpretation of table: Manufacturing of Tata-Indica in India is coasting less in terms of Rupees than in any other cars in India. Thus slowly Tata-Indica has started taking grip in the market even if trusted brand of cars like Daewoo, Hyundai, Ford, Suzuki, etc. around the world are competing in India with it. Thus in coming future people will be preferring not to get exploited and pay higher prices for the product which ultimately lead them to pay higher prices on the spare parts and services too. As of naturally no custom duties and any kind of such taxes will not have to be burdened by Indian indigenous customers.

Thus, indigenisation of small car technology can give amazing results to India.



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Table 17: Independent Survey of ‘Customer expectation from the small car market movers and shakers’:

S N	Customer's Expectations from	What customers expect?
1	Financial Institutions	Easy and 0% interest
2	Loan facility from manufacturer	Easy loan at 0% interest
3	Manufacturer	Quality product at cheaper cost
4	Dealer	Timely delivery
5	Service Centre	Give delightful services
6	Advertisers and Media	Give true knowledge
7	Technology Developers	Consumer friendly technology
8	Monthly awareness drive	From concerned authority
9	Latest development report from manufacturer	Especially at home services
10	Prices of the spare parts	Should be less than Japanese cars
11	Genuine spare parts at the Authorised service centre	Reliable and timely services
12	Nearer Access of the Emergency services	In cities more service stations required
13	Up gradation of parts/ units facility if case arises	Manufacturer must take care of this
14	Government	Put lesser taxes and encourage R & D
15	MNC made small cars	Quality product at cheaper cost
16	Indian made small cars	Quality product, cheaper cost, employment
17	Indian made spare parts	International Quality with high class results
18	About the complaint raised for services	Service stations should take care of it.
19	About the complaint raised for manufacturer	Should take immediate action
20	Resale or Exchange facility	Manufacturer must enter in to this service
21	Second hand small car market	Reliable services for reliable cars
22	Taxes and duties on Indian cars and spare parts	Should be less comp paired to MNC cars
23	Taxes and duties on foreign cars and spare parts	Should be levied more taxes
24	About Traffic manners	Educate people every now and then
25	About Telephonic/Email/FAX/Mobile/Pager messages	Must be a frequent phenomenon
26	About 24 hours Emergency services	Every car dealer or service station must have
27	About at home 24 hours services	Every car dealer or service station must have
28	MNC made spare parts for the MNC cars	Must provide customer at cheaper Indian prices
29	International Quality Equipments for car technicians	Technicians must be provided these equipments
30	Engineer customers' expectations	R & D must be encouraged
31	Doctors, Lawyers, CA customers' expectations	Developing Solar energy cars for Office goers Once year Comprehensive services like Eureka Forbes
32	Dealers, Employees customers' expectations	
33	Roadside mechanics' expectations	Keep alive his part of job as well
34	Traffic Management system must be to the mark.	To get better driving and safety.

Interpretation of the table: When contacted every customer realised that MNC cars provide: The Costly services, and the Costly spare parts but relatively lesser-priced cars and if above measures are taken indigenous car can capture the market.

**Table 18: Survey of ‘What Customer looks for when he buys the car?’**

An Independent Survey, and a survey of Overdrive/ Auto Car/ J.D. Power.

SN	Which Factor is Important for you?	High Priority
1	Price of the car	High Priority
2	Mode of Payment	High Priority
3	Schemes if any	High Priority
4	Maintenances Cost	High Priority
5	Cost of Spareparts	High Priority
6	Loan/ Finance facility	High Priority
7	Comfort	High Priority
8	Warranty	High Priority
9	Seating Capacity	High Priority
10	Resale Value	High Priority
11	Manoeuvrability/ Easy driving	High Priority
12	Safety	High Priority
13	Average or Fuel consumption per kilometre.	High Priority
14	Make: Indian made /Foreign made	High Priority
15	Near Home Garage / Service Station Availability	High Priority
16	Technology	High Priority
17	Quality	High Priority
18	Other Services	High Priority
19	Overall Looks of the car	High Priority
20	Good customer care cell	High Priority
21	Durability of the body	High Priority
22	Will you like a car manufactured with your suggestions?	High Priority
23	Shape	High Priority
24	Style	High Priority
25	Metallic Paints	High Priority
26	Sporty looks	High Priority
27	Contribution to Indian Industry	High Priority
28	Employment given to Indian citizens	High Priority
29	Motive of the company	High Priority
30	Market Condition of the company	High Priority
31	Stock market position of the company	High Priority
32	History of the working of the company	High Priority
33	Did you require any special fittings as a top priority?	High Priority



**Interpretation of the table: The best suggestions from the surveyed customers:**

1. Make more and more people aware about the advantages of indigenisation of small cars before it becomes too late.
2. Few small-scale industries (SSI) should cooperate and manufacture engine of the car by adopting technique of manufacturing each every part one by one within stipulated time frame. Then concentrate on other parts of the car.
3. Indians must enter into the small car market with a broader outlook like Hyundai did in Korea, General Motors and Ford motors did in U.S.A., Toyota and Mitsubishi and Suzuki did in Japan.
4. Like-minded Centre for Advance Computing (CDAC) carried on Research in Computer Technology and manufactured the Super Computer Indigenously in India; similarly like-minded car technologist should do it for India.

Highlighting Point: This table clearly indicates that there is a growing concern about the exploitation Indians are facing due to invasion of MNC cars in India. So anyhow Indians are no longer be over adopting dependent strategies on foreign technologies. Small car will be the stepping-stone in this context.





PART 3: EXPERTS' VIEW

Expert Customers' view on Indigenisation of small cars with respect to this view:

For this purpose suggestions of very many experts who are master in their field are required.

1. Leading Technocrats and Engineers: They feel that whatever expertise they have acquired during the last five decades will be useful to the Indians in coming future. Many Experts are ready to give their services to the nation on the voluntary basis. Only thing necessary is due recognition to these revered men and arranging the on job training for the senior engineers and the experts in this field to gather at a predestined industrial house with all kinds of facilities.

2. Bureaucrats: Many of them want less taxes and strict industrial policy to favour the companies involved in Indigenisation of car industry at least for a decade till the maturity is reached. They are in favour of Indian state to pursue the policies those offering the counter guarantees for Indian organisation involved in Indigenisation of small cars with respect to customer behaviour. They want this offering the counter guarantee to Indian indigenous companies be implemented for the fast track projects without providing such facilities to the MNC.

3. Others: Due importance to Indian experts must be given as otherwise their expertise is used by other MNC. Emphasis must be given on the cheap technology as in USA a car costs the minimum wage i.e. one monthly pay of any working person. This will boost the car industry in India immensely.

4. Majority of Automobile Experts: They strongly believe that if the project of indigenisation is taken as part by part screw by screw, assembly by assembly then it can give us the desired result in coming five years. This will even develop the most required small-scale industrial sector in India and will make the Engineers and the related manpower to develop their skill step by step. Even the giant business houses can reap the dividends in near future by becoming MNC from India.

Table 19: EXPERTS' EXPECTATIONS: INDIPENDENT SURVEY REPORT: **Growth in the Car Industry indicates the nation's Economical and**





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Technological growth?

SN	DO YOU AGREE on the following aspects about the CARS?	YES	NO	REMARKS
1	Car Industry is still the biggest in the world?	YES		
2	India can Design, Develop; Manufacture its own car with its own resources?	YES		
3	US industry thrives on car industry?	YES		
4	India can develop at faster growth rate, if it can produce its 100% own cars?	YES		
5	India can generate most employment through complete set up of own car industries?	YES		
6	US have contributed most in the Research and development of the car industry?	YES	NO	50% Japan
7	Italy has the best designers in the car industry?	YES		
8	Continuous improvement in the Quality has upgraded the car industry?	YES		
9	Better versioning in the car industry is still possible in the car world?	YES		Price concern
10	Should Various impact tests be made compulsory in India?	YES		
11	Should Strict Quality tests be conducted every year in India for every car segment?	YES		
12	Should the Service industry in car segment be upgraded?	YES		Very much
13	Will you expect a completely computer controlled Autopilot driven car in future?	YES		
14	"Car is the best invention of man"?	YES		
15	Complete set up of car industry forms the basis of higher end space-technologies?	YES		
16	Automobiles form the backbone of Transportation Industry?	YES		
17	Number of small cars shows the Economic growth in middle class people?	YES		
18	Small car is mostly driven by professionals like Doctors, Lawyers, Engineers, etc.	YES		
19	Executives must be provided with car and fare or car and petrol facilities?	YES		
20	Cars having price more than Rs.5 Lacs, have less chances of growth in India?		NO	
21	Like Japan India can also manufacture Quality cars in India itself?	YES		
22	In coming 20 years India can have at least one Car Giant like GM, Ford, Toyota?	YES		
23	Should Engineering and Management people come together to develop Industries?	YES		
24	Should India develop Cooperative Car Industry for Indigenisation of Cars?	YES		If it's basic need
25	Should Unemployed youth be utilized for the Indigenisation of car Industry?	YES		Engineers
26	Can Public Sector Industries develop the better cars in India?	YES		Like BHEL
27	Price of a car in US is equal to lowest salary of one month in US?	YES		
28	Can the prices of the cars in India be brought to the level the US has?		NO	
29	Should Hyundai, Daewoo and other MNC cars be 100% Indianised?	YES		Must
30	MNC should be allowed to manufacture cars only if they Transfer the Technology?	YES		
31	Indian cars can capture Chinese and Third World car market?		NO	China Price
32	RTO, DTO must be very strict while allotting the Licenses for the cars?	YES		Must be.
28	Traffic manners, licensing and the car must be directly linked?	YES		
29	Should alternative fuels like Methanol, CNG, LPG, be allowed in the cars?	YES		
30	Should the car industry and other industries be given special privileges?		NO	
31	Should any restriction be brought on importing cars to increase domestic cars sell?	YES		
32	Should the Indian car industry be thoroughly revived?	YES		
33	Should the Indian car and transportations norms be revised?	YES		
34	Should the Indian road conditions and the signals be synchronised?	YES		
35	Should the Indian Traffic Management be revised and Motor vehicle act be revised for the new technology?	YES		



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Interpretation of Table:

The table is quite elaborative and self-explanatory. It covers almost every point related to car industry market and customer and traffic, and the nation's economy.

Here those car experts are been interviewed whom are either in the direct contact with technology or who are driving it since long and who have analysed many of the factors mentioned above.

Experts believe in thorough revision and modification of the car industry and related matter and they believe in India's strength of survival of the weakest and growth of the toughest economy in the world, through this indigenisation of car program.





PART 4:

PREPARING FOR THE FUTURE TRENDS ACCORDING TO THE DEMANDS OF THE CUSTOMERS:

SECTION A: Internal customers satisfaction through stress relies using Information Technology and E-commerce enabled services:

Internal customers will demand Latest Information Technology assisted E-Commerce enabled services to tackle the huge competition from the world market in the field of:

1. Planning system of the organisation,
2. Plant development for the organisation,
3. Product Designing section,
4. Shop floor management system,
5. Manufacturing Processes,
6. Inventory/Logistic Management,
7. Financial control and Management,
8. Costing and Estimations department,
9. Human Resource Management Department,
10. Marketing Management,
11. Sales Automation,
12. Office Automation,
13. Quality Control,
14. Research and Development,
15. Executive Development Programs,
16. Knowledge Management, etc.





17. Every company can get itself fitted with advanced technology like computer and use local but advanced rated software and services.

- This improves faster services,
- Faster decision power,
- Improved Quality,
- Improved productivity,
- Improved work culture,
- Improved cohesive atmosphere in the organisations involved in indigenisation,
- Customer satisfaction will reach its peak to be even called customer delight,
- The socio-economic condition of the nation will be uplifted certainly.

SECTION B. External Customers:

TECHNOLOGICAL ADVANCES CUSTOMERS WILL DEMAND IN NEAR FUTURE IN INDIA:

1. In future vehicles with Global Positioning System will be functioning throughout the world. With this geographical location of the car can be exactly pointed. This technology has started its functioning in North America, Australia, and in Europe.
2. Mainly cars driven on alternative fuels like:
 - a. Solar powered vehicles running on Solar Cells: This car has panels of solar cells or photovoltaic cells in which solar energy is converted into electricity. Rotating the direct current motors' shaft assembled with the axles drives the vehicle.
 - b. Fuel Cells powered cars: The fuel cells combine the Hydrogen and Oxygen to form vapours of water producing enough electricity to drive the car. It contains Proton Exchange Membrane (PEM), and uses bits of plastics and sheets of Graphite to make fuel stack. This steadily





increases the power out put of PEM cells. At the same time these cells also drastically reduces the manufacturing expenses by making unnecessary the costly platinum needed in the electrochemical process. All combining forms the Ballard Fuel cell motorcar. The greatest advantage of PEM fuel cell is that it is absolutely clean and pollution free.

c. Apart from these small cars also been driven on Compressed Natural Gas (CNG), Liquefied Petroleum Gas (LPG), Liquefied Natural Gas (LNG), Ethanol, etc. as these gases are less pollutant and give lesser fuel consumptions customers in India have started using all these fuels and are in huge demands.

d. 'Eco-basic' from a European version of battery driven car has prompted the research in this field. Indians developed the 'Reva' the battery driven car. Now customers are demanding cars having longer life batteries.

3. In 1990's customers demanded the no gear-shifting car and thus the Japanese and Americans developed the CVT i.e. Constant Variable Transmission. This CVT has two belts and pulleys on faster speeds these belts get adjusted well and thus avoiding the need of gear mechanism. Now Indian customers are also demanding the same kind of technology in their cars due to heavy traffic and crowded roads.

4. In 1975 one customer died at the spot while driving the impala car having stiff steering wheel. Immediately US government made a law to for specifying technical details of the cars. Thus, Scientists developed what is now known as the collapsible steering column. This is very safe and avoids the after accident damage to the human body. Now this technology is a common phenomenon in every modern car of India.

5. In 1998, Firestone Tyre Company suffered a huge loss when it was observed that one particular slot of one million tyres suffered a vulcanising problem and its tread were damaged only after vehicle





was driven a few hundred kilometres. Immediately firestone ordered the emergency meeting and called all the vehicle owners who bought that particular lot of tyres. It was a revolutionary step where for the first time a fear of loosing customers was dealt at such a fast speed. Really customer is becoming a king. This made the advancement in the vulcanising section of the tyre industry.

6. In its first lot of Tata-Indica, Tata Engineering invested Rs.123 Crores extra on its suspension system. Around ten thousand Tata-Indica owners got a replacement kit of around Rs. Twenty five thousand each, when again one customer made a complaint these kits were fitted free of cost. Never in the history of India customers were treated so honestly as a king. Even Tata-Engineering was also increased its reputation as the best customer serving company. Later on it went on to sell more than one lac vehicles within the span of less than two year. This time new kind of suspension system was fitted which were having torsion bars, anti roll bars, etc. Thus customers indirectly or directly influenced the suspension technology in the Tata-Indica.
7. There are many more technologies in this category which were developed for the comfort and safety of customers and were highly influenced by the customers' demand only:
 - a. Fog lamps and Halogen lamps: for better vision in humidity or in fog.
 - b. Heaters: To start the car even in colder temperature,
 - c. Turbo chargers and superchargers: To get high efficiency from the car and to burn the fuel completely inside the engine,
 - d. Rear view mirrors,
 - e. Higher speed streamline or hydro-profile cars,
 - f. Tubeless tyres to get rid of puncture,
 - g. Car with Radio system, Stereo system, Television system, Mobile phoning system, Video conferencing system, etc.





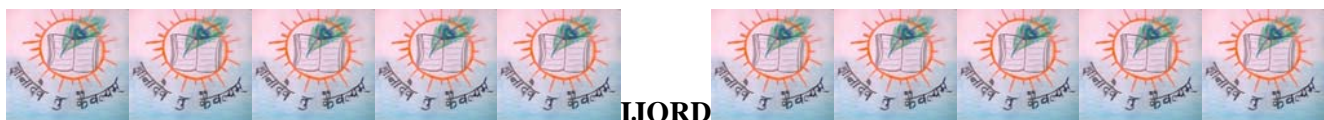
- h. Hybrid Car running on battery as well as conventional gasoline/petrol.
- i. Cars with air-conditioning, defroster, and windshield wipers, extra-wheel, etc.
- j. Cars with instant balloon inflating technology at steering to get in functioning when ever there is impact on the car.
- k. Small car, Medium sized car, Coupe, Estate, Sports car, Luxury car, Weekend cars, etc. kind of cars were developed once customers demanded.
- l. Cars with folding tops,
- m. Cars with G.P.S. and Auto-pilot,
- n. Now a day customers are demanding multi fuel multi functioning cars, and scientist are on the verge of developing them.
- o. Cars with computerised fuel injection system,
- p. Cars with PC,
- q. Ultra light sound insulation,
- r. Frame of the car/ passenger cell function split,
- s. Air conditioning with own power source,
- t. Lightweight data network leader,
- u. Steer-by-wire,
- v. Multiple energy network,
- w. Telematics,
- x. Rear-view observation package,
- y. Carbon disc for the brakes as used in Formula 1-racing cars,
- z. Variable Valve timing,
- aa. Engine without Auxiliary power,





- bb. Integrated Safety System,
- cc. Centre Monitor- (MMI) i.e. as a man, machine, Interface.
- dd. Road recognition light,
- ee. Titanium Spring,
- ff. Head up display,
- gg. Remote controlled driver less featured car with all modern equipments fitted on it,
- hh. Less fatigue prone cars,
- ii. Less pollutant cars fitted with the cheaper version but high efficiency catalytic converter,
- jj. Fuel celled cars,
- kk. Car with more safety feature,
- ll. Car with more advanced features but at less cost,
- mm. Cars so comfortable that while you get out of the car you will feel the same as when you get in,
- nn. Cars will be developed so advanced that they will emit zero pollution,
- oo. Compact car with huge space,
- pp. Car with least spending on the fuel,
- qq. Cars with ultra modern styles,
- rr. Cars with more free and high tech servicing guaranties,
- ss. Car with more modern technological features but with lower cost than its MNC counter part,
- tt. Unbreakable cars with dent detector and recovering from dent technology, etc.

This is an unending process and there is no limit to individual customer's demand. In everyday life customers are expecting the same kind of services, which Rolls Rice car owners get – the royal services. Rolls rice





organisation develops cars as per the specifications of the customers. It gives services as per the demand of the customers. We shall know how to provide these kinds of services to the customers in the next topic.

SECTION C. Customer Relationship:

MANAGING CUSTOMER RELATIONSHIP OF SMALL CARS THROUGH E-COMMERCE:

Now a day even lower middle class houses have computers and Internet connectivity. As mentioned above every customer is demanding self-respect from the car industry. As customer has very many options whenever he wants to buy a car, the car organisation has no other option than respect the king customer. The reason being if one customer losses faith in your company's product or services, the negative mouth-to-mouth publicity makes that organisation loose some hundred more customers.

Also, to keep up with increasing marketing dynamics many enterprises involved on the indigenisation of small cars must speed up their reactions to changes and cooperate more closely with suppliers and customers.

The indigenisation of small car with respect to customer behaviour will mostly depend on the capability of the people involved in the project to react quickly and flexibility to the development in the car market in competition and the technology.

Only those enterprises associated with this project will survive the global competition that are able to reengineer their business processes in an efficient and customer oriented way, that built up flat and process oriented organisation structure and concentrate on their core competencies.

In addition, they have to cooperate with partner companies and above all these measures have to be supported through advanced information technology and hence E-Commerce.

That is why customer relationship through E-Commerce using Information Technology has become need of the day.





So, let us see how customer relationship can well be achieved in the small car market through E-Commerce and using Information Technology.

1. Small Car customers are demanding more personalised treatments than earlier in the history.
2. This thing is possible only by one method i.e. by using the latest technology and management skills using E-Commerce. If we think carefully electronic commerce can even surpass the traditional small car business by leaps and bounds.
3. The World Wide Web offers new opportunities that traditional small car business can not offer like:
 - a. More business of small cars,
 - b. Provision of round the clock services expected from small cars customers,
 - c. Lower operating costs of whole system,
 - d. Easy Maintenances of the small car and the E-Commerce system,
4. E-Commerce market present enormous opportunities due to its sheer pace of operation and extension and growth.
5. Adding Mobile Commerce i.e. M-Commerce in this can boost the communication system phenomenally.
6. Computer based Mobile commerce and Electronics Commerce can keep record of every customer and his expectations in the computer as and when he communicates with the parent company or to dealer or the service station whenever he is need. Only compulsion is that particular organisation must have these computerised mobile connected, pager connected, telephone connected, computer connected and personally visited services fully operating. Thus the information regarding the following things be well maintained in the following manner:
 - a. Customer's general personal Information,
 - b. Customer's pricing expectations,





- c. Customer's expected technology requirement in the car.
 - d. His expectations about the services.
7. One of the web site [www. Priceonline.com](http://www.Priceonline.com) offers the options to buy the small car. If one form is filled it throws open plethora of exciting options. Thus, developing exciting site for the customers, providing that kind of services has got very much importance now a days.
8. Rolls rice car has production schedule in a manufacturing plant based not on forecast but online data capture and well interpreted business intelligence tools.
9. Customer relationships of small cars have moved from being standard, to being targeted and now being customised. Thus in new era of car market strategies of still asset failed. The strategy excelled are having strong customer database. At this front GM and ford have made a remarkable success.
10. Due to globalisation all the car companies have their bases or at least products placed in all the major countries. This has caused following dramatic changes in the car market and customer relationship:
- a. Few Transactions to massive transactions.
 - b. Small amounts of content to tons of rich business content.
 - c. No customer data to huge warehouses of customer data,
 - d. Static catalogues online to dynamic personalisation,
 - e. Homegrown revolutionary solutions to packaged flexible solutions with rapid deployment.
11. *The challenges of new era:*
- a. *The challenge here is to manage the database of prospective and old customers, and evolve the customised relationship with the customer the company is interested in.*
 - b. *The challenge is to attract new customer for the companies car,*
 - c. *The challenge is to engage customer, and*





d. More importantly retain the customer making them brand loyal to the car made by the organisation.

Thus business would need to personalise every individual shopping experience based on customers' past and current online behaviour.

12. A sophisticated E-Commerce Solution allows content to be targeted to unique customer profiles and segments making customer relationship management that much easier.

13. The typical survey report or the interview talk with customer gives his likes and dislikes. The data collected and stored in a database enables the organisation to understand what customer preferences exist and to match specific offerings to those preferences. This will automatically lead to increased customer loyalty and help build customer satisfaction. Ex. One company website of Big book Inc, gives customer every details to the customer about what he is interested in. If a customers want to buy a car it gives options and well-mapped addresses of the companies.

14. Mercedes- Benz, Honda, Toyota, General Motors, Ford Motors, have Analytical Merchandising. This has brought one to one marketing capability to customers E-Commerce site. This has the capability to decipher the needs of the customer shopping on web site so that the customer enjoy a quicker and more rewarding shopping experience inducing him to return to that commerce site time and again. This is the next generation of merchandising which is resulting in:

- Improved customer experience,
- Continued and Sustained brand building,
- Driving customers' interest,
- Increase sales, and more and more other kinds of transactions,
- Increase in visit of the site and request for provision of the information for the product.





15. Further advancement in the small car communications system, E-Commerce Solution will bring following advancement in the market:

- The supply chain management will get improved,
 - Customer relationship will be reaching almost pinnacle,
 - Mobile computing will be improved,
 - Data mining and interpreting will predict the new behaviour pattern of the customer while buying the car,
 - Device new skills for customer handling,
 - Thus more customers will be attracted towards and will be retained due to these kinds of prompt services.
 - In small car market, E-Commerce will be but remain as focused car marketing. It is about marketing to the individual customer to fit his or her unique interest by providing dynamic individualised content.
 - Other businesses will also get the boost due to faster services and orders for the commodities.
- Ex. There are few companies in Japan, which provide global positioning system on the LCD screen of the car showing the full map of the shopping centre and exact location. Many a times it provides other services as well.

SECTION- D:

Small Cars Consumers: New Technology and New Market Trends:

1. Changing Marketing Dynamics: Market changes are taking place very rapidly in the today's globalisation and liberalisation era. Small cars are also facing the same fate. Many MNC are already there in the Indian market and trying to capture the market by all the means. So following highlights are been spotted meticulously by the various forces in India.





- a. Standardisation and formation of global market have seen the emergence of increasingly homogeneous demands across the world for many products and services. Small car developed in the US, Italy, Japan is need to be marketed instantly in at the global level or it faces the consequences, of being neglected by the customer for not fulfilling his demand.
- b. The same type of small car with little modification, is demanded all over the world, by the consumers having geographically distinct markets and satisfaction needs. This sort of convergence of need has turned different markets into a large homogenous unit popularly referred as 'Global Market'.
- c. The world has become a common market place in which people no matter where they live have develop a universal desire for the small cars and life styles.
- d. The shortening of cars life in Japan and USA has shown the vision and rightly assessed the potential changes in taste and technologies of the small cars.
- e. Marketing practices are changing very rapidly and some new kinds of way have developed over the period of time.
- f. Information technology and E-Commerce are going to play major role in the world car market with fast pace of the customer capturing techniques.

2. Viewing Market Forces affecting the small car market:

- a. To capture consumers companies try to reach the right customers, it involves following things:
 - The Product research,
 - Market Research,
 - Test marketing advertising,
 - Public relations,
 - After sales services, etc.





It is not new, but technology invasion has made it so rapid that it makes following impact on the customers:

- Customer oriented marketing activities,
- Customer retention activities,
- Future sales target findings,
- Building company image in the minds of the people.

b. Communication tools such as magazines, newspaper, radio, telephones and postal delivery - to a marketing environment defined by the use of digital communications tools such as data basis email, online services, smart cards, calling cards interactive telephone services system, fax on demand, a host f tools and supporting traditional marketing tools.

Thus, traditional marketing environment is fundamentally linear in nature. So the fast track results expected in the market are as follows:

- The wise car marketers are asking for the greatest impact of each rupee spent,
- Organisation can send thousands of email at a time, so product services are becoming faster,
- Online bill payment of the small cars and its services offers are very common phenomenon,
- Small car customers feel more relaxed to contact online and get the faster and desired results.
- Small car organisation using the advanced tools can contact customers even if he does not have computer by asking sub vendors.
- This fast track small car marketing is spatial rather than linear, in nature and hence, market research, product development, customer feedback can be done simultaneously.
- It has changed the life style preferences and buying patterns of the small customers, and thus present market is customer cantered rather than the product centre.
- Every moment new and creative ways of marketing the small cars are developed around the world,





- Recently, small companies have become more proactive; they are making things happen than wait to happen them.
- In many countries digital technology is making small car marketing process free up people to deal with customers in a more relaxed and meaningful ways.
- With this technology built up in the company car consumers shop at the speed of the light, they order within few minutes having been come to know about the price difference and the features and services differences between the two car competitive products.
- GM, Ford, Toyota, Honda, have already started the “On Screen” demonstration of their latest model n the market and have made very god deals. Thus indigenous car market will also make the breakthroughs.

3. Effect of Globalisation and the Liberalisation on the small cars consumers in this scenario:

Globalisation and liberalisation have not remained words in the textbook they have become a reality. They have redefined the way we do the business, and hence require the new dimensions of thinking and new kinds of skills. Information technology enabled services and E-Commerce are the best possible skills the indigenisation program can acquire.

They are not only effective tools in the advanced countries but also can put formidable challenge in the developing countries like India.

As world have become a true global village you can't just ignore this global market conditions otherwise which can be called a biggest mistake. Better it shall be for the business new to adopt as the industry is struggling to navigate the topography of the wired market place.

In 2005 almost one billion consumers will be using mobile phones and Internet. This will enable the speed, compact machines, compact cars; new inventions rule every sphere of the human life.





Service industry will face a cutthroat competition and who so provide quicker services will capture the market. This will also useful in retaining the customers and generate a classical relationship with the indigenous car making company, which would be the global player in the car industry.

Thus the conclusion of the Section D is if the indigenised car makers also develop their vision for the E-commerce and Mobile commerce and Internet marketing or digital marketing, India will have an excellent chance of emerging in next decade as a global leader in the small car industry.

SECTION E- VISUALISING SMALL CAR CUSTOMERS' EXPECTATIONS:

Small car consumers usually visualise what they expect to see and what they expect to see is usually based on familiarity on previous experience or on pre-conditioned set of mind. In the marketing context, customers tend to perceive products and product attribute according to their own expectations.

1. Today the point for consideration is that the customer is not likely to be as indulgent as most of the Indian customers have been so far. Customers have umpteen number of small car alternative choices available to them. So, the customer is no longer affording the luxury of costs arising out of under-utilised capital assets. He is demanding since long the proven car quality product by the proven market player.
2. Now a days customers demand the life cycle cost bid evaluation and not only yearly budget. Customers are seeking guarantees for the effectiveness of the company.
3. The increase in sophistication of the advertisement and new marketing trends has enable manufacturers to manipulate any kind of customer.
4. Rising expectations from the product to give the good life to customer has become need of the hour. If car is not up to the standard dis-satisfaction results.
5. Dr. Doug Howardell has claims-
 - Customers are revolting.





- They want more for less cost.
- They want it all,
- They want it now,
- If you can't provide what they want somebody else will provide them,
- Customer loyalty is a myth in multipolar market formed in the mist of a distant past.
- They need to be looked closer.
- So we must provide greater customer services.

6. Customer service is ability of an organisation to constantly and consistently give customers what they want for their car and for their personal car needs.

7. Where as the excellent customer service is ability of an organisation to constantly and consistently exceed the need of the customers in the car market.

8. Customer Satisfaction = Customer's Expectations / firm's actual performance.

Thus customers' satisfaction is the derivative of customers' expectations and the fulfilment by the firm.

9. Next step is to know what really customer expect and know the sub steps of these proceedings:

- Know that today's small car customer is always awake and aware,
- All the small car customers want concrete steps to protect their interest,
- A plethora of platitudes and an abundance of assurance will not satisfy him
- For the small car customer the experience of yesterday cannot be the expectations of tomorrow,
- The expectations and the entire scenario are changing rapidly.
- Even the big and top class marketing organisations fail to come closer to the customer satisfaction.
- Even the companies may adopt:
 - * Aggressive marketing,
 - * Large-scale advertising,





- * Well-organised PR activities,
- * Innovative sales promotion exercise,
- * Allowing the Internet Banking option, ATM payment, etc.
- Today's customer is more demanding and expects:
 - * Cars at lower rates than other competitors,
 - * Efficient pre and post purchase services,
- Expectations of small car customers seen rising generally in the direct proportions to the levels of performance. The more one gets the more expectant one becomes,
- Needs can be satisfied because 'need' represents the vacuum-financial, physiological or psychological that can be fulfilled with provision of the small car availability with all kinds of services.
- Whereas the expectations is seen on the border of imagination, which may be realistic or achievable or even illusory.

But now a days expectations and dreams have become a driving force of any economic activity small car is one among them which can provide the necessary impetus to growth and development.

One customer survey by Overdrive Magazine in the may-2001 and revealed that there are three categories of cars and organisation in the world and India is part of it. In the survey following was the out come:

- a. Car organisation exceed expectation like Mercedes-Benz,
- b. Car organisations like Maruti- Suzuki which meet the expectations,
- c. Car organisation that needs improvement for not meeting the customer expectations, like Premier Padmini.





SECTION F: HOW TO MANAGE FOR MEETING CUSTOMER EXPECTATIONS:

1. Know it: Common problems of not meeting customer expectation are:

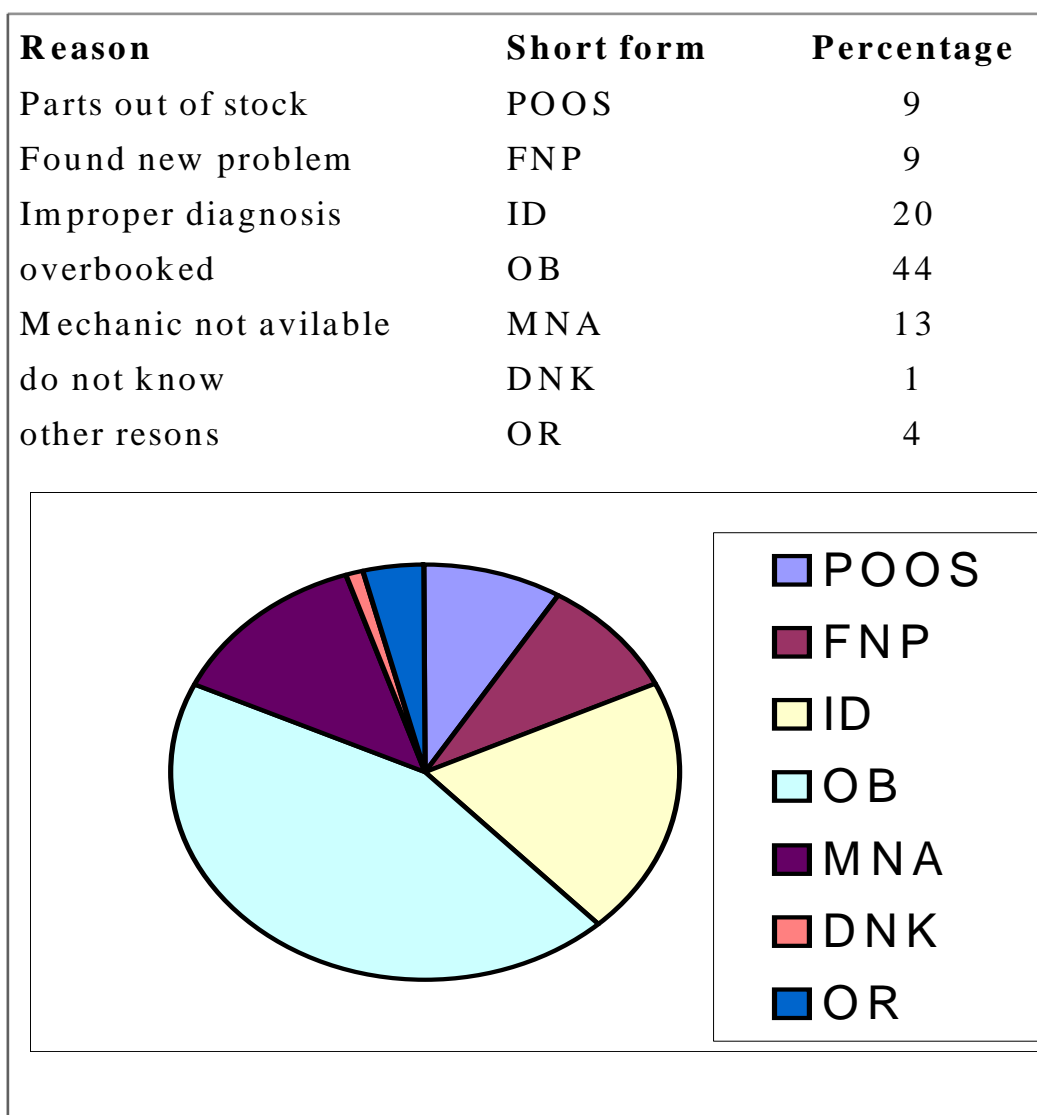
- a. Ill defined and inaccurate requirements,
- b. Unrealistic requirements,
- c. The small print trick,
- d. Requirements are not owned and not taking responsibility,
- e. Lack of courtesy/ service,
- f. Lack of attention to few customers,
- g. Making to hide few services,
- h. Lack of communications,
- i. Failure to redress grievances promptly.

Let us see how Indian car industry is performing. When a survey of most frequent reasons given for delay in servicing small car was carried out the following facts came out.





Table 20: Showing Reasons/ Problems of customer servicing delay:
Reference: Independent survey, Auto India Magazine, few websites.





Interpretation of the chart and the graph:

1. 57% of the time delay in servicing of vehicle takes place due to overbooking and unavailability of the mechanics.
2. 29% of the time is due to improper diagnosis or new problems.

Out of this spare parts out of stocks and unable to find proper problem can be overcome with proper skill up gradation of the mechanics. There is always a scope to upgrade to bridge such a big gap of delay in customer servicing.

2. How to meet customer expectations?

Following are the pragmatic solutions successfully developed by the experts.

In their book- 'Enterprise One To One', Authors- Don Peters and Martina Rogers has stated that in order to compete in a truly customer driven manner an enterprise must integrate its entire range of business functions around satisfying the individual needs of individual customers- not just marketing, customer service and sales, but production logistics, and financial measurements and metrics.

Organisations from dealer to the service station and manufacturer can exceed the customer expectations by focussing improvement efforts in three areas:

- a. Customer friendly, customer-driven, customer oriented process not just mechanisation of services but humanisation kind of services,
- b. Every Employee committed to customer services and will show the behavioural changes when required:
 - * Adequate training,
 - * Leading through training,
 - * Avoiding tunnel vision,





- * Proper and timely communication and listening to customer,
- * Understanding priorities,
- * Understanding the constraints and demands of customers,
- * Knowing own responsibility,
- * Proper objective setting supported by time management.

c. Customer Dialogue: It means by which organisation can know what the small car customer wants and what are his needs. Superlative performance relies upon being self-critical. So one to one correspondence and dialogue must be set up with customers. TQM about challenging requirements, talking, with the customers and agreeing new requirements.

d. Frequent Self-assessment:

Every time organisation goal may be short term and long term must be communicated to all the internal customers i.e. staff members, to grasp real 'mission' set up for:

- * Contact customers and identify them personally,
- * Determine his requirements and expectations,
- * Meet customer requirements,
- * Exceed customer expectations.

Measure the following key issues on the good self-assessment tools:

- * Making sure what customer wants and expect,
- * Being flexible in meeting customer demands,
- * Treating customers like partners rather than adversaries or simply end users,
- * Making it comfortable for customer to do business with your organisation,
- * Having a positive attitude towards customers,
- * Encouraging customers feedback on even trivial matters,





- * Responding positively to customers' problems,
- * Developing a fantastic repeat relationship,
- * Seeking to exceed customer expectations.

e. The reasonable expectations:

Check whether the expectations are reasonable as more than 96% of customers have reasonable expectations like below:

- * That car organisation will attend the customer problems whenever they have one. Customer expects patience, time and attention in that order.
- * That car organisation will take up customer's case with concerned authority or office when need be.
- * That organisation will feel for the customer when ever they have the problem. As feeling many a times actually heels the wounds of the problem.

f. Proactive approach:

- Modern techniques and technology can add the vigour in the proactive approach in fulfilling the customer preferences, aspirations, and expectations are the need of the hour.
- People just don't buy things but buy expectations and not needs now days. Good services are customers' beliefs, so know them at earliest.
- It immutable law in business that words are words, expectations are expectations, promises are promises, but only performance is the reality. So let every customer feel that he is very special to the organisation.
- Every service taken:
 - * Should be with a smile,
 - * Accurate and efficient for the first time.
 - * Must have a personal touch,





* Goes beyond customer expectations,

It must be optimal taking into account the changing customer taste and preferences and remain one step ahead of the customer by continuously monitoring the environment and acting proactively to exceed customer expectations by rendering consumer services beyond promises.

SECTION- G: Inside the customer's expectation fulfilling product the small car:

USING INFORMATION TECHNOLOGY AND E-COMMERCE IN THE INDIGENISED SMALL CAR:

The crux of this E-Commerce is that India has to enter in to the indigenisation of every kind of technology. Indians have to indigenously manufacture or develop following gadgets and equipments to be fitted in the small cars, someday or other to sustain customer demand:

1. Computers having LCD screen to be able to fit in small car,
2. Mobile phones which can be operated well from the small car,
3. Music system and air conditioning to be fitted in small car,
4. Noiseless, ultra safe suspension system like what Mercedes have,
5. Auto pilot car in case of emergency taking the riders to hospital, etc.
6. Accident warning gadgets to avoid accident,
7. Puncture less tyres system or alternative tyre with puncture fixing system,
8. Every company can get itself fitted with advanced technology like computer and use local but advanced rated software and services.
 - This improves faster services,
 - Faster decision power,
 - Improved Quality,
 - Improved productivity,





- Improved work culture,
 - Improved cohesive atmosphere in the organisations involved in indigenisation,
 - Customer satisfaction will reach its peak to be even called customer delight,
 - The socio-economic condition of the nation will be uplifted certainly.
9. Every R & D section in India will be connected to each other and if any new discovery or invention occurs in the filed of Automobiles will be conveyed trough the E-Commerce immediately and thus if at all production is required it can be conveyed to the suitable department.
10. Patent and all the other legal documentation will be taken care.
11. In the event of growing small cars by sheer numbers the Management of Traffic and Regional Transportation Offices will have greater role to play in India. This can become an easier issue if digital technology, information technology and E-governance and E-commerce is used properly. It is estimated that there will one million increases in cars every year from the year 2010, in India. So, AIAM has suggested the safety of the drivers, passengers and pedestrians is ensured more effectively if the following kinds of traffic disciplines are observed and enforced:
- Driving and lane discipline,
 - Parking and Stopping Discipline,
 - Signal and Stop line discipline,
 - Speed restrictions,
 - Synchronising signal for particular speed,
 - Safer Overtaking,
 - U-Turn and intersection discipline,
 - Respecting the rules of the road,





- Using the modern technology any discrepancy, theft, and the accident can be avoided.
12. Corporate governance will use these kinds of E-Commerce Governance system at all the times to avoid any kind of snag.
13. Thus, the complex growth of the modern business and emergence of corporate giants necessitates and require professionals approach in governance to maintain good customer relationships and for the management of the organisation. The changing global corporate scenario also emphasise that good management owes effective organisation culture but to great extent to the mission, vision and pro-active approach of the top management, middle management, the workers for the total customers satisfaction. This complexity can be made simple using Information Technology with modern communication skills used for the E-Commerce.
14. *Prerequisite of this project can be the establishment of service institutions for building consulting companies network and systematic networking of these institutions to realise an overall cooperation marketplace.*

The list is unending. But this task of indigenisation with respect to customer behaviour is certainly achievable, when taken sincerely. When it is supported by fast services provided by Information Technology of the E-Commerce and if the human resource who are cultured and civilised for the above task with proper qualifications, knowledge and skills, and having strong will, and who are acting as a unison for the pride of their motherland or respective nation.





CHAPTER 9. SUMMARIES AND CONCLUSION

1. SUMMARY:

The ways Indians can manage the total indigenisation of small cars with respect to customer behaviour are by means of pursuing the following aspects:

- a. By R & D in the resources required for the small car product, R & D in customers' behaviours and R & D in the required services.
- b. By result oriented approach in the most competitive small car world market.
- c. They will do it by proper utilisation of all the indigenous resources.
- d. They do it by adopting or developing new techniques to suit the very Indian conditions.
- e. They do it for the every individual's sake also for the sake of national cause as well as the humanitarian cause, and
- f. To satisfy the every possible need of the people concerned with the small car.

2. CONCLUSION:

It can be stated in the form of the following points-

Management of the developing small cars indigenously according to the latest and the futuristic needs with respect to customer behaviour in India, is a need of the hour and a viable job, it can be achieved by:

1. Using all the Indian indigenous resources consciously and judiciously,
2. Special attention be given to the customer behaviour as in future, king customer will be detecting the terms and condition in the field of technology and the service industry as well,
3. Allowing benchmarking to develop other industries in India,
4. Generating huge employment potential and thus allowing the socio-economic growth of the country.
5. Making Indian economy and Indian technological front a self-reliant look to strive in better fashion in





the future.

6. Bringing laurels to the nation by giving the world the world-class product.
7. Giving the best example of producing remarkable results if the nation uses all its resources cohesively and acts in a synergy.
8. In all the exercise every individual taking part in making and managing the technology of small car indigenisation must be able to reach the self-actualisation needs and will try only one thing- the customer delight.





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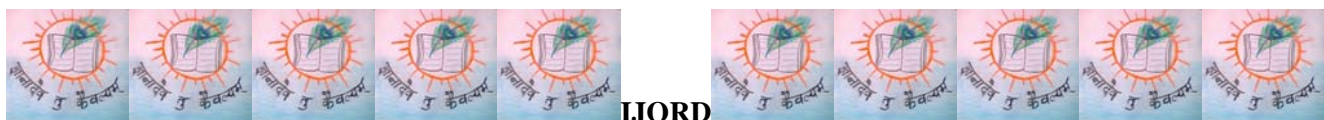
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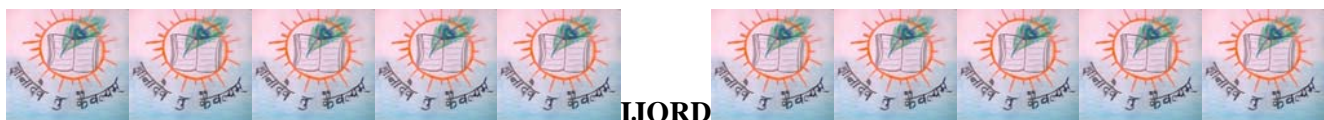
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Appendix 1:

Request Letter for effort to indigenise complete technology i.e. all technologies and services in India, by Indian Companies, to Honourable President of India Dr. A. P. J. Abdul Kalam -

From:
Ashish Manohar Urkude,
(Research Student of PhD in Management
- Nagpur University),
5/24, Radha Damodar Apartments,
Congress Nagar, Nagpur.
Pin code: 440012.
Residential Phone: 0712-540775.
Email: ashish.urkude@gmail.com

To,
Honourable Devotee of the Indian Motherland,
Honourable President of India,
Bharat Ratna Dr. A. P. J. Abdul Kalamji,
Government of India,
Rashtrapati Bhavan,
New Delhi,
Pin: 110001.

Subject: *Research findings for making India a developed Nation by 2020.*

1. In the current Socio-Financial crisis and for long term benefits of India, Indigenisation of Automobile Field and hence Heavy Machineries and Industries, and Military Systems, Agricultural systems & Machineries, and giving upsurge to the local products, are the best possible solution to develop our great nation.
2. It is also the best solution for generating the huge employment potentials and overcoming other socio-economic problems, presently what India is facing. These are but the research findings.
3. Further, researcher hereupon is trying to request you to highlight importance of R & D and needs of indigenisation in your every possible meeting with the Indian technocrats, bureaucrats and other important persons from important institutions and organisations.

Reference:

Wide range of Data collected from various sources including IAF, DRDO, and the thorough analysis for the PhD-Research in Management of indigenously built small car market in India with special reference to



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customer behaviour, under the most able guidance of the Honourable Provisional Vice Chancellor of the Nagpur University, Dr. Mr. Madhukar Rode and under co guidance of Dr. Arun Bapat.

Honourable Sir,

Warm Greetings.

Accept Ram Ram and Salaam from a simple ordinary citizen of India.

Sir, this is Ashish Manohar Urkude perusing his all-important Research studies for the Ph.D. thesis in Management.

Researcher is writing this letter to inform you but the world known fact of the research findings.

Just to inform you researcher is a Bachelor of Engineering Graduate in Automobiles, AMIE (Mechanical), MBA in Marketing and Finance, having almost twelve years experience in the field of Automobiles, Mechanical and Computer Industries. Please don't get confused I'm only 30 years of age.

Following are the Details of the Research for PhD: -

The Topic of research for the PhD:

Management of indigenously built small car market in India with special reference to customer behaviour.

The Researcher for the PhD:

Shri. Ashish Manohar Urkude, Nagpur.

The Guide for the research for the PhD:

Dr. Madhukar Rode, Honourable ProVice Chancellor of Nagpur University.

Co guide for the research for the PhD:

Dr. Arun Ramchandra Bapat, Former HOD of Mechanical Engineering Department, Priyadarshini College of Engineering and Architecture, Nagpur.

Place of research and submission for the PhD:

Nagpur University



**The Hypothesis put forth by the Researcher for the PhD:**

The Param Super Computer, which Indians have developed, forms the most complicated technology in the field of Electronics and Computers.

Comparatively, also it is the latest branch of Science than the Automobile, which is an older Technology that Indian people have digested and assimilated since last fifty years. So, if India can make breakthrough in the latest branch of Science, which utilized limited resources, why cannot it do same thing happening in the basic and important old form of science? Here researcher firmly believes they can, they should, and they will.

Indian can make a Research, they can Design, Develop and Manufacture the car and other Automobiles right from the Engine, Gear Box to the Tyres and also manufacture them at the equal standard the Americans and Japanese can.

Please remember, this form of Automotive Technology also forms the basics of many other technologies right from manufacturing Heavy Machineries and Space Shuttles kind of Vehicles to the most advanced Medical Technologies. Henceforth, India can enter successfully into every other possible field of Higher End Technologies.

Again, Researcher firmly believes that the small car can become a smaller part of this giant Indian project of technological advances and self-reliance of India and Indian.

Why the researcher has selected this topic?

Researcher has passed his Automobile Engineering in Second Merit Rank from Nagpur University in the year 1994; he is also AMIE in Mechanical Engineering and has passed MBA from Nagpur University in 1998.

While pursuing CDAC-ACTS diploma in IT this 'indigenisation' idea got a tremendous boost and already informed for guidance Professor Dr. Madhukar Rode, the then Principal of A. Gundawar College of Commerce, Nagpur, was contacted for the final decision. Please remember in the year 1995, Dr. Madhukar Rode was contacted for the first time for this kind of PhD the time when researcher was pursuing his P.G. At that time, Professor Dr. Madhukar Rodeji, advised researcher to get professional experience of five years in the field of Automobiles and other allied industries to understand the whole marketing and industrial basics.

Since his student age, researcher is interested in developing and manufacturing indigenous Indian cars with using all Indian Resources. Researcher firmly believes that Indian Scientists, Engineers and Managers, Businessmen and Consumers can develop their own technologies using their own resources any time if they wish and if they come together.

Now, researcher feels from heart and soul that this is the write time to start this venture.



**The Problem targeted by the researcher:**

Let us review in nutshell, the technical, and marketing side of the Indian Car Industries:

- a. Until Nineteen Eighties, there were only few cars in the Indian Market the Ambassador by Hindustan Motors and Fiat or Premier Padmini from PAL.
- b. Since Maruti-Suzuki cars entered with well-planned set up of service stations and supporting network, the car market has totally changed for the first time in India.
- c. Next time not only Indian Car Industry but also the whole Industrial world changed a lot, at the time when GATT got its final 'yea' for implementation from Indian in India and 'yea' from many more countries around the world, as well.
- d. The results of 'these kinds of implementations of open economy have shown the whole world the Mexican crisis'. Mexican Economy totally collapsed due to the heavier losses in the industrial sector may be mounting to whopping \$56 Billion.
- e. This was the same time when many more MNC added woes to this factor and destabilized the grandfathers of Indian Auto Industry. Infact, Premier Auto Ltd. (PAL) had to close few of its plants in Mumbai, as they could not compete the professional and result oriented approach of the Maruti-Suzuki and later on from many more MNC.

Few of the major Reasons detected during the research:

- a. Through R & D at all the fronts and at all the possible levels: may it be product, process, resources, technologies, and consumer in the car market; these companies always try to improve all their resources at every possible moment.
- b. Later on, these MNC try to dominate the market by highlighting their products and services through all the possible sources of heavier advertisement doses to the public. Researcher must mention here but the known fact that many of the MNC have yearly turnover more than the GDP of many countries, even more than one third of the GDP of what India (India) has.
- c. Where as the companies, in India, for example PAL, tried to rely on the age-old product and substandard services for more than few decades with absolutely no R & D and nothing new in their cars and services.

Solutions suggested in the PhD thesis by the Researcher for PhD along with his Honourable Guides over the problems India facing at the present moment:

1. As early as possible a strict Indigenisation of the Car Industry, Supporting Services and the Car Market as whole; through using all the indigenous resources, which are abundant in India,
 2. It means, local production of the product (here car) for the whole world with local perfectly developed methods and means. – Mr. M.K. Gandhiji.
- As, it is highly perceived thing now a days that, whoever controls the volume of money in any country is master of all its legislation and commerce, so all the controls must be also indigenously developed





should be in the hands of the indigenous citizen of India. – Mr. James Garfield – TOI-11th July 2002.

3. Simultaneously, higher end technologies can also be made self reliant in India through indigenisation after starting with this project – Ashish himself and Rajeev Dixit, of Azadi Bachao Andolan, Wardha.

Warning: *If these measures are not taken as early as possible then India will lose its self-reliance stats in the technological and socio-economic front.*

How Researcher is pursuing this exercise?

Researcher carried out survey of the Indian Car Market and the conclusions are drawn after the detailed survey and heavy discussions with the people who are bosses in their field. Researcher took five thousand odd samples commenting on this topic. The research sample range is quite huge and varied having interest in this field. The samples taken are from Masters in the Research Associated Field of this topic, may them be the Scientists to the roadside Mechanics, and of course, Housewives who go in the grocery shops through the small cars. Samples are Engineers in the plant, from the service stations, or from the big garages. Samples are Managers of MNC Cars Manufacturer. Samples are Future Customers, other Consumers, and Dealers in the Car Market. Lastly but not the least, the names not to be mentioned as they wished while interviewing the managers from the PAL and then the consumers of the PAL and the manufacturer themselves are also specially targeted samples of the PhD Research studies.

The conclusion drawn every time was but the indigenisation. Researcher firmly believes that it is high time that all Indian people must come together and start the exercise of building their own cars higher end technologies and military vehicles and systems relying on it, as if they are on the war front.

Please remember, if this Remedy suggested is not implemented, very soon the consequences will be very harsh. The consequences can be like; at present, few Indian giants have closed their businesses and may be more will also follow the same path. Similarly, there may be a case on the Military front especially with Indian Air force. IAF will have the Fighter planes but devoid of spare part to fly them due to lack of indigenisation efforts.

Why Researcher is pursuing this exercise?

It is becoming clearer everyday of research that Car Industry forms the very basics in the Technology Sector to build Higher-end Technologies. To make idea crystal clear, researcher must mention here that, may it





be anything like Space Technology, may it be Military Warfare or technology to develop FMCG or Medical Technologies, the Car Technology forms the very basics of all these.

Only One Example will be sufficient to clear this idea. Let us take an example of the Automobile Engine to manufacture that it requires knowledge of more than many branches of Science, Arts, and Commerce. To develop Automobile Engine knowledge of Basic Kinematics, Dynamics, Rotational motions, Translation motions, Reciprocal motions, Fluid Mechanics, Fluid Dynamics, Theory of Machines, Engineering Cost Management, Foundry Engineering, Castings, Forging, Metallurgical Engineering, Machine Design, Engineering Drawing, Materials Management, Artistic Skills, Artistic Drafting, Financial Management, Various Languages in which previous designs are made and procedures are written, etc. and the list is unending. Please remember India has all the kind of skilled people in abundance.

Let us also see why the researcher feels that **if Indian develops the advanced Automobile Engine and the Gear Box or Automatic Transmission then India can take a giant step towards indigenisation and self-reliance.**

Let us see an example of Car Engine and see why it forms the major component of all the basic technology and **helps in manufacturing the following cases:**

- a. The Engine of the car also forms the basis of the power generation from the **Generators**, which manufacture the alternating current of Electricity that is used in every household devices and devices of the industrial houses,
 - b. **The Dynamos** for the direct current,
 - c. The **Compressor** for the air conditionings and cold storage devices,
 - d. **Hydraulic devices** used in power lifting or braking,
 - e. **Pneumatic devices** used for the lifting, elevating, and braking,
 - f. The **Elevator Technology** also based on few techniques used in the Automobile Engines,
 - g. **X Ray machines** use this technology,
 - h. All the Electricity manufacturing **Power plants, Atomic Reactors**, and all Vehicles,
 - i. **Medical Devices** like artificial hearts and Anaesthesia Doctors use the kind of devices, which use this technique,
 - j. The technique in the **Gas Cylinder, Mixer Grinder**, and such all-household devices also use some or the other similar kind of technique or kinematics as used in the Automobile Engines,
 - k. Part time Generators and Dynamos used in the **houses, machineries** and the big industries,
 - l. The **pollution control measure** taken for the exhaust fumes from the Automobile Engine also forms the basic of **Environmental Technologies** used in varied fields of the Industries such as Powerhouses, etc.
- So there is no end to this list.

Places of the research samples:





For this, the researcher carried out a thorough survey and consulted Doctorates, Military Scientists, Indian Air force Pilots, Indian Navy Engineers, and Captains. He consulted DRDO Scientists, BARC Scientists, ARAI Engineers and Scientists, PCRI Engineers and Scientists. He wrote letters to Rahul Bajaj the CEO of the Indian Auto Giant Bajaj Auto Ltd. and got a reply too in different context. He wrote letters to Mr. Ratan Tata, MD of Tata Industry, Mr. Keshub Mahindra, MD of Mahindra and Mahindra. He has established a contact with all Auto giants of the Indian Industry. He interviewed Mr. Ashok Morey the MD of Mahindra & Mahindra, Few IAS officers, Few Scientists from Physics; The Senior Engineers form Telco, Senior Mechanics from Telco and Mahindra & Mahindra. On marketing side, he interviewed Territory Managers of MNC cars Dealers, Consumers of all Indian cars, Service Station Engineers and Owners of Garages of all the cars present in India.

The places and cities of studies vary from Nagpur, Pune, Mumbai, Chennai, Bhandara, Jaipur, Delhi, Kolkata, Nasik, Khopoli, and Thane. There are small service stations and garages from remote Indian places like roadside garage at the National Highways and State Highways even to the villages where our expert Indian Mechanics are working and consumers like farmers are enjoying the ride of an automobile, these also form the important samples.

Thus, you can say researcher has tried to find the root cause of this phenomenon by discussing and contacting the masters at the strategic level in the Automobile industry then the middle level management and the always in contact with technology scientists to the road side mechanics.

Analysis of 'What to do and how to do?'

India has more than one million strong force of Engineers and one million skilled workers in the field of Mechanical and Automobile field. India also has ungrounded **unemployed youth who can become a strong force to reckon with**, if they are trained for the particular job of indigenisation.

Revolutionary planning and implementations is needed for this job. Please remember, India and Indians already have:

1. Skilled workforce as mentioned earlier,
2. Materials required is as abundant as US, Russia, or what China has.
3. Industrial Mentality of the people.
4. Set up of the machinery.
5. Infrastructure set up.
6. Will to succeed in any kind of work using all possible efforts and resources.

Only thing needed is triggering by the Government for this kind of projects. First making it an issue in the parliament, and at a broader spectrum, then, Awarding to the person for making the best kind of suggestion will be an added advantage. Researcher feels here it can start from your department first and in the Industrial sector, ARAI, Engineering Institutes, and other higher Institutes.



What will be the result?

For this we shall consider only three main units in the car, which India is not manufacturing, and the amount of loss India is suffering at financial front and losses to other resources.

S N	Machine unit of the Car	No. of Parts in it	Present Situation	If India starts Manufacturing it	Result of the Implementation of this Indigenisation Project
1	Engine Unit and whole Assembly	1000+ (Thousand plus)	India not manufacturing more than five thousand parts required in Indian and MNC cars.	There will be as many as parts as number of SSI, Vendors, Ancillary Units, Dealers, Service Stations, Garages, and Supporting Services.	<p><i>1. There will be mobilization of resources.</i></p> <p><i>2. Direct Employment generation per part is around two hundred, i.e. overall, generation of around two million at least.</i></p> <p><i>3. Supporting services will generate around eight million jobs.</i></p> <p><i>4. Revenue loss of Rs. Fifty Billion i.e. \$1 Billion, as Foreign exchange will be saved every year.</i></p> <p><i>5. India will be self-reliant in every field of technological base. As manufacturing, an engine means manufacturing a whole power manufacturing unit and so on.</i></p>
2	Gear Box Unit and Whole Assembly	500+ (Five Hundred Plus)	India not manufacturing even half of the parts required for the gear box in many of the MNC cars	There will be as many as parts as number of SSI, Vendors, Ancillary Units, Dealers, Service Stations, Garages, and Supporting Services will be developed	<p>1. There will be mobilization of resources.</p> <p>2. Direct Employment generation per part is around one hundred, i.e. overall, generation of at least one million jobs.</p> <p>3. Supporting Services will generate around eight million jobs.</p> <p>4. Revenue loss of Rs. Twenty Five Billion i.e. \$500 million as Foreign exchange will be saved every year.</p> <p>5. India will be self-reliant in the automobile technology.</p>
3	Driving Axle Unit and Whole Assembly	100+ (One Hundred Plus)	India not manufacturing even half of the parts required for the	There will be as many as parts as number of SSI, Vendors, Ancillary Units, Dealers,	<p>1. There will be mobilization of resources.</p> <p>2. Direct Employment generation per part is around one hundred, i.e. overall, generation of at least one million jobs.</p> <p>3. Supporting Services will generate around eight million jobs.</p>



			MNC cars	Service Stations, Garages, and Supporting Services will be developed	4. Revenue loss of \$200 million as Foreign exchange will be saved every year. 5. India will be self reliant in the automobile technology.
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Please Note:

1. Please remember that the Engine, the Gear Box, and the Driving Axles are the major components of the Car or any other Automobile. They together need a set up of the industries that ultimately can manufacture ninety percent of the basic parts of the machineries existing on the earth. May it be a small screw, a nut or may it be complicated parts like carburettor and fuel injectors and their sub parts.

2. Every distinct parts needs distinct and unique kind of industrial set up.

3. A car has almost thirty thousand components right from the small screw to the body and axles.

4. Any nation manufacturing its own small car has to have this major kind of set up of industries. This set-up of industries is sufficient to develop many of the heavy industrial machineries. Many types of machinery need only few major or minor intricate unique sets up for few parts other than the small car. Otherwise, the equipments and the infrastructure are always remaining to be as same as that of the small car. Ex. Korea can manufacture small car totally indigenously and hence other advanced machineries too, other than Few European, Japanese, and US companies. Thus, only car technology is enough to develop many of the major mechanical, medical, and electrical industrial and military machineries, as their manufacturing, designing, and development are almost similar.

What are the other efforts needed?

1. In India for taking any giant step like this, it has to become a major issue. May it be political issue, socio-economic issue, and the ethical issue! Therefore, it is expected from honourable members of the society who know the seriousness of this problem that they must take this issue to the every citizen of this country.
2. All businesspersons must be convinced that R & D at all levels is need of the day. At every stage and every step R & D with respect to product, procedure, design, marketing, after sell services, is must. Then feedback and Kaizen in this field will bring improvements in this field. In coming future this knowledge bank will be useful in other industrial sectors as well.
3. The efforts from the Education Institutes, The Business Organizations, The Political will, The Banking Sector, The Industrial Development Corporations and Institutes like MIDC, CII. One more step taken can be the new and old Entrepreneurs are to be made more aware about the advantages of the indigenisation.
4. Few more steps can be as follows:
 - a. Provisions must be made that Management, Commerce, Arts, Home Science, Architecture, Engineering students and all the other students is given compulsory contributing internship towards nation as a practical project as part of curriculum. If Doctors have one-year compulsory internship of one year, then why can't these students also?
 - b. The Government can give concession to SSI for manufacturing the above-mentioned parts of Automobile and the higher end machineries.





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- c. MIDC, GIDC, CII, IE, FICCI, IDBI, ICICI, SBI etc. should make special provision for this and must conduct lot of seminars & meets and awareness drives.
- d. The politicians must realize the need of indigenisation as in India this forms the very important factor to mobilize the resources to such very good and giant projects.
- e. Students to the Consumers all must realize that indigenisation means using our own resources for our own development for our own cause and thus helping your own nation and helping yourself as well. If all these people survive then only nation will survive.
- f. Remember USA, Japan has biggest carmakers and more than half of the resources in USA and Japan are directly or indirectly related to the Automobile and Car Market.
- g. Though India our country is not manufacturing the complete car now, still half of the businesses and industry in India listed in CII directory are some way or the other, are based on the Automobiles and Car market. So, if we'll make our indigenous cars we'll be able to make more advanced machines very soon and thus will encourage the other businesses as well.

Expectations from your side:

Sir, the main aim of the PhD thesis is making India and Indians the self-reliant individuals and the self-reliant nation through the indigenisation and that too as faster as we can.

The very first thing needed in indigenisation efforts in every sector is just a triggering by the Government for this kind of projects. First making it an issue in a broader spectrum. Awarding to every possible person for making the best kind of suggestion will be an added advantage.

Researcher feels Dr. A.P.J. Abdul Kalam can be the name enough to trigger this process as he himself has ignited mind to work for the national cause.

Sir, so it is requested from your sides that please highlight few of the major points from this project. It is the only expectation from this younger Indian brother.

Sir, make sure that R & D for Indigenisation be given the highest priority too more than any other issue.

Long live our nation, our culture, our civilization, and our spirituality and of course, the devoted people like you.

Sir, please do send at least “one sentence reply” with your most able signature and seal on it to promote such kinds of activities in the young generation. Especially to me as I'm a case of ignited mind.

With high regards to everyone and lot of support for a huge task and selfless service, you have taken, from a simple devotee of the Mother land. Jai Hind.

Thanking you.

Yours sincerely,

Ashish Manohar Urkude.
25th July 2002.



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N.B.: Sir, you are requested to send few invaluable suggestions for this project, which will be welcomed as if it is a need of the hour.

Please note: Dr. A. P. J. Abdul Kalam had wished “All the best for Ph.D.” in reply to this email and hard copy letter instantly. Author is grateful to him

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Bharat Mata Ki Jai!

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||Soooham Hansah|| || Hari AUM Tat Sat|| ||Aum Tat Sat Brahmarpanmastu||

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