This chapter deals with the various issues related to research methodology adopted for the present study. The research problem is elaborated along with certain propositions made on the basis of a review of literature. Further, the objectives, scope, design and procedures for data collection and its analysis and interpretation have been described. The chapter ends with pointing out the limitations of the research study.

1. Problem Definition/Statement

The passenger car has graduated from the core product of four tyre, engine, stearing system and a body to much complex augmented term like MPFI engines, Mapped EGR, Variable valve-train system and light off technology. The competition has moved from three cars on a road to averagely eight cars per segment. The real survival question has germinated into the new form. Customer wants value for money as a common denominator, while quality remains the unsaid must norm. All the players are trying to give their best in both the final product and processes involved therein. The question “How good is the best?” becomes pertinent.

The review of literature and the establishment of need for research study have facilitated a definition of the research problem. The statement of the research problem is as follows:

“TQM practices in the Indian Automobile Industry- A case study of select passenger car companies”.

The term TQM covers the entire gamut of quality practices in the four companies namely Maruti Udyog Ltd, Honda Siel Cars India limited, General Motors India, and (Passenger Cars Business Unit) Tata Motors. Studies on TQM practices in the selected company shall pertain to quality perspective in all important functional areas ranging from product engineering, process engineering, purchase, inbound inventory, production processing, part inspection to the final stage of quality assurance (QA).

2. OVERVIEW OF SAMPLE COMPANIES

Maruti Udyog Limited

If we look back at the public transport system of India before 1980, it was simply inefficient. This led to the growth of demand for personal mode of transport. Sh. Sanjay Gandhi, political advisor and younger son to the then Prime Minister of India, Mrs. Indira Gandhi, envisioned the manufacture of an indigenous, cost-effective, low-maintenance, compact car for the Indian
middle-class. Maruti Udyog Limited (MUL) was established in Feb 1981 through an Act of the Parliament, to meet the growing demand of a personal mode of transport. For the purpose of borrowing as well as the maintenance of that technology, Suzuki Motors Company was chosen from among seven prospective partners worldwide. This was due not only to its undisputed leadership in small cars but also to its commitment to actively bring to MUL contemporary technology and Japanese management practices (which had catapulted Japan over USA to the status of the top auto manufacturing country in the world).

A license and a Joint Venture agreement were signed between Govt. of India and Suzuki Motor Company (now Suzuki Motor Corporation of Japan) in Oct 1982. Maruti Udyog Limited, a subsidiary of Suzuki Motor Corporation of Japan, has been a leader in the Indian car market for about two decades. Its manufacturing plant, located in Gurgaon, has an installed capacity of 3,50,000 units per annum, with a capability to produce about half a million vehicles.

Maruti Udyog Limited is largely credited for having brought in an automobile revolution to India. Company’s vision is to become “The Leader in The Indian Automobile Industry, Creating Customer Delight and Shareholder’s Wealth; The pride of Indian.” The company has a portfolio of 11 brands, including Maruti 800, Omni, premium small car Zen and Estilo, international brands Alto and WagonR, off-roads Gypsy, mid size Esteem, luxury car Baleno, the MPV, Versa and Luxury SUV Grand Vitara XL7. It is a leading passenger car manufacturer in South Asia. It was the first company in India in mass-production and selling more than a million cars.

The introduction of the Maruti 800 in 1983 marked the beginning of a new era in the Indian automobile industry. Maruti Udyog brought in the latest technology then available, more fuel-efficient cars, and brought down the prices of cars in India. This led to the creation of a huge market for all car segments as the Indian middle class was growing in size. This in-turn brought in more players to this segment. A number of auxiliary car parts manufacturing units were setup as most car manufacturers realized that it was more cost effective to make their car parts in India rather than importing them. Maruti's major influence was in helping the auto-component industry grow in the country because of its emphasis on localization and indigenization. As in the beginning that sector hadn't grown much, Maruti had to start a dozen joint ventures with Indian entrepreneurs. It got them foreign collaborations that led to facilitation for other manufacturers so that over a period of time the whole component industry was able to upgrade itself and
improve its quality, leading to a major export potential in vehicle components. It also brought in better methods of financing that allowed more people, who with their given income levels could not afford to buy a car or own a personal vehicle... It still remains the leader not only in terms of market share but also in customer satisfaction surveys - it has consistently topped J. D. Power quality surveys, from 2000 till 2006.

Awards and Accolades

2006

- JD Power CSI: 1st Rank, 7 years in a row 2000 – 2006
- JD Power SSI: 1st Rank, 3 years in a row 2004 – 2006
- Tops TNS TCS Survey in key segments, 5 years in a row 2002 – 2006
- Among Top 5 car companies in the Forbes list of the Worlds Most Reputed Companies – Nov 06
- Features in Business Today’s annual list of “20 companies to look for in 2007” – Nov 06
- The only automobile manufacturer to feature in Business Today’s list of “India’s Best 10 Marketers – Nov 06
- Ranks 1st for Corporate Social Responsibility by TNS Automotive

2005

- Ranks 1st among Automobile companies in the Corporate Image Monitor (CIM) Study 2005 conducted by AC Nielsen ORG-MARG
- Receives a commendation from Ministry of Economy, Trade and Industry (MITI) of Japan – Sept 05
- Number one in JD Power SSI for the second consecutive year
- Number one in JD Power CSI for the sixth time in a row - the only car to win it so many times
- M800, WagonR and Swift topped their segments in the TNS Total Customer Satisfaction Study
• Leadership in the JD Power Initial Quality Study - Alto number one in its segment for the 2nd time in a row, Esteem number one in its segment for the 3rd year in a row, Swift number one in the premium compact segment
• WagonR and Esteem top their segments in the JD Power APEAL study
• Ranks 1st in Auto sector for Corporate Reputation Strength (CSR) study – Feb 05
• TNS ranks Maruti 4th in the Corporate Reputation Strength (CSR) study (#1 in Auto sector)-Feb 05
• Maruti bagged the "Manufacturer of the year" award from Auto car-CNBC ( 2nd time in a row)-Feb 05
• First Indian car manufacturer to reach 5 million vehicles sales
• Business World ranks Maruti among top five most respected companies in India-Oct 04
• Maruti ranked among top ten (Rank7) greenest companies in India by Business Today - Sep '04

2004

• Maruti Suzuki was No. 1 in Customer Satisfaction, No. 1 in Sales

Satisfaction

• No.1 in Product Quality (Esteem and Alto) and No. 1 in Product Appeal (Esteem and Wagon R)
• No. 1 in Total Customer Satisfaction (Maruti 800, Zen and Alto)
• Business World ranked the company, among the country’s five most respected companies
• Voted Manufacturer of the year by CNBC
• Voted one of India's Greenest Companies by Business Today-AC Nielson ORG-MARG

**Honda Siel Cars India Limited**

Honda Siel Cars India Ltd., (HSCIL) was incorporated in December, 1995 as a joint venture between *Honda Motor Co. Ltd.*, Japan and *Siel Limited* to manufacture HONDA Passenger Cars in India, with a commitment of providing Honda's latest passenger car models and technologies,
to the Indian customers. The company operates under the stringent standards of ISO 9001 for quality management and ISO 14001 for environment management. The green-field project, spread over 150 acres, is located at Greater Noida in Uttar Pradesh. The initial installed capacity of the plant was 30,000 cars per annum, on two-shift basis. This is under expansion to 50,000 cars per annum. The Company has plans to further raise the capacity to almost 1,00,000 cars per annum by the end of 2007 and 1,50,000 units per annum by 2010.

HSCI currently produces the new Honda ‘City’, ‘Civic’ and 7th generation ‘Accord’ models in India and the CRV is sold as a fully imported SUV from Japan. The Honda City, its first offering introduced in 1997, revolutionized the Indian passenger car market and has ever since been recognized as an engineering marvel in the Indian automobile industry. Thereafter, HSCI launched its high-end models the Accord and the SUV, CRV. The City ZX, introduced in its new avatar in 2003, replicated the success of the earlier car. The Honda Civic, launched in India in July 2006, too has matched the success of other Honda models and has proved an instant hit with Indian customers. Honda products are strongly associated with durability, reliability, quality and fuel-efficiency.

The Company's **vision** is "To be a Company that the Society would want to Exist". It strongly believes in co-existence and co-evolution, wherever it operates. The company focuses to lead the world in technology, and make a significant contribution to the creation of a better society.

**Corporate Awards and Accolades**

**2006**

- Best Indian Company (unlisted) by Business Standard Group
- Manufacturer of the Year by NDTV Profit-Car India
- Manufacturer of the Year by CNBC-TV 18 Auto car India
- No. 1 Mid Size Car (Honda City); No. 1 Entry Luxury Car (Honda Accord) and No. 1 Premium SUV (Honda CR-V) by TNS
- Best Mid-size Car in Initial Quality (Honda City) and Most Appealing Mid-size car (Honda City) by JD Power
2005

- CNBC Auto car CAR of the year 2004 - Honda City
- ICICI Overdrive SUV of the Year 2004 - Honda CR-V
- ICICI Overdrive Car of the Year 2004 - Honda City
- Business Standard Motoring Car of the Year 2004 - Honda City

'Challenging the Limits' is a phrase commonly heard across the length and breadth of Honda. Although in sales HSCI is not at top in comparison to other competitors, but the company has consistently been one of the most innovative and reliable manufacturers of cars. It has been growing steadily in revenues and profits over the years, and it may be poised for even greater growth in the coming years.

**General Motors India**

GMI, incorporated in 1994 as a 50-50 joint venture company with the C.K. Birla Group of Companies, became a fully owned subsidiary of GM in 1999 when GMOC bought the remaining shares. The company was restructured in 1999 and was converted from a Public Limited company to a Private Limited company. The existing GM India plant was originally built by *Hindustan Motors*, at Halol in Gujarat. In 1994, GM India entered into a 50% Joint Venture partnership with Hindustan Motors and modernized the 45,000-square-meter plant near Halol, 45 kilometers northwest of Vadodara, in the western state of Gujarat. In February, 1999, GM bought the holdings of Hindutan Motors and GM India became a 100% subsidiary of General Motors Corporation of USA. The plant produces the Opel Corsa, Corsa Sail, Chevrolet Optra, and Chevrolet Tavera. The Chevrolet Forester and Opel Vectra are sold as CBUs (Completely Built-in Units) and as imported from Japan and Germany respectively.

In India, GM strengthened its presence with new product launches Chevrolet Optra in 2003 and Chevrolet Tavera (Multi Utility Vehicle) in 2004. In 2004, the multi-utility vehicle crossed the 10,000-car milestone in January, within seven months of its mid-2004 launch with sales volume going up; the market share of GM India has gone up by nearly 2%. The sales volume in 2003 was 15,155 units. In 2004, the company sold a total of 26,166 cars as against 15,155 cars in 2003 registering a growth of 73% while overall passenger car growth during the year was only around
23-24%. These included 9191 Chevy Optras in Entry 'D' Luxury sedan segment, 8369 Opel Corsas and 8417 units of the new generation premium multi-utility vehicle (MUV) Chevrolet Tavera.

Awards

- Holden's flexible architecture has been awarded an Australian Design Award of the Year in the automotive and transport category
- The Chevrolet brand in India won the "Automotive Brand of the Year Award" in 2004 - BS Motoring
- Chevrolet Tavera was awarded the UV (Utility Vehicle) Award 2005 for its product attributes - OVERDRIVE
- GM Daewoo's Kalos ranked top for the second consecutive year in the compact car category - 2004 Korea Design Power Index (KDPI)

TATA Motors Limited Passenger Cars Business Unit
Set up in 1945, TATA Motors is India's largest automobile company, with revenues of Rs. 24,000 crores in 2005-06. In India, the company has manufacturing facilities in Pune (Maharashtra – western India), Jamshedpur (Jharkhand – eastern India) and Lucknow (Uttar Pradesh – northern India), and a nation-wide dealership, sales, services and spare parts network comprising over 2,000 touch points. TATA cars are being marketed in several countries in Europe, Africa, the Middle East, South Asia, and South East Asia and in Australia. TATA Motors has research centers in India, UK, and in its subsidiary and associate companies in South Korea and Spain. In 2005, PCBU TATA Motors also entered into a Memorandum of Understanding (MoU) with Fiat, the first outputs of which have been the distribution of Fiat-branded cars in India by PCBU TATA Motors, and a proposal to set up a joint venture in India to manufacture passenger cars, engines and transmissions for the Indian and overseas markets. TATA Motors began exports of its vehicles to Europe in 1992, at present, Tata Motors exports the TATA Safari Sports Utility Vehicle, the TATA pick-up and the TATA Indica range of passenger cars to Italy, Spain, Turkey, Portugal and Malta through its established distributors in these markets. In Italy, Tata Motors is already the 4th largest player in pick-ups, while in Turkey it is the third largest player. Today, around 50,000 TATA vehicles are already on European roads.
and bear testimony to TATA Motors' capabilities to address stringent country norms and sophisticated consumer needs in highly competitive markets. This European presence of TATA Motors enables the company to remain well ahead of Indian regulations with regard to exhaust, emission and safety norms.

TATA motors consider following as factors of its success:

- Strong Presence in the Marketplace
- Unique Understanding of Customer Need
- Skill Base Development over the last 40 years
- People Strength
- Future Plans

With 50 years’ presence in the automotive business, TATA Motors understands customer needs and develops products that meet their needs. To elaborate upon this, consider the following examples, in the 1990s, anticipating the need for an affordable family car, it launched the now famous TATA Indica, which occupies a leading position among compact cars. Going forward, TATA Motors has anticipated that non-car owning families, at the bottom of the pyramid, will look for an extremely affordable vehicle, providing exceptional value and this small car will be launched in 2008.

Awards

- Tata Motors has been chosen as India's Most Trusted Brand in cars in a Readers Digest-AC Nielsen consumer survey in 2006.
- The ICICI Bank and overdrive Awards, 2003, voted TATA Indigo as the “Most Exciting New Car” of the year.
- The TATA Indigo was adjudged the ‘Best Value for money car’ at the prestigious CNBC Auto Car Auto Awards 2003.
- The Indian Merchants’ Chamber Diamond Jubilee Endowment Trust Award, 2002, presented TATA Motors with the ‘Industry and Technology Award’.
- Tata indica won the ‘Voice of Customer Award’ for ‘best diesel small car’ at NFO Automotive India 2002.
The Technology Development Board of the Department of Science and technology, government of India, recognized the indigenous development and successful commercialization of Indica by awarding Tata Motors the ‘national Award for Successful Commercialization of Indigenous Technology by an Industrial Concern’ for 2000.

3. Objectives of The Study

The following objectives were delineated to be achieved through the detailed study:

Primary Objectives

1. To identify, conceptualize, analyze and appraise the different elements of a TQM system in the select companies.
2. To profile and compare the perceptual orientation of management and workers of these companies with regard to 15 critical quality elements-Design And Development Assurance, Vendor Control, Control of Purchased Material, Process Engineering Verification and Analysis, Process Control, Maintenance of Production & Auxiliary Facilities, Measurement Assurance: Inspection, Testing & Calibration, Non-Conformity (NC) – Analysis & Control, Post-Production Functions-Handling, Storage, Packaging, Preservation and Delivery, Product Installation & Servicing, Customer Feedback, Servicing & Satisfaction; Product Liability & Quality Costs, Quality Documentation; Records & Audits, Strategic Planning, Commitment & Leadership for Quality, Training & Humanistic Aspect of TQM and Use of Statistical & Other Tools for TQM, besides measuring Quest for Quality among employees of companies.
3. To identify the weak areas, if any, in their system in each of the company.

Deliverables

1. To suggest action plans to convert weak areas into strong areas for development of TQM in the manufacturing industry.
2. Integrated workable TQM strategy and actions in different operational areas for introduction, implementation and success of TQM in a manufacturing company.

4. Justification/Rationale Of Research

In one of the prominent research studies (McKinsey, 2004), it is concluded that India needs to grow at 10% by 2010, to meet its demand for employment in the decade. The analysis predicts
unemployment of 16%, if India grows at 5.5% as jobs created outside agriculture during the
period would be 24 millions. At 10% growth rate this unemployment rate will reduce to 7% as
75 million additional jobs will be created outside
agriculture by the same period.

When India, under the impact of 2\textsuperscript{nd} phase of liberalization, globalization and privatization, is
posed for the growth rate of 9.4%, it becomes pertinent to sustain its higher growth in
manufacturing sector, more specifically in the areas with optimally equal level of capital and
labour (Jasial & Sardana 2005). Contrarily, service sector, which is the largest contributor to
GDP has bought very lope sided and skewed input/output ratio with regards to employment
consumed per unit value of GDP. Hence, it becomes more important for industries like
automobile, pharma, food processing to grow exponentially, as these contribute significantly
higher level of employment in its resultant of GDP.

In its initial efforts, seed capital, relatively cheap labour and technology contribute to the creation
of such industries. However, it is the enduring Quality Management, both for product and the
processes, that profoundly contributes to the sustenance of this industry over the longer period.
With the customers becoming discerning and discriminately strong in demanding quality and
value for money, the entire rule of the game pivots around the scopic perspectives of quality
management systems in the organizations.

Elaborate researches have been conducted in the field of TQM practices across wide spectrum of
industries and companies at international level specially in America, Europe and few Asian
countries. India has its share of such studies specially in service industries like hotels, hospitals
and software development. Unfortunately not much work has been ever undertaken on TQM in
Indian automobile Industry, which is growing presently at 9.2%.