CHAPTER -5

CASE STUDIES

To validate the data collected through empirical study, four case studies have been conducted in the selected industrial units. The main concentration of these case studies has been to search and analyze various aspects on which the working of the organization depends. It involves the problems faced by firms in the era of globalization and need for technology advancement and the role of manufacturing competency in improving their performance. This chapter deals with the case studies conducted at the following automobile manufacturing units:

1. Honda Motorcycle and Scooter India (HMSI) Pvt. Ltd., Gurgaon
2. Suzuki, Gurgaon
3. SML Isuzu, Roopnagar
4. Mahindra and Mahindra (Tractor Division), Chandigarh

The data acquired from these industries is of the last 5 years, that is, 2010-11, 2011-12, 2012-13, 2013-14 and 2014-15. In graphs and charts, the representation is done as: 1st year -- 2010-11; 2nd year -- 2011-12; 3rd year -- 2012-13; 4th year -- 2013-14 and 5th year -- 2014-15.

5.1 CASE STUDY AT HMSI

Honda is the globally largest manufacturer of two wheelers. HMSI started its operations in India in 2001 at Manesar (Haryana) and has acquired over 12 million
customers in 12 years of operations. Now days, HMSI is recognized as the fastest growing two-wheeler company in India.

Two-wheeler segment is the most important among the automobile sector that has experienced significant changes over the years. The two-wheeler sector consists of three segments viz. motorcycles, mopeds and scooters. The key manufacturers in this sector are TVS, Yamaha, Hero and Bajaj. Honda’s governance structure in shown in figure 5.1.

![Corporate Governance Structure](image)

Fig. 5.1: Corporate Governance Structure

### 5.1.1 COMPANY STRATEGY

The principle that HMSI follows, is followed by all Honda companies worldwide.
Company Principle (Mission Statement)

People at Honda are committed to provide products of best quality and at reasonable prices in order to satisfy customers worldwide.

Fundamental Beliefs

Respect for the Individual

- Equality

It means to respect and recognize differences in one another and fair treatment to everyone. Honda is dedicated to this principle, thus, creating equal opportunities for everyone. Figure 5.2 depicts Honda philosophy.

![Company Principle Diagram]

Fig. 5.2: Honda Philosophy

- Initiative

It implies thinking creatively and acting on one’s own judgment without being bound by preconceived notions and one must be responsible for the results from those actions.
• **Trust**

Mutual trust is the basis for the relationship between associates at Honda. Trust is created by helping each other, sharing knowledge, recognizing and making efforts for fulfilling one’s responsibilities.

**Management Policies**

- Always have ambition and youthfulness.
- Making effective use of time and developing new ideas.
- Enjoying work and encouraging open communication.
- Consistently striving for a harmonious work flow.
- Be mindful of the value of endeavor and research. Figure 5.3 depicts principle initiatives in product development. Principle initiatives in product development are shown in figure 5.3.

![Fig. 5.3: Principle initiatives in Product Development](image)

**Innovation in Manufacturing: Strengthening the Fundamentals**

To meet demand, HMSI are pursuing innovations in manufacturing technology. They meet the demands and the expectations of customers and their stakeholders.
Honda Vision of Environmental Technology

Implementing different technologies, Honda is delivering on the promise of genuine value in environmental responsibility and driving pleasure. Figure 5.4 and 5.5 shows principle initiatives in production and recycling respectively. Table 5.1 gives 3R for recycling.


**Fig. 5.4: Principle initiatives in production**

**Table 5.1: Recycling (3R)**

<table>
<thead>
<tr>
<th>Development</th>
<th>Products</th>
<th>Use</th>
<th>Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reduce</strong></td>
<td>Design for reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reuse</strong></td>
<td>Design for reusability &amp; recyclability</td>
<td>Recycled/Reused Parts</td>
<td></td>
</tr>
<tr>
<td><strong>Recycling</strong></td>
<td>Recycling and recovery of bumpers</td>
<td></td>
<td>Recycling of IMA batteries</td>
</tr>
<tr>
<td></td>
<td>Recycling of by products</td>
<td></td>
<td>Compliance with the End of life vehicle recycling law in Japan</td>
</tr>
<tr>
<td></td>
<td>Reduction in hazardous or toxic substances</td>
<td></td>
<td>Voluntary measures for recycling motorcycles</td>
</tr>
</tbody>
</table>
5.1.2 INITIATIVES TOWARDS TECHNOLOGICAL COMPETENCY

Cutting-edge technology

The fundamental design philosophy strives to maximize comfort and space for people, while minimizing the space for mechanical components. With this in mind, Honda's R and D activities include fundamental research and product-specific development.

Combi Break System

Generally, it is quite difficult to control a two wheeler while braking during bad road conditions and emergencies. Combi break system allows easy and simultaneous operation of the rear and front brake and also providing optimal braking performance.

Honda Matic Transmission

The efficient, compact and oil pressure controlled transmission is globally the first fully automatic transmission system, delivering a dynamic combination of torque and accelerator response for superior and constant driving experience.
Fuel Injection System

Honda's fuel injection system is designed to realize ideal combustion, resulting in maximum power output, improving fuel efficiency and yet stay environment friendly.

![Idle-Stop System](image)

Fig. 5.6: Idle-Stop System

Idle Stop System

Honda has developed an advanced Idle Stop System, as shown in figure 5.6, which reduces fuel consumption and totally blocks out toxic exhaust gases and any unwanted noise. As soon as the vehicle stops, the engine is stopped automatically. And the engine restarts, when the throttle is opened and takes off smoothly.

5.1.3 MANAGEMENT INITIATIVES

1. Respecting Independence: (Challenge)

Honda expects associates to express their independence and individuality. In present time, associates are encouraged to think, act and accept responsibility. Anyone with proposals and ideas should express them. Table 5.7 shows principles of Personnel Management.
2. **Ensuring Fairness**: (Equal Opportunity)

Honda offers a simple system with fair rewards for anyone having same abilities in handling similar sort of work and producing similar results, having no concern for nationality or race or gender, making no distinctions on educational basis or career history and objectively assessing each individual’s strengths and aptitudes.

3. **Fostering Mutual Trust**: (Sincerity)

Honda believes that mutual respect and tolerance lays the foundation for trust that binds the employee and the company.

**Fun Expansion**

Honda is the first industry to promote green environment and safety in India. Since 5 years, Honda has expanded popular initiatives such as Asia Cup, Honda One Make Race, Gymkhana and Honda Racing Training by Moto GP riders from Japan.
Environment Conservation

On environmental front, Honda believes that tomorrow should be greener than today. For ensuring joy for next generation, Honda has implemented environmental management at its premises. It makes various efforts like reusing and reducing waste for achieving zero emissions, improved efficiency and promotion of Green Factory, Green Supplier, Green Dealer initiatives and resource conservation. Table 5.2 gives the details of HMSI plants and table 5.3 depicts motorcycle production activities and their targets.

Table 5.2: HMSI Plants

<table>
<thead>
<tr>
<th>Location</th>
<th>First Plant</th>
<th>Second Plant</th>
<th>Third Plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>IMT Manesar, Dist. Gurgaon, Haryana</td>
<td>Tapukara Industrial Area, Dist. Alwar, Rajasthan</td>
<td>Narsapura Area, Dist. Kolar, Karnataka</td>
</tr>
<tr>
<td>Annual Production Capacity</td>
<td>16 lac units (at full production)</td>
<td>12 lac units (at full production)</td>
<td>12 lac units (production started) Additional 6 lac units + (by FY’14 end)</td>
</tr>
<tr>
<td>Lot Size</td>
<td>210,000 m²</td>
<td>240,000 m²</td>
<td>96 acres</td>
</tr>
</tbody>
</table>

Table 5.3: Motorcycle production activities- targets

<table>
<thead>
<tr>
<th>Exhaust Emissions (HC)</th>
<th>Fuel Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce total emissions from new motorcycles to two-third</td>
<td>Improve average fuel economy by 30%</td>
</tr>
</tbody>
</table>
Quality assurance

Honda established Quality Innovation centres so that quality issues do not arise and enhance the capacity to resolve problems whenever they arise. Specialized departments at these centres are fully equipped to handle cases globally. They provide the resolution of any quality issues, rapid information and timely diagnosis. They also keep technicians and customers to date by providing the updates on recommended maintenance techniques. Honda’s quality circle is shown in figure 5.8.

![Honda’s Quality Circle](image)

Fig. 5.8: Honda’s Quality Circle

5.1.4 IMPACT OF COMPETENCIES ON STRATEGIC SUCCESS OF HMSI

Being world’s leading manufacturer in two wheeler sector, Honda is working to increase fuel efficiency and lower emissions. People here are working hard to improve environmental performance. For this, Honda has implemented Programmed Fuel Injection (PGM-FI). It adapts to changes in engine load caused due to acceleration and deceleration, driving conditions, adjusting the volume and timing of fuel injection as well as the timing of ignition for optimal electronic control. With
this, fuel efficiency gets improved and emissions are reduced without compromising on performance. Table 5.4 depicts HMSI sales plan for last 5 years.

### Table 5.4: HMSI Sales Plan

<table>
<thead>
<tr>
<th></th>
<th>1&lt;sup&gt;st&lt;/sup&gt; year (2010-11)</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; year (2011-12)</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; year (2012-13)</th>
<th>4&lt;sup&gt;th&lt;/sup&gt; year (2013-14)</th>
<th>5&lt;sup&gt;th&lt;/sup&gt; year (2014-15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMSI Sales</td>
<td>SC 666,450</td>
<td>751,900</td>
<td>907,421</td>
<td>1,242,975</td>
<td>1,465,267</td>
</tr>
<tr>
<td></td>
<td>MC 403,750</td>
<td>520,000</td>
<td>750,632</td>
<td>864,226</td>
<td>980,348</td>
</tr>
<tr>
<td>Total</td>
<td>1,070,200</td>
<td>1,271,900</td>
<td>1,658,053</td>
<td>2,107,201</td>
<td>2,445,615</td>
</tr>
<tr>
<td>Growth</td>
<td>18%</td>
<td>18+19=37%</td>
<td>37+30=67%</td>
<td>67+27=94%</td>
<td>94+16=110%</td>
</tr>
</tbody>
</table>

Fig. 5.9: Production data of HMSI for last 5 years
Production planning deals with ideas of production and execution of production activities. Production control utilizes different types of control techniques for achieving optimum performance out of the production system thus attaining overall production planning targets. Production planning and control address problems of low productivity, inventory management and resource utilization. From figure 5.15, it is quite clear that there is an improvement in production activities along with reduction in equipment breakdown. This is because of better strategies and planning, thus, production planning and control being an important factor.

![Quality Control Graph](image)

**Fig. 5.10: Quality Control data of HMSI for last 5 years**

Quality Control relates to the overall quality of the product produced. From figure 5.10 it is seen that quality of the products has improved continuously and there is reduction in non-confirmatory products, thus leading to an increased number of sales (from figure 5.14) thus improving profit (from figure 5.15). This has happened because of better quality being provided by the organization.

Product Concept is another significant factor. From figure 5.11 it is evident that HMSI’s R and D expenditure has increased over the years which shows that the
organization is quite serious towards better ideas so as to improve sales and profit, thus, attracting customers. Product design and development is closely related to product concept as designing and testing prototype is also done in R and D. Product Concept is part of R and D department of the organization as product concept involves idea generation either by modifying the existing product or creating a new product.

Fig. 5.11: R and D expenditure as percentage of total expenditure of HMSI for last 5 years

Fig. 5.12: Capital and Recurring Expenditure of HMSI for last 5 years
Management support and commitment is another key factor towards the performance of the company. Organization growth has improved over the years so leading to an improved profit. In figure 5.15, profit has increased over the last 5 years. From figure 5.13 it is quite clear the improvement in total income of HMSI. Figure 5.16 shows the growth of HMSI in comparison to previous year.

![Total Income (in crores)](image)

Fig. 5.13: Total Income of HMSI for last 5 years

![Sales](image)

Fig. 5.14: Sales of HMSI for last 5 years
The graph in fig. 5.13 shows the total income by HMSI in the last five financial years. A gradual rise in total income has been witnessed during this phase. Total income is the sum of the money received, including income from services or employment, payments from pension plans, revenue from sales, or other sources. The sales and profit of the company have been shown in figures 5.14 and 5.15 respectively whereas the growth of the company has been represented in figure 5.16.

Fig. 5.15: Profit of HMSI for last 5 years

Fig. 5.16: Growth of HMSI for last 5 years

Quite similar to the empirical data results, it has been analysed through case studies that manufacturing competency has an impact on overall performance of the
organisation. So from the case study it is quite clear that factors obtained from data analysis are same. The factors determined from here are **Product Concept, Production Planning and Control, Quality Control** and **Management** as there has been a considerable improvement in these factors as compared to others.

From the above data, it has been observed that the company sales have been growing since the past five years. This is due to the company introducing new strategies and technologies in their products. It is very difficult to withstand the competitive world of the market otherwise. Every company has to make use of competency in their products in the present times. If no innovation is made in the product, it becomes obsolete. Honda has legacy of cutting edge Research and Development resulting in customer-oriented products. Today, due to the new technical centre, India is the centre of attention worldwide. They are devoted for delivering the best quality products at reasonable prices and at faster speed by having Research and Development, engineering, purchasing, quality and designing at same place.

**5.1.5 GROWTH FRAMEWORK WITH CUSTOMER NEEDS**

1. **Premises/Process**
   - *Voice-of-the-Customer at dealerships*: evaluating customer feedback and bring it on operations.
   - *Process efficiency improvement*: Improve work efficiency by elimination of wasteful operations at individual dealerships.
   - *Single repair programs*: Ensure that customer’s most issues are solved in a single repair. Figure 5.17 shows Customer satisfaction initiatives
2. Product


3. People

- *Developing a comprehensive dealership training system*: Strengthening training programs to improve human resources and skill levels.

5.1.6 HONDA’s VISION FOR THE FUTURE

1. Future Initiatives

Structural changes surface in the economy because of awareness about environmental issues globally and the growth of developing countries have a significant effect on their business activities. With the growth of emerging economies, competition in the market has intensified, and online information is exerting a significant influence on
performances. In future, this will require them to provide tailor made products to every region of the world more affordably and speedily.

2. **Triple Zero:**

Zero CO₂ emissions will be guaranteed by using original renewable energy. Also, zero energy risk and zero waste will also be ensured with the collaboration of local communities. Figure 5.18 depicts Triple Zero and its coexistence with local communities.

![Triple Zero Diagram](image)

Fig. 5.18: Triple Zero + coexistence with local communities

### 5.2 CASE STUDY AT SUZUKI

Maruti Udyog Limited was established in Feb 1981 with the objectives of modernising the Indian automobile industry, producing fuel efficient vehicles and producing indigenous utility cars for Indian population. Maruti Suzuki is the leader in the car sector, both in terms of revenue earned and volume of vehicles sold. Production of cars commenced in 1983 with Maruti 800. By 2004, Maruti had produced over five million vehicles. Its manufacturing facilities are available at two
locations that is, Manesar and Gurgaon. Maruti’s Gurgaon and Manesar facilities have capacity to produce over 700,000 units annually. Maruti Suzuki offers 12 models, Omni, Maruti 800, Alto, Versa, Gypsy, A Star, Zen Estilo, WagonR, Swift, Grand Vitara, Swift Dzire and SX4.

5.2.1 PRINCIPLES
Maruti adopted the norm of same fabric and colour uniform for all its employees thereby, giving them an identity. In order to have no time loss in between shifts, employees reported early for shifts. Maruti has an open office system and practices kaizen activities, job-rotation, teamwork, quality circles and on-the-job training.

5.2.2 OBJECTIVES
There was a need to provide a reliable, better quality and cost effective car to the customers. Maruti Suzuki India Limited was established in such a scenario with a resolve to bring about technological modernization and expansion of the automobile sector. MSIL was entrusted with the task of achieving the following policy objectives:

- Modernisation of Indian automobile industry.
- For economic growth, large volume of vehicles had to be produced.
- For conservation of scarce resources, fuel-efficient vehicles were the need of the hour.

5.2.3 COMPANY STRATEGY AND BUSINESS INITIATIVES
For three decades, Suzuki has been the world’s leader in mini and compact cars. Its technical superiority lies in its capability to pack performance and power into a
lightweight and compact engine that is fuel-efficient and clean. Maruti is clearly ‘employer of choice’ for young managers and automotive engineers across the country.

Maruti Suzuki assures satisfaction among customer. For its earnest efforts, it has been ranked first in this among all Indian car manufacturers for nine consecutive years by J D Power Asia Pacific. Figure 5.19 shows the organisational structure of Suzuki.

**Fig. 5.19: Organisation structure of Suzuki**
5.2.4 TECHNOLOGY INITIATIVES TAKEN BY SUZUKI

Indian customer has passion for fuel efficiency when they have to choose automobiles. Achieving more energy for car from single drop of fuel is a challenge for the designer but is important for the economy, the planet and the customer. At the same time, a speed conscious, young and fast growing India demands better pick-up and instant response during acceleration. A third requirement is space efficiency, so that the car can cope with parking lots and congestion on roads.

The company’s new K-series engines deliver on all these fronts. The organisation believes that the technology’s purpose is to serve mankind with products that use minimum resources and reach out to maximum customers, good for their long term safety, happiness, well-being, health and meet the needs of society. Better technologies, better thinking, better processes, more ideas and sensitivity that makes a difference in customer’s life, help them develop better cars and thus, a better living. Today, the R and D team, working shoulder to shoulder with Team Suzuki, has many achievements:

- Maruti Suzuki launched many new models in India in the last few years.
- In India, some of the most fuel efficient petrol cars come with the Maruti Suzuki badge.
- Launch of factory-fitted CNG variants. The factory fitted CNG (Compressed Natural Gas) vehicles use advanced i-GPI (Intelligent Gas Port Injection) technology. State-of-the-art i-GPI technology is used by Maruti Suzuki cars.
• The new concept Single Minute Exchange of Dies (SMED) is being adopted. This helps in changing of die setup within single digit minute, thus, improving operating efficiency and machine utilization.

• Almost all Maruti Suzuki’s cars obey ELV norms, which means they can be fully recycled and are free from any hazardous material.

• Plastic Intake in K-series is an example of technologies adopted for light weight construction. Light Piston, Nut-less ConRod and Optimized Cylinder Block for light weight configuration, High Pressure Semi-return Fuel System, Smart Distributor Less Ignition (SDLI) with committed advanced injectors and plug top coils for better performance.

• Wagon R Green: Wagon R is a balance of performance, space and comfort in a new design. Its new model known as Wagon R Green is available on CNG. It ensures fuel-efficiency, safety, reliability and more power. CNG technology is another step for keeping low cost of ownership for customers.

• ESP (Electronic Stability Programme): An onboard microcomputer displays vehicle’s stability and behaviour with sensors on a real time basis. During instability due to lane change or high speed cornering, it automatically applies differential brakes at the four wheels to keep the vehicle stable and on intended track without any additional driver involvement.

• Sequential injection has been introduced in LPG (Liquefied Petroleum Gas) vehicles to ensure reduced emissions, better fuel economy and improved performance.

• Variable Geometry Turbocharger (VGT) has been introduced in diesel engines for improving performance and fuel efficiency.
5.2.5 MANAGEMENT INITIATIVES TAKEN BY SUZUKI

The organisation develops a culture in which higher standards of individual’s accountability, transparent disclosure and ethical behaviour are ingrained in all business dealings and are shared by management, employees and board of directors. The firm has established procedures and systems to ensure that its board of directors are well-equipped and well-informed to fulfil their overall responsibilities and provides the management with strategic direction needed for creating long term shareholder value.

To meet the organisational responsibilities of safe working environment, the company has established an OHSMS (Occupational Health and Safety Management System) for:

- Managing risks – They identify all hazards by undertaking assessments, external and internal audits as well as all the necessary actions to prevent and control injury, loss, damage or ill-health.
- Complying with legal and other obligations – They ensure that business at Suzuki is managed in accordance with occupational health standards and safety legislations.
- Establishing targets and review mechanism - They manage their commitments by using coordinated safety plans and occupational health for each site and area. They tend to measure progress, leadership support and ensure continual improvement. Health and safety performance is always among parameters for evaluation.
- Providing appropriate training and information – They provide all the necessary tools to all its vendors, employees, visitors and contractors to ensure safe performance at work.
- Ensuring meaningful and effective consultation – They involve all interested people and employees in the issues that harm health and safety at workplace.
- Communicating – They believe in the transparent relations of the Suzuki’s performance and OHS commitments.
- Promoting a culture of safety – They believe that all incidents and injuries can be prevented and everyone is responsible for their own and their processes safety. All responsibilities are clearly defined for all personnel, managers and supervisors.

Figure 5.20 shows Materiality Matrix

<table>
<thead>
<tr>
<th>SIGNIFICANCE TO THE STAKEHOLDERS</th>
<th>HIGH</th>
<th>MEDIUM</th>
<th>LOW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NON-DISCRIMINATION &amp; HUMAN RIGHTS</strong></td>
<td>Non-discrimination &amp; human rights</td>
<td>Road safety</td>
<td>Skill development</td>
</tr>
<tr>
<td><strong>CHILD AND FORCED LABOUR</strong></td>
<td>Child and forced labour</td>
<td>Green supply chain</td>
<td>Green service workshop</td>
</tr>
<tr>
<td><strong>INFORMATION SECURITY &amp; DATA PRIVACY</strong></td>
<td>Information security &amp; data privacy</td>
<td>Product labelling</td>
<td></td>
</tr>
<tr>
<td><strong>BIO DIVERSITY &amp; INDIGENOUS RIGHTS</strong></td>
<td>Biodiversity</td>
<td>Indigenous rights</td>
<td></td>
</tr>
<tr>
<td><strong>GREEN PRODUCTS</strong></td>
<td>Green products</td>
<td>Competition</td>
<td></td>
</tr>
<tr>
<td><strong>PRODUCT SAFETY</strong></td>
<td>Product safety</td>
<td>Attrition</td>
<td></td>
</tr>
<tr>
<td><strong>BUSINESS GROWTH &amp; PROFITABILITY</strong></td>
<td>Business growth &amp; profitability</td>
<td>Water conservation</td>
<td></td>
</tr>
<tr>
<td><strong>PEOPLE DEVELOPMENT &amp; MOTIVATION</strong></td>
<td>People development &amp; motivation</td>
<td>Material optimisation</td>
<td></td>
</tr>
<tr>
<td><strong>EMPLOYEE WAGES &amp; BENEFITS</strong></td>
<td>Employee wages &amp; benefits</td>
<td>Effluent waste</td>
<td></td>
</tr>
<tr>
<td><strong>OCCUPATIONAL HEALTH &amp; SAFETY</strong></td>
<td>Occupational health &amp; safety</td>
<td>Waste management</td>
<td></td>
</tr>
<tr>
<td><strong>CUSTOMER SATISFACTION</strong></td>
<td>Customer satisfaction</td>
<td>Government policy and regulations</td>
<td></td>
</tr>
<tr>
<td><strong>PROCESS EMISSIONS</strong></td>
<td>Process emissions</td>
<td>Foreign exchange fluctuations</td>
<td></td>
</tr>
<tr>
<td><strong>INDUSTRIAL RELATIONS</strong></td>
<td>Industrial relations</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CORPORATE GOVERNANCE</strong></td>
<td>Corporate governance</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PRODUCT QUALITY</strong></td>
<td>Product quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PRODUCT EMISSIONS</strong></td>
<td>Product emissions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>COMPLIANCE</strong></td>
<td>Compliance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig. 5.20: Materiality Matrix
5.2.6 QUALITY

The company is awarded ISO 27001 certification by Standardisation, Testing and Quality Certificate (STQC), Government of India. The quality management of Suzuki is certified against ISO 9001:2008 standard. These systems are re-assessed at regular intervals by a third party.

5.2.6.1 Quality policy

To increase customer satisfaction through improvement of services and products, PDCA functions and levels of Maruti Organisations are followed. Table 5.5 depicts the quality tools employed by MSIL for realizing overall organisational objectives.

**Table 5.5: Quality tools**

<table>
<thead>
<tr>
<th>5S</th>
<th>4M</th>
<th>3M</th>
<th>3G</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEIRI– Proper Selection</td>
<td>MAN</td>
<td>MURI– Inconvenience</td>
<td>GENCHI– Go to actual place</td>
</tr>
<tr>
<td>SEITION– Arrangement</td>
<td>MACHINE</td>
<td>MUDA– Wastage</td>
<td>GENBUTSU</td>
</tr>
<tr>
<td>SEISO– Cleaning</td>
<td>MATERIAL</td>
<td>GENJITS –</td>
<td>See the actual thing</td>
</tr>
<tr>
<td>SEIKETISO– Cleanliness</td>
<td>METHODS</td>
<td>MURA– Inconsistency</td>
<td>Take appropriate action</td>
</tr>
<tr>
<td>SHITSUKI– Discipline</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.2.7 IMPACT OF COMPETENCIES ON STRATEGIC SUCCESS OF SUZUKI

Maruti Suzuki recently enhanced its product range with an aim to meet customer needs. A striking new look and a more daring approach to design began with the
launch of Swift Dzire and Swift. Another major development is its entry into used car market, where customers are allowed to bring their vehicles to ‘Maruti True Value’ outlet, where it can be exchanged it for a new one, by paying the difference.

![Production Planning & Control](image)

**Fig. 5.21:** Production data of Suzuki for last 5 years

Production planning deals with ideas of production and execution of production activities. Production control utilizes different types of control techniques for achieving optimum performance out of the production system thus attaining overall production planning targets. Production planning and control address problems of low productivity, inventory management and resource utilization. From figure 5.21, it is quite clear that there is an improvement in production activities along with reduction in equipment breakdown. This is because of better strategies and planning, thus, production planning and control being an important factor.
Quality Control relates to the overall quality of the product produced. From figure 5.22 it is seen that quality of the products has improved continuously and there is reduction in non-conformatory products, thus leading to an increased number of sales (from figure 5.26) thus improving profit (from figure 5.27). This has happened because of better quality being provided by the organization.

Product Concept is another significant factor. From figure 5.23 it is evident that Suzuki’s R and D expenditure has increased over the years which shows that the organization is quite serious towards better ideas so as to improve sales and profit, thus, attracting customers. Product design and development is closely related to product concept as designing and testing prototype is also done in R and D. Product Concept is part of R and D department of the organization as product concept involves idea generation either by modifying the existing product or creating a new product.
Fig: 5.23: R and D expenditure as percentage of total expenditure of Suzuki for last 5 years

Fig. 5.24: Capital and Recurring Expenditure of Suzuki for last 5 years

Management support and commitment is another key factor towards the performance of the company. Organization growth has improved over the years so leading to an improved profit. From figure 5.25 it is quite clear the improvement in total income of Suzuki. Figure 5.28 shows the growth of Suzuki in comparison to previous year. Figure 5.24 depicts Capital and recurring expenditure of Suzuki.
The graph in fig. 5.25 shows the total income by Suzuki in the last five financial years. A gradual rise in total income has been witnessed during this phase. Total income is the sum of the money received, including income from services or employment, payments from pension plans, revenue from sales, or other sources.

The sales and profit of the company have been shown in figures 5.26 and 5.27 respectively whereas the growth of the company has been represented in figure 5.28.
Quite similar to the empirical data results, it has been analysed through HMSI and Suzuki case studies that manufacturing competency has an impact on overall performance of the organisation. So from the case study it is quite clear that factors obtained from data analysis are same. The factors determined from here are Product.
Concept, Production Planning and Control, Quality Control and Management as there has been a considerable improvement in these factors as compared to others.

From the above data, it has been seen that the company sales have been growing. This is due to the introduction of new strategies and technologies in their products which is a prerequisite for survival in the market.

5.2.8 FUTURE PLAN OF ACTION

• Continuously upgrading existing models.
• Developing products having alternative fuel options.
• Compliance with safety and emission regulations.
• Introducing new technologies.
• Developing knowledge of different automotive technologies through standard cost benchmarking and tables.

5.3 CASE STUDY AT SML ISUZU

SML ISUZU LIMITED was established in July 1983 as Swaraj Vehicles Limited for manufacturing LCV (Light Commercial Vehicles) in Punjab. The project aimed at breaking new ground not only in terms of production technology and product but also in building a new value system and culture in the organisation, thus enabling it to move forward with confidence into an era of competitive markets.

The commercial vehicle sector in India is currently witnessing significant activity both in meeting challenges in the form of an economic slowdown and on the new
product front. SML Isuzu is one of the players gearing up for a new destiny. The company’s manufacturing plant is located at Ropar, now Roopnagar in Punjab. Following its pact with CV maker Isuzu of Japan in 2006, the erstwhile Swaraj Mazda, now renamed SML Isuzu, is strengthening its presence in the Medium and Heavy Commercial Vehicle segment (M and HCV) both in trucks and buses where it was till recently conspicuous by its absence. Future prospects of the M and HCV segment are perceived to be bright though the sector experienced downfall of 19.13 percent during the April-December 2012 period.

5.3.1 TECHNOLOGICAL INTIATIVES AT SML ISUZU

Isuzu, having recognised the growth potential in Indian market, is putting its shoulder to the wheel at the company. It now has its own director (R and D), who heads the R and D wing and is also a full-time director on the board. The division is currently studying the Indian market and taking a call on the products that it can customise for India.

In the last two years, SML Isuzu has already invested Rs 14 crores on R and D operations on infrastructure, engine development and testing and developing equipment. It now plans to add additional equipment and beef up manpower from the current 30 to 100 this fiscal, as per new project requirements involving designing of new components and for understanding Japanese designs.

The changed management has, in the meantime, kicked off its entry in the M and HCV market by rolling out two buses and a cargo truck based on the Isuzu chassis.
It is also in the process of developing new 16-tonne plus cargo trucks for the heavy commercial vehicle segment. The company’s existing range spans 5.5-12 tons in cargo and up to 16 tons in buses. The long-term game plan is to become a player in the 5.5-49 ton range, with Isuzu providing technical inputs for the 12-tonne and above category.

**Clean Diesel Technology**

Diesel engine offers numerous advantages like longer cruising range, low CO\textsubscript{2} emissions and superior fuel economy. Isuzu is focusing on enhancing these advantages and reducing emissions to produce the best diesel engines in the world.

**Low Pollution Alternative Fuel Vehicles**

Isuzu is devoting itself for developing hybrid-electric trucks and vehicles powered by alternative energy resources such as dimethyl ether, liquefied petroleum gas and compressed natural gas. Isuzu’s low-pollution alternative-fuel vehicles not only contribute to more effective use of limited resources but also achieve cleaner emissions.

**Upgrading the bread-and-butter models**

Current research at Ropar is mostly centred on upgrading SML-branded Mazda products that are the bread-and-butter models. They contributed towards majority of the 13,646 units sold in FY’12, of which passenger carriers accounted for 6,611 units and cargo for 7,035 units. Of this, the Isuzu brand chipped in with sales of 154 units.
During April-December 2012, sales stood at 8,915 units with passenger carriers pegged at 4,456 units and cargo at 4,459 units. The Isuzu brand contributed sales of 117 units. The company is expected to record similar numbers in FY’13 due to the ongoing slowdown in the CV market, though the company’s targeted growth was 10 percent.

**Engine localisation to trigger growth**

Meanwhile, the 3.5-litre Mazda engine that is in use since 1984 has undergone several upgradations at the in-house R and D centre to meet BS I-IV emission norms with the existing lot of LCVs powered by BS-III and BS-IV engines. Localised Mazda products have enabled the company to notch a 13 percent market share in the 100,000-unit LCV market it is present in. Several variants of the 3.5-litre Mazda engine have also been developed over the years and the company is now further strengthening its R and D capability for which an investment of Rs 200 crores is envisaged.

The R and D division is also being further strengthened for developing future Isuzu products, with additional staffers, of which three are Japanese engineers. The CV manufacturer will leverage different series of the Isuzu 4- and 6- cylinder engines in its M and HCVs that along with transmissions are currently imported from Japan.

With fuel and electronic adjustment carried out to them, these engines will develop different power outputs. For instance, a series of 4-cylinder engines will develop 150-175 hp while the 6-cylinder engines will develop 230-300 hp and will be fitted in both
trucks and buses. These CVs are currently being tested for market to gauge their acceptability in Indian conditions with imported engines.

The next step will be to forge an agreement with Isuzu for localising the engines. The current Isuzu-badged buses, a 27-seater bus with a 4-cylinder 5.2-litres engine were followed by the launch of a 45-seater super-luxury bus (LT 134) with a 6-cylinder 7.7-litres engine. But the company pictures more market potential for the mid-segment 41-seater bus as competitors have done well in this category.

In 2011, SML Isuzu had launched a 12.5-tonne cargo truck IS12T (with a 4 cylinder 5.2-litres, 150 hp engine) based on an Isuzu chassis. While customer response to the cargo truck is good, its price is not acceptable as it is powered by an imported engine. Therefore, the company is selling the vehicle on a no-profit basis.

With the Isuzu engine, the buses can compete with Mercedes and Volvo products but cannot compete with the indigenous products made by Tata Motors and Ashok Leyland unless they localise the imported engines and transmissions for Isuzu platform products. SML-branded buses include mini buses, ambulances, school buses, executive buses and some city buses. Trucks include the crew cab truck, tipper and cargo carriers like Sartaj and Cosmo among others.

CNG power is available on the SML platform since 2001 and the company claims it has a 70 percent share in this segment of passenger carriers in Delhi. More variants on the Mazda platform are in the pipeline with a motive of tapping the market in areas
where it does not exist at present. The LCV market has also been performing better than other CV segments with the April-December 2012 SIAM results showing a 15 percent growth in domestic sales for LCVs from 327,406 units during April-December 2011 to 378,509 units in 2012.

In comparison, M and HCV domestic sales dipped 19 percent to 198,079 units in 2012 from 244,921 units in the earlier year. It is amply clear that SML Isuzu now means business. It has developed a sizeable vendor base of 476 that will facilitate the future localisation process of Isuzu products. Though exports currently form a negligible portion of total production i.e. 1,000 units per annum head to Bangladesh, Sri Lanka, Nepal and African countries where the company was earlier exporting tractors, prospects of the product basket expanding in the future are bright.

SML practices a culture built on the principles of good transparency, corporate governance and disclosure in all its processes and activities. SML gives high priority to ethics and core values. It believes that for a company to be successful, it must consider itself the trustee and custodian of all its stakeholders. It seeks profit and corporate excellence by offering quality services and vehicles to its esteemed customers.

It fosters team spirit in employees by continuously raising their participation in decision making. It places high emphasis on lifetime loyalty and integrity to the company. It recognises that it is focuses on good corporate governance and is rewarded for being better managed enterprise.
5.3.2 MANAGEMENT INITIATIVES by SML ISUZU

ISUZU mission has been shown in Figure 5.29.

Fig. 5.29: ISUZU MISSION

Corporate Vision

SML pictures itself as a leader in diesel engines, commercial vehicles and transportation, respecting the environment and supporting their customers.

Corporate Mission

A global team delivering inspired services and products committed to exceeding expectations.
Focus on localization

The CV maker has also set up a bus manufacturing plant for luxury and air-conditioned buses. Till recently, manufacture of buses was outsourced to external manufacturing plants. SML Isuzu has two major plants in Punjab which develop buses as per the technology, design and chassis given to them. In 2008, the company had entered the bus market with Isuzu-designed chassis on which bus bodies were assembled locally.

Since the earlier bus chassis was based on the Mazda platform, the company operates from two plants – the older one which produces the Mazda chassis for the SML-branded LCVs while the new plant produces chassis based on Isuzu technology for M and HCVs, and bus bodies.

Though initially about 100 units of chassis were imported from Isuzu, they are now being developed in-house leveraging the Japanese design. But the production of old models of buses built by external manufacturers also continues. And for tapping the M and HCV segment in the 12-49 tonne range, the focus will be on Isuzu.

SML Isuzu is also looking at developing low-floor city buses for which Isuzu will have to design the relevant chassis. At present, the SML-Isuzu portfolio spans high-floor and semi-low floor buses. Also, it is not present in bigger city buses like the Marcopolo buses that ply on Indian roads. Among the new products in the M and HCV segment that the company has targeted at is a 41-seater, 11-metre front-engine bus (IS12B) that will be positioned between the two buses already launched. Powered
by a BS-III 5.2-litre, 4-cylinder Isuzu engine developing 173 hp, it will be equipped with airbags, air suspension and ABS. The CV maker has analysed the market dynamics and expects that this model, which will be launched in early 2013, has a large market potential.

5.3.3 QUALITY

Quality Policy

The Quality policy of ISUZU is shown in figure 5.30.

![Quality policy at ISUZU (5S)](image-url)

Fig. 5.30: Quality policy at ISUZU (5S)
Winning trust of customers

SML Isuzu aimed at winning trust of customers by providing services and products to the society and thus contributing to the creation of a prosperous society.

Contributing to society

SML Isuzu has undertaken social contribution activities as a good corporate citizen.

Ensuring harmony with international and regional communities

SML Isuzu respects the customs and cultures of regions and nations, thereby, contributing to their development through its activities.

Making contribution to preserving environment

Isuzu works for the preservation and protection of environment not only as corporate citizens residing on earth but also through its business activities, by involving the company with regional and social environmental conservation activities.

5.3.4 IMPACT OF COMPETENCIES ON STRATEGIC SUCCESS OF SML ISUZU

The growth strategy is to kick off operations with imported engines and transmissions and slowly localize them over a period of time as was done with Mazda products. But, all this will come at a cost i.e. a sizeable investment. The company is considering the proposition to localize the 4-litre Isuzu engine for trucks and buses in the long-term as higher horsepower engines come at an increased cost.

Production planning deals with ideas of production and execution of production activities. Production control utilizes different types of control techniques for achieving optimum performance out of the production system thus attaining overall
production planning targets. Production planning and control address problems of low productivity, inventory management and resource utilization.

From figure 5.31, it is quite clear that there is an improvement in production activities along with reduction in equipment breakdown. This is because of better strategies and planning, thus, production planning and control being an important factor.

![Production planning & control](image)

**Fig. 5.31:** Production data of SML ISUZU for last 5 years

Quality Control relates to the overall quality of the product produced. From figure 5.32 it is seen that quality of the products has improved continuously and there is reduction in non-confirmatory products, thus leading to an increased number of sales (from figure 5.36) thus improving profit (from figure 5.37). This has happened because of better quality being provided by the organization.
Product Concept is another significant factor. From figure 5.33 it is evident that SML ISUZU’s R and D expenditure has increased over the years which shows that the organization is quite serious towards better ideas so as to improve sales and profit, thus, attracting customers. Product design and development is closely related to product concept as designing and testing prototype is also done in R and D. Product
Concept is part of R and D department of the organization as product concept involves idea generation either by modifying the existing product or creating a new product.

Management support and commitment is another key factor towards the performance of the company. Organization growth has improved over the years so leading to an improved profit. From figure 5.35 it is quite clear the improvement in total income of SML ISUZU. Figure 5.38 shows the growth of SML ISUZU in comparison to previous year. Figure 5.34 shows capital and recurring expenditure of SML Isuzu.
The graph in fig. 5.35 shows the total income by SML ISUZU in the last five financial years. A gradual rise in total income has been witnessed during this phase. Total income is the sum of the money received, including income from services or employment, payments from pension plans, revenue from sales, or other sources.

![Sales Graph](image)

**Fig. 5.36: Sales of SML ISUZU for last 5 years**

![Profit Graph](image)

**Fig. 5.37: Profit of SML ISUZU for last 5 years**

The sales and profit of the company have been shown in figures 5.36 and 5.37 respectively whereas the growth of the company has been represented in figure 5.38.
Quite similar to the empirical data results, it has been analysed through HMSI, Suzuki and SML Isuzu case studies that manufacturing competency has an impact on overall performance of the organisation. So from the case study it is quite clear that factors obtained from data analysis are same. The factors determined from here are **Product Concept**, **Production Planning and Control**, **Quality Control** and **Management** as there has been a considerable improvement in these factors as compared to others.

**5.3.5 FUTURE INITIATIVES**

**5.3.5.1 SEE Technology for future generation**

Earning the trust of customers globally is at the heart of SML’s development philosophy. The basis for all product development initiatives is ‘SEE technology’, (Safety, Economy and Environment) technology. The aim is to build advanced technologies with world-class performance in each area. Their unwavering objective
is to supply world market with products that combine economy and safety with a reduced environmental impact. Figure 5.39 shows SEE Technology at SML Isuzu.

![SEE Technology](image)

**Fig. 5.39: SEE Technology**

### 5.4 CASE STUDY AT MAHINDRA AND MAHINDRA (TRACTOR DIVISION)

In 1960s, the prevalence of Green Revolution triggered large-scale use of tractors. The country witnessed an urgent need to build adequate indigenous capacity, in order to meet the increasing demand of tractors.

In 1965, the design and development of tractors based on wisdom and knowledge was initiated by Central Mechanical Engineering Research Institute (CMERI), Durgapur. It was decided that the name of the product ought to signify India, power and grace besides being easy to pronounce. In 1970, Punjab government acquired Swaraj
tractor's design and established Punjab Tractors Limited. In 2007, majority stakes in PTL were acquired by Mahindra and Mahindra Ltd. and emerged as Mahindra and Mahindra’s Swaraj division.

Mission Statement
The company endeavours to create India’s largest network for distribution of automobile, automobile-related products and services by providing customers and dealers with unique world-class services and products.

Vision Statement
The founders of India and of Mahindra company passionately believed that Indians are second to none. People at Mahindra try to prove them correct by believing in themselves and making Mahindra and Mahindra Ltd. known globally for the quality of its products and services.

5.4.1 MANAGEMENT INITIATIVES
The Mahindra group has a core values that are fundamental to all the group companies. At Mahindra and Mahindra, core values are influenced by the past, tempered by the present and are designed to shape one’s future. Core values are the compass that guides the actions, both corporate and personal.

Good Corporate
PTL continues to seek long term success, aligned with the country's needs. They will do this without any compromise on ethical business standards.
Figure 5.40 represents core values of Mahindra and Mahindra

Citizenship Professionalism
They sought the best people and give them freedom and opportunity to grow. They support well-reasoned risk-taking and innovation but demand performance.

Customer First
PTL exists and prospers only because of their customers. They respond to their expectations and needs speedily, courteously and effectively.
Integrated Development Strategy at Mahindra and Mahindra is shown in figure 5.41.

![Integrated Development Strategy Diagram](image)

**Fig. 5.41: Integrated Development Strategy**

**Quality Focus**

Quality is the basis for delivering value for money to the customers. PTL makes quality a driving force in their products, work and while interacting with others.

**Individual’s Dignity**

They value individual’s dignity, respect the time and efforts of others and sustain the right to express disparity. Through their actions they nurture trust, transparency and fairness.

**Continuously improving systems and processes**

They promote Plan-Do-Check-Act (PDCA) method for analysis and improvement. Emphasis is laid on education and training so that everybody can do their jobs better.
Improving productivity, safety and effectiveness and reducing waste by using kaizen.

The company trains for consistency in reducing variation, building a foundation for common knowledge and allows workers for easy understand their roles.

**Encouraging staff to learn from one another and offer an environment and culture for effective teamwork.**

It makes consistent efforts to implement leadership. It expects managers and supervisors to understand their processes and workers. It instructs to not simply supervise but to provide resources and support so that each staff member can perform his or her best.

**Emphasis the importance of transformational leadership and participative management**

It encourages employees not just focus on meeting quotas and targets but to reach full potential. It also emphases on eliminating fear.

**Allowing people to perform at their best by ensuring, they are not afraid to express concerns or ideas.**

It is conveyed to everyone that the aim is to achieve higher quality by doing right things and should not indulge in blaming others when any mistakes happen. Workers must be encouraged to find better ways of doing things.

**Ensuring that leaders work with teams and act in the company's best interests.**

Honest and open communication is to be employed to remove fear from the organisation and break down barriers among departments.
Building the ‘internal customer’ concept – recognise that each department serves other departments that use their output.

The goal is to build a shared vision and use cross-functional teamwork for creating understanding and reduce adverse relationships.

Rather than measuring the people behind a process, measure the process

Allow everybody to take pride in their work without any comparison. Treat everyone in same manner, and don't compare with others. Over time, the system will gradually raise the level of everybody's work to a higher level.

Enable self-improvement by implementing education

The target is improving the skills of workers and encouraging them to learn new skills thus preparing them for future challenges. Building skills to make workforce more adaptable to changes and achieve improvements.

5.4.2 TECHNOLOGICAL INITIATIVES

Principles

1. Consistency of purpose to plan services and products, that will have a market and keep the organisation in competition and provide jobs.


3. Mobility of management: job hopping.

4. Excessive medical costs.

5. Excessive costs of liability.
During the years under study, the farm division while meeting the upcoming engine emission norms, focused on retaining fuel efficiency. Table 5.6 shows the Technologies Imported by Mahindra and Mahindra.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Technology Imported</th>
<th>Year of Import</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New Generation Engine Management System</td>
<td>2009</td>
<td>Technology Absorbed</td>
</tr>
<tr>
<td>2</td>
<td>Electronic programs for safety, stability &amp; steering control</td>
<td>2009</td>
<td>Technology Absorbed</td>
</tr>
<tr>
<td>3</td>
<td>CAN based Networking</td>
<td>2009</td>
<td>Technology Absorbed</td>
</tr>
<tr>
<td>4</td>
<td>Advanced Materials Technology</td>
<td>2009</td>
<td>Technology Absorbed</td>
</tr>
<tr>
<td>5</td>
<td>Development of components using alternate materials and advanced manufacturing processes</td>
<td>2010</td>
<td>In process of Absorption</td>
</tr>
<tr>
<td>6</td>
<td>Engine upgrades and emission improvement technologies</td>
<td>2010</td>
<td>In process of Absorption</td>
</tr>
<tr>
<td>7</td>
<td>Technology for NVH Management</td>
<td>2010</td>
<td>Technology Absorbed</td>
</tr>
<tr>
<td>8</td>
<td>Electrical and electronic technologies for safety, infotainment and convenience feature addition</td>
<td>2010</td>
<td>Technology Absorbed</td>
</tr>
<tr>
<td>9</td>
<td>New suspension system for improved comfort</td>
<td>2010</td>
<td>Technology Absorbed</td>
</tr>
<tr>
<td>10</td>
<td>Agri implements Technology transfer</td>
<td>2010</td>
<td>In process of Absorption</td>
</tr>
<tr>
<td>11</td>
<td>Advanced Engine Technologies</td>
<td>2011</td>
<td>In process of Absorption</td>
</tr>
<tr>
<td>12</td>
<td>Advanced Propulsion technologies</td>
<td>2011</td>
<td>In process of Absorption</td>
</tr>
<tr>
<td>13</td>
<td>Technology for NVH improvement</td>
<td>2012</td>
<td>In process of Absorption</td>
</tr>
<tr>
<td>14</td>
<td>Hybrid Vehicle Technology</td>
<td>2012</td>
<td>In process of Absorption</td>
</tr>
</tbody>
</table>
This was done on the engines with improvement focused on technology and overall tractor optimisation. Efforts were focused on developing a range of mechanization solutions:

- Global vision with specific focus on exports backed by long term strategy.
- Capability displayed in developing new products.
- Low costs for re-engineering efforts and improved productivity.
- Skilled and motivated workforce.
- Capability to develop service and sales network.

Rapidly increasing exports: World-class management and quality systems certified first through ISO 9000

5.4.3 QUALITY
The main pillars of PTL’s model of Total Quality Management comprises of Quality Assurance systems in Manufacturing, New Product Development, Customer Operations, Sales and Supplier Management. On the top of the model stood the purpose of satisfying all employees, suppliers, customers, stakeholders and society. Involvement of all three major stakeholders in working together improved tremendously.

5.4.4 P-D-C-A CYCLE
One of the basic needs of TQM is continuous improvement. In today’s environment, if one does not improve, the competitor will and in addition, will take away the market share. This has been the case with European Electrical and Electronic
companies and American Automobile manufacturers who have seen Japanese competitors eating into their market share. It along with process management and employee suggestions helps in identifying areas for improvement to continuously improve processes, products and services. An ideal tool is the well-known PDCA cycle. This is also called the Deming Cycle as it was developed and promoted by the American Quality Guru Edward Deming.

The essential elements of PDCA cycle are:

1) Select the theme or project.
2) Grasp the present status.
3) Analyse the cause and determine corrective action.
4) Implement corrective action.
5) Take appropriate action.
6) Conclusion and future plans.
7) Check the effects.

5.4.5 LEARNING AND DEVELOPMENT

Training is provided to employees so that they are exposed to new ideas, concepts and expand their horizons. A special emphasize is laid on growth and development of their members. They conduct and participate in training programs and workshops that comprise the managerial, behavioral and technological growth of their members. Training and Development strategy at Swaraj is linked to the strategic plan of the firm. The business plan forms the basis for training and development plans which
defines the competence, knowledge and skills required to meet the organisational objectives.

**5.4.6 IMPACT OF COMPETENCIES ON STRATEGIC SUCCESS OF MAHINDRA AND MAHINDRA (TRACTOR DIVISION)**

The strategy is to begin operating with imported technologies and slowly localize the same over a period of time. Further, considerable R and D work has to be still undertaken for making inroads in the tractor segment.

![Production planning & control](chart.png)

**Fig. 5.42:** Production data of Mahindra and Mahindra for last 5 years

Production planning deals with ideas of production and execution of production activities. Production control utilizes different types of control techniques for achieving optimum performance out of the production system thus attaining overall production planning targets. From figure 5.42, it is quite clear that there is an improvement in production activities along with reduction in equipment breakdown. This is because of better strategies and planning, thus, production planning and control being an important factor.
Quality Control relates to the overall quality of the product produced. From figure 5.43 it is seen that quality of the products has improved continuously and there is reduction in non-confirmatory products, thus leading to an increased number of sales (from figure 5.46) thus improving profit (from figure 5.47). This has happened because of better quality being provided by the organization.
Product Concept is another significant factor. From figure 5.44 it is evident that Mahindra and Mahindra’s Development expenditure has increased over the years which shows that the organization is quite serious towards better ideas so as to improve sales and profit, thus, attracting customers. Product design and development is closely related to product concept as designing and testing prototype is also done in Development. Product Concept is part of Development department of the organization as product concept involves idea generation either by modifying the existing product or creating a new product. Efforts were focused on developing a range of mechanization solutions:

- Global vision with specific focus on exports backed by long term strategy.
- Capability displayed in developing new products.
- Low costs for re-engineering efforts and improved productivity.
- Skilled and motivated workforce.
- Capability to develop service and sales network.
- Rapidly increasing exports: World-class management and quality systems certified first through ISO 9000

Management support and commitment is another key factor towards the performance of the company. Organization growth has improved over the years so leading to an improved profit. From figure 5.45 it is quite clear the improvement in total income of Mahindra and Mahindra. Figure 5.48 shows the growth of Mahindra and Mahindra in comparison to previous year. Revenue expenditure refers to expenditure concerned with the costs of doing business on a day to day basis. When companies make revenue expenditure, the expense offers immediate benefits, rather than long term ones. This is
differentiated with capital expenditures, which are long term investments to help a business grow and thrive.

The graph in fig. 5.45 shows the total income by Mahindra and Mahindra in the last five financial years. A gradual rise in total income has been witnessed during this phase. Total income is the sum of the money received, including income from services or employment, payments from pension plans, revenue from sales, or other sources. The sales and profit of the company have been shown in figures 5.46 and 5.47 respectively whereas the growth of the company has been represented in figure 5.48.
Quite similar to the empirical data results, it has been analysed through HMSI, Suzuki, SML Isuzu and Mahindra and Mahindra case studies that manufacturing competency has an impact on overall performance of the organisation. So from the case study it is quite clear that factors obtained from data analysis are same. The factors determined from here are **Product Concept, Production Planning and Control, Quality Control** and **Management** as there has been a considerable
improvement in these factors as compared to others. The above data shows that the performance of the company has been improving. This is due to the introduction of new strategies and technologies in their products. It is mandatory for companies to employ competency lest their products become obsolete.

5.4.7 FUTURE PLAN OF ACTION

Mahindra and Mahindra continue its efforts for development of new technologies and products to meet the ever growing competitive pressures, regulatory requirements, customer needs and prepare for the future. Mahindra and Mahindra continues to aggressively pursue technology development. Few areas in this direction are weight reduction by using alternative materials, designing modularity, Value Analysis Vale Engineering (VAVE) approach for meeting cost pressures. Development and adoption of safety technologies also remain a key area.

5.5 CONCLUDING REMARKS

The above case studies reveal that the growth of companies has been taking place on a steady pace since the past years. The timely implementation of new strategies and technologies has been the underlying factor for this development. Besides, it is the need of the hour for companies to make innovation and competency significant factors in their development plan if they want to survive in the competitive market.