

# Exploring Manufacturing Competencies of a Two Wheeler Manufacturing Unit (A Case Study)

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## Abstract

The two wheeler industry of India is one of the most dependable industries as every person has at least a two wheeler with him, if not any four wheeler. Earlier there were scooters like Bajaj Chetak, Priya but with evolution of motorcycles like splendor, splendor+, etc. the scooter market started declining but with arrival of gearless scooters like Honda Activa, Scooty Pep, etc. the market place has become increasingly competitive in recent time and industries are facing tough test of improving products and thus market share. The competitiveness among industries is an important issue. Competency development is a vital tool to enhance the competitiveness of industries. Based, on aggregate performance of a firm, it comprehensively explores the varying importance of manufacturing competencies and drives of industrial competitiveness. Hence by, exploring the manufacturing competencies of a two wheeler industry, one can reflect the competitiveness of two wheeler manufacturing industry as a whole. This study presents various factors of manufacturing competencies affecting industrial competitiveness as the significance of these competencies is increasing day by day in two wheeler manufacturing industry.

## 1. Introduction

This paper is about the Core competency thinking is a powerful and widely promoted approach to focus and mobilize an organization's resources. As a result, R&D and technology executives are increasingly being asked to define the core technical competencies of their companies; unfortunately, they often fail to come up with convincing answers. This is not surprising, as the best methods of employing the thinking in organizations have not been elucidated. The method described here is applicable to almost all core competencies, whether they are technical or non-technical in nature and whether they are currently available to the company or will need to be developed in future. It will allow many organizations to put core competency thinking into practice – to great competitive advantage- without necessary struggle and disruption to business activities.( Mark R. Gallon et. al )

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The term “competency” refers to a combination of skills, attributes and behavior that are directly related to successful performance on the job, which are considered important for all staff of the Organization, regardless of their function or level. Competencies are important both for the Organization and for staff. Competencies are forward-looking. They describe the skills and attributes staff and managers will need in order to build a new organizational culture and meet future challenges. They help organizations clarify expectations, define future development needs, and do more focused recruitment and development planning. Competencies provide a sound basis for consistent and objective performance standards by creating shared language about what is needed and expected in an Organization. In most circumstances, competent persons are appointed to specific areas of the workplace, and their competence can be demonstrated by means such as:

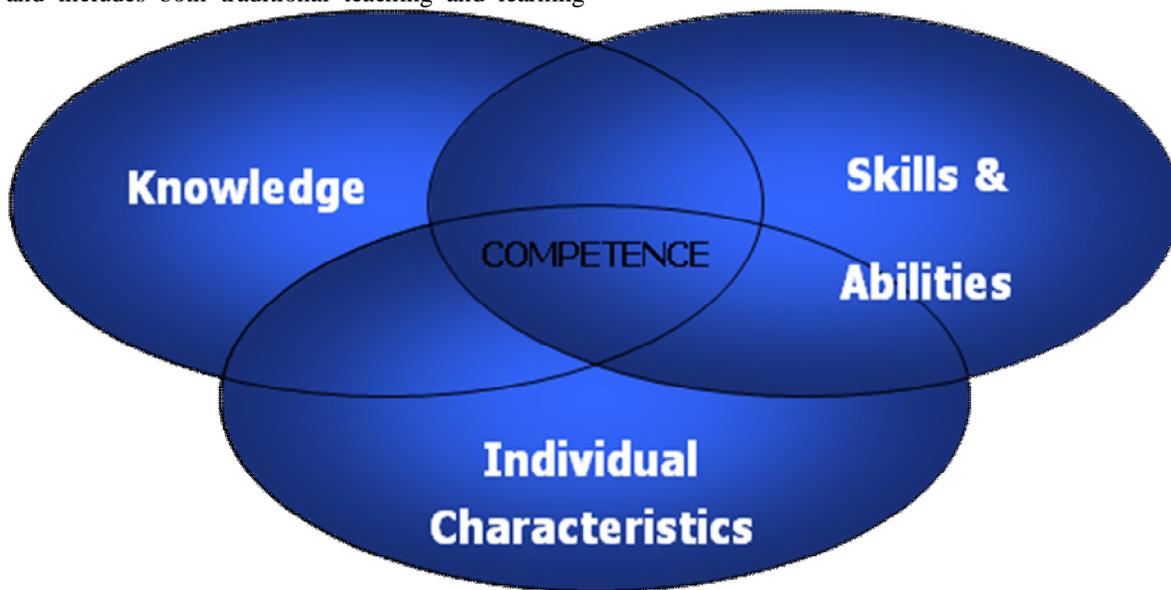
- Work place training,
- Formal and informal qualification's

- Experience gained over periods of time under direct supervision of a competent person performing the task.

Demonstration of competence can also be met by the use of teams to develop and demonstrate competence. It is also important that all persons appointed should know, understand and operate within the limits of their own individual competence. By 'competence' I here understand human knowledge and skills serving productive purposes in a firm. 'Competence development' involves a firm's measures to develop their present competence status, and includes both traditional teaching and learning

methods (such as courses or literature) as well as more action-learning and on-the-job oriented methods (such as work rotation or networking). Organizational market performance', finally, is here understood as a firm's performance on the market as compared to its own specific line of industry, and will later be operationalised as sales performance over time.

"A firm's competitiveness is a set of differentiated technological skills, complementary assets, and organizational routines and capacities that provide the basis for a firm's competitive capacities in one or more businesses" See Fig.1.1



**Fig: 1.** Competency Characteristics

In common dictionaries the meaning is often explained by (sufficient) skills, capability, authority and qualification. Scientific literature emphasizes knowledge as an important component of competence, but also suggests components such as aptitude, attitude, commitment and motivation. Definitions are normally also related to specific tasks or a specific context. One of many examples is found in Nordhaug (1993). Nordhaug relates competence to professional requirements regarding productivity, and defines competence as

"The composite of human knowledge, skills and aptitude that may serve productive purposes in organizations" [1]

### 1.1 How Is Competency Measured?

All competencies are defined from levels in a competency framework. Each definition typically expresses the behavior expected of the associates if he

were to be rated at that level. Using BARS to measure competency

#### 1.1.1 Behavioral-Anchored Rating Scales (BARS)

A BARS describes behaviors differentiating between effective and ineffective performers that can be observed and anchors them at points on a scale. The applicant's behavior displayed (e.g. role-play, oral presentation, in-basket) or past behavior described (e.g. behavioral interview, reference checks) are compared to these examples and rated accordingly. The content of the scale is developed from a job analysis and is based on responses to critical job incidents or situations.

#### 1.2.2 Developing a BARS Scale

Using subject matter experts, identify examples of job performance behaviors reflecting all different levels of effectiveness ranging from ineffective to

superior for all the different parts of the job. These are key indicators only. It is not required to be an exhaustive list of every possible criterion. You may have already identified these behaviors when you conducted your job analysis to establish the qualifications and competencies. [2]

## 1.2 Competency Model

A competency model is a collection of multiple competencies that together define successful performance in a defined work setting. A model provides a clear description of what a person needs to know and be able to do – the knowledge, skills, and abilities – to perform well in a specific job, occupation, or industry. In response to workforce challenges, the U.S. Department of Labor, Employment and Training Administration and industry partners have collaborated to develop and maintain dynamic models of the foundation and technical competencies that are necessary in economically vital industries and sectors of the American economy. The goal of the effort is to promote an understanding of the skill sets and competencies that are essential to educate and train a globally competitive workforce.

### 1.2.1 Competitive Priorities

The competitive priorities are listed in below. Basically, competitive priorities are the operating advantages that a firm's processes must possess to outperform its competitors.

- **Cost:** Lowering prices can increase the demand for products or services, but it also reduces profit margins if the product or service cannot be produced at a lower cost.
- **Quality:** Quality is a dimension of a product or service that is defined by customer. Today, more than ever, quality has important market implications. As for operations, two competitive priorities deal with quality: *high performance design* (It is the determination of the level of operations performance required in making a product or performing a service) and *consistent quality* (It is the measurement of the frequency with which the product or service meets the design specifications).
- **Time:** as the saying goes "Time is Money". Some companies do business at internet speed while others thrive on consistently meeting delivery promises. These competitive priorities deal with time: *fast delivery* (The time elapsed between receiving a customer's order and filling it), *on-time delivery* (measurement of the frequency with which delivery time promises are met), and *delivery speed* (Measurement of how quickly a new product or

service is introduced, covering the elapsed time from idea generation through final design and production).

**Flexibility:** Flexibility is a characteristic of a firm's operations that enables it to react to customer needs quickly and efficiently. Some firms give top priority to types of flexibility: customization (The ability to satisfy the unique needs of each customer by changing product or service designs) and volume flexibility (The ability to accelerate or decelerate the rate of production quickly to handle large fluctuations in demand).

## 1.3 Need for Present Work

To study and propose manufacturing competencies that contributes to the competitiveness and success of two wheeler manufacturing unit, especially in north India. [3]

## 2. Methods and factors

### 2.1 Methodology

1. Detail literature review shall be carry out to study the significance of manufacturing competencies.
2. Case study will be conducted in Honda manufacturing unit in north India.

### 2.2 Objective

1. To synthesis the concept of manufacturing competencies two wheeler manufacturing unit.
2. To explore the manufacturing competencies in two wheeler manufacturing unit.

### 2.3 Manufacturing Competencies

Competencies refer to skills or knowledge that lead to superior performance. These are formed through an individual/organization's knowledge, skills and abilities and provide a framework for distinguishing between poor performances through to exceptional performance. Competencies can apply at organizational, individual, team, and occupational and functional levels. Competencies are individual abilities or characteristics that are key to effectiveness in work. Competencies are the characteristics of a manager that lead to the demonstration of skills and abilities, which result in effective performance within an organizational area. (Anders drejer, 2001)

Once the job requirements have been clarified (and competencies provide a framework for doing this), then competency interviewing helps interviewers look for evidence of those requirements in each candidate. For people already in jobs, competencies provide a way to help identify opportunities for growth within their jobs. (John P.Millikin et al., 2010). Competencies are not

"fixed"—they can usually be developed with effort and support (though some are harder to develop than others). Employees and their managers together can identify which competencies would be most helpful to work on to improve the employee's effectiveness. [4] They can then integrate that into a learning plan that may include on-the-job experience, classroom training, or other developmental activities. (Kwasi and Amoako-Gyampah, 2008)

## 2.4 Factors Of Manufacturing Competencies

Competencies in the area of manufacturing involving steps like conceptualization, designing, development, process planning raw material, production and control and quality control.

### 2.4.1 Creativity

Creativity can be defined as the tendency to produce or recognize ideas, possibilities or alternatives that may be useful in solving difficulties and communicating. Creativity is the ability to think up and design new inventions, produce works of art, solve problems in new ways, or develop an idea based on an original, novel, or unconventional approach. Ability to produce something new through imaginative skill, whether a new solution to a problem or a new artistic objects or form. The term generally refers to a richness of ideas and originality of thinking. Psychological studies of highly creative people have shown that many have a strong interest in apparent disorder, contradiction, and imbalance, which seem to be perceived as challenges. Such individuals may possess an exceptionally deep, broad, and flexible awareness of themselves. Studies also show that intelligence has little correlation with creativity; thus, a highly intelligent person may not be very creative. genius; gifted child.

### 2.4.2 Innovation

Innovation is the basic driving force behind entrepreneurship and the creation of small businesses. When an individual comes up with an idea that has not previously been explored, he or she may be able to turn that idea into a successful business venture. "Ideas are the fuel that keeps entrepreneurial fires blazing." Of course, not every new idea has the potential to become a successful business. And in many cases, individuals with good, marketable ideas fail to come up with the capital needed to turn their ideas into reality. But innovation is still a necessary first step for small business success in many instances. Moreover, entrepreneurs cannot afford to stop innovating once they have established a successful business. Innovation applies not only to

new business and product ideas, but also to the internal workings of a company.

### 2.4.3 Evolution

Evolution is a process of gradual, progressive change and development, as in a social or economic structure with the passage of time. a process in which something passes by degrees to a different stage (especially a more advanced or mature stage); "the development of his ideas took many years"; "the evolution of Greek civilization"; "the slow development of her skill as a writer.

### 2.4.4 Computer Aided Design

Computer-aided design (CAD) is the use of computer systems to assist in the creation, modification, analysis, or optimization of a design. CAD software is used to increase the productivity of the designer, improve the quality of design, improve communications through documentation, and to create a database for manufacturing. CAD may be used to design curves and figures in two-dimensional (2D) space; or curves, surfaces, and solids in three-dimensional (3D) space. [5]CAD is an important industrial art extensively used in many applications, including automotive, shipbuilding, and aerospace industries, industrial and architectural design. See Fig.2.1

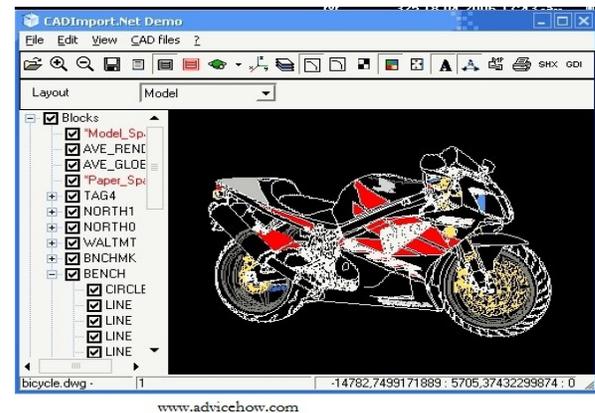


Fig. 2. Computer Aided Design

### 2.4.5 Aesthetics

Aesthetics is the branch of philosophy which deals with the nature of art and of artistic judgment. There are two traditional views concerning what constitutes aesthetic values. The first finds beauty to be objective, that is, inherent in the entity itself. The second position holds that beauty is subjective, in that it depends on the attitude of the observer. Immanuel Kant argued that judgments of taste, as he called aesthetic judgments, rest on feelings, which, though subjective, have universal validity. [6] The

instrumental theory of value, an extension of subjectivism, holds that the value of art consists in its capacity to produce an aesthetic experience.

#### 2.4.6 Ergonomics

Ergonomics is the process of changing the work environment (equipment, furniture, pace of work, etc.) to fit the physical requirements and limitations of employees, rather than forcing workers to adapt to jobs that can, over time, have a debilitating effect on their physical well-being. Companies of all shapes and sizes have increasingly recognized that establishing an ergonomically sensitive work environment for employees can produce bottom-line benefits in cutting absenteeism, reducing health care costs, and increasing productivity. The most progressive of these firms have after careful analysis of the workplace environment and the tasks that their employees have to perform taken steps to modify that environment (whether in a shop floor or an office) to better fit the physical needs and abilities of workers.

#### 2.4.7 Process Planning

Process planning involves determining the sequence of operations to perform to manufacture a part given its description and the specification of the resources in the workshop. It should take into account both technological and economic considerations, some of which are hard constraints and some preferences. This knowledge often represents both the experience and know-how of engineers/specialists, which differ from one company to another. Many approaches have been proposed for automating process planning which focus on generating a single plan that is optimal with respect to some predefined criteria. The process of finding a plan involves examining and evaluating the manufacturability of different machining plans. It is complicated by the fact that the search space is huge and the plan evaluation criteria are not obvious at the beginning and can only be gleaned through interaction with the user. See Fig 2.2

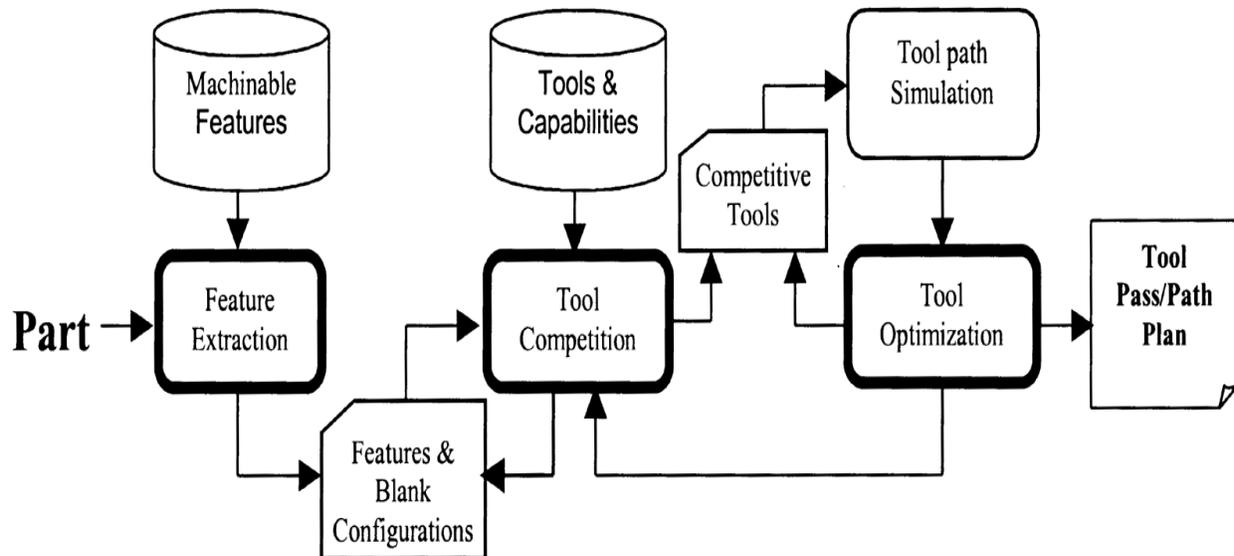


Fig: 3. Process plan flow chart

#### 2.4.8 Production And Control

Once the entrepreneur has taken the decisions regarding the product design and production processes and system, his next task is to take steps for production planning and control, as this function is essentially required for efficient and economical production. One of the major problems of small scale enterprises is that of low productivity small scale industries can utilize natural resources, which are otherwise lying. Small scale sector can play an important role, similar to the one played by small scale industries in other developed countries. Planned

production is an important feature of the small industry. The small entrepreneur possessing the ability to look ahead, organize and coordinate and having plenty of driving force and capacity to lead and ability to supervise and coordinate work and simulates his associates by means of a program of human relation and organization of employees, he would be able to get the best out of his small industrial unit.

#### 2.4.9 Precision Knowledge

The degree of refinement in the performance of an operation, or the degree of perfection in the

instruments and methods used to obtain a result. Precision relates to the quality of an operation by which a result is obtained, and is distinguished from accuracy, which relates to the quality of the result. The marksman has achieved uniformity, although it is

inaccurate. This uniformity may have been achieved by using a sighting scope, or some sort of, the analysis of precision can be misleading if a certain degree of precision is implied but not actually attained.

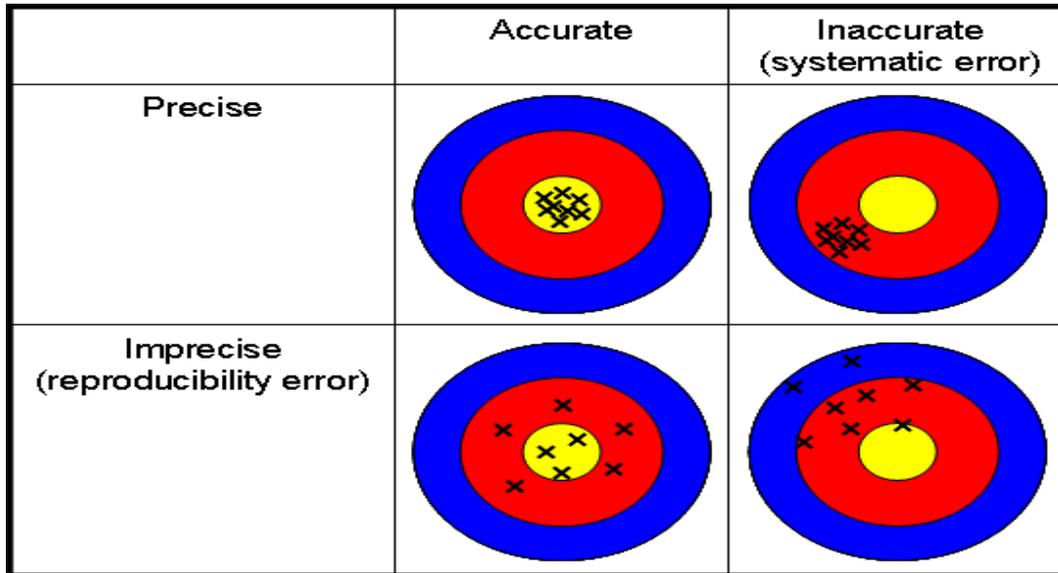


Fig: 4. Precision

To overstate an example, suppose someone were to use a vehicle odometer to measure the distance from one town to another, but measure from the last even mile (as indicated on the odometer) with a tape measure. [7] The result could be represented with an implied precision expressed in feet, but the underlying accuracy is no better than the measurement stabilizing device. See Fig 2.3

#### 2.4.10 Quality

If a product fulfils the customer's expectations, the customer will be pleased and consider that the product is of acceptable or even high quality. If his or her expectations are not fulfilled, the customer will

### 3. Case Study at Honda

Being the leader in product and process technologies in the manufacturing sector, two wheeler industry has been recognized as one of the drivers of economic growth. During the last decade, well directed efforts have been made to provide a new look to the automobile policy for realizing the sector's full potential for the economy. Aggressive marketing by the auto finance companies have also played a significant role in boosting automobile demand, especially from the population in the middle income group. [8] Two-wheeler segment is one of the most important components of the automobile sector that

consider that the product is of low quality. This means that the quality of a product may be defined as "its ability to fulfill the customer's needs and expectations. Quality needs to be defined firstly in terms of parameters or characteristics, which vary from product to product. For example, for a mechanical or electronic product these are performance, reliability, safety and appearance. For pharmaceutical products, parameters such as physical and chemical characteristics, medicinal effect, toxicity, taste and shelf life may be important. For a food product they will include taste, nutritional properties, texture, and shelf life and so on. [4]

has undergone significant changes due to shift in policy environment. The two-wheeler industry has been in existence in the country since 1955. It consists of three segments viz. scooters, motorcycles and mopeds. In India there are some MNC's and Indian company dealing in automobile sector. The main key players who are dealing in this sector are Hero, Honda, Bajaj, Yamaha, and TVS. Hero is the biggest player in this sector in India as well as in the world and playing a very important role in two wheeler automobile sector. Hero, Bajaj and TVS are the

Indian companies and Yamaha & Honda are international automobile brand.

Honda is the world's largest manufacturer of two wheelers. Its symbol, the Wings, represents the company's unwavering dedication in achieving goals that are unique and above all, conforming to international norms. These wings are now in India as Honda Motorcycle & Scooter India Pvt. Ltd. (HMSI), a wholly owned subsidiary of Honda Motor Company Ltd., Japan. These wings are here to initiate a change and make a difference in the Indian two wheeler industry. Honda's dream for India is to not only manufacture two wheelers of global quality, but also meet and exceed the expectations of Indian customers with outstanding after sales support. Following its separation from erstwhile partner Hero Group, Japanese auto major Honda, through its subsidiary Honda Motorcycle & Scooter India (HMSI), is pursuing its India strategy with renewed vigour. The company has been in the market for over a decade now, and its independent foray in the world's second largest two-wheeler market is knitted around a strong product and production strategy, with an eye on claiming the top spot in years to come.

### 3.1 Company Profile

The HMSI factory is spread over 52 acres, with a covered area of about 85, 815 square meters at Manesar, Gurgaon district of Haryana. The foundation stone for the factory was laid on 14th December 1999 and the factory was completed in January 2001. The initial installed capacity was 100,000 scooters per year, which has reached 6, 00,000 scooters by the year by 2007 and motorcycle capacity shall be 4, 00,000 per annum. The total investment outlay for the initial capacity was Rs. 215 crores and now the accumulated investment is 800 cores.

**Table 1.** Annual Production Capacity

	First plant	Second plant	Third plant	Total capacity
As of May 2011	1.6M units	--	--	1.6M units
July 2011	1.6M units	0.6M units	--	2.2M units
March 2012	1.6M units	1.2M units	--	2.8M units
1st half of 2013	1.6M units	1.2M units	1.2M units	4.0M units

### 3.2 Company Strategy

HMSI (Honda Motorcycle & Scooter India, Private Limited) operates on a principle, which is followed worldwide by all Honda companies. Maintaining a global viewpoint, we are dedicated to supplying products of the highest quality, yet at a reasonable price for worldwide customer satisfaction. Honda's philosophy is based on the company's guiding principle.

#### Respect for the Individual

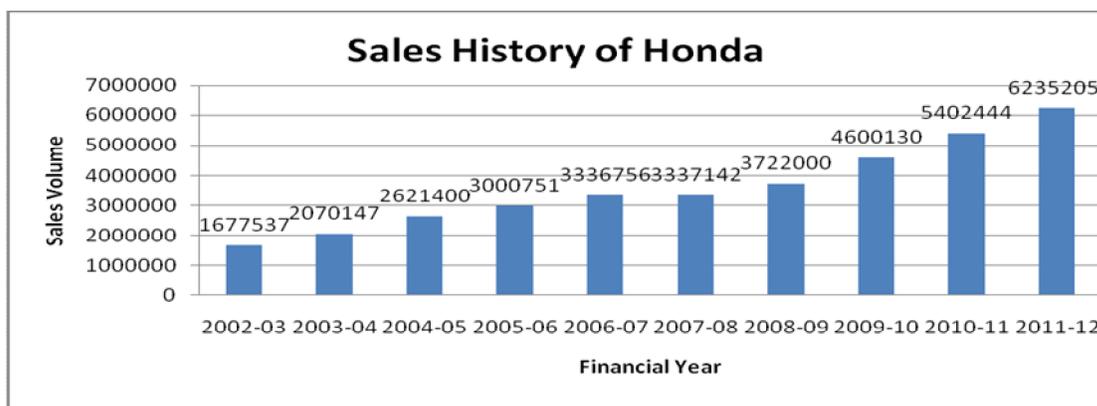
Honda recognizes and respects individual differences. The respect for individual stems from the following three points: Initiative, Equality, Trust. It is the contribution from each individual in the company that has made our company what it is today and that, which will take us into the future.

#### The Three Joys

In line with Honda's Philosophy, HMSI conducts all its daily activities in pursuit of the following joys:

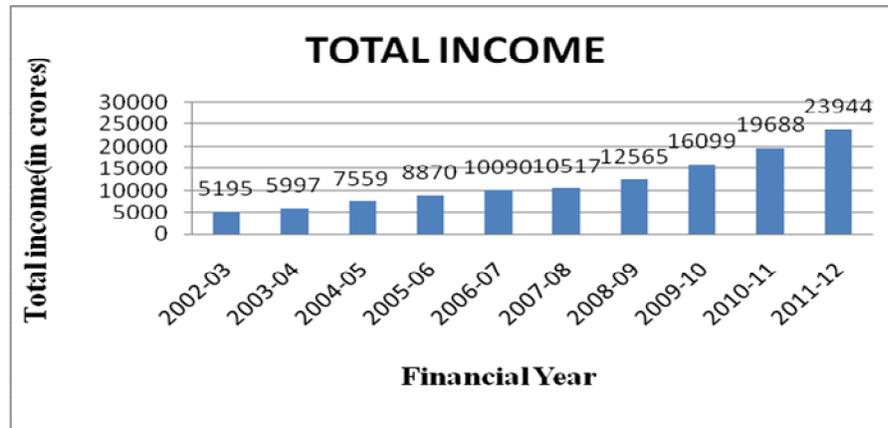
- The joy of manufacturing high quality products.
- The joy of selling high quality products.
- The joy of buying high quality products.

### 3.3 Data Collection and Analysis

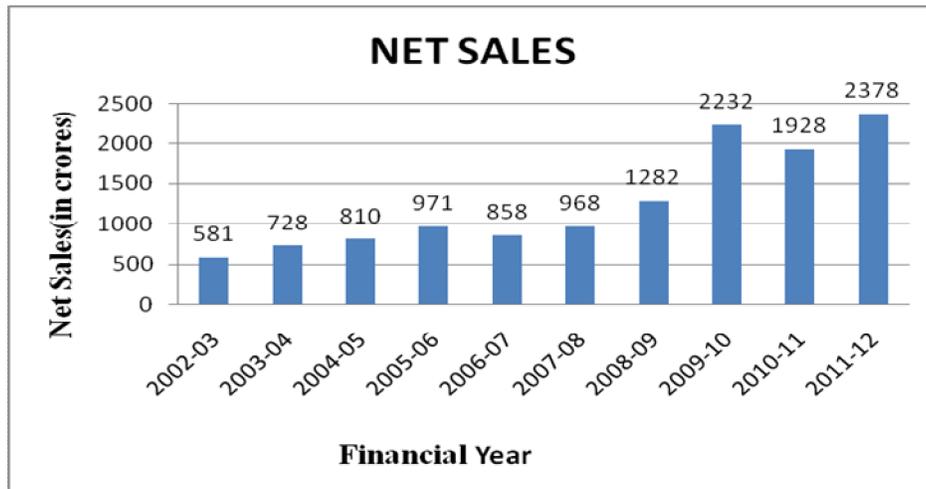


**Fig: 5.** Number of units sold

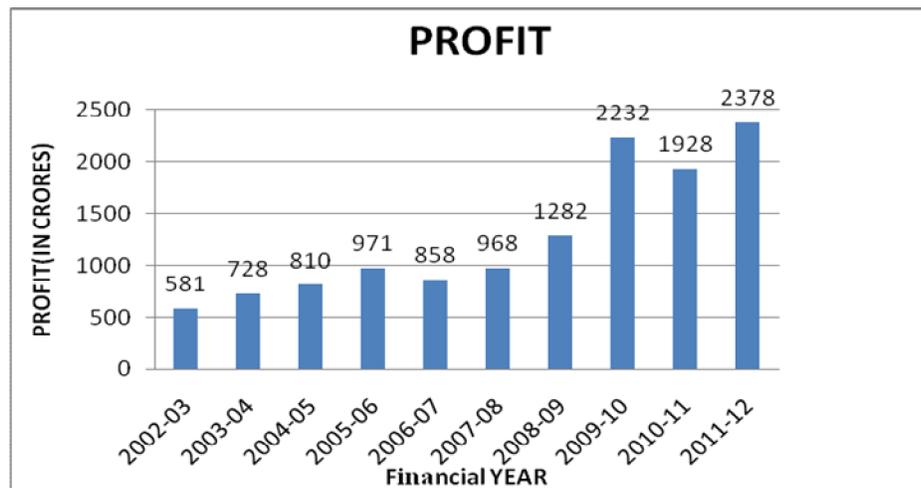
The graph shown above shows the sales history in number of units sold by Honda (HMSI) company in the financial year 2002-2012. It is observed that a gradual rise in sales volume along with the time. See **Fig 4.1**



**Fig. 6.** Total Income of Honda



**Fig. 7.** Net sales in crores



**Fig. 8.** Profit in crores after paying tax [10]

From above data See **Fig.4.2, 4.3, 4.4** of it has been seen that the company sale has been keep on growing from the past years it. This is due to the company introducing new strategies and technologies in their products. It is very difficult to with stand in the competitive world to withstand in the market every company have to use competency in their products in the present times time it has been seen that every person wants development in the product. If we don't make innovation in the product the product will absolute from the market. Honda carries with it a legacy of cutting edge R&D resulting in customer oriented products. India is today the center of attention globally with the new Technical Center. [9] We are committed to deliver the products of highest quality with affordable price at fast speed by enhancing our efficiency of having R&D, designing, engineering, purchasing and quality under one roof for the first time.

#### 4. Conclusion

The case study was prepared at Honda manufacturing unit at Manesar, Gurgaon district of

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Haryana. The case study was carried out on two-wheeler manufacturing unit. During this work, manufacturing competencies have been investigated. It has been analyzed that the sales have improved with an improvement in competitiveness of manufacturing unit.

Following conclusions have been made after preparation of the case study:

1. The manufacturing unit is technically sound and is competent with the latest machinery.
2. Profit of the unit has been improved.
3. Market share has enhanced.

#### 5. Future Scope

Based on the above study, the following aspects for future work have been presented:

1. The work can be carried out in other areas of India.
2. The work can be extended in other automobile sectors.
3. Strategy issues can be studied with this work.

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[9] [www.astd.org/competency\\_model](http://www.astd.org/competency_model)<sup>3</sup>

[10] [www.ask.com/defination\\_of\\_competency](http://www.ask.com/defination_of_competency)<sup>2</sup>