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JUST IN TIME: APPROACH IN AUTOMOTIVE BUSINESSES

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INTRODUCTION

In today's competitive global business environment, the goal of all manufacturing systems is long-term survival. A manufacturing company's survival in an increasingly competitive market closely depends upon its ability to produce highest quality product at lowest possible cost and in a timely manner with shortest possible leadtime. In addition, these goals should be achieved by paying utmost respect to the humanity of the employees who make the system work. Sometime, the difficulty of achieving the goals lies in the complexity of manufacturing operations. It is not difficult to build the high quality product, but is extremely difficult to do so while maintaining excellent quality, and at some time respecting the humanity of people who do the actual work of building that product. A Just-in-Time (JIT) based approach, which is suggested here, is capable of achieving all above stated goals. Just-in-Time (JIT) Based Quality Management is both philosophy and guiding set of principles that integrates the basic management techniques, existing improvement efforts, and technical tools. This approach stressed on longterm benefits resulting from waste elimination, and continuous improvements to systems, programs, products, and people.

It has significant impact on quality control, purchasing functions, and work culture with a philosophy that encompasses cost, meeting delivery schedules, employee's empowerment and skill development, supplier relations and development of new products. But, this approach requires the plants to keep trim inventories because even small glitch in supply chain management, and small failure rate of defective items can bring production to standstill. Some unique techniques of purchasing and quality control are therefore developed in such a way that raw material or components of high quality can be arrived at factory just as they needed, and production of defective items can be reduced to near zero level. Conceptually, this approach combines apparently conflicting objectives of low cost, high quality, manufacturing flexibility, and delivery dependability. Its effects are significant in improving the overall performance of the whole organization. However, there is no standard to implement JIT other than continuous progress towards the ultimate objective of delivery as wanted, with a

smoothly synchronized continuous flow keyed to final demand, with perfect quality of incoming goods. The adoption of JIT based approach in Indian context may be helpful for those industries, which are still struggling with problems of unreliable and long lead-time, inferior quality, low productivity, high rate of scrap and defects, shortage of raw-material, and underutilization of workers and equipment's

THEORY OF JIT PRODUCTION

JIT Based Quality management is combination of inventory control, quality control and production management functions that makes sincere efforts for quality improvement by two ways. First, it concentrates on philosophical aspect of quality improvement by making the quality everyone's responsibility, and then focused on effective implementation of quality control techniques . It recognized that most valuable resources of an organization are its workers, and workers work best when they are motivated, valued, encouraged to contribute, and allowed to make their own decisions. Under this approach, Workers inspect the product quality after each successive operation. They are trained along with managers in preparation and interpretation of process control charts. Managers motivate the workers to think quality first and production rate second. The workers have authority to halt the production line or cell, if quality problems are uncovered. Thus, this concept not only gives the quality responsibility to workers but also match that responsibility with authority to share the quality control functions so that quality problems can be uncovered and solved quickly . Also, JIT production system demands to buy parts in small lots. Small lots require less space and time. Less space and time require less peoples and facilities to complete the same job. Besides, small lots easy to inspect, and defects can be immediately detected. Thus, the parts that are purchased steadily in small lot sizes with frequent deliveries contribute to higher quality and productivity through lower levels of inventory and scrap, lower inspection costs for incoming parts, and early detection of defects . In short, JIT based approaches has potential to improve the product quality and productivity to significant level but organizations must adopt its principles in way that meet their own organizational structure, design and processes.

OBJECTIVE OF THE RESEARCH

This research paper has the following two objectives:

RESEARCH DESIGN AND METHODOLOGY

This research has been conducted by taking SECONDARY DATA from the internet.

The research is primarily based on analysis of two popular automobile manufacturers:

1. Maruti Suzuki
2. Ashok Leyland

LIMITATION OF THE STUDY

The current report is limited to only two companies i.e., Maruti Suzuki and Ashok Leyland. The report represents an analyses based on the data that is available online.

The accuracy and reliability of the analysis is completely based on my interpretation and valuation of data.

The analysis and study could not be approved by company officials as they refuse to entertain students on such matters.

AUTOMOBILE INDUSTRY OF INDIA

India has a huge automobile industry. The country ranks 4th in Asia and 9th in the world as the world's largest automobile industry. India has an annual production of approximately about 2.3 million units.

Presently, India is the world's largest manufacturer of tractors, second-largest manufacturer of two-wheelers, and fifth-largest manufacturer of commercial vehicles.

The automobile industry in India gained momentum after the liberalization in 1991. The industry has continued to grow consistently and is increasingly becoming competent in the global market. In the recent past, India has seen an upsurge in the automobile industry thanks to its relaxed restriction on the investment policies in the sector. India's overall economic growth has also played a significant role in attracting foreign investors in India to invest in the automobile sector of the country.

The automobile sector in India has displayed great advances in relation to the utilization of new technologies and being flexible in the wake of the changing business scenario.

Also, the growth of Indian middle class and their increased purchasing power supported by strong macro-economic fundamentals have been instrumental in attracting major auto manufacturers in India. Several global players, including leading automobile manufacturers Suzuki and Honda, have invested heavily in India and have managed to tap the Indian market.

All these factors and the initiatives of the government is an indication that the Indian automobile industry has been emerging as a new sector that has unlimited potential for growth and has promise to offer valuable returns on investments. The automobile sector has not only been meeting the requirements of the domestic market but has been penetrating deep into the international market.

COMPANY OVERVIEW

Maruti Suzuki India Limited

Maruti Suzuki India Limited, a subsidiary of Suzuki Motor Corporation of Japan, has been the leader of the Indian car market for about two decades. Maruti's contribution as the engine of growth of the Indian auto industry, indeed its impact on the lifestyle and psyche of an entire generation of Indian middle class, is widely acknowledged.

Maruti tops customer satisfaction again for seventh year in a row according to the J.D. Power Asia Pacific 2006 India Customer Satisfaction Index (CSI) Study. The company has also ranked highest in India Sales Satisfaction Study. TNS Automotive also ranks Maruti first for Corporate Social Responsibility.

Maruti is also among Top 5 car companies in the Forbes list of the Worlds Most Reputed Companies – Nov 06. In 2001, Maruti Suzuki India Ltd became one of the first automobile companies anywhere in the world to get an ISO 9001:2000 certification. A V Belgium has rated the company's quality systems and practices as a "benchmark for the automotive industry world-wide", global auditors for International Organization for Standardization.

Maruti already rolled out over 6 million vehicles till 2006 year, in fact on an average two vehicles roll out of the factory every minute. In March 2007 Maruti crossed cumulative export figure of 450,000 vehicle since its first export in 1986. Vehicle for exports and domestic are manufactured on the same production facilities.

ASHOK LEYLAND

Ashok Motors started assembly of Leyland commercial vehicles. With British Leyland participation in the equity capital, in 1954, the Company was rechristened Ashok Leyland. Since then Ashok Leyland has been a major presence in India's commercial vehicle industry. These years have been punctuated by a number of technological innovations which went on to become industry standards. This tradition of technological leadership was achieved through tie-ups with international technology leaders and through vigorous in-house R&D.

Ashok Leyland vehicles have built a reputation for reliability and ruggedness. The 375,000 vehicles we have put on the roads have shared the additional pressure placed on road transportation in independent India.

The share of goods movement by road, rose from 12% in 1950 to 60% in 1995. In passenger transportation, the jump is equally dramatic: from 25% to 80%. At 60 million passengers a day, Ashok Leyland buses carry more people than the entire Indian rail network. In the populous Indian metros, four out of the five State Transport Undertaking (STU) buses come from Ashok Leyland. Some of them like double decker and vestibuled buses are unique models from Ashok Leyland, tailor-made for high density routes.

In 1987, the overseas holding by LRLIH (Land Rover Leyland International Holdings Limited) was taken over by a joint venture between the Hinduja Group, the Non-Resident Indian transnational group and IVECO Fiat SpA, part of the Fiat Group and Europe's leading truck manufacturer. Global Standards, Global Markets The blue-print prepared for the future reflected the global ambitions of the Company, captured in four words: Global Standards, Global Markets (Liberalisation and globalisation were not yet in the air). Buoyed by the backing of the two international giants, Ashok Leyland embarked on a major product and process technology upgradation to world-class standards of technology. In the journey towards global standards of quality, Ashok Leyland reached a milestone in 1993 when it became the first in India's automobile industry to win the ISO 9002 certification. The more comprehensive ISO 9001 certification came in 1994. 1994 was also the year, when international technology changed the way India perceived trucks. The year when a new breed of world class trucks – technologically superior and eco-friendly – rolled out on Indian roads. From our state-of-the-art manufacturing Plant at Hosur, near Bangalore. They carried the name Cargo. Cargo brought with it, a new set of values and an unmatched basket of benefits, ushering in a change.

JUST IN TIME AT ASHOK LEYLAND

Ashok Leyland, one of the largest private companies in the country, had sales over Rs. 6,000 crore in 2005-06. Ashok Leyland is a part of Hinduja Group. It is also one of the largest automobile and auto component companies in India.

The company offers a world-class range of trucks, buses, special application vehicles and engines, crossing millions more than 40 countries in the world. During 2005-06, the company produced total 65,085 vehicles out of which it has exported 4,879 units. In the domestic market, the company has sold total 56,776 units.

The SCM project 'Oscars Inbound' included supplier partnership, vendor base rationalisation, tiering of suppliers and cluster information, inventory optimisation through JIT and LCL, total cost management, logistics initiatives, e-sourcing and global sourcing. The gains from 'Oscars Inbound' are given below:

Supplier partnership covers engineering and technical support, global market leader, global availability of spares, testing capabilities, improved field performance, system supplier, JIT supplies and world-class technology.

Partnership gains include vendor consolidation under Tier-I, continuous technological upgradation of products without in-house investment, shorter development lead time, value engineering and cost reduction, improved field performance, inventory efficiency through JIT supplies and human power rationalisation.

VENDOR BASE RATIONALISATION

Gains from source reduction includes pricing on volumes, improvement in quality and reliability, vendor improvement programme for continuous improvement, tiering for ease of fitment- system buying and reduction in paper work

Vendor tierisation included economies of scale, system buying, rationalization of supplier base, while cluster formation included 5S adherence-mistake proofing, process improvements leading to self-certification

Inventory level has reduced from 23 days to 18 days.

Total cost management included various cost management initiatives such as daily management, process control, design, technology and capacity. Total savings was 3% on total operating cost.

Logistics initiative included transporter-based rationalisation, Kanban pull from satellite warehouses, enhancement of truck turn around, load, space and route optimisation benefiting entire logistics process, which lifted the company by saving over Rs1.25 crore per annum.

JUST IN TIME AT MARUTI SUZUKI

The Company has adopted the Japanese System, JIT to achieve higher operational efficiencies and reduce inventory carrying cost. JIT improves the return on investment of a business by reducing in-process inventory and its associated carrying costs.

To achieve JIT material supplies, the company gives preference to locally based suppliers and encourages far distance suppliers to set up base close to Maruti Suzuki's facilities. Over 76% of the company's 246 suppliers are located within 100 kms of radius. have strategically located the suppliers of bulky components such as instrument panels, fuel tanks, bumpers, seats, etc. adjacent to the company's manufacturing facilities in the Suppliers' Park.

The JIT system has evolved over the last 25 years in the company from monthly scheduling to daily scheduling of parts orders and finally, in 2003, to e-nagare system i.e. the release of schedules on hourly systems, a practice that aids in maintaining less than two hours inventory of components within the company.

The e-nagare system is successfully running today at the company and helps in maintaining the right material inventory, at the right time, at the right place and in the exact amount without the safety net of excess inventory, thus reducing high inventory carrying cost.

Maruti Suzuki is governed by the manufacturing excellence principles of reducing wastages, inconvenience and inconsistency, which are imbibed from its parent company SMC, Japan.

Maruti Suzuki using best practices such as Just in Time (JIT), Kaizen (continuous improvements), Pika Pika and Poka Yoke (mistake proof operations). The best practices are replicated in the business process of business partners to make their operations lean and error free.

The company is efficiently interfaced with the dealers through Dealer Management System (DMS), annual dealer interactions and reviews which help the dealers in cost savings and customer convenience.

Optimum levels of inventory are maintained to reduce the burden of inventory carrying cost. Higher inventory levels are corrected whenever required to them financially viable. This results in multiplicity of efficiency across the value chain.

LIMITATIONS OF INTERFIRM PRODUCTION

- Culture Differences: The organizational cultures vary from firm to firm. There are some cultures that tie to JIT in inter-firm success but it is difficult for an organization to change its cultures within a short time.
- Time frame : Production is very reliant on suppliers and if stock is not delivered on time, the whole production schedule can be delayed.
- Crunch on delivery : Today many tier1, tier2 and tier 3 suppliers are struggling financially to meet their customer demands for lower cost, higher quality and time deliverables.
- Loss of team autonomy: This is the result of decreasing buffer inventories which lead to a lower flexibility of the workers to solve problem individually.
- Loss of method autonomy: It means the workers must act some way when problems occur, this does not allow them to have their own method to solve a problem.
- Responsive method : There is no spare finished product available to meet unexpected orders, because all product is made to meet actual orders – however, JIT is a very responsive method of production.

SOME IMPORTANT FEATURES OF JIT BASED QUALITY MANAGEMENT

This section explains the some unique features of this concept that play a vital role to achieve its objectives of continuous quality improvement, waste elimination and cost reduction.

- One most outstanding feature of JIT is that it generates great number of suggestions by worker's involvement in continuous improvement. Management works hard to implement these suggestions. The number of suggestions is regarded as an important criterion in reviewing the performance of a worker. Thus, management recognizes worker's efforts for quality improvement. Quality circles are also act as group oriented suggestion system for making improvement. In short, JIT requires efficient suggestion system to involve employees in manufacturing activities.
- JIT emphasizes awareness, and provides clues for identifying problems. Once problem identified, it must be solved. Therefore, this concept requires training for using various problem-solving tools.
- Improvement reaches new heights with every problem that is solved. In order to consolidate new levels, improvement must be standardized. Thus, JIT also requires standardization of methods and procedures.
- Often, The heterogeneous composition of workforce and adverse relation between labour and management makes difficult to introduce changes for improve productivity and quality control. Therefore, high motivation, employee empowerment, and an open organizational culture are essential for efficient implementation of JIT.
- JIT requires the habit of working with hard data. It therefore put more emphasize on the use and analysis of statistical data for quality control and problem solving.
- Because workers works on many different types machines at once, this system leads to significant expansion of worker responsibilities and skills. Therefore, effective training programs are primary requirements of JIT to develop the multiplicity of skills in the workers.
- JIT encourages the suppliers to make commitment to supply the excellent quality products. To fulfil this commitment, a permanent quality program is required for supplier's operations, with constant communication between buyer and supplier.

IMPLICATIONS FOR INDIAN INDUSTRIES

Indian manufacturing sector is one of the largest industrial powers in the world, which has never been allowed to realize its potential by bureaucratic governments and protectionists. Consequently, Indian goods are today ranked at bottom in competitiveness including industrial efficiencies, human resource management, product quality, and employee productivity 15. In such conditions, there is urgent need for implementing JIT practices in India. But, some state governments in India regulate the relationships of firms, labour, supplier and financial institutions. These relations

ships have great effect in determining whether JIT can be implemented in India with existing economic structures, culture and social system, attitudes and inclinations. By implementing the JIT in Indian industries, an enormous saving can be generated and a new productivity ethics can be created that may be helpful to strengthen the Indian economy. In addition, JIT practices can help the Indian industries to become more competitive by enhancing their export in world market. But, it is observed that social, cultural and political matters have a significant impact on JIT practices in different parts of world.

In India, suppliers of several raw materials (imported and domestic) are subjected under government control through supply agencies, which translates into high uncertainty. Government control prices of key resources and taxation rates; all creates obstructions in way of implementing the JIT. Some reasons for slow implementation of JIT are listed below. In addition, Indian labour is usually uneducated, lacking in motivation and more concerned with monetary benefits and job security than career progress and development of their potential. Labour unions and their reluctances are also unfavourable for implementing the JIT. Therefore, specific cultural changes are required for successfully implementing the JIT. Training can play a decisive role in this direction. On this issue, some researchers have stated that Japanese training models are not very successful in India. Therefore, some specific time bound training programs should be organized for Indian workforce after carefully studying their behaviour patterns, personal traits, attitudes and social values.

REASONS FOR SLOW IMPLEMENTATION OF JUST-IN-TIME (JIT) IN INDIAN CONTEXT

1. High cost of implementation
2. Informal and casual quality auditing
3. Lack of Communication at various levels
4. Lack of customer awareness about product quality
5. Lack of support from R & D department
6. Lack of teamwork
7. Lack of top management participation in QC Programs
8. Lack of training
9. Lack of understanding about JIT Techniques
10. Negative attitude, traits & beliefs of Indian work force
11. Poor and inadequate maintenance
12. Shortage of multifunctional workers
13. Traditional methods of quality control

CONCLUSIONS

JIT Based Quality Management makes outstanding improvements in area of cost and quality through best use of human resources by focusing on simplicity, waste elimination and continuous improvement. It could be a great opportunity for Indian industries due to its relatively low investment needs and compatibility to small business environment. This approach utilizes the full capacity of workers and enables them to systematically analyze the hidden causes of quality problems by making small consistent changes in organizational arrangements. It allows the workers to become participant in decision-making by putting the trust and responsibility in their hands. Several Indian industries are implementing the JIT with belief that it would be helpful to face the global competition. Yet, its effectiveness would depend upon qualities, attitudes and values of Indian work force. In the end, it is hoped that Indian industries would initiate the necessary changes in their existing production system for adopting the JIT Based Quality Management to gain maximum benefits.