

How Japanese Manufacturing Ideally Words

Prof. E.G. Ubayachandra

Department of Marketing Management, University of Kelaniya.

Abstract

At present, it is noted that Operations Management has made a Considerable change in manufacturing field. It is highly visible in Japanese management practice today. Japanese management is very popular in manufacturing. In this practice, the newly introduced concepts namely Just-In-Time (JIT), Total quality control (TQC) and Kanban play a greater role. How do these concepts become more popular in the real practice today? Secrecy behind this is that they have shown so feasible in the Japanese management practice today. Currently a more comprehensive understanding of these new concepts and the Japanese practice has led to their usage throughout the world during 1970s and on into the 1980s. In Japanese management practice employee involvement has become very popular. Openness and total employee involvement are important to Japanese. All employees help to solve production problems when they occur. The Japanese workers are specially well-equipped to participate in decision making. One of the most often discussed aspects of the Japanese management is lifetime employment. It allows employees to take risks and offer suggestions that improve operations. Productivity in United States failed to keep pace with that of other industrial countries. (Jerome A. Mark, 1979). During this era, many foreign companies started to carve out substantial niches for themselves in United States markets. Prominent examples for this situation are Nissan, Toyota, Sanyo, and Sony. Under this climate, managers in United States have become acutely aware of a more competitive worldwide market. Here, the competitiveness is a frequent topic of discussion at present among managers and government officials and in the mass media. Competitiveness can be defined as the relative standing of one competitor against other rivals. It is of course like the game of musical chairs. The major three American automakers such as General Motors, Ford and Chrysler have worries about their organizations' relative standing in the United States automobile marketplace. Competitiveness has become a prominent business and government concerns in the era of global business as a contest among nations. Members of the mass media routinely talk about the competitiveness is a benchmark for past performance. In this case, the Japanese companies play a greater role at present. These companies have a significant percentage of the world Video Cassette Recorder (VCR) market. This rapidly increasing competition has meant decreased market shares of United States and Canadian business practices. Before this challenging situation especially United States and Canada have refined their attention on cost control, productivity improvement and quality. Since 1970s Japan has penetrated into North American markets. Now it is repeated itself in Western Europe. Under this climate, North American business practices are gaining a greater appreciation of the strategies implemented by the giant international competitors, Particularly the Japanese manufacturers. As such, it is worthwhile to understand the Japanese management practice and the secrecy behind their manufacturing. As the situation is so, it was a puzzle to the author that why Sri Lanka is still at the bottom of the industrialization. Also, the author aims to point out the manner in which existing industries in Sri Lanka ought to be restructured. Especially, this message would be given to the owners of the industries here and the policy markers. Moreover, a vacuum of providing opinions in this respect was also indentified by the author. The ideas have been presented along with this paper methodologically. It was concluded here that as western companies now learn from Japanese, Sri Lanka should essentially absorb and implement the Japanese management techniques to develop our industries.

Key words : *Just-In-Time, Total Quality Control, Push versus pull systems, Bio Technology, Kanban system.*

Introduction

The history of Japanese manufacturing is running to the era of World War II. After world war II, Japan was in a shambles, property destruction was widespread-leaving only concrete or stone buildings in many of the major cities such as Osaka, Tokyo, Nagoya and Yokohama. The Japanese economy too was ruined and faced the great challenge of transition from wartime to a peacetime economy with very few resources. The Key factor which took place

in the evolution of the Just-In-Time (JIT) philosophy was the scarcity of resources. The Japanese government was almost restructured in this same era by the allied powers of General Headquarters. Today, Japan utilizes centralized industrial planning, not a free market economy.

In relation to the companies in U.S. those in Japan are having at least one level of planning above the business plan government industrial planning. This is actually a guiding vision for industry. The Ministry of International Trade and Industry provides that vision (MITI). MITI's duty is making identification of the settings which are feasible and which will be declined and be phased out. (J.C. A beg glen and G.stalk.Kaisha 1985). Furthermore, MITI is engaged in making industrial policies. Recently, MITI has actuated the expansion of research on solar energy. Today, MITI encourages the development of fifth generation computers and producing the experimental equipment for unmanned space flights. MITI's ultimate goal is that Japan should work largely in the service sectors and the field in which U.S. reaps the competitive advantage.

Besides, major changes are on the horizon in the field of biotechnology and Japanese companies are mounting a powerful new challenge to American dominance in biotechnology products. It is already multibillion – dollar industry, with products ranging from genetically improved farm animals and grains to cancer treatments and biodegradable plastics. This has become a battle between Japan and U.S. for prominence in Research and Development (R and D)

In understanding the Japanese industrial policy it is worthwhile to have knowledge about the policy decisions made by U.S. The U.S. government pays more attention on regulation of industry. The U.S. Justice Department enforces U.S. antitrust laws that limit the power and size of the U.S. companies by limiting market Share and the U.S. policy rewards Consumption.

Japanese Management Practice.

Western managers are highly interested in the Japanese management pattern. Further they are interested in finding what Japanese do wonderfully-perhaps; the feasibility and success of Japanese management depend upon their culture environment, managerial skills, belief about the people and basic principles Japanese management.

Several management scholars have pointed out certain views about the secret behind the feasibility and success of Japanese management practice. Of them William Ouchi is highly popular. He has listed distinguishing features of Japanese organizations as follows.

- ❖ Lifetime employment.
- ❖ Slow evaluation and promotion.
- ❖ No specialized career paths
- ❖ Implicit control mechanism
- ❖ Collective decision making.
- ❖ Collective responsibility.
- ❖ Holistic concern for employees.

Especially the Japanese government emphasizes extremely cooperation with industry. In addition it seems that there are no constraints on the Japanese Companies regarding the

power and size of the companies. Basic principles of Japanese Management approach are very important to consider here. Those basic principles are,

- ❖ Advice from all
- ❖ Trust between Labor and Management.
- ❖ The changing Japanese Management.

Advice from all

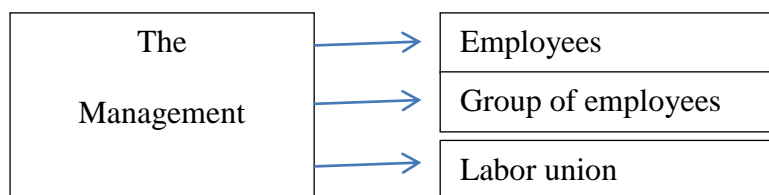
Under this principle wisdom of all the people within the company is completely gathered. At Toyota Motor Company, make 1.65 Million suggestions a year and 95% of these are adopted. “They not only make things but also thinking while making things”. “Not only in Toyota plants, but also all over Japan workers are of excellent quality because they not only make things, but also think while making things. (Chairman Toyota Company) The R and D technique is also highly concerned under this principle. Lower level is also conducted at the level of middle management and above. Group decision-making is the most outstanding feature of the Japanese management in gathering wisdom of the people within the company, they thoroughly consider about the environment needed for that effort. In this regard, both institutional and social environments are taken into account. Under the institutional environment greater attention is paid on training and motivation. In adjusting the social environment industriousness, education and other social habits such as reading books when people are traveling by buses or trains.

Trust between Labor and Management

Trust can be built up in different ways.

- ❖ Inter personal trust building
- ❖ Trust building between a person and group.
- ❖ Trust building among the personal groups.

Above- mentioned trust building ways should be ultimately related to the Management. It can be done in following manner.



One of the keys to drawing and the industriousness of working is to build a good and trusting labor management relationship. There is no quick and easy way to build it. Here, the problem is how Japanese management wins the trust. This is considered under two situations. They are,

- a. When the company shows good results. When good results are there, Japanese managers distribute fruits to workers too.
- b. When the company is in difficulty. Under this situation the respective managers follow the following strategies.

- All the employees are informed, regarding the problems faced by the company.
- Informing to administration to reduce all the remuneration pertaining to all the levels of management from lower to top.
- Transferring employees tentatively to affiliated companies.

Changing Japanese Management.

Japanese Management expects a change because of the challenges to be faced by them. There are three main challenges standing up before Japanese Companies. They are,

- ❖ Low growth of economy.

Under this climate, there are certain problems such as maintaining lifetime employment, maintaining seniority based wage system and promotion from within.

- ❖ Internationalization of Business or Globalization of Business to face this challenge, Japanese management internationalizes total production system.

- ❖ Technological innovation.

For this challenge, they gather wisdom of people and arrange the activities to attain a Creative take-off.

Whatever the case, Ouchi suggested one middle-ground framework integrating American and the Japanese business practices. This new approach is named as theory Z. Richard T. Pascal and Anthony Athos developed and enriched a model in order to analyze American and Japanese companies based on seven variables such as structure, strategy, systems, skills, staff, subordinate goals and styles. These variables are categorized into two categories namely “hard s” and “soft s”. Structure, strategy and systems are considered as “hard s”. Other four are taken into the basket of “Soft s”. In certain cases, American companies are best at the “hard s” and the Japanese companies are best at the “soft s”. (Richard T. Pascale and Anthony Athos. 1981). Usually Japanese managers are highly involved in treatment of employees. The salient feature of Japanese is that they highly appreciate the openness and total employees’ involvement. All the employees should help to solve the problems as they emerge. Especially in decision making, inputs are gathered from the employees. In case of employees they are always well armed to attend the decision making process. Here, it is important to note the following aspects of Japanese life. (Avert F. Adam And Jr. Ronald J. Ebert. 1995.)

- ❖ Women are often not considered part of the permanent work force.
- ❖ Companies carry out extensive background checks on prospective Employees.
- ❖ Lifetime employment is not available to women.
- ❖ Employees are totally socialized to conform to company norms.
- ❖ The Japanese government subsidizes industry through tax breaks and incentives and provides import restrictions to protect home industry.

Just- In- Time (JIT) Production Philosophy.

JIT is a particular philosophy, which includes a set of methods for manufacturing. JIT dictates every process to produce components only when they are required and only quantity required. There is no specific definition for JIT. Mostly, it deals with waste reduction, total quality control and devotion to the customer. Firstly the Toyota applied this philosophy.

“Japanese are not interested in optimizing the level of inventory. They want to get rid of it. In their view, inventory is a flow of waste and an admission of failure. Its purpose is to cover up problems and mistakes. So they try to understand the fundamental forces that led them into hold inventory (Johnson and Kaplan, 1987). Thus, JIT is a manufacturing system with a goal of optimizing process and procedures by continuously pursuing waste reduction. Inventory hides problems. This is the major view of JIT. If there is a lead-time in moving and inventory necessarily there should be a wrong somewhere. Lead-time depends upon the different bottlenecks prevailing in the inventory-moving channel. Thus having taken these bottlenecks and problems into account, then companies made an attempt to discover the methods that minimize the inventory level. In solving the problems arisen from poor inventory management, poor quality control, different bottlenecks, poor co-ordination, obsolescence, shrinkage and supplier unreliability, companies were insisted to apply JIT production philosophy successfully.

Shigeo shingo a well- known JIT authority and engineer at the Toyota Motor Company has introduced seven wastes as follows. (Evert E Adam and Jr.Ronald J.Ebert.1995)

- ❖ Waste of transportation.
- ❖ Waste of over production.
- ❖ Waste of waiting
- ❖ Waste of processing waste of stocks itself.
- ❖ Waste of motion
- ❖ Waste of making defective products
- ❖ Waste of stocks.

These are called JIT’s seven wastes too. They are at the root of what U.S.companies term Value- Added manufacturing (VAM). Professor Robert W.Hall has pointed out major corner stones to the Japanese manufacturing system as follows. (Evert E.Adam, Jr.Ronald and Jr.Ebert. 1995).

- ❖ Produce what the customer desires.
- ❖ Produce products only at the rate the customer wants them.
- ❖ Produce with perfect quality.
- ❖ Produce with no waste
- ❖ Produce by methods that allow people to develop.
- ❖ Produce instantaneously.

Today, Japanese companies apply these corner stones in their production decisions. That is one secret behind their improvement in Production systems. Managers in certain giant Japanese manufacturing companies cater stockless production as a key factor. All the things

are made as ordered. And also the things are delivered, as needed. Japanese companies think there should be a correlation between stockless production and quality. In this context, the concept of zero inventories is highly considered. Perhaps this phenomenon is not always economical and feasible in the real practice. Though it is so, to certain extent it helps to move towards desired goal.

JIT creates a new environment in an organization. That is of course the objective of JIT. If environment is all- correct, system becomes successful. In this connection, it is needed to eliminate the Work-In-Process (WIP) inventory. Orelse it should be brought closer to zero. For this purpose, reasons or need for carrying an inventory should be eliminated. In the manufacturing companies there are four major reasons behind holding WIP inventory. (Johnson and Kaplan. 1989).

- ❖ Uncertain quality of production at earlier stages.
- ❖ Less set-up or net changeover times.
- ❖ Uncertain supplier delivery and quality.
- ❖ Factory layout.

To avoid uncertain quality of production at earlier stages, a higher standard quality should be assured throughout the entire plant. For the purpose of achieving this goal, Total Quality Control (TQC) is applied by the Japanese companies.

For Smooth functioning in an organization long set-up and change over times should be reduced. To reduce them combination of organization, training and equipment should be made. (Atikson and Kplan. 1989). It should be done continuously. If there is an optimal lot size, Set-up time will be close to zero.

In the traditional production philosophy lead- times and defects in supplier delivery channel are apparently visible. Due to this matter, lot size should be maintained. With these uncertainties JIT production philosophy cannot be applied to function with it. Japanese companies keep long living relationships with few suppliers. As a result inventories are flowing from supplier directly to the machines when and where. (Holbrook, 1987 Atikson and Kaplan. 1989)

In JIT Production philosophy layouts are not too lengthy ones. Sequential layouts are arranged in JIT production philosophy. Hence, lot sizes are smaller. Travel distance becomes narrow. Especially U- Shaped layouts are popular in Japan. It maintains their culture due to the fact that it creates collaboration among the employees as they work closely to each other.

Total Quality Control (TQC)

TQC is a Japanese approach to quality control. It stresses continuous improvement in quality. For this, an attention is paid on manufacturing details rather than attainment of a fixed quantitative quality standard. This relates to every facet of the business. This phenomenon is passing hand in hand with JIT production philosophy. Japanese view is that poor quality is wasteful. Poor quality causes to rework. Quality and productivity can be improved through elimination scraps and rework. Quality and productivity can be improved through eliminating scraps and rework. Today, Japanese have become the world's quality leaders as they apply TOC. In their competitive environment they have achieved an image of quality. Since 1950,

Dr.W. Edwards has associated with Japanese quality Programmers. When he entered the programmers the quantity was almost poor.

In Japan employees were minimally responsible for quality. According to his estimate 85% of quality problems were assignable to management. (Evert. Adam, Jr. Ronald J. Ebert. 1995) One of the management Scholars has pointed out 14 mandatory steps called Deming's 14 points for management. These points concern continuous improvement, statistical analysis of work, better employee training and establishing inspection as an individual responsibility and de-emphasize fixed numerical goals. (Evert E. Adam and Jr. Ronald J. Ebert. 1995) The responsibility of improving quality is exemplified in four features such as in-process inspection, visible control, line stop and the N-Z technique. In quality control, Japanese get the aid of Quality circles. Quality circles were conducted as circles (QCs). QC was initially developed in Japan. The purpose of such programmers was to identify the deviation in quality. QC consists of small group of employees. (Mostly 06 to 12). They meet frequently and informally. Generally they get together in an employee's home. Having got together discussion is made about the company problems. Eventually potential solutions are suggested to the management.

Push Versus Pull Systems

Under the push manufacturing system, products are produced in accordance with a schedule. That schedule is constructed from anticipated product. This is infactan MRP-based, or EOQ-based manufacturing system. In this manufacturing system production is scheduled to be run in non-stop flows. To achieve this scheduled production, push-manufacturing system takes into account pre-designed and relatively fixed assembly line balances. In this regard, dedicated single-purpose machines with high output capabilities are utilized. WIP inventories between stages facilitate nonstop flows. From supplying departments or storage depots materials handling equipment shuttles components to work centres. Furthermore, the workers at receiving centres perform their specific jobs repetitively on all units in the production lot. It is the responsibility of work centre management that assurance should be given regarding availability of resources at each work centre and motivation of employees centre. Pull manufacturing system is a system of production in which products are produced only as they are ordered by customers or to replace those taken for use. Actually, it is a JIT system. This manufacturing system is highly flexible and simple. It is cheaper for use. There are adaptable machines in this manufacturing system rather than one big expensive machine. Intricate tools and attachments permit rapid equipment models at each work centre. The major goal is having lotless(stockless) production. There is a closeness of work centres in assembly. Each unit of product can be passed to the next work center when the unit is completed rather than accumulation in larger batches after each stage. In this channel it is convenient to evaluate the work centre. And also this method eliminates WIP inventories. Moreover it eliminates storage areas, inventory conveyance. Equipment and materials control staff.

Kanban System

Simply say, this is a particular card system. It is a visual card system. Broadly say, it is a method of monitoring materials flow through the JIT production philosophy. To do so, cards are used. Such cards help to authorize a work centre to transfer or produce materials. In the Toyota production system, to control the inventories at low levels, a manual two-card Kanban system is applied. There is a particular kind of card called the conveyance Kanban. It

authorizes the transference of materials from supplying work centre. Another card is production kanban. It authorizes production of materials to replace those that were transferred earlier. In this case, materials are transferred and produced in bins. For each item, in the production process, there is a scheduled number of bins in circulation at any one time. Inventories are carefully and visibly managed on the shop floor through the usage of bins and scheduled quantities in those bins. As the result of reducing the number of cards circulating between two interacting work centres, WIP may reach zero. Thereafter needed parts approach Just-In-Time. Accordingly surpluses of materials or productions cannot be seen. Thus, it should be noted that stockless production is the major theme in the pull manufacturing system of planning and control.

Conclusion

Western learning societies always find the study of Japanese manufacturing secret. They are interested to know about the Japanese manufacturing techniques because they have grown up with Japanese products and regularly hear about the threat the Japanese pose as awesome business competitors. Practicing managers in western countries have an even deeper appreciation. In the 1970 s western companies did not understand the challenge that Japanese would come to pose. Many western companies credited the Japanese success to cheaper labour government protection. Today, many of these same companies have lost market share of JIT techniques. Following World War II Japanese learned some important lessons from American industry and has since developed some unique manufacturing strength. Japanese have developed a system of manufacturing including important aspect of approach. The important techniques they use are employee involvement, Japanese management principles, he JIT system, stockless production, TQC, push versus pull system and the Kanban system. The underlying philosophy of JIT is the continuous pursuit of waste reduction. Western business now can learn from Japanese, adopting these techniques that will help them to compete more effectively in worldwide manufacturing.

References

- Abegglen, J.C and G.stalk Kaisha, (1985). the Japanese corporation, New York. Basic Books and Cohen, S.S and J.Zysman (1987), manufacturing matters: the Myth of the post industrial Economy. New York basic Books.
- D Amre, R, Just (1987). –In-Time systems. Cost Accounting, robotics, and the new manufacturing environment American Accounting Association Management Accounting Section.
- Deluzio, M.C., (1993). Management Accounting in a Just-In Time Environment. Journal of cost Management.
- Evert.E.Adam, Jr. Ronal d.J.Ebert. (1995). Production and operations Management. Prentice-Hall of India private Limited New Delhi.
- Green. F.B Amehkhienan, F and Johnson, (1991). performance measures and JIT Management Accounting.
- Hall R.W. (1983). zero Inventories. Home wood, III:Do Jones Jrwin.
- Hatvany, N. and puck V., (1981). An Integrated Management system: Lessons from the Japanese Experience Academy of Management Review.
- Heiko, L. (1989). Some Relationships between Japanese culture and Just-in-Time the Academy of Management executive.
- Holbrook, w. (1987). Accounting Experiences in a JIT environment. Cost Accosting , Robotics and the new Manufacturing Environment. American Accounting Association Management Accounting section.