Analysis of Lean Production and Growth of Nike Inc.

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Abstract

In recent years, the methodology that has brought about a revolutionary change in the production process of many industries is the lean manufacturing. Lean production is a very rapidly emerging and novel approach employed in the production process of any organization including . It mainly emphasizes on reducing the unnecessary waste of production capital, time and raw materials deployed in the production process while retaining the high quality of production. Since the 1990's, Nike's approach to manage supplier responsibility has changed significantly. This report investigates how Nike's methodology to deal with improving social and environmental conditions in its worldwide supply chain network has developed through co-ordinated administrative management, improved supplier rewards, and systems improvements designed to avoid issues before they emerge.

Keywords - lean production, just-in-time, kaizen, cell production, time-based management, simultaneous engineering.

1. Introduction

A supply chain management system effectively integrates manufacturers, suppliers, retailers, whole sellers and customers to meet the increased variation in products and demands in order to minimize the total cost while maintaining the quality of the product. In strategic management, social performance of corporate sectors is counted more than it was ever before. Social activists and media are relentlessly monitoring the effects of the corporate areas activities on society. Researchers have connected the social execution of the corporate areas to an assortment of areas like improved access to finance[1], the flexibility to retain skilled staffs [2,3], exaggerated recommendations from stock analysts [3] and particularly economical risk management strategy [4]. An efficient social performance strategy is very important to a firm which is promoting its business across the globe. The business paradigm has recently shifted towards business integrations or collaborations and supply chain integration is the prevalent factor in improving the performance.

A great deal of multinational companies like Walmart, Target, Ikea, Appel, Microsoft, HP have adopted social compliance program to uplift the social performance standards in their global supply chains. Since 2008, Nike Inc. has advanced the lean manufacturing technique in its clothing production network. They have provided extensive training in Lean manufacturing to their suppliers and encouraged the suppliers to adopt the new technique and continuously keep the suppliers production lines under lance to verify their production standards. In this review paper, we will show that Nike's lean policy have produced a substantial improvement in factory social performance which have led to 15% point drop in serious labour violation with little impact on health, safety and environment compliance. In the next section, we will discuss the features of Lean production with respect to supply chain management.

2. Key Concepts of Lean Production

Lean is a novel technique to reduce waste in a manufacturing organization without compromising with the quality. But in recent times, it has transformed theentire business processes into a world of

knowledge work and management through the practice of continuous improvement such that it can act appropriately according to market needs and responses.

Lean Production emphasizes mainly on integration rather than individual performance and thereby guarantees quality of production.The key concepts of lean production include

1. Just In Time (JIT) production
2. Time based management
3. Simultaneous engineering
4. Cell production
5. Kaizen

3. Just In Time (JIT) Production

Just-in-time (JIT) manufacturing, commonly known as Just-in-time (JIT) production or the Toyota Production System (TPS) is a workflow methodology that primarily aims to reduce flow times within production systems as well as response times ranging from suppliers and even to customers.

Its origin can be traced back in the late 1960s and 1970s when it was first developed by the Japanese manufacturers and particularly at Toyota. But, the term JIT manufacturing faded away in the 1990s and a new term ***lean manufacturing*** was coined which became popular henceforth as a more recent name for JIT and both the terms are often used synonymously.

After the World War II, the Japanese manufacturers countered several challenges ranging from lack of cash to maintain large inventory production methods, scarcity of land to build large warehouses and abundant scarcity of natural resources. This led to the situation to “lean out” their processes where smaller factories were built which mainly focussed on converting small quantities of raw materials quickly into physical products by removing waste from business processes in order to achieve a streamlined, highly efficient system that produces high-quality and low-cost products according to customer needs.

For instance, a vehicle fabricating organization may wish to get precisely the right number and the sort of tires for a solitary day creation, and the provider will convey them to the right stacking line on the creation line inside a limited time-frame.

Advantages of JIT

Although, Just-in-time evolved as a simple inventory system where surplus resources required for production are not stored but only initiates production only when there arises an actual demand for product or services. The JIT system not only optimizes the utilization of resources but also provides some distinctive competitive advantages.

Launching a pull system: By implementing the JIT methodology, the organization will possess the opportunity to create a pull system and apply it to the existing production process. Thus, only the work in demand will be in progress.

Optimizing stock resources: Optimum stock maintenance diminishes the storage space, thereby saving the lease and insurance costs. Since crude materials stock isn't piled up, so it reduces the chance of dying of crude materials with time. Aside from this, it additionally decreases the time on checking and re-checking of completed items.

Eliminating waste: The pull system ensures the team to deliver only the exact items as requested and this eliminates the various types of wastes from the production process.

Smooth workflow: Since there is no surplus production of any products, therefore the production team can observe every stage of the workflow which can lead to detection and handling of bottlenecks very easily. Hence, the production team can maintain a smooth workflow.

Lower implementation costs: JIT aims at manufacturing products based on the demand. Hence, all the items produced are sold. So, no obsolete items are left over in the inventory and thus, help the organization to easily adapt any new changes related to product specification from the market without incurring any loss.

Simplicity and flexibility: Since the JIT approach demands that the production team should deliver tasks in small badges, therefore, problems to existing issues can be easily resolved which in turn introduces simplicity and flexibility in the work process.

Disadvantages of JIT

In general, companies employing Just-in-time manufacturing technique enjoy the benefits of reduced cycle times, faster response times with respect to market demand, and reduced operating costs although there are some substantial potential risks associated with it, especially for the small size organizations.

Risk of insufficient stock: As minimum stock is maintained in JIT manufacturing, therefore, commitment of any kind of error may lead to scarcity of quantity. Thus, JIT production is sensitive to any kind of error.

Sudden changes in demand quantity: JIT production cannot adapt easily to the sudden increase in the quantity of production in accordance with the demand of the market, since the inventory are maintained at minimum levels.

Dependency in suppliers: Just-in-time works well only when all the parties involved in the entire supply chain works in co-ordination with each other. JIT can fail anytime if customer requirements are not met which can halt the production and thereby, lead to huge losses for the organization.

4. Time Based Management

Time-based Management is a key aspect of Lean Production. It is a general approach that recognizes the importance of time and seeks to reduce the level of wasted time in the production process of a business organization. The concept is more commonly employed in the production process where reduced time eliminates labor and other inventory holding costs, thereby making a company's product more cost-effective. A business process that continually emphasizes on time-based management can build up a substantial advantage over other companies in the long run.

Benefits of Time Based Management

The potential benefits of time-based management of an organization include:

- Quicker customer response times to meet the market changes and customer requirements
- Lower labor costs

- Reduction of production waste and hence, greater efficiency
- Reduced investment costs in inventory
- Smaller and flexible product development cycle
- Ability to switch production quickly between numerous products and accordingly modify the production cycle

For an organization to implement time-based management effectively, it should possess highly skilled professionals, flexible production facilities that can adapt to changes easily and a strong mutual understanding between management and employees.

5. Simultaneous Engineering

Simultaneous Engineering is another significant aspect of Time-based Management methodology.

It is a project management approach that helps firms to develop and launch new products more rapidly. All the parts of the project which are actively involved in producing the finished products in the market are bonded together in such a fashion that all the parts of the system run simultaneously (together, in parallel) rather than executing independently (in series). Item groups involve individuals from all pertinent regions for the new item advancement like plan, improvement, creation, advertising and so on Exceptionally dependable providers are utilized during the time spent new item improvement to such an extent that possible deferrals in the acquisition of crude materials, segments and different administrations can be limited.

Benefits of Simultaneous Engineering

- The new product is launched in the market significantly more rapidly
- The business may be able to charge premium prices for their products, which will in turn give a better profit margin and will also cover up the R&D costs
- There may be a lesser likelihood of a need to modify the product later due to unforeseen problems
- A greater sense of involvement across business functions improves staff commitment towards the project
- Can be a source of competitive advantage for the business organization for launching a reliable new product in the market and to build a good brand loyalty in the market before its competitors

6. Cell Production

Cell production is a significant element of lean manufacturing and refers to a manufacturing framework where the labor force is splitted into independent groups commonly, referred to as cells intended to accomplish a specific manufacturing process or product. Each team or ‘cell’ is responsible to complete a significant part of the finished product. The team members are equipped to perform various job roles assigned to them to eliminate the monotonicity of one person carrying out only a single specific task and thus, support job rotation.

Cell production is a form of team work that helps to ensure worker commitment as each cell is responsible for an entire unit of work. Cells deal with other cells and treat them as customers to take the responsibility for quality in their area.

Benefits of Cell Production

- Regular interaction among the cell members enhances communication thereby evading confusion arising out of misunderstanding or lack of communication

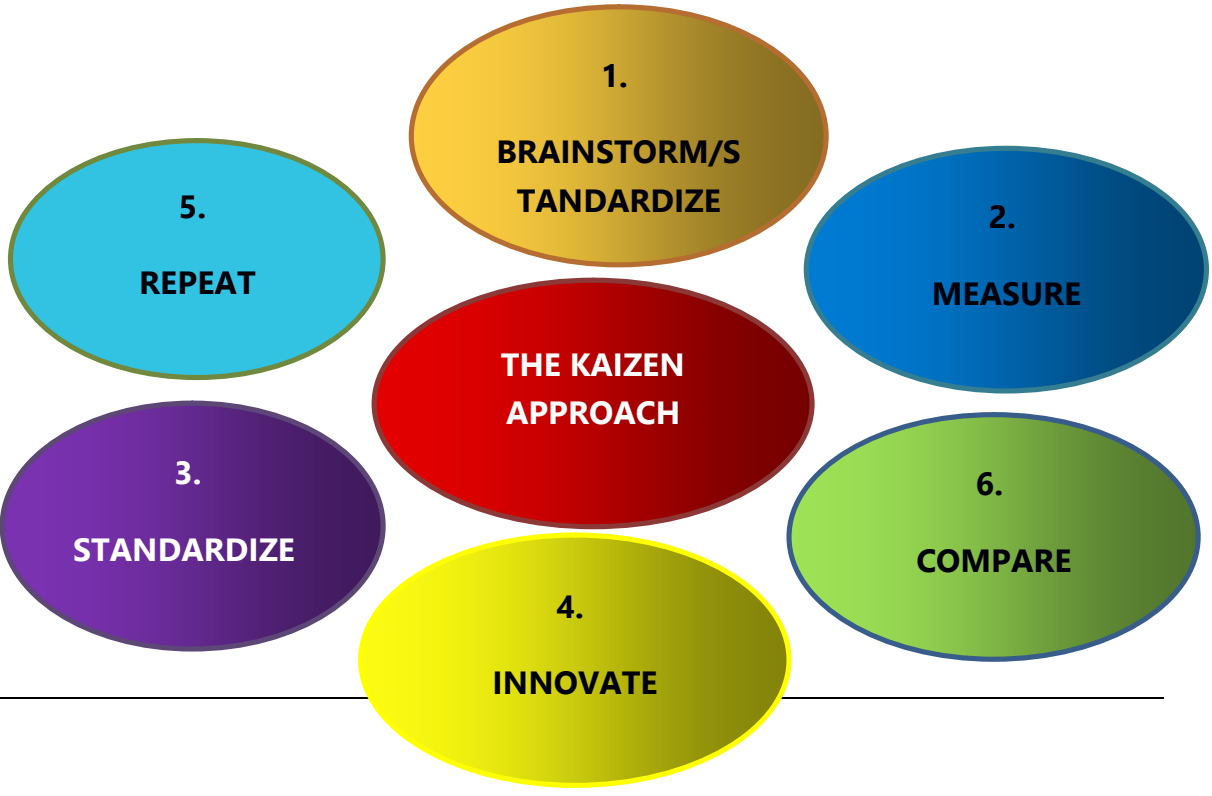
- Workers possess multi-skilled talents and thus become more versatile and equipped to meet the future requirements of a business
- Workers are inspired and motivated which emerge from their commitment towards their work, team work and superior sense of responsibility
- Enhancement of quality as each cell has the responsibility and 'ownership' to maintain the quality in its own area

Drawbacks of Cell Production

- The work culture needs to incorporate trust and interest among employees or laborers can feel they are being pushed for more noteworthy yield with no relaxation time
- Business need to invest to procure new resources for handling and ordering systems required for cell production
- In contrast to traditional flow production, cell production may not affirm an organization to utilize its machinery in an intensive manner
- Some limited scale creation lines may not yield sufficient investment funds to do a switch cell creation advantageous
- Work allocation to cells must be productive such that employees have sufficient work
- Recruitment and training of staff must support this approach to production

7. Kaizen

The word Kaizen basically originates from a Japanese word which means "change for the better". Kaizen (or 'continuous improvement') is an approach to incorporate small incremental changes in a business in order to enhance quality and efficiency in a continuous manner. In lean manufacturing, Kaizen comprises of brainstorming ideas to be implemented in day-to-day activities to continuously improves processes. The target of kaizen is to "go lean" with collecting measures by improving current standardized cycles and undertakings to take out waste and augmentation capability. The way of thinking of Kaizen incorporates building a workplace culture that stimulates dynamic responsibility in suggesting redesigns and using new standards.



Benefits of Kaizen

- **Strengthen teamwork:** Cooperation among team members is fundamental in pulling off a kaizen approach. Taking care of issues all together fortifies bonds among employees and gives them feeling of a new perspective and a sense of belongingness as everybody's thoughts are given priority. Cross-functional collaboration is another significant aspect of kaizen approach. Numerous kaizen groups incorporate individuals from different offices in light of the fact that most cycles stream into each other. Working together with different departments reinforces the bond of the entire organization.
- **Enhanced leadership skills:** All kaizen teams possess a group team leader who has the sole responsibility of the organization, coordination and execution of a kaizen event. A part of the kaizen group pioneer's responsibility is to guarantee that all colleagues are performing their job responsibilities with noticeable progress.
- **Improved efficiency:**The process of eliminating waste from current processes guarantees efficiency among all departments.
- **Implement best practices:** The organization should implement best practices in carrying out a business process which acts as the basis of improvement in a kaizen team and hence are used to train new employees as well as measure the performance of existing employees.
- **Enhanced employee satisfaction:** A regularly underestimated advantage to kaizen is that employee fulfillment can incredibly influence things like profitability, nature of work and degrees of consistency. Thus, priority should be given to esteem employees thoughts for development, particularly if it's their specialized topic, their feeling of fulfillment are worth while.
- **Reduced waste:** Various types of waste reduction is perhaps the biggest challenge of implementing kaizen because of the broad impacts of waste reduction on an organization.

Drawbacks of Kaizen

- **Difficult to adapt to changes:** Implementing kaizen into a current framework implies modification of the entire existing system which most organizations don’t invite with open arms across all degrees of employees.
- **Requirement of additional training:** Adopting the kaizen methodology requires exhaustive training of employees and management in order to successfully accomplish a kaizen event which may interrupt the normal working process while the employees attend the subsequent training process.

Let us discuss Nike’s progress and advancement in the light of Lean production technique’s efficiency.

Nike’s Progress in the aspect of Lean Production

Nike is a world-wide renowned manufacturing organization for athletics apparels. It possesses more than 800 manufacturing units spread all over the south eastern Asia and South America. After confronting numerous challenges in both work environmental conditions and item quality in the late 1990s, Nike began to search for an administration and production involvements for its provider base.

This much held up accomplishment of the footwear business gives the required stimulus to Nike to investigate the lean program to its attire production network. The worldwide attire industry is a significant zone of actualizing and improving social execution of store network the board. It utilizes a huge number of laborers in the creating scene (International Labor Organization2005) and addresses a significant industry for acquiring passage to worldwide creation organizations and setting out open

doors for mechanical updating (Gereffi 1999). As of August 2013, Nike straightforwardly contracted with 449 attire creators across 39 nations, with more than 370,000 representatives.

Nike's Apparel Manufacturing Leadership Forum (MLF), a gathering of vital assembling accomplices with long haul connections to Nike gave the agreement to get preparing and implemen the framework in their own plants. The full preparing educational program was offered beginning in 2009 at the recently opened Nike Apparel Innovation and Training Center (AITC) in Sri Lanka.The preparing focus was arranged almost a clothing plant, so students could be given a hands on training in a lean assembling climate. After consummation of the traning program, learners worked with a Nike administrator to build up a "**proliferation**" methodology for their home industrial facilities to change and execute every component until the change was considered as a steady cycle.

Nike personnel additionally attempted to comprehend of these cycles and attempted to utilize the take time and process duration in the association of creation.

Discussion about Data and Empirical Strategy

Nike assesses manufacturing plant consistence with norms in labor, wellbeing, and ecological execution utilizing intermittent plant reviews.

Nike separates its processing plant consistence program into two theme zones observed through two distinctive manufacturing plant reviews: wellbeing, security and climate (HSE) and work. These reviews score manufacturing plant consistence on a four-point scale: A (4) to D (1).

1) A scores exhibit no genuine infringement of the principles for manufacturing plants.

2) B scores are for the most part consistent, with minor infringement like separated cases of abundance additional time.

3) C injuries implies manufacturing plants may neglect to give fundamental terms of business, utilize youngster work, pay not exactly the legitimate the lowest pay permitted by law, or have genuine wellbeing and security framework disappointments.

4) Nike describes a resistance rating of D to be "basic." A dataset of production line consistence appraisals has been given underneath. These information comprise of production line review results from FY2009 to the primary portion of FY2014. (June to May - The Nike financial year.).

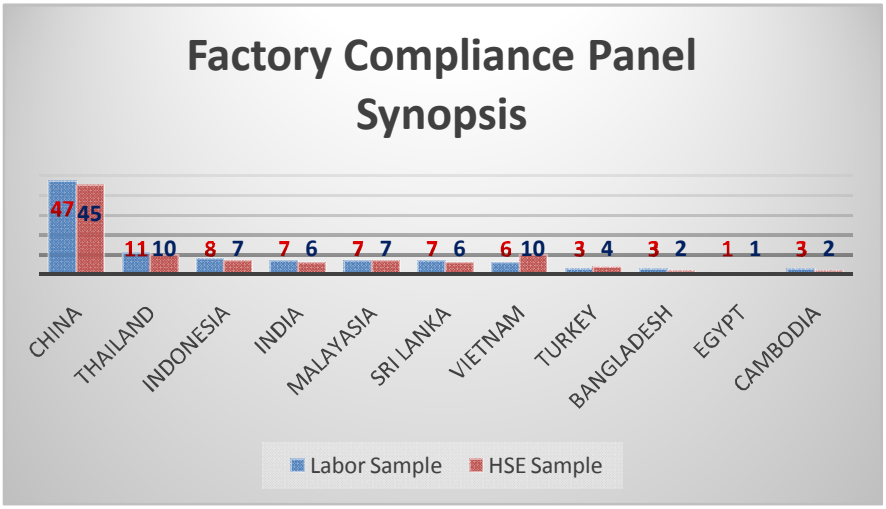


Fig 1: Panel Summary of Factory Compliance

Processing plants that received lean creation methods show preferred work and HSE consistence over non-adopters. In labor reviews, lean-adopters have a mean score of 3.1, contrasted with 2.6 among non-adopters (pval <.00). For HSE, they normal a 2.8 contrasted with a 2.3 among non-adopters (pval <.00).

Fig. 2summarizes the progress of lean adoption in the factory panels. While no processing plant utilized lean toward the start of the example time frame in FY09, about 20% of industrial facilities had actualized lean toward the finish of our example period in FY14.

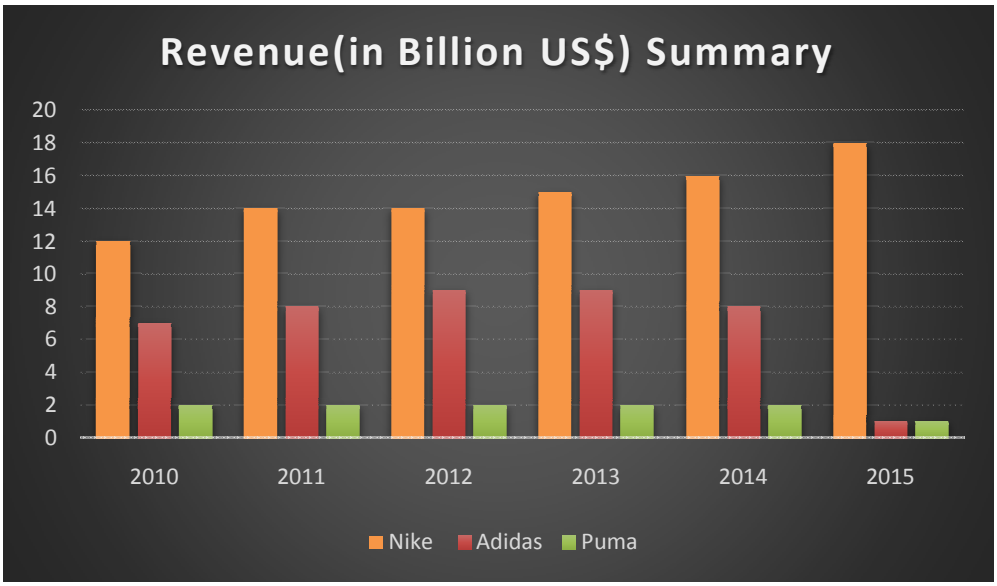


Fig 2: Achievements of Nike

By presenting the Lean creation, Nike has made the accompanying progress:-

1. Achievement of 20% decrease in CO2 in FY11 level to FY15 levels
2. 68 % processing plants increment their creation as far as amount and quality
3. Achievement of zero release of unsafe synthetic compounds for all
4. A decrement of 15% per unit in water utilization in coloring and completing attire materials
5. Accomplishment of a 10% decrease in misuse of completed items
6. 16% commitment of pre-charge pay to various government assistance assets of networks.

Conclusion

Lean creation has assumed a genuinely large part to the development and supportability of the huge association like Nike. However, we ought to likewise perceive the compelling jobs played by the hierarchical heads, who chose to accept the Lean creation as a successful estimation for their association and reorient the whole interaction to change with the Lean.

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