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TOPIC: IMPLEMENTING LEAN MANUFACTURING
SUCCESSSES AND DIFFICULTIES OF VIETNAMESE BUSINESSES

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Abbreviations

	Meanings
APO	Asia Productivity Organization
ERP	Enterprise Resource Planning
MRP	Material Requirements Planning
LSS	Lean Six Sigma
VPC	Vietnam Productivity Center

Abstract

1. The Study's Necessity

Lean Manufacturing (or Lean Production) is an operational strategy oriented toward achieving the shortest possible cycle time by eliminating waste. Lean Manufacturing is increasingly applied in operations in worldwide. According to recently research, it is approximately about 36% of American manufacturers which have already used or have been processing Lean in production¹. However, changes caused by Lean Manufacturing can interrupt production in the case of wrong implementation. In addition, some factors of Lean Manufacturing should not be applied for all firms.

In Vietnam, the concept of Lean Manufacturing seems unfamiliar in firms at that moment. For that reason, information and data about this issue is limited. In other words, this field lacks of concern from researchers and policy drivers. Thus, the trend to develop for Lean Manufacturing in Vietnam has not been studied comprehensively. Hence, our group chooses this issue to study more deeply and to generate some ideas and recommendations about Lean Manufacturing in Vietnam.

2. Literature Review

In the world, there are many researches about Lean Manufacturing. These researches are written by foreign researchers can be divided into 2 main groups:

Group 1: The researches mainly identify basic interpretation and implementation in reality of Lean Manufacturing.

“Defining and Developing Measures of Lean Production” is written by Rachna Shah and Peter T. Ward. This study has subscribed a relatively complete theory of Lean

¹ Mekong Capital (04.06.2004), *Introduction about Lean Manufacturing for Vietnamese firms*, pp.1

Production. At the same time, it generates comments on the practicality of Lean Production for enterprises. However, this study still has limitation since not drawing experiences obtained from the case of Toyota Company.

“The Genealogy of Lean Production”, which is written by Matthias Holweg, provides convincing evidences to prove that Lean Production is not only good for mass production industries, like: automobile, textile, etc., but also suitable for small manufacturing and even for service industry.

Group 2: The researches are mainly focused on the impact of Lean Production on environment, working conditions, etc.

“The effects of lean production on worker job stress” is written by a group of researchers in 2006, Robert Conti, Jannis Angelis, Cary Cooper, Brian Faragher, and Colin Gill. This study emphasizes the aspects of neglectful working conditions in the chain of tool and Lean Production. Especially, it clearly defined an intimate connection between Lean Production and worker job stress.

“Lean Manufacturing and Environment”, which was published by United States Environmental Protection Agency in 2003, had found new implementations of Lean in manufacturing to save up some tasks caused overproduction. These methods can save materials and limit waste to environment; then, generate the optimal solutions for environmental pollution issues caused by production.

In Vietnam, since this is a new field of study, there are a small number of researches and these researches seem not dig the problems out. However, “Introduction about Lean Manufacturing for Vietnamese firms” was written by group of Mekong Capital can evaluated as high practical study. This study goes further in definitions, concepts, frameworks, and application of Lean Manufacturing.

In general, almost the researches identify some basic definitions, comments, and assessments and show the important role that Lean plays in manufacturing operations. From that point of view, it emphasizes the necessity to develop a chain of tools and this method in Vietnam.

3. The Study's Purposes

The study is aimed to clarify some concept and the role of Lean Manufacturing in enterprises. At the same time, it creates an overview Lean Manufacturing's theories and how enterprises apply them in Vietnam situation. In addition, this study focuses on analyzing and drawing some lessons from successful cases of imposing Lean Manufacturing in Vietnam, like: Nike and its suppliers, Toyota Ben Thanh and Techcombank with their Lean's six sigma pilot plans.

In order to achieve these purposes, the study has to answer the following key questions:

- What is Lean Manufacturing? What is Lean Manufacturing's role in the development to optimize enterprises 'profits'?
- What are experiences to develop and optimize Lean Production in the world leader enterprises?
- How is Lean Manufacturing imposed in Vietnamese firms? Do they achieve any success? (If yes, what are they?) Besides, there are many challenges to impose Lean Manufacturing in Vietnam, what are they? And what solutions should be implied to reduce the limitations (disadvantages)?

4. The Study's Objectives and Scopes

The study goes further into general theoretical analysis of Lean Manufacturing and method to imply Lean Manufacturing effectively. At the same time, the study evaluates Vietnamese enterprises' situations; especially, the enterprises have gained some typical

successes. Thereby, it creates some suggested solutions to foster the efficient production process for company.

Scopes: This study analyzes some successful cases of imposing Lean Manufacturing in Vietnam, like: Nike and its suppliers, Toyota Ben Thanh and Techcombank based on data from 1990 to 2011.

5. The Study's Method

Using the secondary data, the study uses analytical generalization method, professional method, and mathematical modeling to quantify the role of Lean Manufacturing in the economy and to position implementation's capabilities of Vietnamese enterprises in comparison with others.

6. The Study Expected Contribution

- Clarify some theoretical issues about Lean Manufacturing and its role in enterprises' operations.
- Quantify the role of optimize production in some typical successful enterprises with the latest data.
- Provide scientific reasons to evaluate the role of Lean Manufacturing in Vietnamese Economy.
- Generate the multinational companies' experience to develop Lean; then, figure out and promote the appropriate development of this method through implying an assessment framework.

7. The Study's Structure

The content is divided into 4 chapters:

Chapter 1: Basic theories of Lean Manufacturing

Chapter 1 provides the basic theory of Lean Production, the factors affected Lean's application process, and Lean's role in company's operations.

Chapter 2: The facts of implementing Lean Manufacturing in Businesses in Vietnam and several typical successful cases

Chapter 2 describes the situation of Lean's application and gives some typical successes in Vietnamese companies; then, draw some general lessons.

Chapter 3: Solutions for implementing Lean Manufacturing effectively in Business in Vietnam

Based on analysis of Lean's application in Vietnam, Chapter 3 propose some solutions for Vietnamese enterprises to apply Lean effectively and efficiently.

Chapter 4: Conclusions and recommendations

Chapter 4 summarizes the important content in this study and identifies some shortcomings to improve in the future study.

CHAPTER 1: BASIS THEORIES OF LEAN MANUFACTURING

1.1. What is Lean Manufacturing?

1.1.1. Objectives of Lean Manufacturing

Lean Manufacturing, also called Lean Production, is a set of tools and methodologies that aims for the continuous elimination of all waste in the production process. The main benefits of this are lower production costs, increased output, and shorter production lead times. More specifically, some of the goals include:

- 1. Defects and wastage:** Reduce defects and unnecessary physical wastage, including excess use of raw material inputs, preventable defects, costs associated with reprocessing defective items, and unnecessary product characteristics which are not required by customers.
- 2. Cycle Times:** Reduce manufacturing lead times and production cycle times by reducing waiting times between processing stages, as well as process preparation times and product/model conversion times.
- 3. Inventory Levels:** Minimize inventory levels at all stages of production, particularly works-in-progress between production stages. Lower inventories also mean lower working capital requirements.
- 4. Labor Productivity:** Improve labor productivity, both by reducing the idle time of workers and ensuring that when workers are working, they are using their effort as productively as possible (including not doing unnecessary tasks or unnecessary motions).

5. Utilization of Equipment and Space: Use equipment and manufacturing space more efficiently by eliminating bottlenecks and maximizing the rate of production through existing equipment, while minimizing machine downtime.

6. Flexibility: Have the ability to produce a more flexible range of products with minimum changeover costs and changeover time.

7. Output: Insofar as reduced cycle times, increased labor productivity and elimination of bottlenecks and machine downtime can be achieved, companies can generally significantly increased output from their existing facilities.

Most of these benefits lead to lower unit production costs – for example, more effective use of equipment and space leads to lower depreciation costs per unit produced, more effective use of labor results in lower labor costs per unit produced and lower defects lead to lower cost of goods sold.

In a 2004 survey by Industry Week Magazine, U.S. companies implementing lean manufacturing reported a median savings of 7% of Cost of Goods Sold (COGS) as a result of implementing lean². We believe that the savings may actually be higher for companies in Vietnam considering the higher levels of waste which they typically have compared to U.S. based manufacturers.

Another way of looking at Lean Manufacturing is that it aims to achieve the same output with less input – less times, less spaces, less human efforts, less machineries, less materials, and less costs.

² George Taninecz, Jan 4th 2004. *Faster but not better*. Available at:
<http://www.industryweek.com/CurrentArticles/asp/articles.asp?ArticleID=1589>

1.1.2. History of Lean Manufacturing

Many of the concepts in Lean Manufacturing originate from the Toyota Production System (TPS) and have been implemented gradually throughout Toyota's operations beginning in the 1950's. By the 1980's Toyota had increasingly become known for the effectiveness with which it had implemented Just-In-Time (JIT)³ manufacturing systems⁵. Today, Toyota is often considered one of the most efficient manufacturing companies in the world and the company that sets the standard for best practices in Lean Manufacturing. The term "Lean Manufacturing" or "Lean Production" first appeared in the 1990 in the book named "*The Machine that Changed the World*"⁴.

Lean Manufacturing has increasingly been applied by leading manufacturing companies throughout the world, lead by the major automobile manufactures and their equipment suppliers. Lean Manufacturing is becoming an increasingly important topic for manufacturing companies in developed countries as they try to find ways to compete more effectively against competition from Asia.

1.1.3. Key Implications of Lean Manufacturing

	Traditional Batch Manufacturing	Lean Manufacturing
Orientation	Supply Driven	Customer Driven
Planning	Orders are pushed through factory based on production plan/ forecast.	Orders are pulled through factory based on customer/ downstream demand.

³ http://www.factorylogic.com/glossary_11.asp

⁴ James Womack, Daniel Jones and Daniel Roos, 1992. *The Machine that Changed the World*. Simon & Schuster.

Batch Size	Large	Small
Quality Inspection	Checking of samples by QC inspectors	In-line inspection by workers
Inventory	Buffer or work-in-progress between each production stage.	Little or no work-in-progress between each production stage.

1.2. Lean Manufacturing Concepts

1.2.1. Value-added Activities and Wastes

In Lean Manufacturing, the value of a product is defined solely based on what the customers actually requires and is willing to pay for. Production operations can be grouped into following 3 types of activities:

1. Value-added activities: are activities which transform the materials into the exact products that customer requires.

2. Non value-added activities: are activities which are not required for transforming the materials into the product that customer wants. Anything which is non value-added may be defined as waste. Anything that adds unnecessary time, effort or cost is considered non value-added. Another way of looking at waste is that it is any material or activity for which the customer is not willing to pay.

3. Necessary non value-added activities: are activities that do not add value from the perspective of the customer but are necessary to produce the product unless the existing supply or production process is radically changed. This kind of waste may be eliminated in the long run but is unlikely to be eliminated in the near term. For

example, high levels of inventory may be required as buffer stock, although it could be gradually reduced as production become more stable.

According to a research at the Lean Enterprise Research Center (LERC) in United Kingdom, for a typical manufacturing company the ratio of activities should be broken down as follows:

Value-added activities	5%
Non value-added activities	60%
Necessary non value-added activities	35%
<hr/>	
Total activities	100%

This implies that up to 60% of the activities at a typical manufacturing company could potentially be eliminated⁵.

1.2.2. Main Kinds of Waste

Originally 7 main kinds of waste were identified as part of the Toyota Production System. However, this list has been modified and expanded by various practitioners of Lean Manufacturing and generally includes the following:

1. Over-production: Over-production is unnecessarily producing more than demanded or producing it too early before it is needed. This increases the risk of obsolescence, increases the risk of producing the wrong thing and increases the possibility of having to sell those items at a discount or discard them as scrap.

⁵ Peter Hines and David Taylor, Jan. 2000. *Going to Lean*. Lean Enterprise Research Center, pp.10

2. Defects: In addition to physical defects which directly add to the costs of goods sold, this may include errors in paperwork, provision of incorrect information about the product, late delivery, production to incorrect specifications, use of too much raw materials or generation of unnecessary scrap.

3. Inventory: Inventory waste means having unnecessarily high levels of raw materials, works-in-progress and finished products. Extra inventory leads to higher inventory financing costs, higher storage costs and higher defect rates.

4. Transportation: Transportation includes any movement of materials that does not add any value to the product, such as moving materials between workstations. The idea is that transportation of materials between producing stages should aim for the ideal that the output of one process is immediately used as the input for the next process. Transportation between processing stages results in prolonging production cycle times, the inefficient use of labor and space and can also be a source of minor production stoppages.

5. Waiting: Waiting is idle time for workers or machines due to bottlenecks or inefficient production flow on the factory floor. Waiting also includes small delays between processing of units. Waiting results in significant cost insofar as it increases labor costs and depreciation costs per unit of output.

6. Motion: Motion includes any unnecessary physical motions or walking by workers which diverts them from actual processing work. For example, this might include walking around the factory floor to look for a tool, or even unnecessary or difficult physical movements, due to poorly designed ergonomics, which slow down the workers.

7. Correction: Correction, or reprocessing, is when something has to be re-done because it was not done correctly the first time. This not only results in inefficient use of labor and equipment but the act of reprocessing often causes disruptions to the smooth flow of production and therefore generates bottlenecks and stoppages. Also, issues associated with reworking typically consume a significant amount of management time and therefore add to factory overhead costs.

8. Over-processing: Over-processing is unintentionally doing more processing work than the customer requires in terms of product quality or features – such as polishing or applying finishing on some areas of a product that will not be seen by customer.

9. Knowledge Disconnection: This is when information or knowledge is not available where or when it is needed. This might include information on correct procedures, specifications, ways to solve problems, etc... Lack of correct information often leads to defects and bottlenecks. For example, unavailability of a mixing formula may potentially suspend the entire process or create defective items due to time-consuming trial-and-error tests.

1.2.3. Pull Production

A core concept of Lean Manufacturing is Pull Production in which the flow on the factory is driven by demand from downstream pulling production upstream as opposed traditional batch-based production in which production is pushed from upstream to downstream base on a production schedule. Pull production is the same as Just-In-Time (JIT) which means that raw materials or work-in-progress are delivered with the exact amount and “just in time” for when the downstream workstation needs it.

There are different models for implementing pull based production, include the following:

1. Replenishment Pull System: In a replenishment pull system, the company intentionally maintains inventories of each type of finished product and only when the inventory of a certain finished product falls below the certain level a replenishment order is issued to produce more of the product. Replenishment pull is more common when a company has a large number of small volume customers who order standardized products. In replenishment pull system, production schedules are more predictable so low inventories of raw materials are required.

2. Sequential Pull System: In a sequential pull system, orders are placed on the factory floor only when demanded by an outside customer. All products are made on a made-to-order basis. Sequential pull is more common when a company has a small number of large volume customers who order customized products. Although company using this system should have lower inventories of finished products, they will typically require larger inventories of raw materials or semi-finished materials due to less predictability in production schedule (due to difficulty predicting exactly what customer orders will be placed and when).

3. Mixed Pull System: In a mixed pull system, certain elements of replenishment and sequential pull systems are used in conjunction with each other.

An example of this would be a company that maintains a managed level of inventory of certain semi-finished items but only produces finished products when ordered by the customer. In such a case, the company applies a replenishment pull system for producing semi-finished items and applies a sequential pull process for the remainder of production process. In the Toyota Production Process, production is triggered to restock semi-finished items so that whenever an item is needed, it is available⁶.

⁶ www.aug.edu/~sbajmg/quan6610/Lean%20Concepts/leanWP1.pdf

1.2.4. Continuous Improvement/ Kaizen

A company can never be perfectly efficient. Lean Manufacturing requires a commitment to continuous improvement, and preferably a systematic process for ensuring continuous improvement, whereby the company constantly searches for non value-added activities and ways to eliminate those.

Kaizen is a Japanese term for “continuous improvement”, with an emphasis on small incremental improvements. A main theme of Kaizen is to create a culture of continuous improvement, largely by assigning responsibility to workers, and encouraging them, to identify opportunities for improvement.

Two common ways to encourage workers involvement in the continuous improvement process are:

1. Kaizen Circles: One way of increasing the level of workers involvement is to implement Kaizen Circles in which groups of 6-8 workers are formed to generate ideas for solving particular problems. Active involvement/ support by managers is critical to the success of Kaizen Circles.

2. Suggestion Programs: Another way of increasing worker involvement is having an active suggestion program where people are strongly encouraged to make suggestions and rewarded for suggestions that are successfully implemented.

1.2.5. The 5S's and Visual Management

5S is a Japanese philosophy that focuses on the effective workplace organization and standardized work procedures. 5S simplified the work environment, reduced waste and non value-added activity while improving quality efficiency and safety.



Figure 1: The 5S's Process

5S's includes:

Japanese	English	Meaning
1. Seiri	Sort	Sort what is needed and what is not needed so that the thing that are frequently needed are available and as easy to find as possible
2. Seiton	Straighten or Set in order	Arrange essential things in order for easy to access. The objective is to minimize the amount of motion required in order for workers to do their jobs.
3. Seiso	Shine	Keep machines and work areas clean so as to eliminate problems associated with un-

		cleanliness.
4. Seiketsu	Standardize	Make the first 3S's a routine practice by implementing clear procedures for sorting, straightening and shining
5. Shisuke	Sustain	Promote, communicate and train in the 5S's to ensure that it is part of the company's corporate culture.

People said that: "A picture says 1000 words". Indeed, 1000 words are unlikely to describe a picture. In business, there are many issues that language cannot interpret the matter, but an image can help the recipient understand the message immediately. Visual management is using colors, images and sounds into the production management. Visual management systems enable factory workers to be well informed about production procedures, status and other important information for them to do their jobs as effectively as possible. Large visual displays are generally much more effective means of communication for workers on the factory floor than written reports and guidelines and therefore should be used as much as possible. When it comes to improving compliance with a process, visual presentation helps the team better understand a complicated process including the correct sequence of events, the correct way to perform each action, internal and external relationships between actions, and other factors.

1.3. Reconciling Lean with other systems

1.3.1. Toyota Production System

Although Lean Manufacturing originated with the Toyota Production System (TPS), Lean manufacturing has been adopted by many companies and has therefore become broader than that TPS encompasses. TPS can be seen as the way one particular company has implemented Lean in a very pure form. In TPS, several key themes are emphasized:

1. Standard Work: All production processes are highly specified in term of work content, sequence of events, timing and outcome. The objective is to eliminate any variation in the way that workers perform their responsibilities.

2. Direct Handoffs: Every customer/supplier connection must be direct, and there always must be an unambiguous yes-or-no way to communicate production requests between suppliers and customers. This ensures maximum accountability by suppliers and ensures optimal communication flow.

3. Production Flow: The pathway for every product and service must be simple and direct, with a predetermined flow. This means that goods do not flow to the next available person or machine but to a specific person or machine and that this person or machine is as close as possible to its supplier.

4. Worker empowerment for process improvement: All improvements must be made in accordance with the scientific method, under the supervision of an expert, but should originate at the lowest possible level in the organization. Toyota encourages workers to propose improvements to the production process which can be implemented on a trial basis, but any changes to the production process must be defined in detail in accordance with Toyota's standards for Standard Work, as described above.

1.3.2. Lean Six Sigma

Six Sigma is a systematic methodology for breakthrough improvement of business processes by identifying the causes of variation in the production process which lead to defects and then eliminating that variation to minimize defects. Since a key objective of Lean Manufacturing is also to eliminate defects, statistical and problem-solving tools of Six Sigma can be used in the implementation of Lean Manufacturing. Often they are implemented concurrently in what is referred to as “Lean Six Sigma”.

1.3.3. Lean and ERP

Enterprise Resource Planning (ERP) has its roots in Material Requirements Planning (MRP) systems for which production is typically scheduled based on a push-based production plan. The schedules are updated based on information on production status which is fed from the factory floor back into the MRP system. A frequent problem that emerges with MRP systems is that the data from the factory floor on production status and inventory levels may be inaccurate or not entered on a timely basis, causing the MRP system’s production plan to use some incorrect assumptions which cause bottlenecks and/or cause the MRP system to intentionally produce more buffer inventory as a precaution. Most ERP packages are designed for push-based, centrally-planned production.

It should also be noted that ERP systems typically include a number of modules that don’t specifically relate to production planning – such as accounting, financial analysis, human resource management, sales management, etc. These can often be very beneficial for the company and have no direct impact on the company’s ability to implement lean manufacturing.

1.3.4. Lean and ISO9001:2000

ISO9001:2000 is a quality management system which aims to ensure that the company has basic systems in place to consistently meet the customer's quality requirements. Relative to ISO9001:2000, Lean Manufacturing may be seen as an efficiency management system which aims to reduce all waste and inefficiency from the production process. Although these goals are overlapping in some ways, particularly insofar as they both should result in minimizing the level of defective products delivered to customers, there are substantial differences. For example, a company could have 100% conformity with ISO9001:2000 but still have very high levels of waste and inefficiency. An important distinction is that ISO9001:2000 requires that the company's processes meet certain minimum criteria, whereas Lean aims for continuous improvement in the company's processes, and provides a set of methodologies to achieve that. In general, it is considered that ISO9001 provides a good foundation for Lean and that the two are complementary to each other.

1.4. Benefits from Lean Manufacturing

Lean is most widely used in industries that are assembly-oriented or have a high amount of repetitive human processes. These are typically industries for which productivity is highly influenced by the efficiency and attention to detail of the people who are working manually with tools or operating equipment. For these kinds of companies, improved systems can eliminate significant levels of waste or inefficiency. Examples of this include wood-processing, garment manufacturing, automobile assembly, electronics assembly and equipment manufacturing.

Since Lean Manufacturing eliminates many of the problems associated with poor production scheduling and line balancing, Lean Manufacturing is particularly appropriate for companies that do not have ERP systems in place or do not have strong

material requirements planning (MRP), production scheduling or production allocation systems in place. This is particularly significant in Vietnam where we believe that many private Vietnamese manufacturing companies are operating significantly below their potential capacity, or experiencing a high level of late-deliveries, due to problems with their current production scheduling and production management systems.

Lean Manufacturing is also appropriate in industries for which it is a strategic priority to shorten the production cycle time to the absolute minimum as a source of competitive advantage for the company.

Recently, some companies in Vietnam have actively conducted training and implemented lean methods to eliminate process inefficiencies. This resulted in an improvement to their production and service lead times. For example, Toyota Bến Thành, a service center of Toyota in Vietnam, has implemented lean methods to significantly reduce the process time for its automobile maintenance service from 240 minutes to 45-50 minutes per car, and as a result, increased the total number of cars processed at each service center from 4-6 cars up to 16 cars per day. Toyota Ben Thanh achieved significant reductions in the process lead time by successfully eliminating unnecessary waiting time, inefficiencies of physical motions and process flow⁷.

⁷ Hoang Ly, May 27th 2004. *Can Improve Productivity without Investment?* The Saigon Times.

CHAPTER 2: THE FACTS OF IMPLEMENTING LEAN MANUFACTURING IN BUSINESSES IN VIETNAM AND SEVERAL TYPICAL SUCCESSFUL CASES

2.1. The Overview of Lean Implementing in Vietnamese Businesses

In the recent years, the corporations and the departments start paying more attention to how to apply Lean successfully in manufacturing and providing products and services. The production process exposed many weaknesses, such as: the defective goods, considerate material surplus, the disruption and lack of enthusiasm of workers in coordinating production are the typical difficulties many Viet Nam companies are facing. Those problems cause the waste of the corporations, to be more specific: the activities do not add any values to the products and services which are not attractive to customers at all. The solution here is that using LEAN application to minimize the waste in the production and supply, thus utilizing the resources thoroughly. However, to achieve the expected results in this process is obviously not easy.

Lean Manufacturing has been already conducted in many countries over the world and helped many firms make the success. Nonetheless, in Viet Nam the application of Lean in manufacturing is still not popular among the enterprises and there is also not significant achievement. This is due in part to the shortage of the consultants supporting the companies in the Lean application, while it is quite a new concept in Viet Nam which will take time to study, plan on track, and get the long-term result.

Because of the fairly new process to Viet Nam, there are also some misunderstandings of Lean production from many firms. Some corporations misunderstood Lean production as downsize, some others just think that Lean is the available equipment system to apply in the enterprises. These mistakes in the Lean knowledge lead to the

misguided application or hesitation in following Lean. In addition, the businesses, especially some state owned enterprises, get into the habit of the disorganized, involuntary and slow working style being hard to modify; and then hesitating about the changes, risks and long-term commitment.

In spite of the limited accomplishment, some Vietnamese firms had the right direction and gain the remarkable achievement. Some manufacturing in Viet Nam, namely: Nike, Adidas, Toyota... are the exemplification in Lean deployment successfully. Besides, some have already started deploying the Lean system, and hopefully getting the promising results if they continue implementing as the schedule and having the correct improvements continuously.

With the positive changes of the companies as providing the staffs with Lean training, piloting Lean in co-operation with the experienced organizations and consultants... the Lean model in the next few years is expected to expand and gain the better achievements for Vietnamese firms.

2.2. The Initial Success of Lean Application in Vietnamese Businesses

In fact, there are not so much successes in the Lean application of Vietnamese corporations. The typical Vietnamese enterprises conducting Lean quite successfully are: Minh Phú seafood, Thiên Long Group, Bitis Footwear, etc. However, the Vietnamese businesses still did not achieve the results as the expectation after the period of Lean deployment. Almost the considerable successes sadly belong to the foreign manufacturing companies in Vietnam as Nike, Adidas, Toyota⁸, etc. In the following part, we will find out more about the typical successful firms in Lean application in the recent few years.

⁸ Pham Thanh Dieu, 2008. *Lean and the Stories in Vietnam*. The Saigon Times

2.2.1. Nike and the Success in the Supply Chain Management

One of the companies which apply Lean most successfully in Viet Nam is Nike with the suppliers of Nike in Viet Nam. According to the report “The Top 25 Supply Chain” of AMR Research in 2005, Nike held the 21st position about the effective supply chain management.

Every year, Viet Nam produces approximately 158 million Nike and Converse shoes under brand of Nike, Inc. to export around the world, only the value of the exported footwear to America is over \$2 billion. In fact, Viet Nam became the biggest footwear-manufacturing base of Nike with 37% products manufactured under the contract of Nike in 2010, beyond China with 34% products of Nike. Nike did not invest in building the plants directly, instead hiring the available factories to outsource their own products. These days, over 40 plants through Viet Nam are producing and processing the Nike goods⁹. This is considered as the strategy in order to reduce the production cost as well as utilize the cheap labor force.

On the other hand, Nike identified the successful supply chain management as the competitive advantage of the firms. Having focused on building the supply chain as the advantage, Nike desired to cut down the duration from receiving the orders to delivering the final products to the retails. So far, however, little was achieved at first. When starting the changes of the supply chain in 2001, Nike met the failure to predict the customer demand leading to the overproduction and must solve the inventory at the adverse price which affected directly to the profit. Also in 2001; the financial statements of Nike gave the lower profit than expectation. Applying the program which predicts I2 Technology demand to reduce the overproduction and delays in the

⁹ Finance Magazine, 2011. Vietnam – The Best Choice of Nike. [online]. Available at: <http://www.tapchitaichinh.vn/Qu%E1%BA%A3ntr%E1%BB%8Bn%E1%BB%99idung/ViewArticleDetail/tabid/56/Key/ViewArticleContent/ArticleId/6528/Default.aspx>

production with the order management system of SAP supplier did not synchronize the information resulting in the orders sent to the Asian factories.

After the failure in identifying the customers' needs, Nike invested US\$500 in reconstructing the supply chain with the new information system. The result of this investment led the design and production faster, and the profit increased about 42.9% in 2003 in comparison with the average 39.9% during five last years. The inventories decreased significantly by cutting down the rate of production without the certain confirmation of purchase from the retailers (pre-building), specifically from 30% to 3%. Meanwhile, Nike also shortened the time from receiving the orders to delivering the products to consumers (global product lead time), down to 6 months than 9 months before¹⁰.

In addition to the considerable and long-term investment, Nike put great efforts into building the strong collaboration between the suppliers, the producers, and the retail distributors; to make the management of hundreds of manufacturing and distribution base all over Vietnam in particular and thousands of others worldwide in general easier. Particularly, Nike chose Vietnam to establish NOS (Nike Operation System). In here, the Lean experts of Nike organized the training in Lean and made the improvements continuously for their supplier as well as the units of Nike, simultaneously consulting on the Lean implementation.

Furthermore, Nike built the program "Business Continuity" to ensure the strong management of all links in the supply chains and improve constantly, synchronized throughout the whole process from production to delivery.

¹⁰ Retail World News, 2011. Supply Chain Management: Lessons from Nike. [online]. Available at: <http://thegioibanle.vn/news/chuoi-quan-tri-cung-ung-nhung-bai-hoc-tu-nike>

When it comes to the supply chain management of Nike, the returned goods management is the highlight in their strategy. This is the noticeable issue, especially when the topic “corporate social responsibility” is particularly given much attention in the recent years. By recalling the used shoes in order to recycle and produce the runway to the community, Nike ignored the costs in processing the inventories, returned, and used goods which are usually considered as the sort of waste to build the brand image.

The Lean Approach and Development of Nike

Nike already considered the effective supply chain management as one of its competitive advantage. One of Nike’s strategies while applying Lean in production and distribution was the standardized work, and the combination of the Pull/ Kanban system and the information system which supports the supply chain in identifying the customers’ demand; therefore planning the proper production. Nike also used the methods of Lean measurement to shorten the duration from receiving the orders to delivering the goods to consumers.

The Lessons from the Success of Nike

- Invest considerably for long-term commitment: this is one of the essential prerequisite of Nike’s success in particular and the firms following Lean in general. There is the significant need of investment in both time and other resources to help those firms gain success.
- Draw the lessons from the initial failure: Nike encountered the failure from the beginning. Despite that, more importantly Nike drew the lessons from this failure and then investing more thoroughly and carefully.

- NOS - Nike Operation System: The transmission of Lean thinking as the corporate culture is required to maintain the sustained success of the enterprises in the constant improvements.
- Invest on building the supportive information system for the supply chain: One supportive information system will be useful to synchronize all links in the supply chains and unify the general activities for the whole chain.
- Identify the demand of customers to plan the production: Pull production is a kind of strategy to cut down overproduction, basing the customers' needs to plan the actions will obviously reduce the initial costs and later waste.
- Build the program "Business Continuity": This program will also help Nike manage and synchronize the suppliers of Nike when this number in Viet Nam and worldwide reached thousands.

Considering the efficient supply chain management as the competitive advantage is the strategy being worthy of learning from Nike to the firms, especially manufacturing.

2.2.2. Bến Thành Toyota

Another typical case about applying the Lean model successfully is Bến Thành Toyota, the biggest southern dealer of Toyota Motor Vietnam. It is one of the leading maintenance and service center of Toyota in Vietnam which provides various services with the facilities, the professional qualifications and enthusiasm being rapidly enhanced to meet the higher requirements of customers.

Bến Thành Toyota, as well as the other dealers of Toyota Motor Vietnam, make the business on the new-assembled domestic cars, used Toyota ones, genuine parts and accessories, and provide the maintenance & repair services for the cars of 5-30 seats. The difference of Bến Thành Toyota is the services saving time for customers, such as:

Express Maintenance in 60 minutes, 4hours Scratch Repair Service, Express Body and Paint Service in about 8 hours¹¹.

Having those accomplishments, Bến Thành Toyota applied Lean with the philosophy “Customers First” and always satisfies all the wants and requirements of consumers. Thanks to Lean implementation, Bến Thành Toyota shortened about over $\frac{3}{4}$ the duration of periodic maintenance per car, from 240 minutes down to approximately 50 minutes. At first, Bến Thành Toyota overcame the dead period of time accounting over $\frac{1}{4}$ the duration of car maintenance, mostly as the staffs must wait for each other in delivering and receiving the parts between the steps of the process. Nevertheless, there is still about a half of maintenance time need to be speeded up as the request of customers. To reduce this amount of excess time, Bến Thành Toyota reexamined the arrangement for the positions of workers in the operation to support each other more effectively, less time for movements; reorganized the devices in the appropriate order to optimize the time in choosing; provide more the specialized equipments and trains workers in the proficient use of those devices¹², etc.

It can be seen from the realistic story of Bến Thành Toyota in Lean application that the logical organization, ground planning; arrangement for the machinery, plants, labors; and reducing the unnecessary stages in the production line is much more important than equipping with the modern technological devices. In case of Bến Thành Toyota, the invested capital for the equipment is just about \$10,000; yet still attracting the satisfaction of consumers, avoiding wastes, and gaining the high economic benefits only by the logical arrangement of operational activities in Lean thinking. This is a

¹¹ Toyota Ben Thanh Website, n.d. *About Us*. [online]. Available at: <http://toyotabenthanh.com.vn/About.aspx>

¹² Pham Thanh Dieu, 2008. *Lean and the Stories in Vietnam*. The Saigon Times.

lesson for the Viet Nam plants, manufacturing base in efforts to upgrade the production system in both the quality and the productivity.

Toyota's Approach in Lean Deployment:

From the 1940s, Toyota had its own orientation to cost-saving, increase of productivity & quality with the Toyota Production System (TPS) which later was the base of Lean development. Inheriting the “culture of working” from the enterprises - Bến Thành Toyota, the biggest Southern dealer of Toyota Motor Vietnam applied the tools of Lean reasonably to decrease the maintenance time and accelerate the working process of center.

Bến Thành Toyota identified the unnecessary activities and stages, decrease the dead time between the steps which the workers wait for each other (measurement based on Lead Time – Down Time), thus reducing about ¼ the maintenance time.

Then, the instruments and the position of the maintenance workers were reorganized in an appropriate way to speed the activities; save up the time of movement, and the staffs in the process can help others. The reasonably standardized working process, modern equipment, and training of workers help Bến Thành Toyota cut ½ maintenance time further which meet the customers' requirements.

Lessons from the Success of Bến Thành Toyota

- The philosophy “Customers First”: Towards to the customers' needs is the most competitive and permanent strategy for the business, also suitable for the innovative Lean system.
- Arrange the position of workers appropriate in the operational process: Rearrangement the staffs' position in a suitable way is one of the methods

helping decreasing the unnecessary activities & movements most simply which can be conducted in all small and medium manufacturing bases.

- Rearrange the devices along each appropriate action: Similarly with arrangement of the workers' position, the devices for each step need also be the right position with the process, avoiding the redundant movements.
- Equip more the specialized devices: Provide more the necessary modern equipments stimulate the productivity and quality of final products.

The logical organization, ground planning, arrangement of staffs & instruments is the easiest way to gain the achievement while investing in equipment not so much. This is the solution which the enterprises and small & medium manufacturing bases can learn.

2.2.3. Techcombank and the Pilot Project “Lean Six Sigma” in Collaboration with the Asian Productivity Organization (APO)

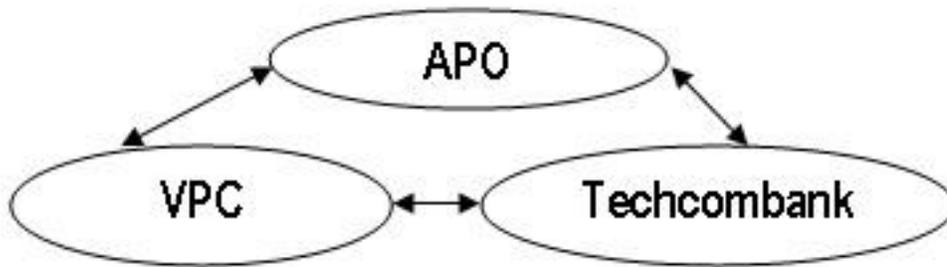
In fact, Lean is the concept which is applied in not only manufacture but also all types of corporations. In recent few years, some companies applied Lean in their activities. The typical case here is the Vietnam Technological and Commercial Joint-stock Bank – Techcombank with the successful pilot model Lean Six Sigma in collaboration with Asian Productivity Organization.

In 2009, the Asian Productivity Organization (APO) approved the pilot project Lean Six Sigma (LSS) in the Vietnam Technological and Commercial Joint-stock Bank (Techcombank); in order to promote Lean 6 Sigma in increasing the productivity & quality of organizations and corporations. The project started in Techcombank from January 2010, and came to an end successfully on March 2011.

According to the information of Vietnam Productivity Center (VPC), during a pilot year of APO, Techcombank applied LSS to cut down the wastes, rise up the

productivity, reduce the defective goods, and most importantly increase the customers' satisfaction.

The project was deployed with the participation of 3 partners: Asian Productivity Organization (APO), Vietnam Productivity Center (VPC), and the Technological and Commercial Joint-stock Bank (Techcombank).



Techcombank's core value is: "Customer First" and "Innovation" being suitable with the philosophy of LSS. In the difficult time of the world as well as Vietnam economy, especially the services sector, Techcombank needs accelerate the innovative process of the system to raise the effectiveness of activities and the quality of customer service up.

The pilot projects chosen to apply LSS in changing the process:

- **The 1st project:** Improve the ATM management & operational process
- **The 2nd project:** Improve the comparing-transactions process through ATM
- **The 3rd project:** Improve the release process and amendment of imported LC
- **The 4th project:** Reduce the processing time to the record of exported LC services
- **The 5th project:** Shorten the processing time of customers' complaints at Call Center and standardize the grievance procedure of consumers over Techcombank

About APO, the LSS experts provided the techniques guidance, Mr. Kabir carried on the guidance for the group of project in the method:



The project team deployed in the method: DMAIC (Define – Measure – Analyze – Improve - Control)

- **Define:** The groups redefine the issues basing on the context of project, analyze its benefits, and simultaneously indicate the schedule, scope & team list of the project.
- **Measure:** From the defined issue, the groups focus on analyzing the factors impacting to the objectives of project and start measuring, collecting the data to clarify the issues.
- **Analyze:** The goal is using the analytical and statistical tools to find the root causes of the problem.
- **Improve:** At this stage, the groups provide the solutions for the root causes of the issues to remove or limit these reasons.
- **Control:** The groups conduct the solutions on a pilot scale, measure again and make procedures to maintain the results of project in a long and stable way.

Overcome many difficulties after 14 months, the pilot project gained the great success and promised the positive results for long-term.

- **The 1st project:** Reduce 3 steps in the process to fund ATM; increase the operation time of machine from 95-97%; save up 0.1 FTE and 111,286,666 VND/year; increase the customers' satisfaction

- **The 2nd project:** The average time of comparing-data stage decreased from 12 to 8 minutes (approximately 25%); the off-us faults went down 47%; the fault-identification time in the on-us system reduced from 18 days to just 5 days; and minimized the considerable risk of the bank in finance.
- **The 3rd project:** Reduce 7 steps and 4 approval signatures in the procedures; raise the rate of sigma level from 1.6 to 2.5; save up 20% the transactions time of customers (from 198 minutes to 162 minutes); increase the satisfaction of customers
- **The 4th project:** Reduce 1 step and 1 approval signature in the procedures, decrease one waiting time for customers; save 25% transaction time (from 250 minutes to 188 minutes); increase the rate of sigma level from 2.0 to 2.7; and raise the satisfaction of customers
- **The 5th project:** Stop at the construction of new-procedures for receiving the opinions of consumers and solving at the branches and transaction counters because of the disadvantaged reasons about the changes in the organizational structure

The success of the project at first step recorded the experiences and the skills in the manufacturing management of Techcombank and guided the Vietnam firms to use LSS tools effectively through the workshop of experiences-sharing and project's results-announcing on 2 days, March 29th, 2011 in Techcombank and March 30th, 2011 in the national workshop "Optimize the Resources and Create the Remarkable Ability through Lean Six Sigma Application" in Hanoi.

(Source: The Vietnam Productivity Center, *The results achieved after 1 year of conducting the pilot model Lean Six Sigma in Techcombank*)

Techcombank's Approach in Lean Deployment:

The success of Techcombank basing on the supportive collaboration between APO and VPC built the detail plan for each small project. The staffs were professionally trained with the experts. The Lean deployment was managed thanks to the DMAIC method maximizing the efficiency of Lean Six Sigma. Furthermore, the issues-identification in the operational procedures used the popular measurement tools of Lean. Techcombank standardized the steps in the operating procedures with Lean Six Sigma, thus shortening the waiting time of customers and the unnecessary steps. The project obtained the very promising achievements with the tight management in both the process of implementation and the training support of APO and VPC.

The Lessons from the Success of Techcombank

- The core values: “Customers First” and “Innovative” – Those core values of Techcombank are totally suitable with the Lean criterions.
- Apply Lean Six Sigma with the support of the expert from APO and VPC: If this project was conducted solely by Techcombank, the effectiveness would not be so great for sure. This success had the significant contribution of APO & VPC experts with the realistic experiences and the professional knowledge.
- Apply DMAIC (Define- Measure- Analyze- Improve- Control): This method helps the companies be able to monitor, inspect, and evaluate the whole project and make the appropriate adjustments immediately.
- Deploy each part on the small scale: With the resources which are not strong enough and also doing not have the professional knowledge; the application on the small scale is suitable with the Vietnam businesses today, avoiding the interruption due to the unfamiliarity with the new way.
- Train the staff professionally: Thanks to the experts, the employees of Techcombank are well educated, creating the consistency in the working method and supporting each other.

2.3. The Reasons for Failures of Implementing Lean Manufacturing in Vietnam

2.3.1. Objective Reasons

The failures in implementing Lean process for Vietnamese businesses is caused by the lack of experienced and knowledgeable experts to support for companies to develop a clear and specific implementation plan. So far, although Vietnam has appeared a lot of consulting organizations about production management, the operational levels are not strong enough and the resources are not fully released to support the businesses.

Another reason is that lack of well training human resource. To implement Lean, a major of enterprises have to actively give their staff through training courses of the consulting organizations in the field of production management, while this human resource can be trained about the basis of Lean in the professional training schools to save time and money.

Although Lean has been growing for a long time in the world, it is still a new category in Vietnamese businesses. The support from Government is very essential; however this support is not strong enough to help the enterprises implementing Lean. So far, we hope that Vietnamese business can receive the effective support from Government, at least in term of human resource training.

2.3.2. Subjective Reasons

To success in implementing Lean, Vietnamese companies need to have long term and synchronized investment; however many of them cannot do this. The mistake of many business owners is that they think that Lean application would bring the immediate results. However, Lean is a process of continuous improvement that brings long term effects after the innovation and application process. To gain the success, enterprises

should have a specific implementing plan for every stage in process from production to distribution in order to minimize waste and increase the optimal value for product.

Besides, lack of knowledge that caused misunderstanding about Lean is other reason. Many companies misunderstand that Lean Manufacturing means downsizing. In reality, despite of downsizing, Lean mentions about the most effective and productive working methods for human. After finding the optimal solutions, company can re-contribute the positions and jobs for the employees that are not necessary in that process into other process in order to leverage the resource. Nevertheless, Lean is not the tool or software computer, it is based on knowledge and analysis capability to find out how to use other tools in the most effective way to maximize the resource, create the optimal value for products and satisfy the customer's need. Based on this, Lean can not only apply into production but also into all types of businesses to help reduce the waste in materials as well as the time and brains. Lean orients to increase not only the output productivity but also the value and quality of products to satisfy the customer's requires because the output which synchronized with the quality and value is considered to reduce the waste and maximize the corporate resource.

The last but not least, implementing Lean requires continuous improvement while Vietnamese business is afraid of changes and risks. In some small and average factories, the workers receive the jobs and choose their positions by themselves as tradition. Although this way is lack of organization and plan to optimize the productivity, this still exist because of long time application. This way of thinking is obstructing the success of Lean in Vietnam.

In the next chapter, we will propose some recommendations for implementing Lean Manufacturing in Vietnamese businesses in order to increase the their competitiveness with other foreign companies.

CHAPTER 3: THE SOLUTIONS FOR IMPLEMENTING LEAN MANUFACTURING EFFECTIVELY IN BUSINESSES IN VIETNAM

3.1. Positioning the Implementing Lean Manufacturing of Vietnamese Businesses

Through some examples about implementing Lean of Vietnamese enterprises above, we can see that so far there are few Vietnamese businesses that exposed to this continuous improvement system; and also very few businesses have applied can gain the success as expected. Even with the companies have achieved positive results, this was the initial success; they need to conduct in long term period, improve continuously to minimize the wastes, increase the value of products and optimal leverage the corporate resources.

During the most difficult domestic economy situation and tough competitive market, Vietnamese companies and organizations are increasingly interested in Lean to improve the competitiveness, maximize every resource through training activities and pilot applications. However, Vietnamese businesses have not achieved derived results after applying continuous improvement activities by Lean because they cannot create the corporate culture consistent with Lean thinking as well as Lean commitment from top management to staff and employees.

Along with the high concern of Vietnamese enterprises about Lean Manufacturing, there are more and more forums, training organizations about Lean for staff and the broad members of the company through the seminars, training courses, discuss forums with more in-depth knowledge and practical experience from the experts. The Lean

consulting organizations with qualified, knowledgeable and experienced experts also appear more to support the enterprises to apply and deploy Lean.

We can see that Lean Manufacturing has become the significant issue for Vietnamese businesses to increase the competitiveness and the value of products. Although Lean has been applied successfully in many countries worldwide, for Vietnam, Lean application is still at early stage and the businesses need to provide the specific plan, clear direction and appropriate investment to achieve the derived results.

3.2. Solutions

Recent years, although Lean has been more concentrated on developing with positive direction in Vietnam, it still need the appropriate solutions for Vietnamese businesses with the corporate culture that lack of initiative and self-discipline. We will propose some solutions for companies and organizations based on the lessons learned from the success of enterprises above in order to improve Lean applications effectively and acquire long term results.

3.2.1. Partial Implementation with Small Scale

With low qualification and experience about Lean applications, Vietnamese businesses should apply a portion of pilot Lean's tools on a small scale but with appropriate investment in long-term to gain the real effectiveness. With the application Lean in small scale, the assessment and monitoring become easier and enterprises can reduce the initial risk disrupting the production due to lack of experience when implementing Lean. After collecting the initial effectiveness and certain experience, company can extend the deployment to the entire production system.

3.2.2. The Involvement of Senior Management and all the Employees

Lean creates a significant change in the working methods and activities of the enterprise. Therefore, to successful implementation, it needs the involvement of the senior management in company to solve the problems that arise during application process and commit to consistently implement Lean processes. During the implementing, the conflict and difficulty may be arisen due to the change in traditional way, this is inevitable that requires the leaders must be determined, tough and persistent to guide all staff involved. Besides, the continuous improvement needs the involvement and working awareness of all staff. Lean Manufacturing system requires the employees must have a high sense of responsibility and innovative ideas. This is also the key in Lean Production when the contribution and working methods of employees have the high unity, responsibility and continuous improvement ideas.

3.2.3. The Consultant's and Expert's Support

With the positive actions of organizations, experts, consultants inside and outside the country as well as the concern of Government, the most important now is to have the consulting team who fully qualifications, practical experiences and depth knowledge about Vietnamese culture in order to oriented the local businesses to access Lean. Through the training courses and discuss forums, the board members of company can understand the important of implementing Lean and its benefits.

Now, Vietnam has appeared many consulting and training organizations for various levels of leadership, management, staff and employees about Lean implication methods such as PMCVietnam - one of the Vietnamese training organization in the field of Production Management with the top consultants, highly applicable training programs for Vietnamese enterprises; Vietnam Productivity Center (VPC) with many activities, pilot projects in many companies that have achieved remarkable success; or P&Q

Solution that provides service orientation consulting and training in production management. Besides, *Leansigmavn.com* forum is one of the active forums in the field of production management with several seminars and training programs.

With the appearance of many intensive consultancy organizations, the strategic plan in implementing Lean Production system can be approached in affordable investment to bring the real results.

3.2.4. Training deployment and Lean thinking changes

According to Jamie Flinchbaugh (Lean Learning Center), he said that: “Everyone tried to copy the final results of Lean instead of using Lean thinking method in their real situation”. Effective applying Lean is not simply to apply the Lean’s tools or systems; it is a process of long term and continuous developing. Therefore, the thinking of company and individual need to be changed by Lean thinking, that means company need to extensive training to change the traditional thinking that lack of science, planning and responsibility. Developing orthodox seminars and training courses for the top management and building the training organizations for the entire employees are essential to change the thinking from broad members to the staff.

First, we need to cooperate with organizations and consulting companies on production management in Vietnam to take the orthodox and qualify training courses that in accordance with the characteristics of each enterprise. Training for the management that have the knowledge about Lean first and then these people will spread, guide and change the thinking, working style of the entire employees in the company to build the company’s Lean thinking.

Second, after having a certain understanding about Lean, we must apply the Lean thinking into the company’s activities by recognizing the gaps, wastes and the resources are not optimized; then we can find the appropriate solutions to improve

continuously. For example, during manufacturing process, the product's quality inspection team is not necessary, the worker can also check the product by himself when he made it; it saves time by eliminating one step in manufacturing process. The staff whose belongs to inspection team can be arranged to other position to leverage the resource.

At the same time, we must to adhere to the customer's need to create the real value for product. Although this thinking is not new, very few Vietnamese businesses implemented properly; they mainly produced under orders from distributors. This is also be considered as unnecessary wastes if the products are not match with customer's need or renewal product's function are not really needed. Therefore, thinking before creating the products is very essential for the company to save and take advantage of resources.

3.2.5. Building Corporate Culture consistence with Lean Thinking

Corporate culture can influence to the working styles and working responsibilities of the employees. So, to apply Lean successfully, building corporate culture that based on Lean thinking, leverage maximize the resource to create optimal value for products. All the activities need to be performed asynchronously across all divisions, departments and individuals to save the resource and minimize the wastes during manufacturing. To implement this, it requires the persistent participation of the management to develop a systematic working style throughout the company.

3.2.6. Specific Implementation Plan and Continuous Improvement

To get the long term and effective results, before proceeding with the conversation to Lean Manufacturing, the company must map out detailed and clear implementation plan from import raw materials to manage the output.

Firstly, Value Stream Mapping is a necessary statistic and descriptive tool to analyze the weaknesses, wastes of the company are facing as well as the resource that are not leveraged.

Secondly, based on the initial analysis and specific knowledge, enterprise will cooperate with qualify and experienced consulting companies to select the most appropriate tools (JIT, Pull Manufacturing, Kanban...) to apply into the first stage of Lean Production.

As mentioned above, Vietnamese enterprises should apply a part of these tools in order to avoid interruption due to fast innovation and select small scale at the same time. At the first stage, the company can apply the simple steps such as:

- Measurement and monitoring the yield and capacity of equipment
- Processes establishing and documentation
- Implementing 5S system in factories management
- Planning the layout of production

Before implementing Lean, the process evaluation should be planned specifically by using error avoidance tools (Poka Yoke) to rapidly detect errors and avoid duplication.

3.2.7. Combining Lean with other appropriate Improvement Tools

Along with Lean Manufacturing tools, company should apply simultaneously other tools such as Six Sigma, TPS (Toyota Production System), ERP (Enterprise Resource Planning) and ISO 9001:2000 to get the best results. The information about these tools has been mentioned above in Chapter 1.

CHAPTER 4: CONCLUSIONS AND RECOMMENDATIONS

4.1. Lean Application in Vietnam – Lessons and Challenges

The goal of Lean is an increase in customer's value by the elimination waste in operations, product distribution and customer service. Waste, as discussed in Chapter 1, is defined as all enterprises' activities that do not create any value for customers (non value-added activities). In order to reduce waste in firm's operations, understanding customer's requirements and their real desires is set in priority. Based on that, firm can produce a real product and service that have significant value to customers.

Both identifying and eliminating unnecessary and redundant processes and decreasing the initial cost have not been conducted strictly in Vietnamese enterprises. It is illustrated in Vietnam traditional working style that lacks of scientific. In most of manufactures in Vietnam, the employees choose their favorite working space, work slowly, and lack of quickness; thus, it wastes time and does not take advantage of the maximum workers' capacity. Furthermore, layout planning and production management lack of synchronization, thus it leads to time gaps – wait for transporting materials or completing other stages. This small delay in production can generates such unnecessary waste that firms can eliminate by implementing the progressing improvement and the appropriate Lean's tools.

Since the old methods had rooted in almost employees to become their habits, it confronts with obstacles to renew production and product distribution. Besides, enterprises are afraid of both changes and risk when implementing new methods. Hence, the business leaders must have a new mind, a Lean Thinking, to guide their company durably in this progressing improvement.

In addition, despite existence of many organizations to consult and train about production management and support for planning Lean's application, lack of human resources in this field is still occurred and needed more concern from government departments. Besides, a Lean Thinking should be spread widely to change the way of thinking, which lacks of scientific inconsistencies, has rooted in Vietnamese.

Enterprises need to figure out appropriate tools and solutions to apply improvement continually and efficiently. At the same time, these solutions should be a thorough investment and stick consistently with the firm' core value without any rush to change.

The core part of implementing Lean Manufacturing is education for employees; so they can be receptive and work as planned process and think of waste's elimination as necessity in general company's activities. Furthermore, company should build up their own corporate culture based on setting customers true desires as production criteria to create real value for their products and services.

In summary, in order to implement Lean successfully in Vietnam, it requires more time to do the pilot and real projects, and to expand them. In addition, the support from other Government departments is needed to build up professional human resources who have knowledge and experience in implementing Lean Production. The key point is the consistence in all level of power in the enterprises, from the leaders, the managers, to the workers. Thus, all of them will understand the process and commit to do improvement in long-term. Changing flexibly to adapt with real needs from customers is also a long-term strategy for enterprise to compete and survive.

4.2. Recommendations

According to analysis and conclusion discussed above, the suggested recommendations are:

For enterprises: should develop Lean Thinking as corporate culture with participating from all managers and workers, consisting with firm's core value, and setting progressing innovation as competitive advantages. It is insisted in Lean thinking because it leads to the most effective and efficient actions. The combination of Lean Thinking, long-term investment, support from consultants and compassion of all managers and employees would lean enterprise to success.

For the State: should back for consultant organizations and professors who have trained and had practical experiences. Furthermore, state needs to set up Lean Thinking in study program for students in universities, colleges, and training centers to create Lean's basic knowledge based human resources after graduating.

4.3. Limitations of this Study

This research focuses on implementing Lean Manufacturing in enterprises in Vietnam. Even though the concept of Lean has defined and applied successfully in many countries for a long time; there is a few application of Lean in Vietnam as well as a fewer successful cases. Therefore, sources of information and data of Lean's implementation in Vietnam are limited. Almost information used in this study is secondary data.

In addition, these solutions discussed above are general for most enterprises in Vietnam, because the study analyzes some typical successful cases of imposing Lean Manufacturing in Vietnam instead of concentrating on specific case of one company.

In conclusion, to improve this research, further search for professional information and primary data are required. Then, it can be utilized to analyze specific case of implementing Lean in Vietnamese company and to offer accurate solutions for them.

References

1. Aug.edu, n.d. *Lean WPI*. [online]
Available at: < www.aug.edu/~sbajmg/quan6610/Lean%20Concepts/leanWP1.pdf >
2. George Taninecz, January 2004. *Faster but not Better*.
Available at: < <http://www.industryweek.com/CurrentArticles/asp/articles.asp?ArticleID=1589> >
3. Hoang Ly, May 27th, 2004. *Can Improve the Productivity without Investment?*. The Saigon Times
4. James Womack, Daniel Jones and Daniel Roos, 1992. *The Machine that Changed the World*. Simon and Schuster.
5. Mekong Capital, June 4th, 2004. *Introduction to Lean Manufacturing*. [ebook]
6. Peter Hines and David Taylor, January 2012. *Going to Lean*. Lean Enterprise Research Center, pp. 10
7. pmcvn.edu, n.d. *Do not misunderstand about Lean*. [online]
Available at:
<http://www.pmcvietnam.edu.vn/Home/HomeDetail.aspx?id=133&catid=79&ch=-1>
8. Pham Thanh Dieu, 2008. *Lean and the Stories in Vietnam*. The Saigon Times
9. Thegioibanle.vn, August 2011. *Supply Chain Management: Lessons from Nike*. [online].
Available at: <http://thegioibanle.vn/news/chuoi-quan-tri-cung-ung-nhung-bai-hoc-tu-nike>

10. Steven Spear and H. Kent Bowen, October 9th, 1999. *Decoding the DNA of the Toyota Production System*. Harvard Business Review

11. Toyota Ben Thanh Website, n.d. *About Us*. [online]

Available at: <http://toyotabenthanh.com.vn/About.aspx>

12. vpc.vn, n.d. *The Achievements after 1 year Implementing Lean Six Sigma at Techcombank*. [online]

Available at:

<http://vpc.vn/PortletBlank.aspx/A8771B23A55747178C42F6B3BC6FE359/View/cong-cu-cai-tien-nsc/Nhung_ket_qua_dat_duoc_sau_mot_nam_Trien_khai_ap_dung_mo_hinh_diem_Lean_6_Sigma_tai_Techcombank/?print=1914078863>