

Independent Final Report

**Implementing Lean Management in the Supply Chain Dynamics of Bangladesh
Garment Industries: A Feasibility Report**

by

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Certification Page

I, SADAT, Aminus (Student ID 52116009) hereby declare that the contents of this Master's Thesis are original and true, and have not been submitted at any other university or educational institution for the award of degree or diploma. All the information derived from other published or unpublished sources has been cited and acknowledged appropriately.

SADAT, Aminus

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Summary:

To raise productivity and performance along the supply chain, numerous methods have been proposed in the contemporary era. One of those revolutionary methods is the Just-in-time (JIT) approach developed in Japan in the 1970s. Lean Management is an element of JIT. Lean Management is a systematically identifying and eliminating waste through continuous improvement to get perfection. In textile industry, through lean manufacturing, it is possible to shorten the time to complete a customer order and shipment of the products by eliminating waste in the production process. The Bangladesh garment industries accounts for 78% of total export from Bangladesh and currently in second position after China in terms of producing garments. However, because of different incidents, the Bangladeshi garments industry are facing stiff challenge to produce quality product and thus searching for efficiency and along with improvement in compliance. Moreover, since Bangladesh is also facing numerous competition from China and Vietnam, the time has come to find an effective solution for this problem. This research will investigate the prospects of Lean Management in the supply chain sector and demonstrate the scope and opportunities on improving performance through lean management. The study will aim to answer the following question:

- 1) What are the prospects and challenges of implementing Lean Management in the supply chain dynamics of Bangladesh Garment Industry?

Data will be collected through a semi-structure questioner and secondary sources.

1. Introduction:

Bangladesh, a small country with ranking of 11th in population density has become the second largest garment exporter in the world. However, Bangladesh is facing issues in terms of production quality and quantity. Despite of the advancements made over the years in the global garments production context made by Bangladesh, there is so much more to be done if Bangladesh wants an optimal growth in terms of production of garment goods. In terms of advancement made, Bangladesh probably had a bigger and better growth than any other country in this particular sector over the last two decades of global garment business industry which, as per as Karim, et. al (2012), contributed as much as 80% of the country's flow of foreign exchange money. Moreover, the existence and the improvement of garments industry in Bangladesh has provided a greater tangible value since it has solved the population's unemployment issues which was 4.10% from 2016 and did not changed since then. The garment industry has also provided a great measure of contribution to the lives of 3.5 million workers affiliated Hossain (2011) and of which the majority is women as Zahira (2015) pointed out how the garment labor force comprises of 80% women work force and the fact is empowering to say the least.

However, with the garments industry getting bigger and better over the years, the

competition for a quality export control along with mass quantity good export is more competitive than ever. Previously, the likes of China and Vietnam were Bangladesh's biggest nemesis as per as Garment sector production and export and the expansion of the industry has only made things worse for Bangladesh as the market now has more ball players on a global scale than ever. According to, Sharma (2016)'s affirmative notion on the discussion, India is aiming to take over the likes of Bangladesh and Vietnam in quantity export and with the man power that the country possesses, the target seems very feasible without much of a second thought. The situation in hand only makes things for Bangladesh look shaky. Not only has the competition increased in terms of export from countries with a skilled set of labor force eagerly waiting to work on something big but also, the tragic incident of Rana Plaza¹, Tazreen fashion² have not been much of a help in representing Bangladesh's garments production industry and the significance of it on a global scale. However, provided that Bangladesh wants to bring in a change in the status quo (which it does since there is no apparent alternative to garments industry in Bangladesh), the system needs a change for the greater good of the garments industry and bring better results in terms of exports accordingly.

¹ In Savar, 2013, a five stories commercial Garment building collapsed with death toll over 1100 and injured more than 2500 people.

² In 2012, Dhaka, a fire broke out in Tazreen Garments, killing 117 people and injured over 200 people.

In light of the events and situation in hand, this report will discuss the essentials of Lean Management, its implication and the success that it possibly might bring to the garments export of Bangladesh. Furthermore, the literature review will also discuss an extensive overview of the current garments industry of Bangladesh in order to portray where lean management can be integrated in effectively. The report will also look for quantitative data along with secondary sources through surveying people who are heavily affiliated with the garments industry of Bangladesh in hopes of getting their responses regarding the implementation of Lean Management System in Bangladesh. To explore beyond the odds of success, the report will also shade light into the possible fallacies of Lean Management System and the drawbacks that this system in particular can trigger. Accumulating all of the aforementioned angles of discussion through both qualitative and quantitative analysis, the report, on a whole will explore the feasibility of implementing Lean Management system in Bangladesh.

1.1. Problem Identification:

As explained previously, the key problem is the fierce competition that Bangladesh garments industry is facing from other global competitors with the arrival of new key players in the market who tend to produce on big scale and export since they already have the specifics needed in order to do so. According to Textile Today (2017), there are quite a certain number of major issues that Bangladesh garments industry will be facing in terms of competition and they are hereby:

- a. China has been building towards an effective action plan as the country is concerned with United State of America's recent turn of events regarding anti free trade policy and to tackle the odds of higher duty and low scale profit, the key stakeholders of China have unanimously decided to dynamically drop of several upper scale garments products. Moreover, the fact that China is the key raw material provider for Bangladesh still remains as a problem as the notion of Chinese garments industry stakeholders regarding this particular situation is very much unclear.
- b. The fall of Chinese currency value is not helping Bangladesh's situation much since it apparently allows the industry producers and mass exporters to remain competitive.

- c. India, previously rumored to have plans for action, is currently working on the garments industry for a positive shift in the economy.

Additionally, other geopolitical affair, such as Brexit, is hampering any sign of positivity for the garments industry of Bangladesh. It is blatantly obvious to anyone who spares a second thought on the situation that the stakeholders of Bangladesh's garment industry has to formulate a plan to enhance and upgrade the production system to remain competitive and do well in the business accordingly.

1.2. Research Question:

It is needless to explain at this point why the supply chain of the industry has to be upgraded on a whole and build a better production scale in the first place. However, with a strange situation in hand, the report heavily emphasizes on a better production scale and accordingly asks one simple question overall to address the problems of the status quo:

- a. What are the prospects and challenges of implementing Lean Management in the supply chain dynamics of Bangladesh Garment Industry?

Through answering this question by both qualitative and quantitative analysis (secondary sources and surveys); the report aims to address the current context of Bangladesh's Garment Industry.

1.3. Research Objectives:

The research work is done in orientation with Lean Management and Bangladesh Garments Industry and hopes to attain the following objectives mentioned hereby:

- a. Provide an accurate overview of Bangladesh Garments Industry
- b. Discuss the fundamentals of Lean Management System (along with the challenges involved)
- c. Explain the implementation process and justify the rightfulness of implications accordingly.
- d. Analyze how the implementation might give Bangladesh Garments industry an upper hand in global export competition through results.

2. Literature Review:

In this section of the report, a broad and disciplined discussion of Lean Management is to be done with the additional layers of explanation regarding the system's prospects and challenges of implementing the process in Bangladesh. Furthermore, an analysis of how to overcome the odds of Lean Management will also be discussed in the context of Bangladesh. In before discussing Lean Management, the Literature review section will also give a constructive explanation of the Garments industry in Bangladesh initially.

2.1. Overview of Bangladesh's Garment Industry:

The Garments industry and business together is an essential part in the Bangladesh economy. The economy of Bangladesh, in its very early stage was based on agricultural activities and co-related business. Nonetheless, the shift to a certain focus on Garments industry has developed as the greatest foreign exchange rate the country has ever experienced over a certain period of time and ever since the inauguration of the garments industry boom, the country has seen an exponential development since the late

1980s. This particular sector contributes on a huge scale to the ever improving GDP (Recorded 1,358.78 USD as of 2016). About four million people are directly co-related among which one and half million are woman labors. On a bigger scale, as much as twelve million individuals are directly and indirectly affiliated with the industry's system as they work in several sectors. The part has additionally assumed a noteworthy part in the financial advancement of the nation. A staggering number of labors in this field of work division are women which triggers a lot more than moral boost in the status quo of employment. According to The Bangladesh Garment Manufacturers and Exporters Association (BGMEA) reports (2014), the Garments industry contributes as much as 81% to the nation's GDP and that, by all means, is a notable achievement.

The Daily Star (2009) stated that 1,176 garment industrial units are identified as the biggest polluters among the 7000 industries being pointed at as responsible for the industry waste. Nasrin (2016) explained that 67.7 million liters of untreated liquid industrial wastes are dumped into the nature every day. She also added that in a survey covering 11,149 industrial units within the timeframe of 2002-2005, DoE had identified 524 falling under the red category as per Environment Conservation Rule. Among all the 524 red listed industrial units, something around a hundred companies did not have any sort of Effluent Treatment Plans to begin with. This goes to show the poor waste

management status quo of Bangladesh and the industries working within the infrastructure. And being mostly a garment industry oriented economy, Bangladesh needs to do something about the industry's waste management and turn things around for the betterment.

2.2 Supply Chain of Bangladesh's Ready Made Garments Industry:

According to Chowdhury (2015), Scott and Westbrook (1991) and New and Payne (1995) defined supply chain as "the chain which links and connects every particular element of a specific manufacturing and supply process from the core raw materials to the very end user (consumer/customer), encompassing various layers of organizational boundaries". In orientation with the broad definition, Supply Chain Management (SCM) "encompasses the entire value chain and addresses materials and supply management from the extraction of raw materials to its end of useful life".

Farley asserted (1997) that SCM "focuses on how several firms and business entities utilize and make the best possible use of their supplies, suppliers, processes, technology, and capability to initiate and accordingly enhance competitive advantage".

Chowdhury (2015) also referred to Houlihan's (1987, 1988) description of Supply Chain Management as the mechanism of combining several core departments such as production, finance, marketing and human resources of a particular company so that this unified and tied chain links tier-one suppliers and distributors to improve production performance by managing to make it to the final customers on time. There is already an extensive literary work that discusses focal companies and the utilization of vendors' manufacturing expertise along with other R&D values to design new products at lower costs through collaboration among trading partners.

In the context of Supply Chain Management in Ready Made Garments industry, Sen (2008) said that some of the primary principles and characteristics of the fashion business are such that the life cycle of any possible new style(s) at any given time of any apparel(s) is continuously on a decreasing curve; the end demand for any garments at any given time is highly fluctuating and changing more frequently than ever; various kinds of designs and styles are evolving everyday worldwide, and the total chain from yarn and cotton supplies to final garments through a lot of suppliers from many countries is indeed dynamic and accordingly, difficult to manage in all forms. Sen (2008) also asserted that the business of the fashion industry is so volatile and

competitive that the key driver for successful entrepreneurship is capitalizing on opportunities and scopes by integrated efforts among supply chain partners.

There are certain variables which affect and influence the Supply Chain Management of Ready Made Garments industry in Bangladesh and they are presented hereby according to the classification set forward and discussed extensively by Chowdhury (2015) in the following chart.

Variable	Components (associated factors)
Market sensitivity	Starting time of raw material sourcing and procurement. Training managers, technicians, workers to manufacturing ability of sophisticated and fashionable garments. Procuring sophisticated machinery to increase the sewing ability of sophisticated garments and improve Quality
Delivery speed	Assigning importance/priority on special tasks to meet future requirements of market demand such as training of human resources, usage of IT, working together with buyers & suppliers, exchange of necessary information among supply chain partners, enhance collaboration with suppliers and buyers, having stable workforce
Process integration	Strategically fixed and fewer numbers of suppliers and buyers. Joint work team with buyers and suppliers to solve problems. Providing feedback information to buyers and suppliers to keep them updated.
Collaborative Planning	Using centralized collaboration teams among factories or production facilities. Informing suppliers and buyers about changes of product design/specification well in advance so that necessary preparation can be taken to reduce waste. Maintain and share up-to-date production and inventory status with buyers and suppliers
Use of IT	Using both hardware and software at least in three aspects such as internal operations, purchasing and vendor management, and on buyer relationship. Different kinds of hardware and software can be used for managing all these aspects like ERP software, marker and pattern making software, inventory management software, etc.
Uncertainty	How many times did the buyers change their order quantities and product specifications? What is the rate of shipments of 100% quantity of original orders or without shortage by the factories? How many times factories could not ship out within the original lead time? How frequently did the overseas and domestic suppliers fail to deliver fabrics and accessories within lead time, without quantity shortage and with appropriate quality?

The Supply Chain Management of Bangladeshi Ready Made Garments industry has many blatant concerns which need to be resolved and this paper address and hopes to resolve the issues in hand with a proper implementation of lean management. The issues which need to be addressed are the likes of political issues, abundance of technological improvements, lead time management, labor cohesion etc. However, it is of utmost importance to maintain lead time, deliver the orders JIT (yet another core element lean management practice), control the inventory properly with enough precaution, maintain the entire balance of production line and obtain buyer's and stakeholder's satisfaction. The improvement of the supply chain of the Ready Made Garments industry is a never ending process which needs utmost attention from all key stakeholders involved. The later portions of the paper discuss and analyze how the efficiency of the supply chain performance can be enhanced through implementing lean management in the system.

2.3. Lean Management:

2.3.1. Definition:

Despite of the huge analysis and observations made on lean management and the

system's several implications on various manufacturing industries, lean management and its practice, possible scopes, feasibility approach in the context of readymade garments industry has never been analyzed much. The report aims to discuss all of the aforementioned sectors but a clear concept of lean management is a necessary prerequisite to be addressed in the first place.

Lean Management, in its general essence affirms to be a management practice system which does cost reduction of the supply chain outputs and enhances the supply chain's performance by removing waste through a proper waste management. The Lean Management system makes a manufacturing and the business body more market inclined by increasing the market responsiveness of the platform, produces any particular product and service faster and also provides the product or service in a better state than any other system we are aware of. Holweg & Matthias (2007) affirmed that the lean management system was inherited on a global scale from Japan and more specifically from "Toyota Production System" when it was originally referred as 'lean'. Argued and explained by Womack and Jones (1994) several times, lean management has apparently brought about positive changes in different geographic locations such as: Japan, North America and Europe by reducing waste, inventories and throughput time and error management.

2.3.2. How to obtain lean management:

However, the question regarding how to achieve a proper lean management system still remains in before discussing the implementation process of the lean manufacturing model. A clear and illustrated version of implementing the system was put forward by Akin O. Akinlawon as he discussed the principles of lean management.

According to Akinlawon, (2017), there are three decisive and simple steps to construct a lean management system in the first place and they are hereby:

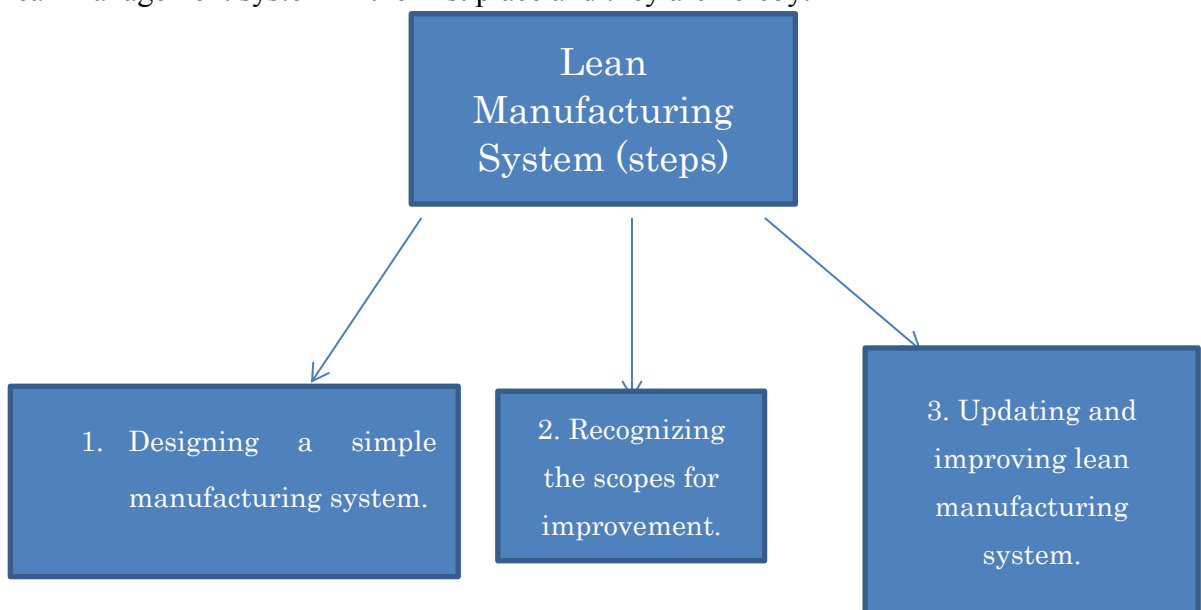


Figure: Lean Manufacturing System Steps

Source: Akinlawon A. O. (2017) Thinking of Lean Manufacturing Systems

Designing a simple manufacturing system is based on company's inventory management system in co-relation with production outputs. As in, pulling inventory

through only to meet the particular customer needs is how a simple manufacturing system should be designed with a few particular goals to be achieved ultimately, such as: decreased cycle time, minimum possible inventory, increased capital equipment etc.

Recognizing scopes for improvement refer to the continuous improvement of the management system and the manufacturing process on a whole. This helps the company to improve product or service over time and waste management for improving the workstation environment functionally aids the purpose of manufacturing in the first place. Additionally, continuous improvement also improves product quality, service management, product performance etc. Rizzardo (2003) stated that, "The value of adding activities are simply only those things the customer is willing to pay for, everything else is waste, and should be eliminated, simplified, reduced, or integrated". This only goes to show how important a continuous and relentless effort for improving the system is in the first place.

Updating and improving the lean manufacturing system is the last yet the most important step in initiating a lean management system on a whole. Lean manufacturing, if managed properly, can attain a serious level of improvement and expand further scopes of improvement accordingly. Lean manufacturing improvement includes

methodologies of time management, cost analysis, IT effectiveness to procure and display scopes for better attainable results on the long run. Ker, J. I., Wang, Y., Hajli, M. N., Song, J., & Ker, C. W. (2014) analyzed two concepts in the medical field for implications and a clear observation and analysis of the concepts brought in major improvements with 54.5% reduction in queue time, 32.4% in order entry time and other miscellaneous parts and bits of the medical infrastructure.

2.3.3. How to implement lean management:

Moving on to the next portion of understanding lean management, an understanding of how to implement lean management is required. According to Lean Enterprise Institute (2017), there are five steps to implementing lean management system and they are discussed hereby:

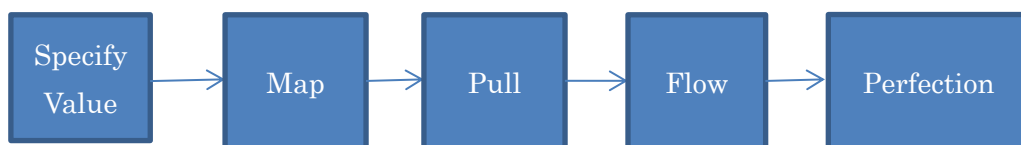


Fig: Steps of Lean Management Implementation

Source: Lean Enterprise Institute (2017)

Specifying value refers to characterizing an incentive from the point of view of the end customer of the supply chain. Expressing the aforementioned incentive in the context of a product/service and addressing needs of a customer with a specification of time and

price is very much the essence of specifying value.

Mapping, the following step refers to identifying the value stream and accessing the set of three standout management tasks: problem solving management, information management and physical transformation management. Mapping also includes the idea of creating a map content of the present and future state of the supply chains waste and eliminating the current waste in order to procure the future state accordingly. In short, mapping refers to figuring out the fundamentals of every possible time context which enables the stakeholders to pursue required steps and methodologies in the coming days.

Pulling, as a step, by default allows the customer and consumer base to pull products as needed and that eliminates any possible skeptical financial forecast to be done by the company.

Flowing is to ensure a proper flow and maintenance of the other steps in the value stream. Flowing requires elimination of every possible functional barriers in the supply chain while optimizing the supply chain through a proficient lead time production management and making the company more product oriented than ever.

Perfection is the last yet probably the most important bit of lean management yet it is not a step to begin with in the first place. Perfection sort of explains how lean management, through it's process will never probably compile the best possible

reducing effort, time management, reduce cost in the first place regardless of which, there is no end to lean management as a process on a whole. Perfection refers to the fact that the lean management system goes back to the first initial step at this point, eliminates more waste, enhances the system more than ever and accordingly make a better lean transformation happen every time.

Tools of Lean Management:

As per as Vidyut (2017), there are twelve tools of lean management which contribute more to the lean management than any other. In this section, the report discusses the important tools that lean management has integrated within the system's structure to be more productive.

Cellular Management: The first of many important tools is the cellular management concept which addresses the current state through a methodology of arranging every workstation and equipment based on a certain few factors so that everything within the system is placed within a closer proximity than ever. The core incentive behind cellular management is to simply reduce the inventory management and waste reduction within the working body as well as making proper time adjustments.

Takt Time: The next important factor is the Takt Time which accounts for the average time at which a company must produce a certain product, offer a certain service or

complete a certain transaction to meet the customer and consumer basis needs. Mathematically explained, Takt Time can be expressed as, $Takt = T/D$ where T stands for the Time available for product/service and D refers to Demand in number of standard units. Moreover, T (Takt Time) provides us information on production rate or transaction made on a standard time unit.

Standardized Work: Standardized Work is a process which aids the value stream of the organization and maintains standard of the production cycle with a bottom to top approach.

Pull Systems and Kanban: This is a methodology through which a particular customer channels signals and indicators for a certain supply chain to manufacture a product, information or deliver the product or information whenever required. Kanban refers to the signals within a pull system.

Continuous Flow: Continuous Flow (also referred as a one piece flow at times) is a process through which a product keeps moving at a consistent pace regardless of the obstacles or circumstances involved within a production cycle and accordingly ensures that there is no delay in between one step to another.

The Five Why's: Asking the why questions repeatedly to reach to the root of a problem co-existing within the cycle.

Quick Changeover: Quick Changeover or Single Minute Exchange of Die (SMED) allows a reduction of time for the changeover of machinery involved through streamlining and externalizing the steps involved within that production cycle. This improves flexibility and responsiveness to customer needs and demands in any status quo.

Mistake Proofing: Often termed as 'Poka Yoke', Mistake proofing allows the cycle to minimize its obstacles and reshape the production cycle for better outputs.

Leveling the Workload: As a process, 'Heijunka' (an expression for leveling the workload) urges the system to produce similar quantity of products on a standard time chart regardless of the changes that might take place in orders and behavioral patterns of customer and consumer basis needs at any given time.

Total Productive Maintenance: TPM, as a tool, is a collective effort to improve OEE (Overall Equipment Effectiveness) judging on the basis of criteria like availability, quality and performance. TPM aims to increase the production range of the cycle as well as bring intangible value addition to employee value and job satisfaction. A mathematical analysis of OEE would be something like,

$OEE = A * PE * Q$ where A stands for availability of the machinery, PE stands for performance efficiency and Q indicates to the quality rate.

Five S: Five S is one of the most methodological tool kit for lean management as it aims at a more organized visual workplace resulting into a better system than ever and thereby aiding organizing, cleaning, developing, sustaining etc.

Problem Solving: Problem Solving is probably the single most important tool for lean management. Often referred as PDCA or PDSA, Problem Solving is a cycle; that graphically and rationally represents several solved problems of individuals from various viewpoints and contexts involved. It helps a business to bring major insights into production cycle since it judges the cycle with the viewpoint that every possible production step has a customer or consumer basis owing to which the final product meets the required standards with ease. Problem Solving has four main components consisting of Plan, Do, Check and Act. Establishment of certain objectives, principles in accordance with the tasks in done in the 'Plan' stage where as it is followed by a principle of 'Do'ing which refers to implementation of the plan, initiating the process and accordingly making the product that a particular stakeholder aims for. The 'Check' phase helps to compare and illustrate the differences between the current (post Do stage) and the expected results (post Plan stage). The last stage 'Act' refers to a new working strategy to minimize the differences between expected and current results with a plan to improve the 'Plan' and 'Do' stage.

The report will further analyze these abovementioned tools in the context of Bangladesh's Garments industry and the supply chain for a greater understanding of the context.

2.3.4. Criticism of Lean Management:

Even though lean management brings a large portion of perks and productivity into the system of any business entity or infrastructure, a lot has been said regarding its lacking and misconception throughout. There are certain ideas of lean management which has been critically assessed over the time and this report discusses the shortcomings of lean management system on a whole:

Hopp, Wallace; Spearman, Mark (2008) asserted how lean management is more in orientation with the machine effectiveness and tool set whereas like any other management system, it should be more focused on the cultural values of management system instead. Also, to pull off lean manufacturing with certain productivity, a proper manager role player is just as much as important as the manufacturing process which goes to show the difficulties which might be there in terms of implementation of the process itself. Hopp, Wallace; Spearman, Mark (2008) also explained how the

managers come up with a solution in the first place through lean management implementation without looking into the details of the problem and the pitfall the company is in at the point of being. It goes without saying that there is always a specific and particular solution to a particular given problem and even though lean management has been derived from Toyota Production System (TPS) methodology initiated by Toyota Motors in times of trouble and desperation, it just might not work with the similar range of effectiveness and have similar substantial outputs.

According to Nayab (2011), the criticism of lean management lies in its core principles of carrying out the process in the first place. Nayab (2011) explained how the lean management system ends up resulting in no margin for error (and stress accordingly), an extravagant concentration on waste management and reduction etc. Furthermore, lean management does not have a standard procedure or methodology. It is more of a culture that has been derived from Japan in the early days and integrated later onwards in other business in other corners of the world. Kaizen, 5S, Six Sigma, Quality Management etc. are the sort of tools which adds up to the lean management culture on a whole but the lacking of a standard model to work on is frustrating and misleading nonetheless. A business methodology, regardless of the impacts and the output that it might bring in as an additional value, is still a big question mark for many without standard procedure

maintenance in the first place.

2.3.5. Challenges in implementation of lean management system:

According to Ingram (2015), the challenges within the implementation of lean management system can be categorized into four different parts and they are: 1. Supply Chain Issues 2. Employee Development 3. Cultural Issues and 4. Technological Issues.

Below hereby is an acute description of the following challenges which the sophisticated process of lean management might additionally bring in within the system of a business entity to begin with:

Supply Chain Issues: Lean management incorporates the minimization or nullification of storage time for in-flowing of materials and outgoing items or products. Executing and establishing a JIT (Just In Time) framework is important to guarantee that raw materials are always coming in and accordingly being processed to be delivered at the ideal rate to be in orientation with and meet the operational demand. This requires close coordination with providers, even integration of automated ordering and the order ensuring process through a fulfillment system between two particular companies. This sort of rigid operational participation and management can result into a large number of issues, since directors or managers in two different working organizations must

cooperate and interact with each other while dealing with their very own particular side of the action plan in managerial role play. The same can be said for the flow of the outgoing end since it is no different for the incoming end. Serving business clients with JIT (Just In Time) frameworks can transform any company's business into a JIT (Just In Time) supplier as well which might create a hazardous state of supply chain implemented without enough perception and preparation.

Employee Development: Establishing lean management techniques in any form of existing business creates a obvious talent gap and mismanagement that must be handled and dealt with proper caution in attempt to avoid any further backlashes. The innovative foundation of the technological infrastructure that lean management brings in requires a proper analysis and overview of supply chain issues while keeping up with automated production and quality-control frameworks require more taught and well prepared employees than the usual traditional assembly setups. Lean manufacturers apparently demand top notch skilled and educated employees to carry on continuous inspections, repair checks and creatively designing the layout of the aforementioned automated production technology on a daily basis. Highly skilled, technical at work and educated employees will presumably ask for safety issue certifications and a different branch of licenses to manage operations and accordingly to maintain such sophisticated systems,

it is only natural that they will demand for a much higher level of compensation packages in comparison with the general-labor employees. Hence, there are two key problems to sort out within the employee sector for lean management and they are somewhat co-related with each other since there is a scarcity of both top level worker and enough monetary resources at the same time. For countries with a fragile supply chain and poor scale inventory management (as of now), lean management can only make things more complicated initially, although it might work out for the betterment later onwards

Cultural Issues: Going lean initiates a progressive move in the mannerism of the way work is done in a manufacturing body and the entire work station. Executing lean manufacturing process from the scratch requires fewer workers to go up against a more extensive scope of duties and work load, obscuring the lines between formal sets of responsibilities and previous job outlines or descriptions. It includes a strict and significant sense of duty regarding waste management, which can mean changing employees and their recognizable work forms. It ought to include improvement in terms of motivations and external structures to reward and acknowledge any mannerism of behavioral approach and thoughts that decrease costs, saves time and lessens waste. This requires a true manner of buy-in at every level of a company's operating body

starting from the core executives or senior most managers to the bottom of the chain of command which consists of mainly front-line machine operators. A huge chunk of commitment is expected of everyone and establishment of such culture in terms of work and practice can just be more than tricky in all fairness. This is the principle challenge in terms of conducting and establishing a proper work culture through lean management on a whole.

Technological Issues: Last but not the least, handling technological issues within lean management is no less of deal. Lean management has an obligatory requirement of critical forthright interest and investment in technology and innovation owing to being a very much technology oriented management system in the first place. From a new line of production management system to rather statistical methodology oriented software for observing various layers of quality change on the assembly line, a huge monetary investment in technology is something of an obligation for lean management on a whole. The affordability of these technologies followed by a severe maintenance of the business and the technology itself raises too many eyebrows regarding the successful implementation of lean management. Figuring out the accurate system to run on is one of the key factors for a lean manager and producer's point of view since the chosen system has everything to do with the company's supply chain and operational

performances as well. One of the fundamentals of lean business practices on any particular level is to be automotive technology oriented as much as one can making one's business more dependent on the lines of technology and innovation than one has ever been through any previously pursued management systems. For the aspiring developing countries with business infrastructures which want to pursue and obtain a lean management system, the technological aspect of the lean management is probably the biggest drawback for them since there is an initial gap of monetary investment which is more enforced upon with the complications of maintenance of the system and the technological infrastructures in question.

Therefore, it can be easily understood that the practice of lean management will indeed result into favorable status for the industry in Bangladesh. Although, there are several issues in hand which need to be dealt with in a right manner to understand and implement lean management better, the productivity in terms of output which lean management has to offer is certainly impeccable and one of its kind. Provided that the issues in hand can be mitigated and seen through in the right most fashion, lean management will be a great addition and will have both tangible and intangible values within the dynamics of RMG in Bangladesh.

3. Methodology and Analysis overview:

The report conceives an unique methodology to determine the findings and results of implementing lean management system in Bangladesh since the methodology is mostly in orientation to the literature review and two surveys conducted with the assistance of top notch officials of Ready Made Garments sector in Bangladesh who are well aware of the current environment of Bangladesh Ready Made Garments sector.

Firstly, the paper discusses the survey questions in brief and then analyzes the answers from two different individuals with an attempt to judge the similarities and differences in between the two survey outputs by key contributors in the industry. The paper, in the following order discusses key findings from the two surveys conducted to mark the significance of the qualitative study aspect of the report itself.

On a secondary level, the paper discusses all the key aspects of the lean management system presented in literature review to illustrate the differences between the standards that lean management demands and the standards that Bangladesh Read Made Garments sector might or might not be able to cope up with on the long run. As a conclusion to methodology discussion, the paper finally points out the key learning issues to be considered for further improvements and research findings from the broad discussion of

the fallacies and success of possible lean management aspects in Bangladesh Ready Made Garments industry.

Last but not the least, the discussions from the methodology conceived in the research are a mix of both quantitative and qualitative analysis which will have a huge impact on the research findings without a sphere of doubt. Additionally, the detailed methodology covering everything on the basis of secondary data and comparative quantitative analysis will also help the purposes of further research to be conducted on lean management and the important aspects of the management system as well as the Ready Made garments industry of Bangladesh. Therefore, it goes without saying that the methodology conceived to incorporate the data, analyze the understanding and determine the results accordingly is a hard task yet a fulfilling one since it manages all possible sources of information and provides several key findings in the context of the research accordingly.

3.1 Qualitative portion analysis:

The first section of the report puts forward the discussion of obtaining lean management and if Bangladesh Ready Made Garments industry will be able to do so. Lean

Management has three major steps in terms of obtaining and they are: a. designing a simple manufacturing system b. looking for scopes of improvement and c. continuously improves the lean production and management. Even though the steps seem to be factors that can be easily taken care of, it is a hard sketch for Ready Made Garments industry of Bangladesh. Bangladesh Ready Made Garments industry, albeit very capable of constructing a simple manufacturing design lacks specific technology and people who can manage technology to look for scopes of improvement. Also, corruption within the working bodies can be detrimental as a factor in obtaining lean management practices in Bangladesh.

On a secondary level, since there are complications within the implementation process which raises a bigger question in accordance with the feasibility of lean management implementation in Ready Made Garments industry of Bangladesh. With a poor infrastructure of garments business, the current context of Ready Made Garments industry cannot focus on mapping for the future perspectives through a concurrent analysis which leads to a display of bad flow management and a never ending chase for perfection accordingly.

On a third note, the elements of lean management are, frankly put, well beyond the spheres of Bangladesh's Ready Made Garments industry. The industry cannot handle

takt time, TPM, Kanban, JIT due to the lack of a proper infrastructure, work culture and ethics in business etc. Therefore, it is very evident that the Ready Made Garments cannot incorporate the elements required to operate lean management. Ferdousi (2009) did a detailed case study on as much as nine garments, which showed a massive improvement under the implementation of Lean Management in Bangladesh with results improvements in the fields of Kanban, JIT, 5S TPM, Pull Production, Kaizen etc. as the observed firms have incorporated these systems within the already preexisting systems. Despite of the improvements made, Ferdousi (2009) also discussed in the findings how the infrastructural limitations as well as external factors such as political monopoly and corruption harm the implementation of lean management on a whole leading to a failure on building long term and sustainable relationships.

Last but not the least, Bangladesh Ready Made Garments industry would face all four challenges in terms of a proper lean management implementation owing to several infrastructural problems, corruption, and lack of monetary resource which will definitely lead to fallacies in employee development, supply chain problems and other external issues.

To summarize, the qualitative analysis section, summarized, shows that the

implementation of lean management system is nothing short of a miracle owing to the facts that Bangladesh's Ready Made Garments industry does not have a proper methodology and infrastructure as well as a fitting environment to begin with.

3.2 Questionnaire survey analysis:

In this section of the paper, the discussion is primarily in orientation to the two surveys conducted and answered by two key personnel in the industry's dynamics due to the significance of their job position and depth of knowledge in terms of understanding the industry. Mudasser Mahmud Khan, Assistant General Manager of Dird Group and Golam Sabbir, Senior Merchandiser of Jamuna Apparels were very co-operative in understanding and answering a similar set of questions. The survey was conducted through e-mail. The survey questioner was sent to the respondent on 16th of November and got the survey result on 17th of November. The key personnel were selected from two large garment industry in Bangladesh and on basis of strong work relation network. The questions (Stated in the appendix) discussed if the people to be surveyed acknowledged lean management system and knew about the innovative measurements of the systems. The survey further interrogates about the feasibility and possible scopes

of success of lean management if implemented in Bangladesh Ready Made Garments on a hypothetical issue. To conclude, the survey also asks the tools required for lean management and implementation as well as figure out the benefits that the Ready Made Garments might receive on the longer run on the basis of a hypothetical implementation.

In response to the survey conducted, both of the answers were positive in terms of acknowledging the presence and effectiveness of lean management but transformed into a no while asked about the implementation of the lean management system. The following queries through the survey which was conducted through sending emails, were in regards to the possible success post implementation stage of lean management and while one answer was skeptical about the odds of implementation due to a lack of centralized control, the other answer was a rather straightforward no. The key obstacles, as per as the survey conducted in the context of obstacles in implementation are a disorientated centralized control, an unproductive supply chain, improper management of resources, internal and external environmental factors, corruption etc. Upon the addressing of important tools in the lean management implementation, the surveys conducted show that a proper layout of plan, action plan, minimizing waste and reducing waste are more likely to be the tools of further importance in Bangladesh's

Ready Made Garments industry's context. On a concluding note, both questionnaires suggest that a hypothetically possible lean management implementation would come into good use of the industry since it would improve efficiency, productivity, larger shipment rates accordingly. A critical overview of the quantitative overview suggests that though the importance and outputs are acknowledged by key stakeholders in Bangladesh's Ready Made Garments industry; there is a certain abundance and disbelief regarding the feasibility in terms of implementing lean management and lean production in Bangladesh since the industry is affected largely by a poor management and allocation of resources, infrastructural decay, corruption and other external factors.

In fact, WNN (2013) suggests how corruption has not only brought about deaths of the underprivileged workers in Bangladesh over the years but also has failed a bare minimum maintenance of employee rights, especially women. A lot of the progress that Bangladesh Ready Made garments industry could have and should have made has been harmed much by corruption. Thus, the overall methodology in order to analyze research findings done through both qualitative and quantitative approaches lead to a similar conclusion which shows how there is a certain ambiguity in terms of feasibility of lean management implementation in Bangladesh Ready Made Garments industry. The methodology, despite of its limitations (a. lack of further qualitative analysis of lean

management and b. lack of more survey participants), can attest to its findings and should be measured as a standard of the current context of Bangladesh RMG industry.

4. Research Findings:

The paper has a few key findings to discuss amongst the many that can be possibly conceived. Below hereby, the paper explains the key findings from the research itself and explains several aspects of the research.

The first key finding in terms of the research is how the paper explains every aspect of lean management, from obtaining process to every core element of the subject itself, any further discussions on lean management can be conducted based on the paper itself.

The second key finding is how lean management, as a production model, started in the core of Toyota (TPS) and spread out to the rest of the world in a steady manner. The global acceptability of lean management is something of a reference to look back upon in order to study more on the expansion of a management and production model in a global scale.

The third key finding is the criticism of lean management and lean production model on a whole as the paper tries to nullify the weirder odds that lean management brings along.

The paper criticizes the sudden urgency and the complexity created by lean management. After that, it finally discusses the possible mitigations for this.

The fourth key finding is through the research methodology, in which, a combination of

quantitative and qualitative analysis shows that the feasibility of implementing lean management in Bangladesh is very low. Even though, there is a wide and general acceptance of lean management in the very first place, the issues of implementation are rather skeptical due to a poor infrastructure, an ineffective supply chain, corruption etc. However, there is a rather clear acknowledgement of the fact that a hypothetical implementation of lean management would be very beneficial for the Ready Made Garments industry of Bangladesh since it would change the dynamics of efficiency, productivity and shipment delivery without a second thought.

The aforementioned four findings are the key suggestions that the paper has established throughout an extensive analysis of literature review, methodology and the quantitative and qualitative part within. The research question begs to ask the prospects and challenges of implementing lean management in Bangladesh and the paper responds to the particular question on the basis of prospects such as: corruption, lack of a centralized system, low productivity supply chain etc. Moreover, it is almost safe to assert that the paper acknowledges that the implementation of lean management in current Ready Made Garments industry of Bangladesh is almost impossible.

5. Limitations and suggestions for further research:

The paper, albeit, providing enough evidence to back up the hypothesis and the assertions made earlier, has some certain limitations and below hereby, the two key limitations of the paper are discussed:

The first key limitation of the research is how every single aspect of lean management has not been taken under consideration. As in, despite of the broad engagement made on lean management and lean production throughout the paper, there are still several aspects of the lean management system which has not been taken under consideration or even described with rudimentary information as the event of implementing lean management in the Readymade Garments industry of Bangladesh was very much under consideration. This, although unwillingly, limits the scopes for any further results or outcomes. Provided that there is a research(s) to be conducted on the same theme or perception, additional elements and substances of lean management should be taken under consideration. This limitation can be, however, counter measured by further researches in days to come.

The second key limitation is the outcomes of quantitative study. Even though, the questionnaires were intended for two key stakeholders in the context of the current

Ready Made Garments industry; the fact that two key stakeholders and their opinions on anything in general does not reflect the entire integrity of the business industry. To avoid such shortcoming, an expanded survey should be carried out to illustrate the opinions and status quo of every possible key stakeholder in the business industry. The larger the number of people affiliated with a particular industry answering the same questionnaire, the greater the chances are of getting a clear understanding and perception of the demands of that particular industry. Such shortcoming can be avoided with ease provided that the survey(s) is conducted on a greater scale.

There is a possible scope for research in the field of finding out an alternative for lean management system which, if implemented, might work, in the developing countries.

6. Conclusion:

To summarize, the paper aims to explain the feasibility of lean management implementation in the Ready Made Garments industry of Bangladesh and through a detailed process of understanding and analysis, it shows that the implementation of lean management in Bangladesh is as good as impossible based on both qualitative and quantitative approaches. In an attempt to analyze such findings, the paper discusses an extensive literature review comprising of lean management essentials and Ready Made Industry information along with overview. The paper also discusses supply chain and the improvisations of it. Furthermore, the paper divides the research analysis portion to both qualitative and quantitative analysis where a mixture of literature review and survey outputs is combined to affirm the results expected in research findings. Furthermore, a broad discussion of every single finding throughout the research was followed up by the minimal limitations that the research is indulged in with scopes for improvements (also, explained) in the days to come. The paper will deem to it's success if it enhances a reader's understanding of the Ready Made garments industry of Bangladesh, Lean Management, Lean Production, Supply Chain etc. Also, the paper wishes to experience further researches being conducted under the same limelight in

order to find a developing country alternative for lean management. The further outcomes yet to be foreseen were not discussed in the report but in any case that the paper helps the understanding of a management forecast, the report will be of much significance in terms of aiding understanding.

7. Figures



Figure: Supply Chain essentials

WHAT IS SUPPLY CHAIN MANAGEMENT?

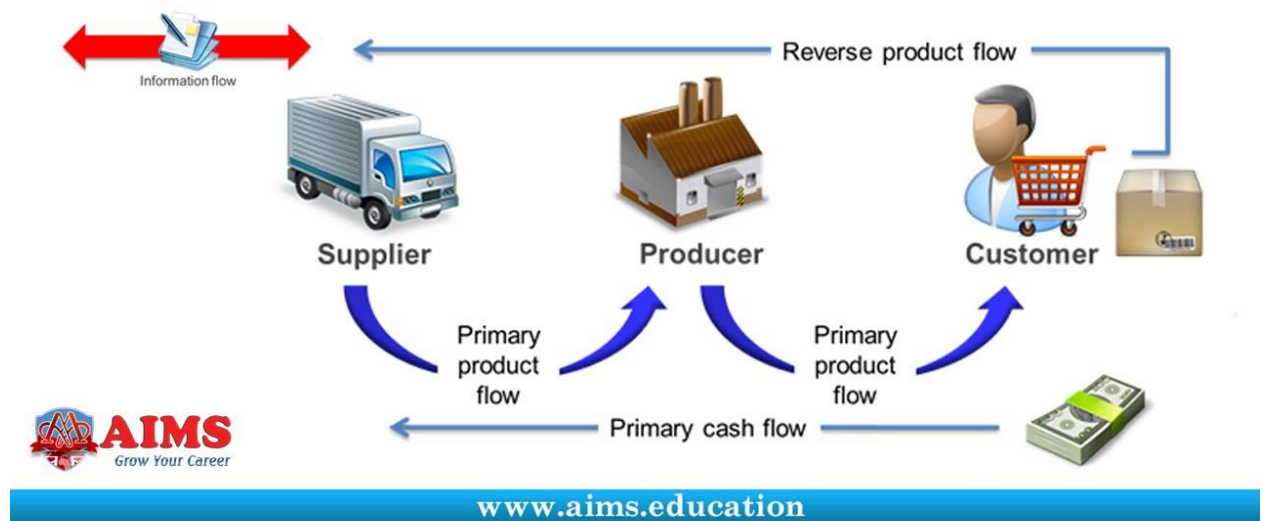


Figure: Definition of Supply Chain Management

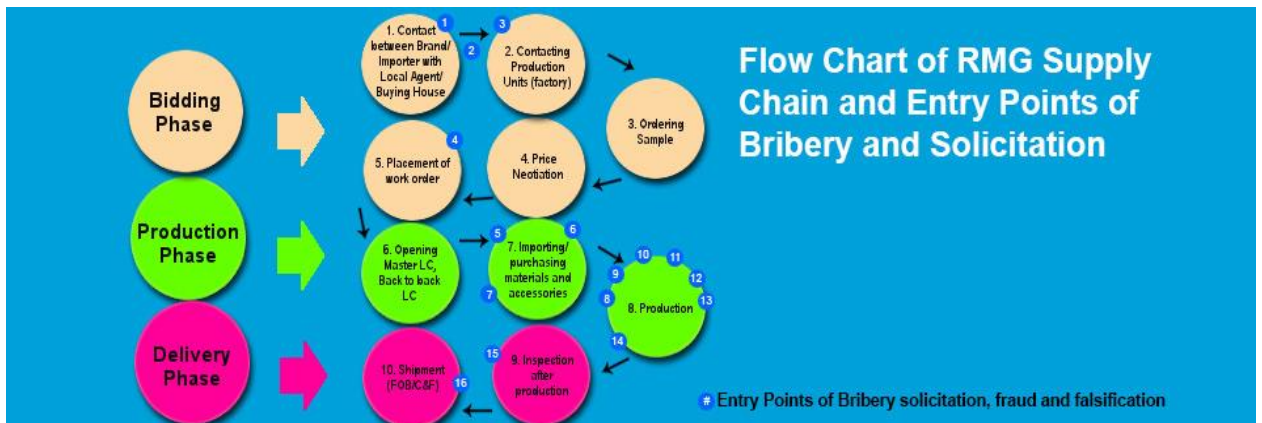


Figure: Ready Made Garments Supply Chain essentials

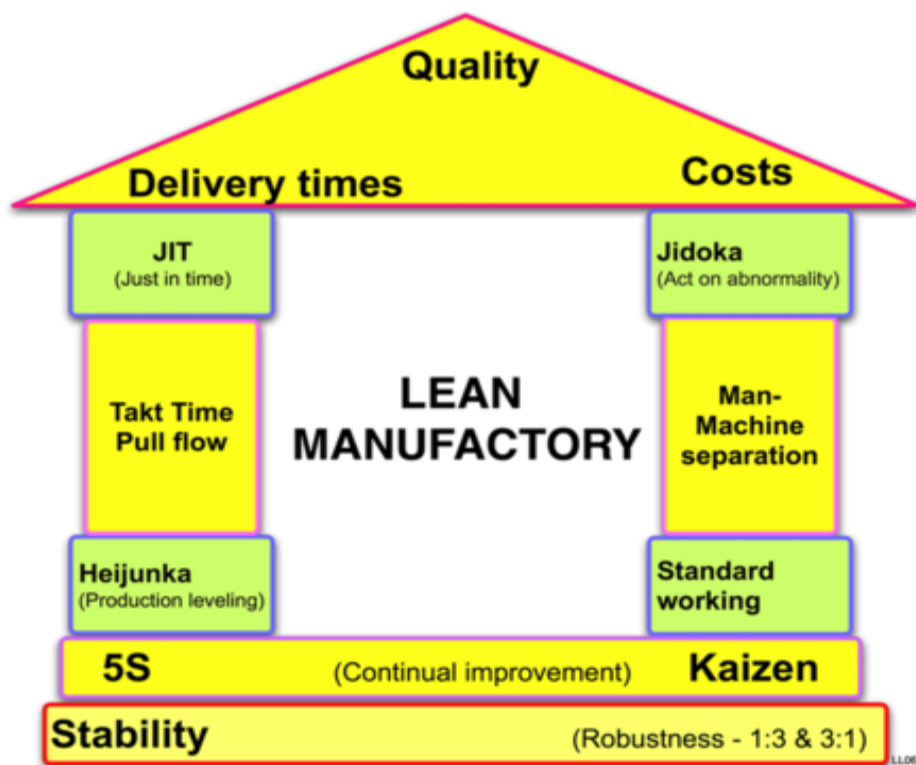


Figure: Lean manufacturing essentials



Figure: The real factors of Lean Management



Figure: Lean Principles

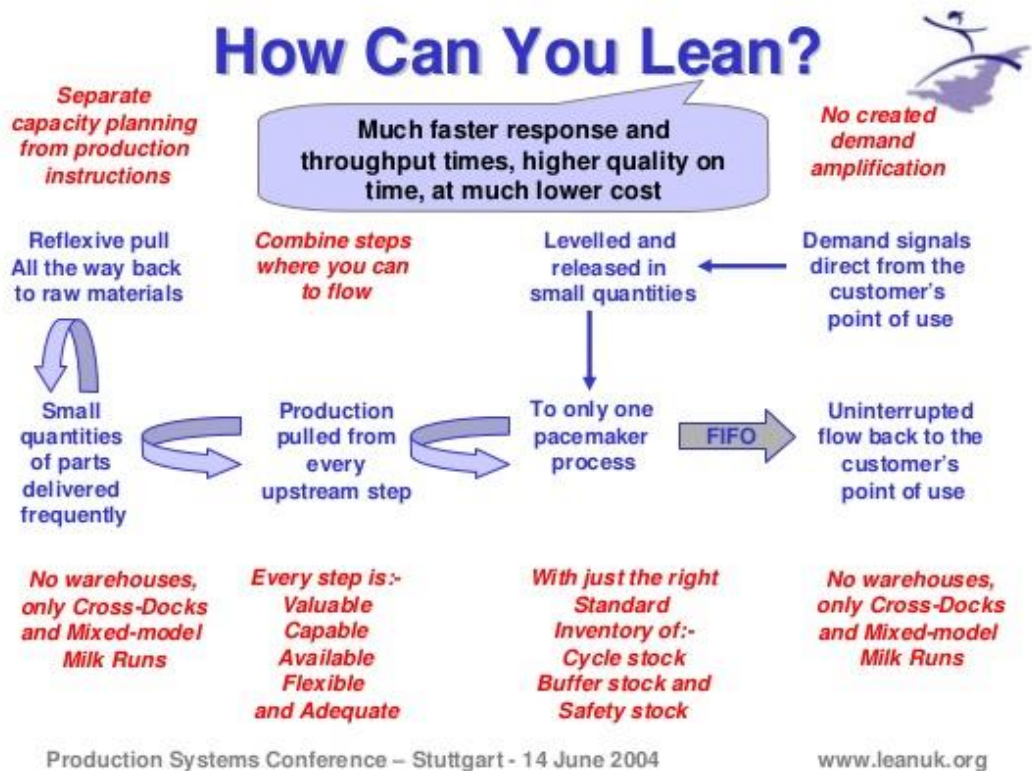


Figure: How to Lean

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9. Appendix:

Survey 1 (Mudasser Mahmud Khan, Dird Group, Assistant General Manager,

Conducted on 16th November 2017 through Email.)

Please answer the following question:

1. Do you know about Lean Management?

Yes.

2. Do you think lean management is successful in the garments industry of Bangladesh?

No, I don't think so.

3. Do you think implementing Lean Management in the supply chain of Bangladesh garments industry will be successful?

Implementation of lean management in the supply chain of Bangladesh garments industry will be extremely difficult (largely because of the absence of centralized control) but with enough time and effort from different companies involved, it will be successful.

4. What obstacles do you foresee in terms of implementing lean management in the supply chain of Garments industry?

Absence of centralized control, lack of a well-established supply chain, improper management of resources

5. What are the most important tools for lean management practice in Garments industry?

Proper layout plan, establishment of a standard time & action plan format.

6. If lean management is implemented in the supply chain of garment industries, what kind benefit you might get. (If you have chances of increasing profitability, please mention.)

Increase efficiency, reduce overhead and ensure timely shipment of orders.

Survey 2 (Golam Sabbir, Senior Merchandiser of Jamuna Apparels, Conducted on 16th

November 2017 through Email)

Please answer the following question:

1. Do you know about Lean Management?

Yes.

2. Do you think lean management is successful in the garments industry of Bangladesh?

No

3. Do you think implementing Lean Management in the supply chain of Bangladesh garments industry will be successful?

No

4. What obstacles do you foresee in terms of implementing lean management in the supply chain of Garments industry?

Due to corruption we cannot implement lean management in garments industry.

5. What are the most important tools for lean management practice in Garments industry?

Most important tools are better productivity and lower wastage.

6. If lean management is implemented in the supply chain of garment industries, what kind benefit you might get. (If you have chances of increase profitability, please mention.)

Lean management will help to achieve shipment goals and improve factory productivity