

Book Report

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Lean Thinking: Banish Waste and Create Wealth in Your Corporation by James P. Womack and Daniel T. Jones was published in 1996 by Simon & Schuster, New York. The book successfully continues the ideas of authors who have previously expressed them in *The Machine That Changed the World*. The authors analyze an alternative way of producing goods that was called “lean system.” It is an absolutely innovative way of rethinking the traditional mass production structure characterized by batch-and-queue methods. Moreover, it challenges one more fundamental concept such as “batch” processing (Japanese counterpart to this is called “muda” and means “waste”). Accordingly, lean system concentrates on intelligent strategies in planning and producing goods. However, the most important fact about lean thinking is that it is an innovative method that proposes an effective shift from mass production to special attention on the customer’s needs, when the product is a part of the value stream.

The authors begin their theory from the assumption that lean thinking helps companies “to specify value, line up value-creating actions in the best sequence, conduct these activities without interruption whenever someone requests them, and perform them more and more effectively” (Womack & Jones, 1996, p. 15). According to this, five basic principles of lean thinking are formed, namely Value, Value Stream, Flow, Pull and Perfection (p. 16). However, this line is not principal for lean values; hereby, they can together vary or group another more developed and productive system. It means that when workers follow these values, they work smarter but not harder, thus, it completely converts the Eastern code of collective production, especially when it concerns such large company as Toyota Corporation.

Value is described as a “capability provided to customer at the right time at an appropriate price, as defined in each case by the customer” (Womack & Jones, 1996, p. 311). The value is one of the most important categories in lean thinking, and the customer can outline it as well. The authors explain that the customer is the same as the user of the product. For Womack and Jones (1996), there is no truth except the following statement, “No one upstream should produce a good or service until the customer downstream asks for it” (p. 67). The authors draw an analogy with value and marketing, interim customers, supplier, distribution, and others. Value also means specific product that is why the authors note that it acquires full meaning when it appears to the original result of production.

The value stream is described as a set of concrete actions that are necessary for the concept, ordering, production of a specific product, and its delivery to the customer. In order



to create the value system, a person should carefully describe each phase of production from the first idea to the next delivery. The process begins by specifying the value of the product or service (it is dependent on the stage that will be chosen by the customer), and then switch to recognizing the stream. Afterwards, the most effective ways should be uncovered that clearly create value such as assembly of automobile sections. Furthermore, in this process, the producer finds phases (Type One *muda*) that do not add any value (Womack & Jones, 1996, p. 16) but are important in the context of the desired final result. As for Type Two *muda*, they are useless products as the first ones; however, unlike the Type One *muda*, it is crucial to get rid of those in the value stream as quickly as possible. Apparently, all business activities in the value stream analysis should be considered from the beginning to the end. Thus, the limitation of opportunities for their own immediate sphere creates an island of efficiency against the background of *muda*.

After specifying the values in the stream, the company makes next steps defined as *flow* (Womack & Jones, 1996, p. 21) The principle of flow is classified as the “progressive achievement of tasks along the value stream so that a product proceeds from design to launch, order to delivery and raw materials into the hands of the customer with no stoppages, scrap or backflows” (Womack & Jones, 1996, p. 306). In fact, this step requires a complete rethinking of the processes that have traditionally been considered automatic such as grouping tasks by type and batch-and-queue processing. The challenge of establishing flow processing eventually brings good results by removing department-oriented processes and replacement work in creating activities of specific products. Methods include stimulation of the flow allowing one to quickly change tools in the workplace and right-sizing machines as well as to place successive stages next to each other.

The authors believe that lean thinking is one of the new approaches of thought in production and one of the most innovative methods for reorganizing manufacturing. The early stage of manufacturing has a simple formula, stating that one person made an entire product that would probably be useful for ages. The authors try to prove that today there is no such thing as an entire product, but there is an endless series of production. However, they propose to change label ‘unique’ to ‘special’, thereby reinterpreting classical examples of manufacturing in the context of modernity. With the advent of industrial technology, mass production became the main method of producing goods because of several social and economical reasons; the main among them was a rebirth of capitalism. In fact, lean is in direct conflict with the mass production system that stresses the economies of scale that



became to accept a large number of elements and packet queues. Thus, the mass production thinking can be explained by looking at automatic painting factories.

The paint manufacturing plants follow a series of principles, which is divided into the schedule. One week cars are painted in white, the other in green, and the next is characterized by blue. There is no duty as well as an original approach is missing, while there is only a rough shape of mass production. Apparently, this method of production completely ignores the needs of the customer because they have to wait a month or more in order to get the desired color. Instead, lean system pays particular attention to the needs of the customer; thus, it focuses on the individual needs and requirements. The principle has influenced many factories, including the automatic painting factories, "It is vital that producers accept the challenge of redefinition, because this is often the key to finding more customers, and the ability to find more customers and sales very quickly is critical to the success of lean thinking" (Womack & Jones, 1996, p. 18). The modernized factories became to react to the customer's special needs, switching the color very quickly and responding to the client.

Other manufacturing management concepts that have received attention in the past few decades are incompatible with the principles of thrift, while many of them fit nicely within the lean and complement it. With regard to methods of 'Six sigma', they are a process that aims to bring under control manufacturing processes that cause a reduction in defects. As a result, this opens a way for the elimination of *muda* in the flow and makes productive values. Concerning continuous improvement (CI), it describes how the organization constantly evaluates itself and learns from its mistakes; thus, the way of improving lean concept encourages continuous stream of the value creation for ways to remove waste. Talking about total quality management (TQM) and quality circles, they are techniques to include employees in decision-making and problem-solving. In fact, this is a very effective method for better producing and making a very high level of value. In this case, the authors mentioned that the central task in production is postulating value (Womack & Jones, 1996, p. 28, because this is a starting point that determines how effectively a product will move among others and, what is the most important, whether it will satisfy the customer's needs.

One more special idea is that the employees are also an important part of the development process, and lean thinking proposes to use them as a source of better production. It does not mean that lean informally uses the working resources, since it only stresses that lean excellently identifies a place of the employer in the whole process of manufacturing. Womack and Jones (1996) offer their own ideas on how their lean principles differ from the principles of production management:



We are putting the entire value stream for specific products relentlessly in the foreground and rethinking every aspect of jobs, careers, functions, and firms in order to correctly specify value and make it flow continuously along the whole length of the stream as pulled by the customer in pursuit of perfection. (p. 275)

The authors classify success stories in the private sector and explain how manufacturing firms and organizations in the service sector (for example, the airlines companies that have always had problems with lean sector) can apply lean in their business strategies. With regard to government organizations, they perhaps under different constraints can also start to be lean. The United States Air Force (USAF) has adopted lean under the Chief of Staff's Air Force Smart Operations for the 21st Century Initiative (Womack & Jones, 1996, p. 322). The USAF's Fiscal Year 2007 Budget rollout briefing offered examples such as changes to processes that condensed depot flow days by half for the C-5 aircraft. In addition, the increasing regionalization of target load flow in a wide range of logistics activities demonstrates the Air Force's endeavors to make more lean stories in the twenty-first century.

The authors also provide different examples that show how serial production process transformed into a flow stream, where each step of production has its special place, starting with design and ending with delivery. The main shift of this change is jump from concentration on the product and its needs to the complex organization of all activities that appear in a permanent flow. These changes are based on such special principles as *kaikaku* or *kaizen* that are used in Japanese economical world (Womack & Jones, 1996, p. 68). The first one means a radical realignment of the value stream, while the second one means incremental improvement. Moreover, the transformation of the flow may also occur through a combination of the two. By establishing value-creating flows, the company lets the customer pull the product as needed, which decreases inventory *muda* not just at the outset but also for a long term.

Lean thinking entails the creation of value stream mapping across the enterprise and some intensive tasks. The authors dissect steps when getting cola products to Tesco supermarket shelves in the UK. The whole process took 319 days filled with *muda* (Womack & Jones, 1996, p. 54). In fact, it was difficult to utilize mass production practices in the context of *muda* because of unnecessary distances between key points, requirement of more palletizing and unpalletizing cans, and the waiting time during which the production equipment idles. Toyota was just in time practice-striking example of lean in action. In this case, small machines are utilized in huge production of replaced machines. Employees



learned to perform various tasks. The performance was supported by equipment to achieve minimal downtime, allowing one to perform continuous production. Toyota also applies lean principles to the supplier Toyota and other providers in the chain. These efforts have developed into phenomenal growth of production among enterprises.

The authors cite numerous examples when a traditional queue form of production was transformed into a periodic stream processing, reducing the time needed to go from concept to launch and then to delivery. According to the author's point, this is a "system of cascading production and delivery instructions from downstream to upstream in which nothing is produced by the upstream supplier until the downstream customer signals a need" (Womack & Jones, 1996, p. 309). A prerequisite for this change of mentality is the fact that production rapidly increases when strictly focused on the product and its requirements over the organization and equipment so that all actions occur in a constant stream. Restructuring of the machines used for production allows the organization to work on a regime from low to high rate. The transformation of the flow can occur by *kaikaku* or *kaizen*. The first means a radical restructuring of value stream creation, while the second means its gradual improvement. In addition, changes in flow may also occur through a combination of the two. By setting the value flows, the company makes the customer pull the product if it is necessary, which leads to lower inventories of *muda* not only at the beginning but also in the long period. However, this does not concern the extruded products through a system that responds to the client and leads to excessive accumulation of reserves. The idea is to structure the processes in order to achieve accurate results in the future. However, the authors warn that the initial successes and savings reserves may lead to complacency.

The final step in lean thinking is *perfection*, which is the idea that if harder pull is applied, the mode *muda* is exposed that can be continually removed from the flow. The authors define this step as the "complete elimination of *muda* so that all activities along a value stream create value" (Womack & Jones, 1996, p. 309). Apparently, this makes the fifth principle of never-ending pursuit of lean so that there will always be actions that reflect *muda* in process; thus, the complete elimination of *muda* is a desired end state and is really an achievable goal. Likewise, a lean enterprise offers transparency, whereby everyone sees and gets feedback on the process.

The book includes a number of case studies of companies that have done lean transformation from small family operations of large companies in the US, Germany and Japan. Case studies are focused on production and include product development and order taking aspects of business. Thus, the last question in this book concerns the relationship



between lean thinking and product development. In fact, there was one person clearly responsible for the success of a product over its entire life (profitability and client satisfaction). Annual planning process takes major projects during the year. Lantech establishes a dedicated (full-time) and cross-functional development team for the top two projects a year. Teams included marketing, engineering, electrical engineering, mechanical engineering, procurement and production (including hourly workers from Kaizen team), co-location of all team members. Apparently, this is a very clear example of how one company made the economical revolution in product development.

Therefore, the most important idea of this book is how one can rethink the mass production in the context of new paradigm that called 'lean thinking'. The strategy can be really used as a combination of value, value stream, flow, pull, and perfection; however, it is difficult to unite them into one single process. Thus, many companies can use only some of these elements in order to increase the production. However, the most important component for modern companies is the value. It reflects the tendency of many major companies to rethink the sense of production, where the mass transforms into the individual case. Moreover, the idea of special product is brilliant and mirrors tendencies in making product not for all but for everyone (the most striking example is *Apple*). One more important point is that lean thinking proposes to take a collective part in every possible production. Creating flow and pull begins with radical reorganizing of certain stages of the process, but the benefits were truly significant as the steps linked together. It can be useful in the context of the recycling production because more waste layers become evident; thus, the process is gradually approaching maximum level of perfection, and the client gets a special value product.

