

Business Report on Lean Systems Thinking for an Organization

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Executive Summary

In 2014, amid class action lawsuits and threats of criminal prosecution, Toyota Motor Corporation thought they could be going under; thought, they could be facing the end of a 77-year old company which Kiichiro Toyoda built from the ground-up. In the wake of newspaper headlines which read, “*Toyota Unintended Acceleration Has Killed 89, FBI to Investigate*”¹, Toyota knew they had to do something... Toyota implemented *lean* thinking, *lean* manufacturing techniques and *lean* systems.² Today, Toyota is a Japanese multinational automotive manufacturer with over 364,000 employees, a net worth of approximately \$236 billion, and represents the 10th largest company in the world by revenue.³

Problem

I understand your company provides both products and services and I realize that you need more information about *lean* systems and *lean* thinking and to consider options for your organization. I have come to understand you are dealing with issues of waste, problems in your supply chain relationships, poor production floor layout, long delays in inventory-retrieval and setup-time, issues with batch scheduling, and a lethargic workforce.

Solutions and Recommendations

This research on lean thinking was specifically performed with your business in mind. It was performed to demonstrate to you how you will benefit from utilizing lean thinking in your organizational strategy. *Lean* thinking, *lean* manufacturing techniques and *lean* systems are the solutions to your aforestated problems. Additionally, I have covered benefits which you will begin to see come to fruition upon implementing lean practices as I have prescribed for your organization.

Part 1: What is Lean Thinking?

Within the first section of this report I will define lean thinking and offer examples of its use. Lean thinking is a philosophy in business which can be applied in both service and product-based organizations. Successful implementation will accomplish three key principles for you: a fast response, high quality, and the minimization of waste.²

Part 2: How to Incorporate Lean Systems

In the second section of this report, I will demonstrate how your company can incorporate *lean* systems into your existing organizational culture and organizational strategy. I ask that you pay particular attention to this part as it contains my solution to your aforestated problems and the results that my research have yielded. My findings and suggestions, which I propose that you implement *post haste*, are packaged below in a way that easily communicates your needs for my altered strategies to leadership. I cover the following solutions and remedies: creating and sustaining a lean culture in the workplace, creating sustainable supply chains, promoting positive social change, and measuring and improving your performance.²

¹ (Reed, 2015)

² (Wisner, 2017)

³ (Market Watch, 2020)

Part 1: What Is Lean Thinking?

Introduction to Lean Thinking

Lean thinking is a philosophy in business which can be applied in both service and product-based organizations. Successful implementation accomplishes three key principles, to wit: a fast response, high quality, and the minimization of waste (Wisner, 2017). Often, companies will sacrifice one in pursuit of another. The difficulty in correctly employing lean thinking and reaping the three aforesaid benefits is what makes a corporation, which has completely implemented lean thinking, so revolutionary. Derivatives of lean thinking include lean systems, lean manufacturing, and lean production. Perhaps paramount to the proper understanding and implementation of lean thinking is that its application is multi-faceted. In seeking the aforementioned three resulting benefits, implementing lean thinking begins first in the mindset of the managers and leaders of an organization, since one's thinking influences their words and in turn influences their actions; one's actions given time and repetition become habits which reflects on one's character and in time is due to become their destiny (Lao tzu, n.d.). After principles of lean thinking have permeated the mindsets of an organization's leaders and managers, a lean redesign of the layout of the manufacturing equipment and/or production floor is in order. A lean culture must be nourished and sustained amongst employees, and the company must be given to acts which support sustainability, both in the supply chain and in the company's positive social-change initiatives.

According to Wisner (2017), I assert that there are seven elements of lean thinking, to wit: waste reduction, lean supply chains relationships, lean layouts, inventory and setup time reduction, small batch scheduling, continuous improvement, and workforce empowerment. These seven will be explained in further detail and elaborated on in subsequent paragraphs and parts of this dissertation. Sam Lombardi is managing partner of Refined Impact, a national marketing agency which specializes in digital marketing. Lombardi (2018) reports on four supreme companies that are implementing lean thinking, and doing it well. He cites Toyota Motor Corporation as his number one selection and in Chapter 9, entitled Lean Systems, in the curriculum text on Operations Management, Wisner (2017) names Toyota a total of 48 times with respect to aspects and proofs of it being a lean company. Toyota specifically exercises lean thinking in its reduction and elimination of seven known wastes and areas of excess, to wit: overproduction, waiting, transportation, over-processing, excess inventory, excess movement, and defects which require scrapping or reworking (Harris, 2007). The other three companies which Lombardi cites as companies possessing exemplary lean manufacturing are Intel, John Deere, and Nike. Lombardi further documents proof for his choices by noting Intel's use of lean manufacturing to reduce the time necessitated for bringing a processor to its factories down from three months to just short of ten days. He points out John Deere's successful implementation of lean controls which are used to monitor the production of substantial parts of their products in efforts to never over-produce or wastefully expend materials. Lastly, by way of one final example, Lombardi (2018) credits Nike for implementing lean manufacturing practices through reduction of poor labor practices in their manufacturing plants overseas. A reduction, which has been quantified to be as much as fifteen percent.

Albeit implementing lean thinking is extremely beneficial to a company and its employees, organizations do face many challenges in their quest for successful implementation of lean practices. After synthesizing Venkataraman (2018) and Ingram (2020), I have identified four principal areas from whence these challenges arise. Firstly, an element of lean

manufacturing is the minimization or elimination of storage of raw materials and finalized products. The terminology created to describe the system necessary to have raw materials coming in at a rate commiserate with final products' demand is called *just-in-time production* or JIT. This necessitates close coordination with a corporation's suppliers and supply chain issues often do emerge. Secondly, with the revision of a corporation's layout and development of more streamlined manufacturing and production processes comes with an increased complexity to employees' jobs. These advances will require company workers and staff to obtain newer certifications or endure increased training. Lest we neglect the additional considerations of this change, it should be noted that this further education, training, and development of employees comes at an increased cost to employers. Thirdly, implementation of lean practices shall require reformation of employee culture. Lean culture involves systems to reward positive actions which promote the corporations' lean initiatives and, here is a big one, employees will have to begin working more closely and working together more as well. For smooth operation within the rigid requirements of lean production, a commitment to reduction of waste across the ranks of employees is in order, as is employees' need to work fluidly as if they were one organizational unit. Fourth and lastly, I assert that technological challenges will emerge. Lean production will require increased financial costs to acquire and implement new technology and employees will need to undergo adequate training to be efficient with new systems. It should be known early on that one of the principle traits of a properly implemented lean organization is automation. Choosing adequate and appropriate systems is important albeit an arduous process. If a company is to pursue lean initiatives, these are just a few of the challenges they will be dealing with. The promise is that the rewards for successful implementation will be great and will be worth the process.

Lean Thinking Applied to Product Systems

Having just reviewed the tenets of lean thinking and having obtained a vast overview and broad working knowledge of the subject, let us now examine the results of lean thinking within the context of product development. The foremost consideration for lean product development is designing new products which are iteratively more efficient and effective. Efficiency helps users of the product reduce time and efforts which, if it were not for the product, would otherwise have to be spent. Creating effective products involves prior comprehension of what is required to create value for the consumer, which in turn, requires knowledge of what the consumers' needs are (Lynn, 2020). A great complication exists in that, unlike a service-system (which I will review next), the time between development of a product, customers' use of that product, and feedback received to better the product is greatly protracted. To appropriately apply lean thinking to a product system, iterative design and development revisions must be employed. As aforesaid, it must be stressed that employee culture be refined such that employees' duties and responsibilities have significant overlap and the employees work as if they were one organizational unit.

Lean Thinking Applied to Service Systems

Lean concepts may have started within product-based organizations, but its principles are just as effective within a service-based company. According to Sarkar (2009), *lean* is a philosophy for improvement. Often, service-based organizations are consistently seeking to add value to present service-offerings. Contrarily, lean thinking applied to service systems is about focusing on aspects which do *not* add value *per se*, but instead refine the existing service

offerings. This could matriculate in any of three ways, to wit: a reduction in cycle time, touch times, or lead times. The first of which, a reduction in cycle time has to do with decreasing the amount of time an existing service offering takes to complete. This could be with improvements to efficiency or the synergistic effect which occurs when more workers converge on the same project. Examples of reduction in cycle time abound. Consider, for example, the speed with which two workers could wall-mount a television as compared to if only one worker attempted to tackle the task. The second way in which lean thinking can manifest itself within a service-system is through a reduction in touch times. The less frequency with which staff is required to appear to maintain systems or the number of times in which they need to return to a customer's location for maintenance items, the more lean that organization is considered. A third, and final way, I suggest for lean thinking's application in a service-organization is with respect to a reduction in lead times. A reduction in lead times constitutes faster response to customers' requests for service and faster performance of those services. Each are great examples of lean thinking applied to service systems.

Lean Layouts

The physical arrangement of work areas and equipment constitutes the firm's *layout*. The firm's layout is important and affects operational costs and efficiency (Pinto, 2018). When considered strategically, layout can help an organization achieve its desired business outcomes. Synthesizing Pinto (2018) and Venkataraman (2018), I present several great examples of lean thinking implemented into layout decisions. Venkataraman (2018) reviews an oil-burner manufacturer named R. W. Beckett that was successfully able to reduce its space and inventory requirements while simultaneously improving work flow through development and implementation of a lean material-handling layout. At the onset, management reported cluttered factory work areas with inventory storage filled to overflowing. There were also issues with the fundamental processes of turning the firm's inputs into outputs. Redesign of the layout and finding the optimal layout took numerous iterations. Ultimately, however, the firm settled on a U-shaped redesign for the facility layout. R.W. Beckett was able to see a 10% reduction in space requirements and an 85% reduction in plant-wide inventories while keeping up with the same output as they had previously been producing (Venkataraman, 2018). This layout redesign brought products, materials, and workers closer together. It minimized the need for workers to bend and twist physically to get their hands on the next part in the manufacturing process. Lean layouts are about processes being positioned in such a way that facilitates take on a smooth workflow throughout the facility (Pinto, 2018).

Part 2: How to Incorporate Lean Systems

Creating and Sustaining Lean Cultures

Creating and maintaining a lean culture within a product or service-based business begins with a top-down approach. If the directors are not involved or interested in cultivating a lean culture, then neither will the managers be either. The same equally holds true with lower ranks and *their* immediate supervisors. There are a couple components of a lean culture: Managers create an atmosphere which encourages workers to notify them if they foresee any problems and training and cross-training is valued in the firm. Wisner (2017) details six additional elements of a lean culture. First, workers feel competent and comfortable in seeking assistance and to help others as needed. Second, employees are enabled and supported by superiors to take actions as necessary to continually improve their processes. Third, employees take an active interest in the wellbeing of the company. Fourth, workers are encouraged to actively participate in finding and correcting any problems which arise, creating a culture of unity and a sense of togetherness. Fifth, workers are empowered and given the capacity to affect change. Sixth, superiors inspire subordinate staff and encourage creativity and the free-flowing of innovating ideas, in conjunction with, celebrating the successes of the employees.

Lean culture doesn't happen overnight and occurs iteratively. Likewise, maintaining a lean culture is a continual and refining process. Service and product-based organizations each follow similar processes and few, if any, differences exist in creating or sustaining a fruitful, lean culture. With respect to global or international organizations, I would just stress the need for a consistent adaptation of lean cultural principles amongst superiors, managers, and subordinate staff equilaterally. Particularly with the widespread corporate integration of VoIP telecommunications technologies and geographically-agnostic networking solutions, global corporations are nearly just as capable of fluid communication as are domestic corporations and few differences abound.

Creating Sustainable Supply Chains

Creating a sustainable supply chain starts with managers identifying areas where waste occurs and determining the exact causes, then taking action to eliminate or greatly reduce waste (Venkataraman, 2018). Using Sage Publications (2018) as a reference, I assert that there are several additional steps which companies can take to create a sustainable supply chain. Firstly, organizational goals must be clearly defined and any suppliers which do not align with the corporate goals for sustainability must be replaced. Goals for sustainability can also dictate particular materials or components to be used in the construction of a part or product. It may be to accomplish *green* initiatives or goals for the sourcing of environmentally friendly materials. In another example, constraints may be established to restrict the speed of production or place limits on the acquisition of certain inputs which may be restricted. Conversely, what is constituted as sustainable by one organization may not be the intended definition of another. Differences in a firm's definition of sustainability can be seen in the following example: Where one is considering preserving natural resources, another may be considering factors which affect reliability of inputs such that production of outputs does not decrease or slow due to unavailability of a raw material or other input.

In designing a sustainable supply chain, optimally, many departments should be involved, from facilities management to inventory management, and since a key to lean-thinking these days is

automation, the information technology division should be involved as well (Sage Publications, 2018). Up for logistical consideration are also decisions such as whether to outsource component manufacturing or assembly, or whether to handle these roles internally. Lean-thinking organizations should weigh such decisions as the number of manufacturing plants, warehouses, and distribution centers needed to appropriately provision products and services as offered. The general flow of information and inventory must be principally considered in creating a sustainable supply chain.

Promoting Positive Social Change

As aforesaid, creating a sustainable supply chain begins with managers identifying areas where waste occurs and determining the exact causes, then taking action to eliminate or to at least greatly reduce said waste (Venkataraman, 2018). When organizations begin to implement lean thinking into the organizational culture and put lean principles into practice, organizations will begin to contribute to positive social change. Besides lean culture, creating sustainable supply chains will also make great strides at preventing or at least decreasing long term negative impacts on the environment and society as a whole. In accord with Amazon News (2016), I assert that positive social change can be created through donating items which the firm produces through its sustainable supply chain, through community efforts, or by identifying and reducing waste and inefficiencies.

Additionally, in accord with Vative (2015), I contend that positive social change can be promoted through employing persons with special needs like Publix has been known to do. Positive social change can also be implemented through organized and clean work environments which reduce work injury and promote efficiency, or through creating more value while consuming fewer resources without reducing quality or simply cutting costs. Sustainable supply chains and positive social change both have to do with understanding what the customer values and then continuously increasing those product values. It can also be cultivated through improving customer loyalty, industrial competitiveness, or lean culture within the organization. Industrial competitiveness can be promoted by reducing long wait times, increasing customer options for materials produced, increasing quality, and by promoting consistency in factory output.

Measuring and Improving Performance

According to Pinto (2018) the measurement of a successful lean system's impact is not seen in monumental strides. Quite contrarily, I assert that improved performance as a result of implementation of lean thinking is measured in small increments. The measure of a corporation's improvements in performance can be done by evaluating progress toward the goal of finding the simplest way to accomplish a given task or operation. The United States Navy considered how to measure performance and contended that the measure could be found in the number of touches and process time at each step in a process. Touches refer to the number of times a part required handling or processing. Remember, as aforesaid, one of the principle traits of a properly implemented lean organization is automation. In proving the U.S. Navy's theory for measuring performance, I would note that automation reduces touches while decreasing process time. Additional methods by which to measure performance improvements includes analyzing operational excellence, improvements in the firm's layout, improvements in product flow, and reductions in inventory levels. Becoming a lean corporation is not something that can be done in

one-step and it is not a one-size fits all prescription for transforming an organization. Implementing lean thinking and lean principles is both a gradual and continual process.

In summation, once executives choose to enact lean systems in their organization, they must realize that they will be making a commitment to continual improvements in their organization over time. These improvements consist of improving quality, eliminating waste, and promoting positive social change through imposing a sustainable supply chain. Organizations should then follow up by measuring their own performance in several key areas, keeping in mind that improvements in automation do go a long way toward a successful implementation of lean manufacturing and lean production.

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