

Table of Contents

"The Lean Machine: How Harley-Davidson Drove Top-Line Growth and Profitability with Revolutionary Lean Product Development" - Dantar P. Oosterwal	3
Reference	3
Notes	3
<i>Summary</i>	3
<i>Creation of Learning Organization</i>	3
<i>Problems with Projects and Over-utilization - Firefighting</i>	4
<i>Addressing Problems with a Common Portfolio Cadence</i>	5
More Pithy	6

"The Lean Machine: How Harley-Davidson Drove Top-Line Growth and Profitability with Revolutionary Lean Product Development" - Dantar P. Oosterwal

Reference

["The Lean Machine: How Harley-Davidson Drove Top-Line Growth and Profitability with Revolutionary Lean Product Development"](#) - Dantar P. Oosterwal.

Notes

Summary

Brilliant book, just brilliant, if you are trying to understand how to implement "lean" type thinking approach to the problem of new product development and how your culture has to change. To quote Clement Stone "You are a product of your environment. So choose the environment that will best develop you toward your objective. Analyze your life in terms of its environment. Are the things around you helping you toward success - or are they holding you back?" This is a book about "helping you toward success".

Creation of Learning Organization

To quote some of the ideas:

- "Initially, consensus-driven decision making appears slow and cumbersome. Every employee involved in a decision feels the need to be part of the discussion and provide input on the decision before it is made, vastly protracting the decision process. But although the initial decision-making process is painstakingly time-consuming and arduous, the payoff comes in the implementation of decisions. The consensus-building process creates buy-in and commitment as it vets the alternatives and the constituents become personally committed to success."
- "We tend to focus on the parts that are visible rather than seeing the whole, and in turn, we fail to see the organization as a dynamic organism. Systems thinking argues that a better appreciation of the system leads to more appropriate action."
- The five disciplines of a learning organization are:

- Systems thinking: “Classically, we look to actions that produce improvements over a relatively short time horizon. However, when considered from a systems perspective, short-term improvements often involve very significant long-term consequences.”
- Personal mastery: “Organizations are comprised of individuals. Organizations can only learn through individuals who learn, but individual learning does not ensure organizational learning.” and “Personal mastery is a special kind of proficiency and confidence in one's ability to the extent that one is able to question it openly and accept criticism from others. Personal mastery is not about dominance, but rather about balancing inquiry with advocacy, about acceptance of others' opinions even without fully understanding”
- Mental models: “For any organization to develop the ability to work with mental models, people must first learn new skills and adopt an orientation of trust and openness to the thoughts and perspectives of other people.”
- Building shared vision: “When a genuine shared vision (no to be confused with the all-to-familiar 'vision statement') is built, people excel and learn, not because they are told to, but because they want to.” and “The art of building shared vision requires establishing a common perspective of the current situation, then involves the skill of unearthing shared 'pictures of the future.'
- Collective team learning: “The discipline of team learning starts with dialogue, the capacity of team members to suspend assumptions and judgment to genuinely “think together.” “Dialogue occurs when there is a free flowing movement of ideas, when a group becomes open to the flow of a larger intelligence and thought is approached largely as a collective phenomenon. When dialogue is coupled with systems thinking it creates a language more suited for dealing with complex issues and there is a shift to focusing on deep-seated structural issues rather than short-term problems.” “A very important aspect of team learning is to recognize that when there is disagreement, a group will talk for ten or fifteen minutes on a topic. But when there is agreement, a team will talk for hours on a topic as they build on each other's ideas and learn collectively. It is important to recognize that silence does not constitute agreement. Contrary to conventional thinking, silence generally means something is missing and there are unresolved differences in the group that need to be uncovered.”

Problems with Projects and Over-utilization - Firefighting

There is the notion that “Most organizations unintentionally create systems that require extraordinary people to deliver ordinary results. These extraordinary people are rewarded for their ability to game the system. In a complex system, success in one area is often achieved at the expense of another area unless a holistic approach is applied to the overall system. When a development process is created with an understanding of the dynamics of the system, a development system can be created where ordinary people can collaborate to deliver extraordinary results consistently across the entire development portfolio.”

One specific problem that we all see is a system that rewards “Firefighting”. The proposed solution to firefighting is to increase visibility of the practice through “system maps”. “Firefighting is the practice of reactively pursuing issues as they surface in the development process. Firefighting is distinguished by last-minute heroics to save a project.” “Firefighting exists in a bimodal semi-stable state like a ball on the plateau of a hill. As issues surface in the development process, they cause disruptions. If the issues are

relatively small compared to the resources and knowledge available to resolve them, the issue may generate some panic, but the system can absorb the temporary disturbance and return to a normal state as the problems are addressed. However, if the issue is large or resolution of multiple issues becomes protracted, the system decays into a permanent state of ongoing firefighting." To address fire-fighting "system maps are used to describe the causal loops and the dynamics of the system. Utilizing causal loops to describe project-related firefighting helps to uncover the underlying causal relationships and the organizational behaviors that results in firefighting."

Firefighting comes from over utilization of resources "There are three important realizations learned from operating beyond the brink:

1. Although firefighting is well intentioned and initially used only when a project gets into trouble, once initiated, firefighting quickly becomes the de facto development process. A reliance on firefighting serves to drive out proper, disciplined process execution.
2. An influx of workload can initiate firefighting and result in a permanent deterioration of overall system performance. While the cost of permanently overloading a development organization is tremendous, the implication of a tipping point is that the complexities of the development system make it extremely fragile with a propensity toward firefighting. Even a temporary overload can initiate a vicious cycle of costly firefighting.
3. The location of a tipping point, and the susceptibility of the development system to degrade into the firefighting phenomenon, is determined by the steady state of resource utilization. As competitive forces drive companies to be increasingly more efficient, they streamline their organization, with the result that smaller disruptions to the system draw the organization into a firefighting spiral. "

The key thing to understand here is "People who operate within the development system are rarely directly to blame. Individual mistakes happen. However, consistent lack of performance must be attributed to systemic issues. To improve the development system, it must first be recognized that a bad system will always undermine even the best efforts of good people. Bad systems beat good people every time!"

Addressing Problems with a Common Portfolio Cadence

Cadence is a tool to help as it is "the basic time element that supports flow. Cadence is the rhythm and the heartbeat that drives effective product development." "In the manufacturing environment, "takt time" refers to producing goods or services according to the pace of customer demand." "Takt time (TT) is defined as the available work time (TA) divided by demand (D) for the products over the same period. $TT=TA/D$ " "In a physical environment such as a manufacturing plant, takt time can be calculated by dividing the available time for production by the sales demand for the products (that is, the number of units needed)." "The optimal flow is achieved when takt time is balanced across all steps in the operation." "The corollary to takt time for the product development environment is "cadence." In the product development environment cadence is the basic time element that supports flow. Cadence is the rhythm and the heartbeat that drives effective product development."

"Cadence is even more critical in the product development environment, where flow is not inherently observable." "Cadence is the metronome to pace work in all areas of business outside standard, routine

production.” “Just like air traffic controllers establish the landing patterns and cadence of airplanes to synchronize arrivals regardless of size, distance traveled, experience of the crew, or any other attribute, so that the planes follow an identical, predictable pattern when landing, a pattern and cadence that encompasses all aspects and varieties of projects in the development portfolio must be established in product development.”

The contrast here is versus more traditional project management techniques “The application of project management techniques to facilitate product development has become standard.” Referring to project management techniques aimed at ensuring a successful project “Although each of these actions is put in place to aid project delivery, they often unintentionally pervert the fundamental need of multi-project product development, which is the need to establish consistent predictable flow through an organization-wide cadence.” “Actions that optimize individual projects generally serve to suboptimize the portfolio of projects as a whole.” “In the case of significant shared resources it is worth noting that the impact is even more acute. When work bunches up, it causes project delays that in turn require shuffling priorities, which further exacerbates the problem. When projects are individually optimized, the bunching and delay of work creates a domino effect across the development portfolio.”

The optimal cadence is determined by an application of Little's Law “By manipulating Little's Law to fit product development, the new product introduction rate-development throughput (TH)-is found by dividing the work in process in the development portfolio (WIP) by the time to complete a project (CT)” “The cadence of new products can be determined from this relationship. Why is this important? Leadership must determine the rate of new product introduction (TH) that supports their long-term business objectives. This can only be the role of senior leadership because it often involves deselecting highly desirable projects from the portfolio (WIP) to balance the capability of the development organization. Leadership must then proactively manage the development system to ensure that projects start, progress, and launch according to a steady cadence (CT).”

Once this was determined “The combination of standardization of project types with the convergence of projects in July established the foundational elements of cadence and flow. From a project management perspective, there are three variables to manage: scope, schedule, and resources. Historical data indicated that successful projects used approximately the same amount of resources within each project classification. This allowed fixing the project resource allocation for each project type. The completion deadline of July fixed the end point of the schedule. Fixing the starting point of projects bound the allowable scope of projects. Having these three fixed project management variables allowed standard elements for capacity planning and budgeting.” “The result of standardizing the three elements of project management (scope, schedule, and resource) established elements of work that became known as “bin” classifications.”

Interesting [story about the Wright Brothers](#), about how they focused on learning things rather than building an airplane because “flying was too dangerous”. “Their greatest contribution may well have been the development process that yielded the airplane.”

More Pithy

- “The 'five whys' of problem solving had degraded to the 'five whos' of blame”
- “When a project fails, the failure is generally blamed on the project leader rather than recognizing

that the system in which the project leader operates is a much greater determinant of success and failure than the project leader"

- "Actions that optimize individual projects generally serve to suboptimize the portfolio of projects as a whole."

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