

Book Review

This is Lean - Resolving the Efficiency Paradox by Niklas Modig and Pär Åhlström

Trond Bølviken¹ and Lauri Koskela²

This is Lean - Resolving the Efficiency Paradox is an ambitious contribution to the genre of easy reader introductions to lean. It is ambitious because the authors Niklas Modig and Pär Åhlström have a dual ambition. Their aim is to combine an easy reader explaining the concept of lean in an understandable way for an uninitiated audience with a theoretical and conceptual ambition, namely to provide the definitive answer to the question What is Lean? It is this combined ambition of simplifying and making a substantial theoretical contribution that has prompted us to write this review.

The conceptual reasoning in the book can be condensed as follows: In a process, something is moved forward. This something is called the flow unit, and can be material in the form of a physical product being produced, information being processed or people experiencing something (p.19). There are two different types of efficiency. Resource efficiency is how efficiently resources are being utilized (p. 9) while flow efficiency is how efficient a unit flows through the process, that is, how much of the total throughput time the flow unit is actually being processed (p. 13). Flow efficiency focuses on the amount of time it takes from identifying a need to satisfying that need (p. 5) and looks at the density of the value transfer from resource to a flow unit (p. 27). The efficiency paradox, however, is that a greater focus on utilizing resources efficiently tends to increase the amount of work there is to do (pp. 47-66), and it is difficult, if not impossible, to combine high resource efficiency with high flow efficiency (pp. 16 and 45). Lean is a strategy for resolving this paradox (p. 66), and is defined as an operations strategy that prioritizes flow efficiency over resource efficiency (pp. 117 and 127). Value should always be defined from the customer's perspective (p. 24), and is seen as something that is transferred from a resource to a flow unit during the production process. The flow unit "receives value" during production (pp. 14, 23-24 and 27). A value-adding activity is one in which the flow unit is being processed, whereas an activity that does not process the flow unit is wasteful (p. 24). To exemplify, the story of Alison and Sarah is used throughout the book. They are two patients experiencing two different healthcare systems. Alison experiences a system in which the resources in the system are used efficiently. Alison has to adapt and wait for the doctors, not the other way around. Consequently, it takes 42 days to give Alison her

¹ Director of Strategy, Improvement, HR and HSE, Veidekke Entreprenør AS, Norway.

² Professor, School of Art, Design and Architecture, University of Huddersfield, UK.

diagnosis. Not so with Sarah. She meets a system that is flow efficient. The doctors are ready to do what is needed almost immediately, and she gets her diagnosis in two hours. The lean system in this example seems superior, and the authors write about lean in an enthused manner. However, in the epilogue, they end up stating that the two strategies “both have their own advantages and disadvantages” (p. 156) and let it be understood that they are not recommending either.

How should we assess this explanation of lean, oriented around the concepts of resource efficiency and flow efficiency? Let us address resource efficiency first.

The selection of the term resource efficiency is unfortunate as it has already a settled meaning, namely the efficiency of using the resources of the Earth. The term as used by Modig and Åhlström is not related at all to this - as they very clearly say, it is about capacity utilization (p. 10), about taking care that machines and workers are busy. However, this is not the only meaning that the authors give this concept. For them, resource efficiency is also about doing necessary (value-adding) work - unnecessary work should not be taken into account when measuring capacity utilization (p. 122). Curiously, and rather confusingly, the authors seem to use this one term of resource efficiency in these two different senses in the “efficiency matrix” (for example p. 121).

However, the authors seem to misunderstand the concept they have coined and use it also in a third sense. The authors claim that “for more than two hundred years, industrial development has been built around increasing the utilization of resources.” (p. 9) Furthermore, they claim that Taylor, when studying shovelling, was promoting resource efficiency (p. 161). In both cases, the question is about productivity: industrial development, along with Taylor’s aligned efforts, have focused on improving productivity of the resources (men and machines) rather than their utilization. A moment’s reflection reveals that industrial development based on increasing the utilization of capacity would soon hit the ceiling of 100 % utilization - it is the capacity that has to be increased, through higher productivity.

Thus, the narrative of resource efficiency as the mainstream concept of production before lean, and indeed as a counterpart to lean, seems to be held together only by understanding it in three different senses.

What about flow efficiency and its primacy, then? Actually, this is not a new idea at all. As a general idea, this principle was stated³ and known already during the heyday of scientific management. Since then, the primacy of flow efficiency has been promoted especially by Shigeo Shingo (1988, 2005), who has presented his model of the two flows of production in several books. Shingo calls the first flow the *flow of operations*. This is the flow of the production resources (work, machinery, etc.). Shingo calls the second flow the *process flow*. This is how the product that is being produced flows through production. Shingo’s fundamental strategy is to improve what he calls the process before attempting to improve operations. However, Shingo wants to improve the productivity of operations, not only the utilization of capacity. It remains unclear whether the authors are familiar with Shingo’s work. Shingo is one of the classics of production theory and it is therefore

³ Clark (1922) says: “The part of the work of management described above, that is, keeping work moving through the plant at a rapid pace, should be well organized before very much time is devoted to individual production, because the delays under the control of management are usually much greater in extent than those under the control of individual workmen, and because improvements in the management will have an appreciable effect on the output of the workmen.”

somewhat surprising that Modig and Åhlström make no reference to him at all, thereby leaving the impression that this is an original contribution from them.

One author they do make reference to, is John Krafcik, who in 1988 introduced the term lean. For Krafcik lean means *without buffers*. He discusses the effects of leanness or bufferedness of different production systems. He sees lean as a higher risk strategy compared to buffering, but his empirical data indicate that the risk is paying off: in general, lean car manufacturing systems perform better on productivity, quality and flexibility than buffered systems. Since Krafcik introduced the term lean in 1988, it has conquered the world. At the same time, it has lost the precise content Krafcik gave it. After identifying 38 different types of lean (Lean accounting, Lean design, Lean leadership, etc.), Modig & Åhlström set off to develop their own definition. They go for a high level of abstraction, giving their definition a global ambition. The definition they present is that lean is a “strategy that prioritises flow efficiency over resource efficiency” (p. 117). Of course, this is in the right direction - at least if the reader succeeds in identifying the right meaning of resource efficiency (namely productivity of a productive resource)! Perhaps it would have been helpful to mention that in practical situations the interpretation of this abstract definition is not always easy and straightforward. For example, there are stationary industries, such as construction, where the “flow unit”, the product itself, does not flow; instead, the resources flow over the product.

Another question is whether lean can be exhaustively defined without using concepts like value, waste and continuous improvement. The concept of value is discussed in the book to some degree. However, the approach is somewhat surprising. In the lean tradition, value is commonly seen as value for the customer. Value in this tradition is about the utility of what is coming out of production, about benefits and the ability of the product to satisfy needs and desires. Instead of this approach to value, Modig & Åhlström seem to base their reasoning on Michael Porter’s (1980) value chain and see value as something that is transferred to the product during the production process, the product “receives value” during production (pp. 23-24, 27). In the book, Alison and Sarah are part of a service production and they are themselves the flow units flowing through the system. Being both flow units and customers at the same time, for them the questions of value and flow efficiency become identical. This, however, is not typical for production as such. In manufacturing, value for the customer is related to the price and quality of the product the customer buys, not to the flow of the production process.

The presentation of waste is in the book entirely based on Taiichi Ohno (1988), and as such in line with mainstream lean. However, the authors get limited mileage out of it. Namely, the two contrasted strategies could easily have been illustrated through the famous list of seven wastes, which “inhibited the production flow” at Toyota (p. 73). One waste there is waiting: machines waiting and workers waiting. Actually, this is resource efficiency strategy presented through the lens of waste: one gives priority to the elimination of this waste. Instead, the flow efficiency strategy addresses the seven wastes. What does this tell us? Resource efficiency strategy is a partial strategy; only one type of waste is addressed, whereas the flow efficiency strategy attacks all seven identified wastes. Clearly, one should use the whole range of options - the resource efficiency strategy is weak and biased at the outset and should not be proposed as being on a par with flow efficiency strategy, as Modig & Åhlström suggest.

Here and there in the book, the important role of continuous improvement in lean is mentioned. Unfortunately, the proper treatment of continuous improvement boils down to

less than three pages of chatty text (pp. 151 - 153), where the omission of the Plan-Do-Check-Act (PDCA) cycle is a glaring gap. This omission is at best puzzling.

The authors are surprisingly inconsistent regarding some of the terminology used. The book is founded on the explicit definition of the term lean as “an operations strategy” (p. 117). This definition, however, is not used in a consistent way: In one section, lean is no longer a strategy, but a “state” (p. 149), in another “a goal” (pp. 90 - 92, see also 127). On page 151, the operations strategy in question is no longer to prioritize flow efficiency over resource efficiency, but instead to continuously improve the flow efficiency (p. 151). Early in the book, when introducing “the efficiency paradox”, the authors state that it is difficult, if not impossible, to combine high resource efficiency with high flow efficiency (pp. 16 and 45). Later it turns out, according to the authors, that this is not impossible at all, but actually a realistic goal if one follows the advice given in the book (p.127)!

Is “This is Lean” a good book? Our answer is yes and no. Yes, because it is easy to read. It uses some intuitively understandable examples and analogies (for example, the story of Alison and Sarah, the football pitch as a metaphor for jidoka) and thereby creates an experience of understanding. However, when one goes beyond the easy read and looks more thoroughly on the theoretical and conceptual contributions of the book, the conclusion is that they don’t hold. Thus, the book ends up not delivering what it promises, namely a consistent explanation of what lean is. Now the book is an odd potpourri where apt insights, interesting analyses and readable illustrations mingle with confused concepts and discussions, undeservedly omitted topics lurking in the wings. The significance of the book may well be that it serves as a reminder that the two goals, that of defining the underlying theory of lean, and that of providing an accessible and coherent introduction to lean, still await fulfilment.

The book is available in several languages and is promoted through the web page www.thisislean.com and by the Lean Construction Institute, www.leanconstruction.org/about-us/publications/.

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List of references

- Clark, Wallace. (1922). Relieving Industry of Burden. Mechanical Engineering, December, pp. 819 - 820.
- Krafcik, John. (1988). Triumph of the Lean Production System. Sloan Management Review, Vol. 30, pp. 41 - 52.
- Ohno, Taiichi. (1988). Toyota Production System. New York: Productivity Press.
- Porter, Michael. (1980). Competitive Strategy. New York: Free Press.
- Shingo, Shigeo. (1988). Non-stock production: The Shingo system for continuous improvement. Cambridge: Productivity Press.
- Shingo, Shigeo. (2005). A study of the Toyota production system. Boca Raton, London and New York: CRC Press.