

Managing Variation to achieve Product Production Performance

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Lean practitioners are acutely aware of the impact variation can have on process performance. Some variation is wanted variation and thus “good”; all other variation is “bad.” For example, designing a building fit-for-purpose means valuing-in “good” variation (in number and other qualities); so we are surrounded by a variety of buildings, hospitals, schools, etc. Lean practitioners practice “seeing” variation, distinguishing good from bad, ruthlessly eradicating bad, and only then buffering against any variation that remains.

The efficiency paradox that stems from “the law of the effect of variation on processes” can be expanded upon by highlighting two incarnations of variation that impact project production performance.

As design and construction professionals, we have yet to deeply grasp the impact our product choices have on process performance, and vice versa. When sharpening our pencils to design a product’s specifics with value creation in mind, we all too often overlook the “matching problems” we thereby create by choosing increasingly unique parts. We lose the potential benefits of using process improvements—for instance by standardizing and allowing for product substitutability—in case variation were to occur (something goes wrong, and Murphy says it will) in the part’s supply system.

When dividing work in pieces each to be done by a specialist, we create networks with sequences of tasks that merge before follow-on tasks can start. More paths merging increases the likelihood of delay of the follow-on tasks; this is the “merge bias problem.” We lose the potential benefits of using process improvements—for instance using product and process modularity, preassembling, and kitting—in case variation were to occur.

Lean thinking means replacing our deterministic conceptualization of the world and replacing it with a stochastic one—distinguishing good from bad variation. “Regardless of the source of variation, it affects time” (M&A p. 41). Awareness of matching- and merge bias problems will serve lean practitioners create increasingly robust project production systems.