Where Your Productivity Problem Is Hiding

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The farther we get from the production line, the less adept we are at managing productivity.

(IW – William Heitman: 3-10-16) A global auto parts manufacturer was introducing a new engine component and wanted to use more digital technology for its assembly and packaging.

Its industrial engineers designed a full-scale prototype and proceeded to testing. Videos and other documentation ensured relentless scrutiny, fine-tuning and consistency.

The results were impressive: factory labor was cut by more than half.

Although the team's actions seemed instinctive, they followed a centuries-old "industrialization" process that balances three characteristics of effective work: *standardization, specialization of labor* and *management of worker autonomy*. As they would eventually learn—painfully—these characteristics apply to any work anywhere in the company.

For example, the new robotics required more rigorous levels of parts interchangeability. This required that existing standardization for parts be improved to levels measured in microns. Next, the work activities had to be redistributed among new machines and workers. The existing specialization of labor was redesigned. Job roles and tasks were restructured. Finally, the new robotic process required changes to the workers' traditional decision-making authority—their autonomy. A new schedule of worker decision authority was specified and managed as precisely as a parts list for inventory.

The goal of industrialization is to harmonize the operation of tangible capital—machinery—with intangible capital, especially human activity and know-how. Well-documented records of work methods allow businesses to convert the

skills of individual workers, which are costs, into institutional knowledge, which is an asset.

This institutional knowledge is the company's "experience curve." It is a critical component of the intangible capital that accounts for a majority of the value of businesses today. It provides a formidable barrier to competitors. And, ideally, it advances in a never-ending march of increasing refinement.

Like any asset, however, the experience curve can be underused and its value wasted. Anything that reintroduces errors, ambiguity or variance undermines a painstakingly developed experience curve.

Often this wasted value is the unintended consequence of an otherwise well-intentioned improvement. Call it "Virtuous Waste."

Unfortunately, a malfunctioning experience curve will not leak oil or flash a warning buzzer. This intangibility, plus the good intentions that inadvertently created the waste, means the symptoms will likely be overlooked and misinterpreted.

And that is precisely what happened a year later at the auto parts maker. Downtime had increased gradually and persistently. No one knew why. To investigate, engineers added a new digital entry station to each machine operator's station. The plan was for workers to enter the reasons for machine downtime directly into the plant control system.

In theory, this was an excellent idea. In practice, it only created a new problem: each digital station used a free-text entry field. No standardized directions, codes or drop-down menus were provided. This allowed each operator to describe a downtime root cause "using his own words." The result: an entry station at a single machine typically generated more than a thousand "falsely unique" descriptions.

In hindsight, the problem was obvious. The implementation of the digital entry stations ignored the three elements of industrialization: standardization, specialization of labor and management of worker autonomy. The solution was simple: integrate these elements into root cause identification.

The hard part was recognizing that the well-intentioned digital improvements had

backfired. Virtuous Waste is difficult to spot and painful to acknowledge. It's a psychological problem, not a technical problem.

The improvement team worked quickly to industrialize. It discovered that many causes were merely identical problems worded differently. Fewer than a dozen causes accounted for three-quarters of the downtime. Standardized drop-down menus were added to the entry stations.

More than half of the newly standardized causes, however, involved operator error: misunderstanding the operating instructions, mistreating the equipment or misdiagnosing the problem. Thus new rules to manage worker autonomy were needed. The plant changed workers' "decision rights" and introduced specialization of labor for diagnosis. An operator could enter simple causes. More complex causes required consultation between the operator and his supervisor. A third category required diagnostic tests prior to entry. All of this was documented on laminated cards mounted next to the entry stations.

Downtime was cut by three-quarters in eight months.

Want to find a treasure trove of Virtuous Waste improvements in your business, as this manufacturer did? Search beyond historically industrialized areas. Industrialization receives generous management attention when it involves the direct activities of production. Look at worker activities that are about production, that are one step removed from the line. Scrutinize them every bit as scrupulously.

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