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DISTRIBUTION AND MATERIALS HANDLING FOCUS

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Is it possible to tap into the collective wisdom of the crowd" distribution and manufacturing workers) to gain insight into how to improve work processes and productivity in manufacturing and distribution environments?

Yes, according to Steve Mulaik, a consultant at The Progress Group. In what he refers to as "crowd engineering," Mulaik offers an approach that in part uses the somewhat well understood concept of "preferred methods," and then combines it with some smart new age thinking about using today's resources to find a better way to get the job done.

Pioneered by industrial engineer Gene Gagnon in the 1970s and 1980s, "preferred methods" refer to a determination of the best way to do a particular job in the DC, whether it be order picking or truck loading. In general, a preferred method will define the most productive way to do a job within constraints of safety and quality, versus the widely variable ways tasks get done by individual workers without such a definition. Gagnon, in fact, used to say that "an engineered standard is invalid unless it is based on a preferred method."

A preferred method is much more than a list of tasks (e.g., scan this, enter that) that a worker must do in process sequence. A method, for example, would define how and when an order picking on a pallet jack should get on the equipment and drive to the next location, walk with the equipment, walk to the next location without moving the jack, define where the jack should be parked in the aisle, how the labels should be held and applied, etc.

Unrecognized by many logistics managers: having each employee do the job the right way can shave valuable seconds off each task, every time, and that adds up to real savings when multiplied across dozens of workers, hundreds of shifts, and tens of thousands of tasks per year.

How much? As much as 30% savings from current baselines, says Mulaik, though he takes a different approach to the problem that more aggressively uses the collective knowledge of the workforce to develop the methods.

"Traditionally, the one "best way" or "preferred method" was determined mainly by the engineer. My experience has been humbling in this area," Mulaik told SCDigest. "I find the operators know a lot more than we engineers give them credit for. Some of this is explicit knowledge; much of it is unconscious. I want to say the "preferred method techniques" of the past downplayed the role of the operator. I would elevate it. "Crowd engineering" is about tapping that unconscious process knowledge."

He says that often, other process improvement techniques put the emphasis on the engineer. "Engineers make assumptions about what people can do. They also don't have the benefit of practical insight because they don't do the job," he adds. "Crown engineering is new in that it gives the operator a much more central role in determining the preferred way and as a re-

sult the new process is rich with lots of practicality because many of the ideas come from the best operators. This also helps change management; how can you argue with a technique that someone next to you is doing already?"

While some industrial engineers would likely argue that the input of the workers through discussions and observations is in fact key to development of methods, Mulaik says it is in some respects method development is becoming something of a lost art, or not being taken as far as it could for maximum results.

The concept of crowd engineering for distribution and manufacturing is based in part on the thinking of James Surowiecki, author of the 2008 book *The Wisdom of Crowds*.

In that book, Surowiecki wrote that while in a race, the average runner by definition will not be as a good as the fastest athlete, "ask a 100 people to make a decision and the average decision will be at least as good as the most [intelligent] person. We are programmed to be 'collectively smart.'"

Video Observation and Analysis

Mulaik notes that part of the problem companies have is that most have significantly downgraded the number of industrial engineers on their staffs over the past decade or more. This is especially true in distribution, where the number of companies with full-time, on-site engineers has dropped dramatically.

As a result, there is almost inherently less of a focus today on process analysis and improvement. That can be compounded by various labor reporting systems that can sometimes drive supervisors to spend more time looking at numbers than really working with operators on how to better do the job (though Labor Management System providers will argue that such "coaching" is a core part of a total program.)

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A critical point, Mulaik says, is that in reality, it is the methods that workers use in distribution and light manufacturing that actually explain most of the differences in productivity, not motivation or skill level, as is usually assumed.

It takes real analysis to get at potential productivity gains because "Large gains in productivity are achieved not through finding two or three things associated with a process that each saves 10%, but by finding many small things that each save 2% to 3%," Mulaik adds.

With his crown engineering approach, Mulaik suggests videotaping a large number of workers each doing the same job, and analyzing the process each worker uses for what typically is a multi-step process.

For example, The Progress Group recently worked with one home decor products manufacturer that had some light assembly operations. The 30-40 second assembly process actually consisted of 10 sub-operations that each took only a few seconds. They videotapes each workers, and then analyzed performance for each sub-process.

The results were surprising.

First, there were substantial differences in performance across each operator for a given sub-process, as shown in the graphic nearby.

Second, these differences between the performance of specific workers on a sub-process varied by worker and sub-process. In other words, it was not always the same workers who were superior for each sub-process. The leaders varied - depending on the method each used for that sub-process.

When you add up these differences of just a few seconds or even less across all the tasks, workers, and time, the opportunity for total improvement was substantial.

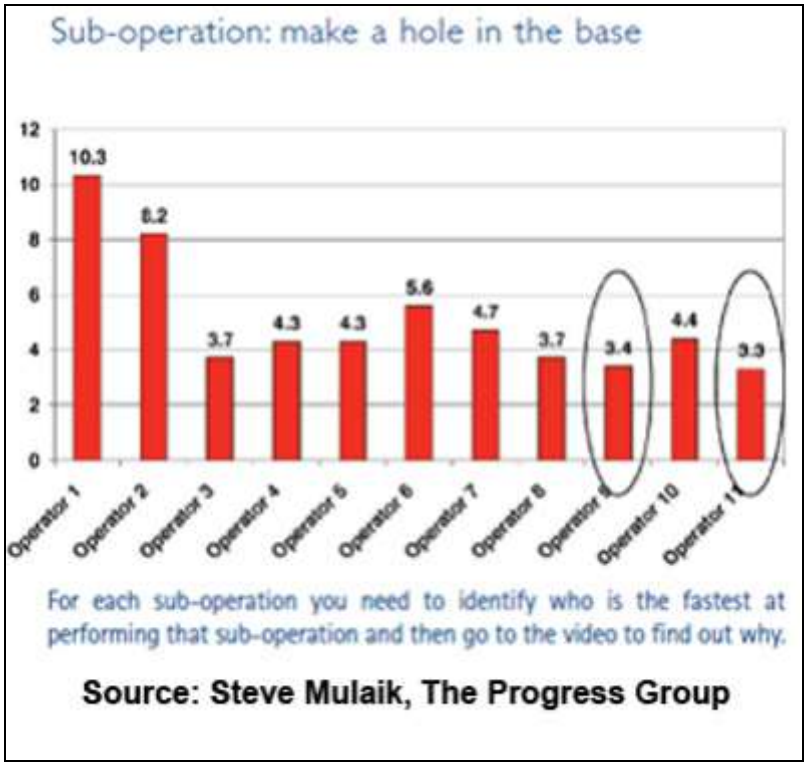
"Such nearly sub-second differences go unnoticed everywhere," Mulaik says.

So, The Progress Group studied the best performers for each sub-process to understand what it was they were doing differently. As a result, it was able to identify the fastest approach to each sub-process - a series of "preferred methods" - that will maximize total productivity of the full process, often with increases of 20-30%.

In many cases, especially for a series of fairly short sub-steps, use of video analysis is key, Mulaik believes.

Video allows slow motion and repeat viewing, whereas "an untrained eye, without the aid of video, might never see these little 0.5 to 2-second differences in method used by different operators," Mulaik says.

In total, this can take many hours of analysis. Mulaik says the cost of this can be reduced by using qualified offshore resources trained in how to do the analysis and log the data.



Source: Steve Mulaik, The Progress Group

But it can be done on the relative cheap in-house as well, hiring part-time staff to shoot the video and others to do the analysis.

Interestingly, Mulaik says the biggest benefits often come from when there are a large number of relatively short sub-steps to complete a full process cycle.

Long sub-steps - say 20 minutes - tend not to offer the same level of productivity opportunity.

He also told SCDigest that even after the new methods have been defined, "you are still fighting muscle memory" in how people do their jobs. He also thinks companies should take a look at adding incentive pay into this equation.

"I think incentives are definitely one of that variables that need to be fully explored when you do this," Mulaik told us. "It's hard to get everyone to do this on their own. We sill find people dropping out and often times moving on because they just cant bring themselves to take on the "new way".

All told, "crowd engineering" seems like a low cost, high impact way to improve distribution and manufacturing performance.

What's your reaction to the "crowd engineering" concept? How does it differ, improve - or not - traditional "preferred methods" development? Have you used a similar approach? Let us know your thoughts at the Feedback button below.

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