The Operations 4.0 podcast: Productivity and ‘pilot purgatory’

The value from Operations 4.0 comes from how it unleashes productivity gains across a wide range of measurements. But to achieve those results, businesses must do more than launch pilot after pilot.

Yogesh Malik and Rafael Westinner

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In our continuation of the Ops 4.0 podcast series, McKinsey partners Yogesh Malik and Rafael Westinner dive deeper into three topics: the productivity impacts of Ops 4.0, separating hype from impact, and the pilot purgatory phenomenon.

This transcript has been lightly edited.

Moderator: Yogesh and Rafa, in previous podcasts you've talked about the productivity step-up. Productivity can mean a lot of things. In addition to the cost savings that Ops 4.0 can achieve, what are some of the other tangible metrics?

Rafael Westinner: We purposely talk about "the next step in productivity" precisely because it enables a clear measure of impact and improvement that is tailored, [yet] applicable to a lot of different organizations.

We start from the very basic definition, "output per input." This naturally translates into less labor, less time, maybe even less material needed to accomplish certain tasks. But what we're seeing—and this really is tailored by industry and specific companies—are improvements in [a wide range of] measures that really impact day-to-day business. Stuff like revenues, service levels, quality; in manufacturing settings, OEE, inventory optimization, lost sales, etc.

The way I typically look at improvements in productivity [translates] into five measures. The first is about accelerating, making sure that you cut down the lead time that it takes to go from effort to impact. Second, efficiency, being able to achieve the impact that you're going for with less input. Third, effectiveness, which is getting closer to providing impact first-time-right. Fourth, predictability, which for me is one of the biggest measures of impact—being able to be consistent and more agile, because you know what to look at. And last but not least, the capacity to reach out to a lot more people, which means deeper engagement and hence faster scalability across the organization.

Yogesh, I think it a good example would be to discuss the company we're working with on quality improvement.

Yogesh Malik: Rafa, I think that's a very important point. Operations 4.0 is not for operations people only—it's for the business. And as you mentioned, the example is an electrics manufacturer that had done a lot of Lean, very Lean plants, very efficient plants. The next business challenge was that their lot sizes were shrinking, so that meant they had to do a lot more new-product introductions, changeovers. As the industry moves faster and faster, the first-time yield becomes very important, because they're now making only a few thousand of [their products] versus previously making hundreds of thousands. They cannot wait for a long learning curve for the first-pass yield to improve.

"We don't want cost reduction—we want yield improvement, because that can uplift our revenue and margin, so we can take on manufacturing orders for even smaller lots." [...] They implemented a holistic solution they called "Digimet," a fancy consulting word that stands for "digital manufacturing excellence transformation." For the people on the shop floor, it means, "let's use all the technologies that are available to us."

Let's give people RFID and wearables and wristbands to figure out how much time they are spending going between machines. Let's also put some sensors and scanners on machines and equipment where it would be beneficial for us to catch quality [issues] sooner versus later. And more importantly, let's collect and use the data that our machines are already generating. Because [the leaders realized], it's not that they didn't have the data—they didn't have the insights from the data.

[They took] an approach that was very targeted—they didn't give all of their people wristbands to wear, only in the areas where they felt that labor was [being wasted]. And when they put all this information and data together in a cross-functional team and said, "Let's analyze all we can learn to improve the first-pass yield," they came up with 17 very specific, physical initiatives.

When they applied those initiatives into their assembly processes, they increased the level of automation—but that was not the end goal or success. The success was to improve first-pass yield by 15 percent, because they were able to pick up more orders in a profitable way, which previously they were not able to pick up because of the smaller lot sizes.

So this is an example, Rafa, as you were saying. You have to look at the business problem you're solving, and it could be a revenue problem, it could be a margin problem. Only then put the team together and enable them with all the technologies to come up with the right business solution, in this case which they were able to do very successfully.

Rafael Westinner: That's exactly what I like about this case, because at the end it was about … not only improving efficiency (in the end they were able to automate 70 percent of their assembly hence increasing the efficiency considerably), but it was also about being more effective and ultimately also more predictable by increasing the first-pass yield rate.

Moderator: This is a great discussion on the tangible impacts and value coming from Ops 4.0., but there's so much technology, so much information, so much press out there—how does Ops 4.0 help clients cut through the hype?

Yogesh Malik: That is the most important question from our perspective, because this is an evolving field with a lot of innovations happening almost on a daily basis, and a lot of publications, a lot of information out there.

The biggest thing to us is [to help] businesses deploy and accept these technologies that will create value or impact, whatever the right impact is—which could vary by the business. […] We start by defining a business opportunity or a business challenge: What are we trying to achieve in the business?

Now, how can we achieve the same thing better and faster by using all the 4.0 technologies— that's the angle to come at. We call this "value-back" approach, not "tool-forward." A lot of times [business leaders] see a lot of software and tools are out there, and [they] try to deploy those tools and say the success is tool deployment. To us, success is getting the value.

And to get to the value, a lot of times companies have data which they can use better. Companies have tools and software which they can get more value out of. A lot of times the answer is not another big or important software or tool. A lot of times the answer is to have point solutions, figuring out where we are missing some information and [how] we can get that information in there.

Case in point: we did a survey of global operations executives. Two-thirds of the people were more excited than the year before about what Operations 4.0 can do for them, but only one-fourth of them had real business cases to say how are they going to get value out of Ops 4.0.

To us, the simplest way to cut through the hype is start with the business challenge or opportunity, and then define an aspiration that we want to achieve, that bold business challenge or bold opportunity, by using the technologies.

So Rafa, I think that's what you and I have always talked about, to make sure that we are encouraging an output- and impact-based Ops 4.0 deployment, versus tool-based deployment. I would love to hear your

thoughts, especially what you are seeing happening in Europe.

Rafael Westinner: Yogesh, I can only echo what you are saying, and I think this has been the driver of a lot of our discussions. It sounds simple, but at the same time, it's ever so important. It is about focusing on impact. And what I see is a lot of willingness and understanding that there is quite a bit of value in taking this step. But a lot of times there's also some frustration, and not necessarily the right coordination or prioritization of where to make the investments, point number one, and point number two, how to get actual value out of [those investments].

There's typically the temptation of thinking that you need to have a lot of [IT] infrastructure and [so forth] before you can actually get to this value. This is why it's so important to be business-driven, starting with the business problem and working back. Because the sense of urgency is real.

One particular example is from a basic-materials company. They had fallen into the trap of investing quite a lot of money—millions—into what they called "smart manufacturing systems." The idea was to be able to track a million-plus data points. So as you said, a lot of data around, and they just wanted to be able to track it.

Nevertheless, when [they started working] through the business problem, and looking very concretely into one use case where we knew there was value in the [potential] yield improvement, [they] found out that there were actually 20 very critical variables that were needed in order to make the improvements. These were the ones that really moved the needle, but they were not at all considered in the initial investments.

For them, this was a bit frustrating, but at the same time a clear [indication] that this was the way to go. They've now been able to turn things around and be much more prioritized and much more value-driven based on the problems at hand.

Yogesh Malik: Yes, I think that's a great example, Rafa, because if you invest first in systems, then you know there's a risk. And these investments are not insignificant.... One of the most underappreciated things is how much investment some of these could take—investment not only in terms of buying the system, but putting any [new] system in an organization and thinking about change management is a big disruptive change. So that's why always thinking about starting with the business value, and then what will it take us to get there so that we can minimize the pitfalls.

Moderator: Okay, connected to all this buzz out there on Ops 4.0 technologies and fears about falling behind, it seems like some companies feel this sense of urgency to just get started. McKinsey has recently published some interesting thoughts on a phenomenon called "pilot purgatory." What is this, and how do savvy companies beat it?

Yogesh Malik: This is one of the most exciting topics, with a lot of different views out there. So let me share mine and then, Rafa, we'll hear from you also on this.

So basically, what [pilot purgatory] means is, [as a business leader] I'm excited about these [Ops 4.0] technologies, and I'm going to do a lot of pilots. I'm going to bring a 3D printing machine in. I'm going to have analytics come in, some pricing analysis or some operations analysis. I'm going to make an app to pilot how the digital world works...I'll put some sensors on the machine, I'll try to improve the OEE of that machine.

So these are all examples of "point pilots"...where there is a lot of hype. And there is some benefit, because pilots start the learning curve and the excitement within organizations. But doing a lot of these pilots also prevents creating at-scale impact.

So that's why from our perspective, it's [better to] pick one or two areas where you can move the needle on creating impact, and in those areas do pilots, with a plan to scale them up. Because we see the scale-up part gets missed.

For example, [one company] did an OEE improvement on a machine, but guess what? After some time, that machine was not the bottleneck anymore. The [real question] is, how do we do that [OEE improvement] on a machine, but with an end-state vision of what the whole assembly line will look like, including how to get there. Let me focus on that, get it right, and create impact—before I jump onto another pilot to improve, say, the analysis and quality.

I don't know Rafa if you also saw similar examples and a little bit of struggle between point piloting versus having a scale-up plan to begin with.

Rafael Westinner: Well, Yogesh, I think unfortunately you're talking about one of the most common phenomena. For me, it's a delicate balance that we need to strike, and then I'll comment on how I've seen this successfully being brokered.

But the delicate balance is: you want to prove relatively fast that what you're doing has merit and has value...that's why we do pilots. At the same time, having a very good success case by no means translates to having it fully implemented, because you know the span of attention might actually get lost, or the prioritization might actually get lost during the implementation time. And by no means does it translate to being able to do it at scale in a replicable way.

I unfortunately see that a lot of companies do that. They celebrate successes, which is great and important in order to create momentum and generate this positive move toward testing and proving something new. But then not being able to scale it up. And this is what this pilot purgatory is about.

What I've seen work is very much goes in line with what you were describing... [One aspect of] Ops 4.0 is around making sure that the products have higher competitiveness. [With one manufacture,] what we jointly did from the beginning was also think about how we were going to do the scalability—how we were going to test the scalability, learn from the ideas or the improvements that were generated, and have people who [would later] be responsible for scalability be involved in the process.

We actually front-loaded the difficulty that comes typically afterwards: having to convince people in another factory that this idea has merit, for example. [This time, these stakeholders] were involved up front. And we jointly aligned on what this process was going to look like...the company after the successful pilot was able to roll this out in a much more consistent manner.

There are a couple of elements that play an important role. One of them is the strategy—making sure that you do this front-loading, that you actually know what this scalability will look like. Don't wait until the end of the pilot to think about this. Second, you need to have the organization...having the stakeholders already involved so that you speed up the whole implementation and going-at-scale process.

Then last but not least, it's having a good backbone on technology. [The manufacturer] was leveraging advanced analytics to look at the complexity of its [product] portfolio across different factories. So [having the right technology] created a sufficient fact base for them to also see the merit and the impact faster.

Yogesh Malik: Rafa, I think that is very well laid out. And I think at the end of the day, pilots are a first stepping stone, and a means to an end, not an end in itself. A pilot is what you start with, with a plan to scale up, having the right strategy, technology, and organization plan up front, as you said. That's what we mean by making sure that companies are doing pilots as a first stepping stone to get to the end state of scaling up and creating impact, versus switching from one pilot to another pilot to another pilot.

Moderator: Thank you all so much for joining this segment of the Ops 4.0 podcast series. If you have ideas for future Ops 4.0 podcasts or questions that you'd like Yogesh and Rafa to tackle, please shoot them over to Christine Decker Miller. ■

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