The New Normal in Operations

Meeting the data challenges of the future and supporting new ways of working

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Where are we now?

Under normal operating conditions all businesses have continuity plans in place to deal with a localized disaster. But these strategies tend to be focused on managing short-term outages. Very few have planned for extended outages that transcend international borders for months at a time.

The overriding assumption is that we will eventually return to the previous status quo. But the reality is that remote working is an operational necessity, not just a stop-gap measure until normality resumes.

Digitizing operations is more than a nice-to-have for manufacturing companies. It's an imperative, and they know it—more than 80% of them are actively investing in digital operations, according to a recent BCG survey. Digitization—when done right and at scale—yields impressive upsides: a 10% to 20% reduction in production and supply chain costs, a 15% to 30% cut in working capital, and an uptick in incremental revenue growth of up to 6% through enhanced productivity. Digital technology can even facilitate fundamental changes in supply chain strategy and promote resilience in a volatile business environment.[1]

The COVID-19 pandemic lock down has shown that this set-up is developing but immature, with assets operating – albeit at a suboptimal level. Companies have also realized that this immaturity has highlighted some significant flaws.

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> Boston Consulting Group

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1 The How-To Guide to Digital Operations – Boston Consulting Group - https://www.bcg.com/en-nl/publications/2019/how-to-guide-digital-operations.aspx

Across disruptions, one success factor stands out: resilience. From strategy to operations and execution, building a sustainable, resilient business has been key— and now, it is more important than ever."

Accenture

What are the current challenges to remote working and digital transformation?

The ability to survive and adapt to change is the defining hallmark of success in the mining industry. As Accenture comments, "Across disruptions, one success factor stands out: resilience. From strategy to operations and execution, building a sustainable, resilient business has been key—and now, it is more important than ever."

The COVID-19 pandemic has fundamentally changed the way process industries organize their workforce. The "Essential workers", those who work in operations, are expected to conduct shifts as normal. Management and administration on the other hand are expected to work from home and support operations until lock down, emergency response or crisis is lifted.[1]

Industry-wide efforts to introduce digital transformation programs have made this working paradigm possible. Efforts to centralize and aggregate data make it possible to monitor and assess system health remotely.

Digitization isn't easy though. Common problems identified by BCG include:

- **A lack of change management** – underinvestment in training hiring and scalable infrastructure affects 38% of businesses.
- **Information silos and legacy technology** – prevent inter-departmental data and knowledge transfer (36%).
- **Skills shortages** – A lack of technical and data skills is holding back 31%.
- **Generalized technology deployments** – Nearly one-third (29%) claim new technology is deployed without fully considering operational pain points or the value they expect to realize.

Legacy technology is a serious issue – the 2019 Client Global Insights found that change is slowed by technology and agility constraints according to 70% of executives.[2]

During a time of crisis, employees need greater oversight – and support – from the Operations Leadership. But paradoxically this leadership needs more information and insight to provide that support. Information that cannot be accessed from existing operational systems such as Distributed Control Systems (DCS) or data historians alone.

What is required for meaningful operational management is for a high-resolution picture of the operations reality. The information that makes up that picture cannot come from just plant data or asset history, but also how the operations staff are using that data and taking action.

For any number of reasons, business create a patchwork of focused solutions, targeted at specific audiences. This works when those audiences occupy and work in the same time and space, as this ecosystem of solutions depend on face to face exchange of contextual information to manage operations.

And this is a problem for many process firms even when there's not a pandemic threatening the workforce. So much valuable time of key frontline resources is spent collecting and curating information, that not enough time is available to analyse and act on this information effectively.

This realization underscores the importance of continuing with digital transformation efforts – even now. By improving the use of data businesses will enhance their strategic decision-making capabilities and by extension, process efficiency. Therefore, the act of automating data collection and correlating process data with operations activity, and presenting it in easy to share formats, have transformative effects on the efficiency and resilience of your operations.

2 COVID-19: Managing disruption in the chemical industry – Accenture - https://www.accenture.com/gb-en/insights/chemicals/coronavirus-building-resilience-amid-disruption-chemical-industry
3 2019 CGI Client Global Insights Report – CGI - https://www.cgi.com/en/client-global-insights

Addressing the issues: Digitizing manual data processes

Operational organizations already have the basic building blocks to begin the digital transformation journey, particularly in relation to their data historian. But as outlined previously, without full context, data-based decisions are not fully informed.

The next step towards digital transformation will be to digitize and formalize your manual data processes. This delivers several important benefits.

Consider a relatively simple process like shift hand-over logs. Moving from paper or spreadsheet-based systems can yield significant benefits:

Reducing information loss

First, utilizing a templated digital log system makes it easier to capture key details. Well-designed forms guide shift managers through the process ensuring that nothing is left out of the report. With auto-completion and multi-select input, the form is quicker and more efficient. And if the log is deployed on mobile devices, engineers can capture information in situ, rather than waiting for the end of shift when details may be missed or omitted.

Digitizing log collection also ensures that they are available for historical analysis when required - next week, next month, or next year. This will allow the Operations leaders to refine processes and provide advice to shift engineers using evidence gathered from their own systems, rather than estimates based on incomplete data.

Avoiding data errors

Digital forms can perform in-line error checking, identifying problems and offering an opportunity for correction before they are saved to the central database. Capturing errors early dramatically reduces the cost and inconvenience of correction later; it also helps to prevent faulty decision making based on erroneous, incomplete or out-of-date information.

Any organisation still reliant on paper-based shift logs faces a second threat to data accuracy. Illegible handwriting makes it much harder for the incoming shift manager to understand what has happened and what needs to be done for instance. Even if these handwritten logs are later digitized, there is a very real risk of transcription or typographical errors being made.

Making shift log data available centrally

Captured data is only of use if it can be accessed and shared by all relevant stakeholders. Indeed, this is the initial challenge that most digital transformation efforts set out to address.

The data historian centralizes data, making it accessible by shift workers on site and managers remotely. In order to provide "human context", the shift logs must be similarly reachable. Ideally, both datasets should be available through a single interface to further simplify the process of unlocking insights.
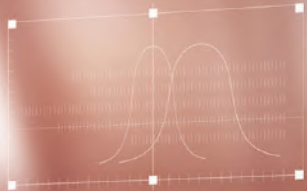
What the future should look like

Fortunately, global pandemics that force entire countries into lock down tend to be relatively rare, occurring maybe just once per century. Localized outages are much more common however, and every business needs to have systems in place to facilitate remote operations management for when they do.

Thriving, not just surviving

With the ability to view human sensor data alongside information from the data historian, operations directors can respond to process issues more quickly. Importantly, digitizing operations management in advance of a disaster will ensure that production remains as close to normal as possible.

Improved operations management

As well as offering 'business as usual' capabilities, consolidated digital operations management systems ensure stakeholders have instant access to data. With relevant, contextual data from process systems and human sensor information they can address unforeseen issues more quickly, and to adjust strategy as circumstances change on the ground.

Improving remote management functionality also allows external workers to feed back to shift engineers more effectively. Using the available consolidated data subject matter experts can feed advice and guidance back to front-line workers. The data historian will also capture this information for future reference.

Greater overall control

Greater visibility of data coupled with improved collaborative tools will ensure that operators are able to increase control of their processes – and not just in times of crisis. Simplified information flow between stakeholders will accelerate the rate at which adjustments can be made, reducing downtime or boosting efficiency to cut costs and increase yield.

When digital transformation is done right, it's like a caterpillar turning into a butterfly, but when done wrong, all you have is a really fast caterpillar."

George Westerman
MIT Center for Digital Business

How to get started

As previously noted, digital transformation is far from simple – but adopting the correct approach can help to increase operational efficiency and reduce costs:

Look at the bigger picture

By focusing solely on production data, industrial organizations are missing other opportunities to create efficiencies elsewhere in the value chain. Functions like product engineering and distribution can also be improved with the right technologies. Firstly, understand how to maximize value from the data you already have.

Identify pains

What are your business pains? Where are there operational inefficiencies? These are priority areas for technology investment, yielding the greatest advances and savings. To build an architectural framework that facilitates rapid on-going change requires technology to be built around the "customer first" principle.[1]

Define goals and expectations

Without pre-defined goals and targets, technology investments will never perform as well as they could. As well as identifying pains, digital transformation efforts must also specify desired outcomes.

George Westerman at the MIT Center for Digital Business observes, "When digital transformation is done right, it's like a caterpillar turning into a butterfly, but when done wrong, all you have is a really fast caterpillar."

...to get the maximum resolution

Once the existing production and asset data is being fully consumed, meeting the basic goals and expectations of these existing investments, adding in solutions such as operations management solutions, Shift management solutions, Control of Work Solutions and Operational Excellence solutions, will connect Process data with Asset data, and add workforce data to create the best possible view of the operational reality. This checklist approach helps to avoid wasted spend and to deliver the enhancements and efficiencies your organization requires.

Measure, measure, measure

Digital transformation is not a one-off project, it is an ongoing process of continuous improvement. Measuring progress, ease of adoption, end user experience and performance will highlight new opportunities to increase efficiency or to re-target investment and resources for greater returns.

4 A Rough Road to Data Maturity – Boston Consulting Group - https://www.bcg.com/en-nl/publications/2019/rough-road-to-data-maturity.aspx

What are the potential returns

As digitalization projects mature it is possible to see the benefits being realized by early adopters. When the Boston Consulting Group surveyed digital leaders they discovered:

1. Leaders act faster

Digitally-enabled firms are implementing 2.9 times more use cases across multiple sites or functions. The ability to implement at scale further accelerates deployment.

2. Leaders save more

By deploying technology intelligently, leaders realize 2.7 times greater cost savings and revenue growth than their regular competitors. The achieve these advances by implementing high-impact use cases across the entire value chain, not just production.

The conclusion:

The survey responses reveal the factors that matter most for promoting implementation speed and value generation. The top three dimensions—targets, technology enablers, and organizational capabilities—highlight the importance of early enablement and planning to ensure success and create momentum.[1]

Digitalization does not mean having to be the first to adopt new technologies. But it does require implementing technologies that solve business pains now while retaining flexibility and scalability to address the challenges of the future too.

The results of digitalization in the industries such as mining and oil and gas, are tangible and will help to overcome current issues with productivity and efficiency. As McKinsey reports, "Those that adopt new tools or structures to enhance remote ways of working could improve their future operating models, attracting top talent or reducing costs."[2]

Takeaways

- Industrial companies has struggled with productivity for many years – but digitalization presents a way to address those issues.

- Technology can solve many productivity problems across the value chain – but only when used to solve actual business pains.

- Even relatively basic processes like shift handover can be improved using digitalization, and the data created can be reused elsewhere in the business for strategic purposes.

- There are tangible benefits to digitalization and your technology-enabled competitors are already taking advantage.

1 The How-To Guide to Digital Operations – Boston Consulting Group - https://www.bcg.com/en-nl/publications/2019/how-to-guide-digital-operations.aspx
2 A safer, smarter future: Working remotely in energy and materials – McKinsey & Company - https://www.mckinsey.com/industries/oil-and-gas/our-insights/a-safer-smarter-future-working-remotely-in-energy-and-materials

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