



HEXAGON
PPM

WHITE PAPER

PRACTICAL HOW-TO ON DIGITAL CHANGE MANAGEMENT
AND DRIVING OPERATIONAL PERFORMANCE FROM
DIGITAL TRANSFORMATION

The Complete Executives' Guide to Digitising Operations







Asia-Pacific is receiving its economic wake-up call in 2019. Externally, the world's two biggest importers, China and the United States, are engaged in a trade stand-off resulting in rising protectionism, which hurts Asia-Pacific growth prospects. At the same time, many countries are experiencing domestic issues that are cooling previously hot spots of growth.



Introduction - APAC

Economic Outlook 2020

JAPAN HURTS MOST FROM US-CHINA TRADE WAR

Debate continues to rage over the impact of Abenomics and Japan's declining population and exports. Experts are eyeing a potential recession, or even a fiscal crisis before 2020, for the world's third largest economy. With the country's government working hard to increase exports through free trade with Europe and placating the US's protectionism, responsibility will fall to the private sector to find ways to remain globally competitive through the country's ongoing labour shortage and innovation crisis.

The most recent purchasing managers' index for Japanese manufacturing indicated a significant weakening of the sector. Tokyo-based entrepreneur Tim Romero claims the burden of carrying Japan through this pending crisis is on the shoulders of mid-size manufacturers, which account for 54 percent of the workforce and 48 percent of corporate revenue. He says if just 1 percent of the 165,000 small manufacturers in Japan could innovate process and product, the economic impact could revitalise the flagging economy.

SOUTHEAST ASIA: STEADY, NOT STRONG

Southeast Asia's remarkable boom over the last 10 years is facing some stark realities as growth rate slowed in 2018 for the first time in three years. Mobilisation of the region's labour force into manufacturing is a major contributor to its growth; however, this dynamic is starting to dampen, revealing a problematic productivity gap. However, many organisations – including Southeast Asian governments – have recognised the need for stimulus to maintain high levels of growth.

One example is Malaysian petroleum company Petronas, which is making a strong investment in people and technology through its strategic PIVOT (Petronas Integrated Vision for Operational Excellence and Technology) pillar, which doubled its training budget per person in 2018. Petronas aims to increase its leadership and workforce's capability for a long-term growth on intellectual and financial capital.

AUSTRALIA'S ENERGY WOES

Australia is experiencing mercurial economic growth in the face of housing affordability and uncertainty over energy policy.

The country is set for energy policy reform to combat sky-rocketing consumer electricity prices. Providers are under increasing scrutiny from the federal government, which is investigating wholesale costs, network charges and the retail margin of providers. While policy reform, which may drive at privatisation of state-owned networks, aims to reduce the burden on consumers, providers will face continuing profitability challenges if there is further price deregulation, as wholesale costs may not be impacted by government change.

Leading Australian electricity and gas provider, AGL, mentioned in its 2018 annual report that earnings momentum is slowing in the face of a carbon-constrained future; however, the organisation's new three-year strategic direction includes the aim to "operate, maintain and renew our energy supply portfolio at the lowest practical cost."

DIGITAL TRANSFORMATION IN OPERATIONS

Despite the challenges across Asia Pacific, most organisations are heeding the macro-economic factors and flagging a strategic imperative to drive down cost and operate more efficiently.

These two strategic objectives are the major mitigating factors in overcoming the global negative headwinds in 2019 and beyond. Hence, we have produced this eBook, focusing on digitising operations – giving your organisation practical steps to improve productivity and create a cultural hotbed for innovation.

Hexagon PPM's internal expertise in information management, operations excellence and our work with existing clients form the basis of the knowledge we share with you in this document.



Contents

INTRODUCTION - APAC ECONOMIC OUTLOOK 2020	4
BACK TO BASICS: THE IMPORTANCE OF PRODUCTIVITY	9
Productivity is not Production	10
Productivity Gains – Innovation & Disruption	10
The Leader’s Responsibility	11
DIGITISING OPERATIONS: THE KEY TO PRODUCTIVITY GAIN	12
Understanding Poor Productivity During the Digital Transition	14
How to Digitise Effectively?	15
Threats to Success	17
WHAT IS OPERATIONAL EXCELLENCE?	19
Types of Operational Excellence Systems	19
Benefits	21
Challenges	21
Digitising Operations in the OpEx Philosophy	22
IMPLEMENTING AND SUSTAINING OPERATIONAL EXCELLENCE	25
Leadership	25
Resistance to Change	26
Allocating Roles	27
Culture	33
Sustaining an OpEx Culture	34
TECHNOLOGY	37
Infrastructure	37
Software	38



Back to Basics: The Importance of Productivity

In a very general sense, the best way to think about productivity is by thinking of production. You can have increased production from an increase in inputs, you can have increased production due to more efficient use of those inputs or a combination of both of factors. Accordingly, you can measure productivity by looking at the ratio of output to one or more inputs.

An often-quoted summary of the importance of productivity growth comes from U.S. economist Paul Krugman:

“Productivity isn’t everything, but in the long run it is almost everything. A country’s ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker.”

PRODUCTIVITY IS NOT PRODUCTION

Productivity is the measure of how efficient the production process is, irrespective of the stand-alone quality or quantity of output or inputs.

This means that productivity will rise when inputs are optimised to achieve greater levels of output. Achieving productivity gains is therefore not equivalent to working longer (e.g. more labour hours – also known as ‘throwing manpower at a problem’) as this will result in a greater amount of inputs for every output and reduce productivity. Nor does greater input necessarily correlate with higher volumes of outputs – as inputs could be increasing at the same or greater pace.

If the same measure of iron, coal and labour inputs equals one steel output, the only way to realise productivity gain is to reduce one or more of the inputs for the same output – or alternatively, keep the same measure of inputs for more output. At the same time, if you add one measure more of labour input, you would need to increase output 40 percent before making a productivity gain.

Process and efficiency – not technology – is everything when it comes to improving productivity.

PRODUCTIVITY GAINS – INNOVATION & DISRUPTION

Productivity growth is important to a firm because more real income (or its relative purchasing power) means the company can meet its obligations to customers, suppliers, workers, shareholders and governments (taxes and regulation) and remain competitive or even improve its competitiveness for labour, capital and raw materials in the marketplace.

Many companies have formal programs for improving productivity. Companies constantly look for ways to improve quality, reduce downtime and increase inputs of labour, materials, energy and purchased services. Simple changes to operating methods or processes can increase productivity – think Henry Ford’s assembly line – however, the biggest gains often come from adopting new technologies or concepts, which requires capital expenditures for new equipment, training, devices or software. This means resources need to be dedicated to innovation, a responsibility which is best linked to an executive.

Previously, operations viewed machine as an extension of man. However, today’s operating models need to consider that man is the biggest factor in improving the output of machine. **Digital technology is an extension of the machine and only when all three (man, machine and technology) are working in concert can an organisation realise a productivity gain.** Arriving at this symphony is the operations leader’s greatest challenge.

THE LEADER'S RESPONSIBILITY

Management must implement control processes to maintain or improve productivity. Managing production levels is part of the control process – management teams must predict demand to avoid market saturation. At the same time, they must also find ways to make the most of their inputs. From the operations leader's point of view, more outputs from the inputs is a step in the right direction. Finding ways to streamline internal operations to minimise cost, limit resource use and optimise performance (quality) is operations central responsibility. This presents two main priorities for operations leaders:

1. ***Enhancing productivity through process disruption*** – As discussed, adopting new technology provides the largest productivity gains. Accordingly, COOs are responsible for analysing their control systems, finding potential areas for improvement and spearheading the implementation of new technology.
2. ***Owning data collection, collation and insight*** – Information, or properly collated data, is fast becoming every business's most valuable asset. Accordingly, COOs must ensure their reports are accurate, up-to-date and includes the right information. This allows better decision making to meet demand and enhance productivity.

References:

http://www.aphref.aph.gov.au_house_committee_economics_productivity_report_chapter%202.pdf
<https://www.pc.gov.au/research/completed/rising-protectionism/rising-protectionism.pdf>
<https://courses.lumenlearning.com/boundless-management/chapter/managing-productivity/>
<https://www.aigroup.com.au/productivitycentreframe/pdf/productivitycentre/new-markets.pdf>



Digitising Operations: The Key to Productivity Gain

According to the World Economic Forum's *Maximising the Return on Digital Investments* paper, digital technologies help increase cost effectiveness, enhance existing revenue streams and open new ones. However, productivity growth is still slow. To understand this dichotomy, operations leaders must understand digital transition.

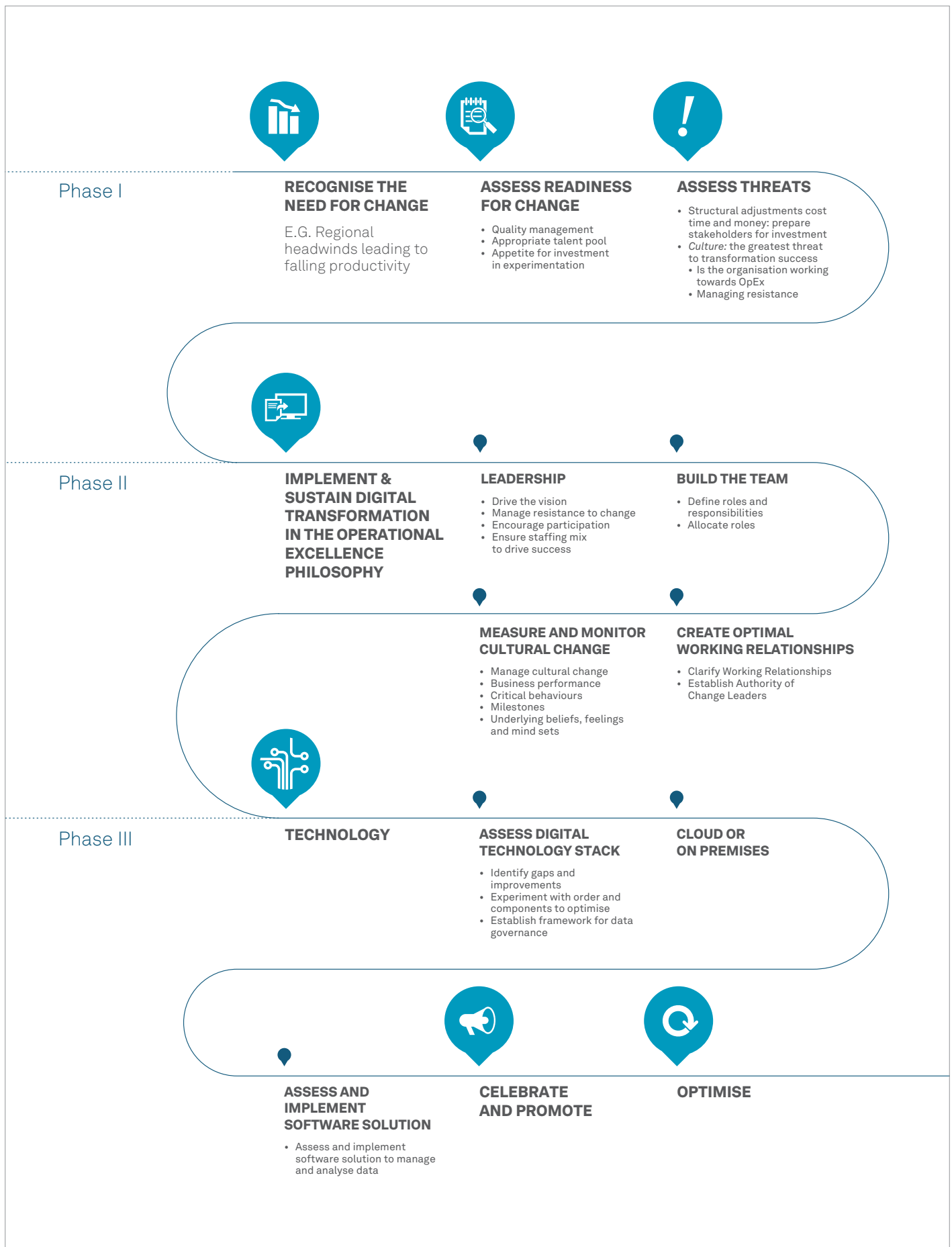


Figure 1: The digital transformation process.

UNDERSTANDING POOR PRODUCTIVITY DURING THE DIGITAL TRANSITION

The most productive 20 percent of companies in each industry are driving productivity growth – more than doubling productivity through digital transition, according to WEF. However, the rest see average productivity fall.

Further, OECD (Organisation for Economic Co-operation and Development) analysis shows that uneven uptake of digital technology is an important source of productivity slowdown. The world's most advanced firms are not slowing in productivity gains; rather, there is a widening performance gap between the most productive and unproductive firms. Top firms are pushing out the productivity frontier, while laggard firms stagnate or decline in productivity due to limited capabilities, or a lack of incentive, to adopt best practices. **Digitisation may be contributing to this divergence.**

The incentive to adopt new technologies is often related to competitive pressures. A laggard organisation can mask its productivity issues if financials (a lagging indicator) appear healthy (i.e. low net debt). This leads to what OECD defines as “zombie firms” – non-viable companies that would typically exit or be forced to restructure in a competitive market. These organisations linger on, clogging up resources and capital, while crowding-out growth in more productive firms. The survival of these firms drags down average productivity across whole industries, particularly in oil and gas and mining.

AM I IN A “ZOMBIE FIRM”?

Zombie firms are defined as organisations more than 10 years old that can't cover their interest payments with their profits for three years running and would have defaulted in a normal economic cycle, but survive due to low-interest rates and capital-raising initiatives. British facilities management and construction company Carillion is a prime example.

According to KPMG, **mining and oil and gas companies make up 70 percent of zombie firms on the Australian Stock Exchange.**

These firms aren't important to our discussion at large, but important to keep in mind when assessing your own digital adoption. Be mindful that frontier organisations are seeing huge productivity gains from digital transformation, while the bad apples in certain industries are dragging down overall gains. Don't let this hold you back ... use it to manage expectations.

The important thing to remember is: Digital Transformation works – if you can transition or adapt your people and process to new technology effectively.

HOW TO DIGITISE EFFECTIVELY?

Effective digital transition depends on three main factors (Figure 2):

1. ***Strategic decisions and the ability to implement them*** – requires high-quality management and managerial practices
2. ***The talent pool and the ability to upgrade it*** – requires a pool of workers whose expertise lies in deploying and managing digital technologies and their willingness to upskill
3. ***Experimentation investment*** – requires a company to comfortably invest in digital transition, in order to scale up efforts if successful or quickly exit the technology if they fail.

Higher digital adoption rates are associated with the quality of organisational capital – making systems and philosophies paramount to digital transformation. Accordingly, the executive team must start with defining necessary leadership skills, updating their managerial practices and bringing in innovative work processes. This guide will expand on this in a later section.

At the same time, the availability and allocation of talent also improves digitisation rates. While executive decisions to strengthen investment in digital technologies are important, greater emphasis is needed on investment in complementary knowledge and capabilities, such as research and development, process innovation and other “intangibles”. One of the primary drivers of success is investing in workers’ skills. As the introduction showed, Petronas is investing heavily in the intangibles to drive future growth.

Finally, the success of digital transformation comes down to a business’ tolerance for risk and experimentation. The adoption of new technology is becoming more challenging over time due to tech innovation outstripping implementation times, as such digital adoption will be facilitated by efficient resource allocation, since a firm’s incentives to experiment with uncertain digital technologies will be shaped by its perceived ability to rapidly scale-up operations in event of success, and rapidly scale-down operations if unsuccessful. This guide will help organisations set up efficient resource allocation.

Factors that Indicate Readiness to Change



High-Quality Management

- Up-to-date management practices
- Introduction of innovative work processes



People

- Building a team with the right mix of skills and experience to implement transformation
- Readiness to invest in workers skills



Tolerance for Risk with Transformation Implementation

- Ability to invest and upscale rapidly if transformation is successful
- Ability to down-scale rapidly if transformation is unsuccessful

Factors that are Threats to Success



Structural Adjustments Cost Time and Money

- Structural change be slow and expensive
- Embedding transformation across an organisation takes time and effort sometimes leading to low or even negative productivity
- Managing expectations during this period is crucial



Culture

- Business has not implemented or is not planning to implement operational Excellence philosophy
- Cultural resistance to changes
 - Do the collective philosophies, values and view of the world in the workforce hinder transformation.

Figure 2: Is your organisation ready for digital transformation?

THREATS TO SUCCESS

STRUCTURAL ADJUSTMENT COSTS MONEY & TIME

The process of resource reallocation is the basis of improved economic performance. However, structural adjustment is slow and rarely happens smoothly. The more drawn out and disruptive the process, the larger the costs.

Digital transformation, as with other technological changes, is not just about the diffusion of technology but also about the complementary investments that firms need to make in skills, organisational changes, process innovation, new systems and new business models (Haskel and Westlake, 2017). These investments involve much trial and error and take time. Productivity growth may be low and can even turn negative during this process of adjustment and experimentation (Brynjolfsson, Rock and Syverson, 2017).

Change management, managing the board and cultural shifts are crucial to overcoming this issue. This problem alone can scupper digital transformation because of the perceived drop in shareholder value. The operations leader must overcome this issue and this guide will help achieve that aim.

PROTECTIONISM

Organisations must petition governments for broader policies that strengthen the economy's resilience and the workforce's adaptability to digital technologies which are driving change. Technology is driving more economic adjustment today than the liberalising markets.

As such, organisations should lead by example. Internal education and training policies will help build foundational skills for the workforce's further participation in the economy, while sharing the benefits of market liberalisation with the government will also assuage protectionism.

CULTURAL RESISTANCE

Operations leaders not only need to manage up in terms of expectation to cost and time but also down in terms of resistance to change. Sociologist Paul R. Lawrence said in the January 1969 issue of the Harvard Business Review that people aren't averse to technical change (as with digital transformation) but rather social change. People worry about how the technical changes impact their human relationships and their place in the hierarchy. Viewing resistance through this lens will help operations leaders better understand how to effectively manage cultural shifts.

References:

<http://www.oecd.org/going-digital/productivity-growth-in-the-digital-age.pdf>

Andrews, D, G. Nicoletti and C. Timiliotis (2018), "Going Digital: What Determines Technology Diffusion among Firms?"

Haskel, J. and S. Westlake (2017), *Capitalism Without Capital: the rise of the intangible economy*, Princeton University Press, Princeton.

Brynjolfsson, E., D. Rock and C. Syverson (2017), "Artificial Intelligence and the Modern Productivity Paradox: A clash of expectations and statistics", NBER working paper 24001, Cambridge: National Bureau of Economic Research.

http://www3.weforum.org/docs/DTI_Maximizing_Return_Digital_WP.pdf

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ECO/WKP\(2017\)31&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ECO/WKP(2017)31&docLanguage=En)



What is Operational Excellence?

Operational Excellence (OpEx) is a philosophy and social change in attitude toward the way a company delivers value to its shareholders and customers. Many companies implement OpEx methodologies with varying degrees of success; however, overcoming the social displacement that comes with changing what and how things are done is the biggest barrier to reaping OpEx benefits. Accordingly, OpEx is why the change needs to happen and the principles behind that change. This helps minimise the social displacement of diffusing new ways of thinking across an organisation and its employees. OpEx methodologies are the practical application of diffusing new thought.

TYPES OF OPERATIONAL EXCELLENCE SYSTEMS

While not an exhaustive list, operations leaders should be familiar with some elements of the following methodologies or systems.

LEAN MANUFACTURING

Lean manufacturing focuses on systematically eliminating waste in a production system.

It teaches that the only thing a business should focus on is that which adds value. Lean also teaches that every process has some sort of bottleneck and that focusing all your improvement efforts on that bottleneck is the quickest path to success.

Traditional lean manufacturing identifies seven areas of waste which are commonly referred to as the seven deadly wastes.

- **Overproduction:** This is one of the worst forms of waste because it leads to excessive inventory and often masks underlying problems.
- **Waiting:** If an employee is waiting, he is not adding value. Examining the cause of wait time is crucial to reducing waste.
- **Transport:** Unnecessary movement of uncompleted or finished products causes waste.

- **Motion:** This step refers to all movement that doesn't add any value to the product and is usually caused by poor work standards.
- **Over-processing:** The hardest waste to remove occurs when more time is spent on processing than is necessary to produce what the customer needs.
- **Inventory:** Waste is derived from managing more supply than demand.
- **Defects:** Dedicating resources to overcoming mistakes results in waste.

SIX SIGMA

Six Sigma is a set of tools and techniques that are designed to improve business processes which will result in a better product or service. The goal of Six Sigma is to improve the customer experience by identifying and eliminating variation.

Half of all Fortune 500 companies have implemented Six Sigma to some degree, helping save more than \$427 billion across the past 20 years.

A Six Sigma business improves operations through the DMAIC framework:

- **Define:** In this first step, you will simply define the problem. Without knowing what the problem is, you can't fix it. Once you have defined the problem, you can begin creating a plan and evaluating your available resources.
- **Measure:** Now that you understand the problem, you need to measure all available data and look closely at your current process. What is working well, and what needs to be improved?
- **Analysis:** Once you have measured your data, analyse your findings to get to the root of the problem.
- **Improvement:** After you analyse your data, begin coming up with possible solutions. Implement these solutions on a small scale to test the results so you can make any necessary changes.
- **Control:** Once you have implemented your new process, you need to find a way to maintain that process. Continuous improvement is important to ensure that your process stays effective.

KAIZEN

Japanese for "continuous improvement" and in business, "kaizen" is used to implement positive, ongoing changes in the workplace. This methodology has become a critical component for all OpEx methodologies, as defined by the Shingo Model's guiding principles.

Kaizen teaches that when applied consistently, small changes will compound over time and produce big results. The methodology does not necessarily encourage only making small changes, though; kaizen focuses on the participation of all employees to effect real change.

BENEFITS

All the operational benefits we normally associate with continuous improvement, dramatically improve once we achieve Operational Excellence. Some common examples include:

- Better time to first production, or enhanced output
- Inventory turnaround
- Cost reduction & supply chain optimisation

However, once an operation has achieved Operational Excellence, the strongest benefit is it requires very little management intervention. Employees are self-sufficient in driving the value chain, not only improving productivity and shareholder value but recognising problems with process before they happen and fixing them using pre-established standardised work.

CHALLENGES

According to a Business Transformation & Operational Excellence World Summit survey conducted in 2019, 40 percent of companies stated that they had an enterprise-wide operational excellence program. However, more than half (53 percent) of respondents named improving company culture as its top challenge.

As one operations leader said of the challenges in sustaining OpEx in the survey:

“Unlearning the learned, effective change management, establishing a new workforce mindset”

OpEx can open Pandora’s box of end-to-end transformation; however, with a strong vision, an effective change management process, efficient role/resource allocation and a healthy culture, operations leaders can form the backbone of business transformation and become the blueprint for wholesale business transformation.

DIGITISING OPERATIONS IN THE OPEX PHILOSOPHY

OpEx philosophies work with digital transformation as they provide the guiding principles behind why, what and how an organisation digitises operations. In fact, OpEx provides the framework for how new tools fit into existing or new systems which deliver results and outcomes for the business.

A common mistake made by organisations is to focus too heavily on a specific toolset as the basis for improvement efforts. Tools do not answer the question of “why,” only the question of “how.” Knowing the “how” without understanding fully the “why” leaves team members waiting for instructions and powerless to act on their own.

Conversely, when team members understand how the tools serve the larger system and its purpose, they are better able to use them toward the desired outcome. In other words, if they understand why the tool is important to the system, they can use the tool in alignment with the purpose of the system. It is an important form of empowerment for team members.

OpEx gives staff the understanding of “why” this tool in this system.

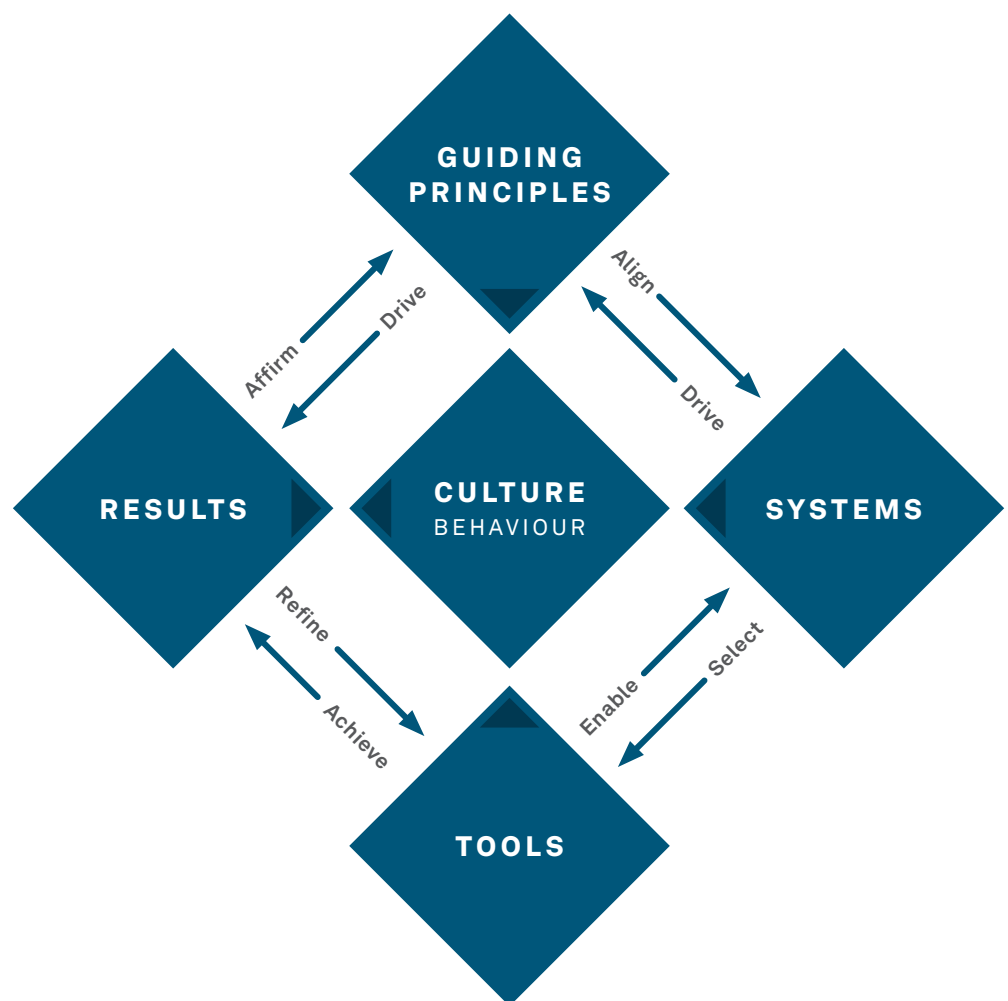


Figure 3: The Shingo guiding principles.

Guiding Principles – Shingo Model

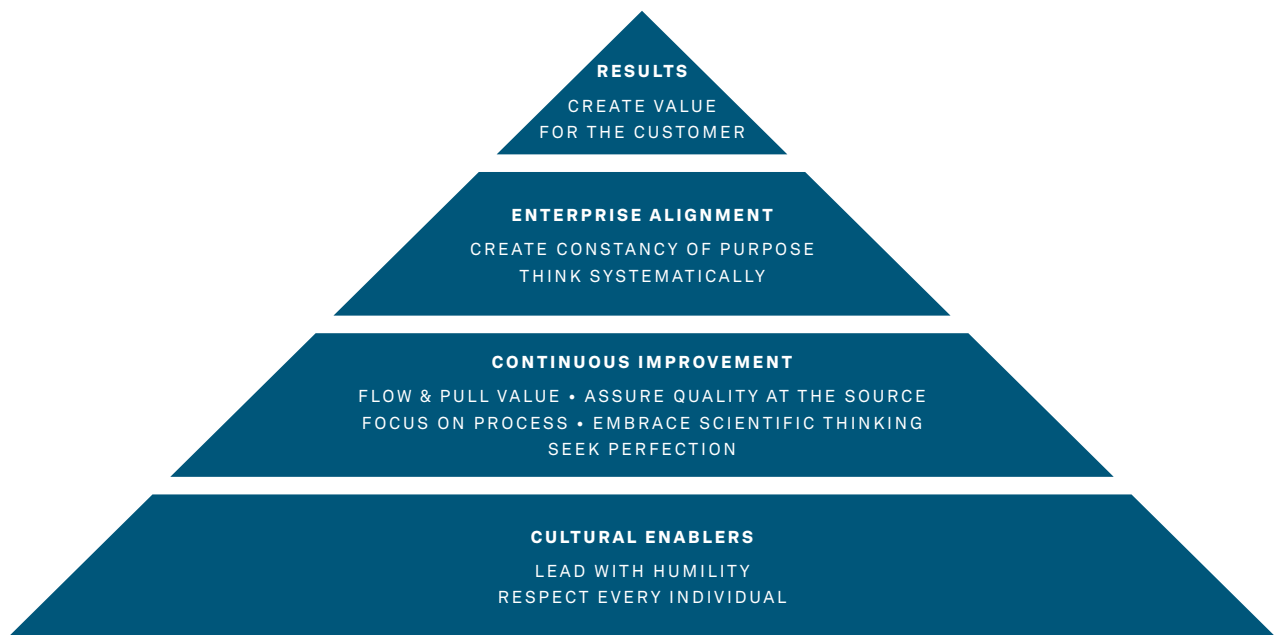


Figure 4: The Shingo Model

This pyramid (Figure 4) is not another system or methodology to brute force over an organisation's existing processes but rather the philosophy or principles for guiding the improvement of existing methodologies. It helps companies align to the human factor in their operations, while accounting for the big four of transformation: Systems, Culture, Tools and Results (Figure 3).



Implementing and Sustaining Operational Excellence

LEADERSHIP

DRIVING THE VISION

The bedrock of cultural change is setting and driving a vision. A vision is a clear, distinctive and specific view of the future and is usually connected to the company's strategic objectives. It helps define what an enterprise can be as opposed to what is now. Communicating an effective vision - which fosters enthusiasm and commitment to an organisation's future - is an essential quality of effective leaders. The vision will give context to decisions you make and provide the workforce with a unity of purpose.

As discussed earlier, the primary causal link for productivity gain from digital transformation is the successful adoption and diffusion of new technology. This requires a cultural shift, enabled by a vision towards operational excellence, starting from the top-down. However, enterprise businesses can expect some resistance to change. The time and cost of this change is variable and may result in productivity loss as new ways of working and new technologies are being onboarded. This section will explain the different types of leadership that can smooth the transition and how to allocate resources and roles effectively.

TRANSFORMATIONAL AND TRANSACTIONAL LEADERSHIP

Transformational leaders focus on increasing employee motivation and engagement, while attempting to link an employee's sense of self with organisational values. They often lead by example so followers can identify with their vision and values.

Transactional leaders, or more commonly known as managers, are responsible for emphasizing processes, coordination and compliance with organisational goals. They manage performance expectations through supervision and influence, while empowering the workforces with the use of rewards and punishment.

Accordingly, a cultural shift requires a blend of transformational and transactional leaders. Transformational inspires change and arbitrates the conflict arising from this change; and transactional drives the vision's performance and standardises new processes.

RESISTANCE TO CHANGE

“We keep reorganizing, and the resulting fallout is a tendency to protect your own turf and not work as closely with others as you could.”

Process Line Manager - Mineral Processing BOETS Survey 2018/19

PARTICIPATION

Getting staff involved in the change is important to overcoming resistance to change; however, participation is an intangible. It is a feeling on the part of people, not just the act of calling staff in to take part in discussions. Calling cross-functional meetings and asking for each department's expert input helps as it respects their knowledge and the worth of their skills, rather than dictating to them a set of predefined questions.

While offering participation may seem simple, it is anything but – as the real resistance to change comes from threatening pre-existing human relationships, which will happen no matter how much leaders ask staff to participate. This is the core challenge to overcome in transitioning to a new way of working.

SOCIAL VS TECHNICAL CHANGE

Sociologist Paul R. Lawrence made astute observations between two different engineers and the same product operator in a manufacturing plant. In summary, their interactions resulted in the following exhibit.

Change	Technical Aspect	Social Aspect	Result
Episode 1 Operator <i>a</i> Engineer <i>a</i>	Clean part prior to assembly	Sustaining the customary work relationship of operator	1. No resistance 2. Useful technical result 3. Readiness for more change
Episode 2 Operator <i>a</i> Engineer <i>b</i>	Use new part in assembly	Threatening the customary work relationship of operator	1. Signs of resistance 2. No useful technical result 3. Lack of readiness for more change

This table concludes that the variable is the social aspect of change, not the technical. The operator doesn't resist technical changes, but she does resist the accompanying change in her human relationships.

Accordingly, operations leaders must understand and consider the existing social arrangements for work between staff specialists, like engineers and IT, and operating staff – not the actual technology itself.

One of the main considerations in Lawrence's observations is that the exchange of ideas flows freely in each separate function, without threat to customary work relationships because of a mutual understanding between stakeholders in that function. Rarely does this mutual understanding journey outside that function.

In a manufacturing context, this can often lead to specialists becoming too engrossed in the technical change and overlooking the expertise of production specialists, such as foreman's practicality in how long it will take to deliver the change – much to operating staff's chagrin. This is the recipe for resistance to change, which leads to low adoption, leading to roadblocks to technology diffusion that begets productivity problems and eventually failure in technical transition.

This situation can arise in any business, regardless of industry. The power of strong leadership and managing the cultural change toward new digital operations will help assuage the social change that comes with the territory.

ALLOCATING ROLES

Sustaining a change toward digital adoption needs a framework for success which allocates roles and responsibilities in the change effectively. Ackerman and Anderson's Change Leader's Roadmap (2001) provides excellent guidance for operations leaders in undertaking effective change management (Figure 5).

ROLES

Sponsor - Individual with highest line authority over the transformation. Sponsors are the primary influencers of values and culture. Their responsibilities include setting parameters, allocating resources, and often having veto power over decisions. They also appoint the change process leaders (below) and provide them with support. They are prepared to make a personal change in mindset and behavior and models the transformation through leading by example.

Their role is often closely related to the “glue” in transition, keeping the transformation in alignment with overall business strategy, handling major communications, celebrating and acknowledging benchmark successes and maintaining on-going links with key stakeholders.

Executive Team The organisation's executive leadership team (either of the entire company or a specific function or segment) must be adequately briefed of the transition. Team members are responsible for supporting and modeling the desired outcomes of the transformation (usually at the vision, strategy and behavioral level). They buffer the change effort from organisational constraints, making strategic decisions for the transformation as negotiated with the sponsor. (However, the sponsor and the executive team in a large organisation-wide transformation may delegate all or part of this responsibility to a change leadership team [below].) They also participate in designing the change strategy and design of the desired state, as needed.

Change Leadership Team The group of cross-functional leaders or key stakeholder representatives from the entire system being transformed with delegated authority to shape both the desired outcomes and the change process; usually focusing on the vision, strategy and managerial-level design and planning of change activities. Team members assure adequate resources from sponsor and executive team, while being actively involved in directing and guiding communications. When encountering challenges, this team is responsible for course correcting the transformation. Depending on the scope of the transformation, this team may be the same as the executive team, meaning it would assume the combined functions of both teams.

Change Process Leader The sponsor delegates authority to a line manager or executive as high in the organisation as possible to lead the change process. This leader is responsible for defining, planning and course correcting the transformation strategy and process. This leader clarifies the scope, outcomes, pace, conditions for success, constraints and infrastructure, as well as advocates transformation initiatives and secure resources to implement these changes. He provides feedback and coaching to all change leaders and stakeholders while leading the change leadership team and the change project team.

Change Project Team Cross-functional representatives, process leaders and/or specially-skilled individuals who assist the change process leader in the day-to-day activities of the change effort, doing the work required to complete the various activities of the change process, such as impact analysis or technology scoping. This team pursues feedback and information for course correcting and communicates as is appropriate.

Change Consultant External change process expert. This consultant acts as a sounding board and third party who educates about transformation and strategies. He helps plan change strategy and major events, communications, training sessions, and meetings. During change, he assesses progress, problems, concerns, political and cultural issues and facilitate change in mindset and behavior. He provides experience in course corrections to the change strategy and change process. He works with the sponsor to coach, provides feedback, and acts as a conscience for the sponsor, change process leader, executive team, change leadership team and change project team. This may be a software vendor with expertise in your industry or a subject matter expert sourced from the market.



Figure 5: The change-leadership team.

THE IMPORTANCE OF CHANGE PROCESS LEADER

The person selected as the change process leader will represent how important the organisation views transformation. The more well-respected the person is, the more important the change will be perceived. Ackerman and Anderson advocate, in most cases, for a high-level line executive to fill the role of change process leader. This role should not be filled by an external consultant or a staff person, unless the change is occurring primarily in a specific function and that person is well-respected by the leaders and the organisation.

The critical factor in managing change is that the entire workforce must respond positively to the change leader. The person selected to fill this role is one of the first clear signals leaders send about the magnitude and priority of what is to follow. The change process leader should be selected not only for the respect he or she commands from the line organisations, but also for his or her ability to demonstrate conscious process thinking and design skills and a facilitative change leadership style. In addition, the more dedicated he or she is to personal development, the better.

CREATE OPTIMAL WORKING RELATIONSHIPS

Once roles are assigned, building and sustaining effective working relationships is an important condition for success. When people take on special change leadership roles, it is essential to clarify the working relationships among them and with their peers who retain existing functional roles. Too often, old political struggles will surface and hinder the change leaders from doing what is required.

Leaders can ensure the cleanest, clearest leadership thinking and behavior to support the overall transformation by addressing and clearing up history, conflicts or political dynamics. Having the leaders model the healing of broken relationships and the creation of effective partnerships are powerful cultural interventions that are absolutely required to make your change effort successful and timely.

When key change leadership roles - such as the **change process leader** or the **change consultants** - are filled by people from lower levels in the organisation, you must reestablish effective working relationships among all the change leaders and the executives. Everyone who has a key role must be clear about who has responsibility and authority over every action so that everyone can pull in the same direction. It is especially critical that people from lower in the hierarchy be given the authority they need to succeed in their new roles.

The relationship between the executive team running the business and the change leadership team changing it must be **crystal clear**. The business must continue to operate effectively during the transformation, and it must also be enabled to change so that it can better serve the digital age. This requires negotiating **clear decision authority** and responsibilities between these two teams. Make the predictable tension between these teams overt; clarify how both teams can best serve the overall good of the organisation. Organisation development consultants can assist with this work, which should begin when the change leadership team is established and be re-visited periodically throughout the transformation.

NO SINGLE PERSON OWNS AN IDEA

Staff often work hard on their own ideas for change that they come to identify with it – the term “his or her baby” is the common reference. The staff member works on the idea alone or with close colleagues, and the company benefits from their complete devotion. However, the problem with this comes from introducing this siloed idea to different functions.

The idea owner may be unreceptive to input – not want someone to tamper with their pet – which can be interpreted as a lack of respect for suggestions. At the same time, the idea owner might not adequately communicate the idea to the stakeholders it impacts, meaning the change is less likely to be understood and will be performed with less satisfaction.

Top line managers change process leaders and executive are responsible for expanding ideas across functions. Most idea owners need time to ingratiate their ideas so that they make “sense” to those it impacts; leaders can hasten this process.

1. Encourage the idea owner to take part in new projects with different stakeholders, cross-functional if possible.
2. Lead by example – take feedback on your own ideas and implement the feedback in a public and easily identifiable manner. Also, a leader can coach idea owners to develop a healthier respect for feedback.
3. Draw a parallel between the satisfaction the idea owner derives from being productive and creative with their idea is the same satisfaction they deny other stakeholders by resisting their input. Try to stimulate their empathy and their satisfaction in sharing success and creativity with others.
4. Lead the idea owner that the challenge and reward of birthing an idea is the same as winning acceptance of the idea. Creating an idea is great, but it is incomplete unless everyone believes in your idea.

At the same time, leaders should familiarise themselves with how idea owners install changes. Activities for understanding these changes include asking discerning questions about reports, listening closely for reactions to employee reports and, if time permits, watching the employee work. Drastic action is seldom required unless operating staff don't understand the idea owners change – which requires a delay until they do. Leaders need to simply evaluate the idea owner's approach and teach them what is expected in their relationships with operating staff.

Important note: having a cross-functional sharing of ideas comes from the right organisational culture.



CULTURE

Culture is seen as the manifestation of philosophies and views of the world in the workplace. It's shared values and how things get done, how the workforce thinks, believes, acts and feels. As an operations leader, your job is to shape culture by what behaviours and processes are tolerated.

Accordingly, if the organisation is constantly 'firefighting,' that means the company promotes and honours a 'firefighter' culture – not one of identifying and fixing the root cause of problems. The frantic problem-response behaviours are tolerated, reinforced and then that is how the workforce thinks, believes and acts toward issues they encounter. Excellent organisational culture often exhibits humility, respect, trust, collaboration, innovation and empowerment.

Identifying when the function or organisational culture needs to change is a key component of good leadership. For example, when production techniques can no longer satisfy demand or deliver strong financial performance, change is needed. A good example of this is the stress tolerance an organisation has for changes in wholesale or commodity prices. If price volatility significantly impacts your bottom line, then cultural change toward adopting digital technologies is vitally important.

According to several papers, culture is the single biggest factor in the success of transformation. If you do not have the culture to back a shift, it is doomed to fail. But how do you know you need a change?

HEED THE WAKE-UP CALL

Examples of the need for change include loss of market share, new technological advancements in the industry, mergers of key competitors, the required closure of a once valuable factory, the initiation of a hostile unionisation effort or an increase in turnover of critical employees.

If leaders are conscious and open to learning and changing, they will effectively deal with these types of wake-up calls. Unfortunately, cultural transformation is the hardest aspect of digital transformation and is the greatest progress limiter.

Most change initiatives don't achieve their objectives or are deemed unsuccessful, resulting in wasted resources and diminished moral. Many factors that contribute to poor results, including change fatigue, too many priorities to focus on, top-down dictating with no true employee engagement. This in turn leads to passive aggressive behaviors at the lower levels as the social changes to working relationships causes resistance.

LEAD THE CHARGE

The first phase in leading a change is establishing the clear foundations for success. This phase often covers 50 to 60 percent of the decisions you need to make in your digital transformation strategy and plan. This work cannot be delegated and is the responsibility of the sponsor and lays the groundwork for change process leaders. The majority of this work is creating the vision and staffing up to execute that vision. While change may be underway in your organisation – this doesn't mean you can skip phase one, rather it means you must gain a realistic picture of where the change is right now and how successful it has been.

The work falls to you. Make the decisions about your vision and the staff to execute it today or what changes need to be made to effectively execute on your existing digital transformation plan.

Once this work is done - and it will be a lot of work if you've followed this guide - the rest is managing performance.

SUSTAINING AN OPEX CULTURE

Bringing a new culture to your organisation may be the responsibility of Human Resources, however, without a collaborative understanding of what the company is trying to achieve, the journey is doomed to fail. Keep in mind a few high-level ideas while managing a cultural change:

FOCUS ON A FEW KEY BEHAVIOURS

Shifting culture is a large task, however changing and sustaining just a few – even small – behaviours can create big changes. Leading change management consultant Jon Katzenbach said in HBR that asking employees if they'd ever shared feedback with the person in question during 360-degree evaluation helped one company to increase employee engagement on constructive criticism. Normally, employees would receive feedback through the 360-degree process, causing demotivating surprise. However, the simple change in question encouraged staff to talk directly to each other about concerns and built a better culture on performance dialogue.

The key takeaway is that peer-to-peer customs resonate stronger with staff than top-down mandates. Accordingly, encouraging staff to find new behaviours that suit them, and the new cultural vision is best when trying to change how work is done.

FORMAL AND INFORMAL CULTURAL INTERVENTION

Cultural interventions should do two things: Reach people at an emotional level (invoking altruism, pride, and how they feel about the work itself) and tap rational self-interest (providing money, position, and external recognition to those who come on board).

Informal interactions with employees - including social visits, ad hoc meetings, impromptu telephone discussions and e-mail exchanges - are excellent at getting cross-sections of people to reflect on how they were feeling and on identifying their sources of anxiety and concern. At the same time, non-hierarchical forums among peers and colleagues help uncover and discuss existing company values - what they were, what they should be, why many of them were no longer being “lived,” what needed to happen to resurrect them and what leadership behaviors would ensure the right employee behaviors.

This helps operations leaders twofold: one, it identifies a core group of “key influencers,” potential leaders who could offer invaluable perspectives on the cultural situation, regardless of their level in the hierarchy, and two, establishes the formal processes for cultural transition. Holding discussions with key influencers helps give insights about the staff but also creates rapport between leaders and a respected group that disseminates the cultural message both formally and informally.

MEASURE AND MONITOR CULTURAL EVOLUTION

Progress measuring and monitoring are essential to sustaining change. This is where most organisations fail. Just as you would with any other priority business initiative, rigorous measurement allows executives to identify backsliding, correct course where needed and demonstrate tangible evidence of improvement, which can help to maintain positive momentum over the long haul.

Executives should pay attention to four areas:

1. **Business performance** - Are key performance indicators improving? Are relevant growth targets being reached more frequently? What is happening with less obvious indicators, such as local sales improvements or decreases in customer complaints?
2. **Critical behaviors** - Have enough people at multiple levels started to exhibit the few behaviors that matter most? For example, if customer relationships are crucial, do managers update the CRM database on a regular basis?
3. **Milestones** - Have specific intervention milestones been reached? For example, has a new policy successfully been implemented? Are people living up to their commitments to key account targets?
4. **Underlying beliefs, feelings, and mind-sets** - Are key cultural attitudes moving in the right direction, as indicated by the results of employee surveys?

References

<http://catdir.loc.gov/catdir/samples/wiley031/00011969.pdf>
<http://insights.btoes.com/download-research-report-2018/19-the-global-state-of-operational-excellence-critical-challenges-future-trends>
<https://hbr.org/1969/01/how-to-deal-with-resistance-to-change>
<https://hbr.org/2012/07/cultural-change-that-sticks>



Technology

Once people and processes are aligned to the vision of change, organisations can begin assessing their digital technology stack and identifying gaps or areas for improvement. Setting roles and auditing processes will give leaders and the team a better foundation for selecting and experimenting with the right tech in the right order.

INFRASTRUCTURE

Practically all companies have established procedures for collecting, analysing, and reporting productivity data. This presents opportunities for improving productivity; however, most organisations struggle to keep clean data or integrate it effectively.

Typically, the accounting department has the overall responsibility of collecting, organising and storing data generated by various departments. This is no longer an effective means for gaining insight into productivity in a rapidly transforming digital world. This responsibility needs to be spread and socially explained to the cross-functional elements it will impact. Accounts and IT can manage data, however, it is vitally important that all functions understand the impact they have on data extraction and collation through a solid data governance framework.

INFORMATION MANAGEMENT AND DATA GOVERNANCE

A proper framework for data governance is vital for any company to succeed in the 21st Century. Once a company has grown to a large enough size data governance is not only necessary for its ongoing operation, but it is vital to remain competitive and adaptable to new avenues for growth. Often, establishing a data governance framework involves moving from a set of informal protocols to a formalised set of established guidelines to aid in strategic, tactical and operational decision making. As such, executives are a crucial component of the process.

Overall objectives: The big picture objectives of data governance involve several factors:

- Create data strategies, architecture, policies and procedures
- Track and enforce compliance with policies and procedures
- Manage and oversee data projects and services
- Resolve data-related issues and ensure data quality
- Recognise the value of data as an asset

While each company may have additional needs, these factors are required for any successful data governance program.

Decision-making: A key element of a data governance framework revolves around the ability to use data to make both high-level and day-to-day decisions. A sound framework should provide executives with the necessary data and analytics to aid in determining a direction for expansion with the same accuracy it helps a mid-level manager make staffing decisions. Indeed, a primary goal of data governance is to make necessary data most available to aid in the fundamental operational elements of a company, from technical, organisational and business perspectives.

Decision-making responsibilities are shared by the business's stakeholders, often formed into a data governance council. These councils include leaders from both the business and IT side of the company and help facilitate decision-making while ensuring the practical elements of day-to-day operation are met.

CLOUD VS ON-PREMISES

Provided that you have a solid data governance structure, the decision for cloud versus on-premise is an internal decision. However, it is important for executives to remember that if your long-term digital efforts will involve business and operational intelligence systems, the organisation will need large amounts of processing power for analytics platforms, which are expensive and difficult to manage on-site at a reasonable cost.

OPERATIONS DATA MANAGEMENT TOOLS

Owner operators struggle to manage large volumes of unstructured, unintelligent information – documents, drawings, data sheets – which are often duplicated in various folders and databases throughout the organisation. Great tools in this space will help you integrate legacy data, structure it effectively and give the right stakeholders the right access to the right information at the right time.

SOFTWARE

While culture is the glue that helps systems and processes drive results, software is the tool that enables those systems to flourish and drive better business performance. They are often the last piece of the puzzle, and organisations fail in digitisation efforts when their OpEx framework isn't in order (identifying the systems needed to drive results and the culture that sustains those systems effectively.) Below are some areas where software can enhance your systems.

ENABLING WORKER PRODUCTIVITY

A U.S. study from Pew Research Center states that 77 percent of adults in 2018 owned a smart phone. This means that within seconds, 77 percent of your front-line workers can access any piece of information available on the internet.

How long does it take front-line workers to access information they need to do their job timely and effectively? Without a **Connected Worker** strategy, front-line workers feel disconnected from the rest of the operation, like they're stuck on a deserted island.

Empower your front-line workers through a Connected Worker strategy and improve how work is performed as part of your maintenance, inspection and operation processes while boosting compliance and safety with connected workers; rescue them off the island and bring them into 21st Century civilization.

Hexagon's Connected Worker strategy delivers a consolidated view to connect your front-line workers to the multitudes of different information systems in use at the plant today without storing or duplicating the data. This allows your Connected Workers to efficiently carry out routine processes, improve operator productivity and reduce OPEX.

SAFETY, COMPLIANCE AND REGULATIONS

Operations personnel should not have to question their safety due to poor handover from shift activities; their friends and family are counting on them to get home safely. Using paper forms and spreadsheets to document shift activities leads to unnecessary risks at already complex plants. Driving **Shift Excellence** can significantly improve shift activities and ultimately reduce risk.

From the most earth-shattering accidents to untimely shut downs and deterioration, your workers are a key defense against damage. Driving Shift Excellence fosters success because it focuses on the talent and expertise of the people working in your plant today.

Automatic and instantaneous information updates empower your workers, keeping them connected, freeing their time and focus and ensuring clear communication during critical times.

The effectiveness of operators during shift activities and handover is a variable that positively impacts:

- Risk
- Compliance
- Uptime

However, at the end of a shift, all the information created over the last 12 hours is time-consuming to consolidate in order to effectively communicate to the on-coming shift.

Shift Excellence simplifies a process that used to take hours of data entry. Teams now work with the logs, tasks and orders digitally collected throughout the shift to address anomalies and effectively communicate with the on-coming shift.

