

Making your Digital Transformation successful: back to fundamentals

Industry 4.0

The truth is digital transformations mostly fail for all the reasons change programs typically fail. They do have a wide range of specific attributes, including technology wonders and unprecedented degrees of changes, but ensuring success means going back to a few enduring principles: value realization, technology as one enabler, and behavior changes for lasting results.



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Promising imperative, but a daunting task

Digital Transformation, the process, or Industry 4.0, the end state, and many of the related technologies (IoT, AI, Big Data Analytics, Cloud-based Computing, etc.) are ubiquitous in the media, a vast array of potential vendors, and, inevitably, many company strategic initiatives.

Simply put, technology can be categorized as operating technology (OT), i.e. instrumentation, equipment and machinery, SCADA, etc. and information technology (IT), i.e. software and associated hardware mostly. With ever increasing integration and connectivity, lines are being blurred between OT and IT creating the digital work environment that is the core of Industry 4.0.

One distinctive feature of today's technology is the abundance of data, storage capacity and processing power now available, and the advent of algorithms approaching cognitive capabilities of human beings. This has never been seen before. The impact on business models, operations, and results can be dramatic and has been well documented.

Yet, the magnitude of change to be undertaken can make the bravest leadership team pause. Compounding the issue is technology's, especially IT's, notoriety for cost and schedule overruns and mixed record in delivering measurable value when compared to the investment.

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As a result, companies are still hesitant or slow to engage, unsure of where investments make most sense. When they do, they start with pilots in specific areas or, less often, make it a company-wide endeavor. Some companies have achieved what they intended. Many have not.

With much emphasis on technology, the task can feel daunting. The truth is digital transformations mostly fail for all the reasons change programs typically fail. They do have a wide range of specific attributes, including technology wonders and unprecedented degrees of changes, but ensuring success means going back to a few enduring principles: value realization, technology as one enabler, and behavior changes for lasting results.

Issue # 1 - Ignoring, assuming or taking value realization for granted

It may sound fundamental, but companies may not fully understand how they make money (or not), truly operate, or where or by how much they are strong or wasteful. Leaders need a keen understanding of what happens at the grass root level and visibility into true performance. The reality almost always differs from the picture painted by the data. Selection of where to and why start a transformation is thus the first challenge. An understanding of what can be achieved and what the “to be” state could /should look like is required.

For digital transformations, as for many change initiatives, the measure of success needs to be defined with sufficient rigor and details, especially to deliver new behaviors and skillsets sustainably. Often, value, as measured by financial impact and associated operational metrics, is conceptually accepted or roughly estimated.

That’s not good enough.

First, measurable value objectively sets expectations and assesses what is being achieved. In its absence, disappointment is the main outcome. For example, a midstream company hired an AI technology firm to assist with pump failure prediction, critical equipment to monetize liquids transportation in a capacity-constrained environment (as of 2019), but had not defined whether to expect lower reactive maintenance and backup costs or avoid deferred fee revenue, let alone quantified either. After months of testing (and paying bills), the experiment concluded with no meaningful results to offset the cost of the project.

Second, the transformation should strive to be self-funding. With a business case established, a cash projection is set. Initially, money will be spent, for example on third parties, with little to show for it. But as changes are operationalized, they must start delivering value. Many benefits are derived: the effort is sustained by demonstrating results, keeping everyone engaged, and most importantly, cash generated from the transformation is reinvested in it, proving its own case.

Third, behavior change cannot be institutionalized without matching individual accountabilities with the metrics that enable value creation. Countless companies have relied on communicating, telling, training, even coaching, to effect change, but in the absence of the evidence the business case provides, these activities, while necessary, have proven insufficient to make change stick.

Establishing value is easier for some business use cases, especially for point solutions. Sending drones to remote locations saves personnel and logistics cost. Predicting failures based on operating conditions provided by sensors and AI algorithms can prevent costly emergency repairs and lost sales. Besides reducing operating costs, flying drones to detect pipeline leaks or cracks on storage tanks and other elevated structures avoid exposing people to poisoning or falls. In many industrial sectors, safety is a major benefit of digital transformations. In all those cases, value can and should be made explicit.

While it may be true that “Not everything that can be counted counts, and not everything that counts can be counted”, justifying the investment or establishing some objective measure of success must be done. For transformations related to safety or environmental compliance, value can be demonstrated as part of a social license to operate. In all cases, the question “How do we know this was worth doing?” must eventually be answered clearly.

Issue # 2 - Deploying technology as the solution rather than one enabler

When companies struggle to understand what to do and what value can be delivered by a digital transformation, considering and evaluating pitches from technology vendors has merits: exploring options can broaden perspectives on what is possible and what could be achieved. However, companies need to stay with their business case once they get a grasp of it and not be tempted by an “outside-in” approach where hope may replace certainty: technology vendors know how to promote benefits to clients in addition to features, but sometimes they can’t articulate value for clients because they do not understand how companies generate and spend cash operationally. In other words, they may have a brilliant AI algorithm, but know little about your business. More importantly, technology vendors code, program, connect, test, install a solution or provide an ongoing service, etc. They accomplish a lot, but only assume accountability for solution delivery and not value realization.

Technology vendors often direct their pitch to technology managers, who have been delegated the authority to explore solutions on companies’ behalf. No matter how knowledgeable about the business those managers are, some loss in translation occurs. This disconnect between business ownership and technology focus dilutes understanding, results in underwhelming or incomplete solutions and ultimately undermines value.

Getting the right data, and getting the data ready for analyses, is a significant challenge (“one source of truth”). Understanding data sources, whether through automation (e.g. sensors) or manual entry and laying out master data management (“one source of truth”) is the first step. Over time, companies have grown clusters of disparate technologies, databases, interface programs, etc. to meet their needs with sometimes extensive customization that can add much complexity. Implementing digital technology involves hardware (e.g. instrumentation, SCADA, etc.) and software (databases, applications, etc.): extensive “plumbing and wiring” will be required. Be wary of too much customization: it is the historical black hole for well-meaning IT investments.

Digital transformations can have dramatic implications on people, organization, workflow, how decisions are made, and how performance is measured. Those cannot be overlooked or underestimated. Multiple needs calling on different types of expertise from engineering to data science to software programming to training and skill development imply a best-of-breed approach will provide the best solution and a holistic one. Technology vendors focus on deploying their products and associated services. Companies still have a business to run but own the change process. They may not have the resources, know-how, toolkit and proven solutions to drive all the changes through and realize the value they set out for. That execution gap is a major cause for failure.

Issue # 3 - Underestimating impact on organization, people and behaviors

Digital transformations challenge traditional organization structures and decision-making authority:

- Information is available real-time and at the point of action
- People are empowered to make decisions faster
- Transparency enables speed and responsiveness
- Action, and less planning, is encouraged through immediate feedback
- Collaboration prevails over individual effort

Organization structures may need changes that fit those premises. Delaying and delegation of authority are major opportunities. Managers' and supervisors' roles may change or be removed. Traditional roles and responsibilities may change or disappear. Specific talent may be required, for example "Translators" connecting technology experts and business leaders to define business use cases and where value can be found. With such dramatic changes, it must be recognized that no matter how good the execution, some anxiety will prevail among employees, who may feel their employment is threatened or their skills may become obsolete.

Unaddressed skill gaps prevent full adoption of implemented solutions. Skill levels required in new areas such as cyber security, privacy, using new technologies, user experience, and human-centered design are not prevalent in the current workforce. Behaviors also need to change and use insights delivered by analytics. The change in the employee mix driven by baby-boomer retirements and new millennial hires, should help, but industrial sectors, rightly or wrongly, are not attractive enough places for it to happen fast. Paradoxically, the sectors that should benefit greatly from digital transformations are the least likely to attract the resources that would make those successful. Upskilling is the primary way to go in the short-term. That means tailored training programs to accompany the change process.

[See *Addressing skilled worker shortages and the growing talent gap*, by X/Celerant, May 2019]

Dedicated structures and new roles, from data scientists all the way up to the C-Suite (e.g. Chief Data Officer), have been created to support digital transformations. New structures acknowledge the need for expertise, but caution is required. They tend to grow in size over time, take a life of their own and justify their existence by launching initiatives on behalf of the rest of the organization to whom they can feel like "hammers looking for nails". One well-known

example was the extraordinary growth of black-belt experts and Six Sigma organizations within companies in the 90s at the zenith of GE's influence and celebrated success.

Many company initiatives fail to effect behavior change at all or sustainably. They do not demonstrate to people through action rather than words why they need to do things differently and how doing so derives benefits for them. They may also implement overly complex tasks and systems to over-compensate for the greater availability and transparency of data. Is work simplified? Are people going to have higher autonomy and task variety? Feel proud of their accomplishments and have an objective measure of how "good" a day is instead of "busy"? See the direct contribution of their actions and the link with the overall company goals? Imagine a technician alone in a remote location to repair equipment with access via a mobile device and a cloud-based platform to work order, equipment specs and history, troubleshooting guides, etc. in a secure and user-friendly manner. She can directly assess her own efficiency (e.g. number of work orders completed) and effectiveness (e.g. uptime) and see for herself the benefits of the "new way". Only so will she readily adopt all proposed changes. True change can only come from within.

Approach

- **Begin with the "end in mind": define purpose and select focus**
 - Review operational strategy and develop digital approach alternatives, with future financial and operational risks/ impact for all stakeholder groups
 - Do the homework; understand what is possible and whether or not that fits the strategy of the company; or if it will require a change in strategy
 - Understand current performance strengths and weak areas/pain points (e.g. safety, operating cost, plant productivity, customer service, etc.)
 - Clearly articulate the "as is" and "to-be" states; use input from technology vendors to paint the desired state, but remain in control
 - Build a multidisciplinary team and solicit input to understand the needs of all stakeholders
 - Further define scope areas for improvement (geography, business units, locations, etc.) balancing appetite, risk, and perceived value
- **Build the case, understand operational changes required and derived value**
 - Demand qualification and quantification of business value to be realized before embarking on execution. Refer to *"Successful Change Programs Start with Results"*, by Robert J. Shaffer and Harvey A. Thomson HBR 1991
 - Assess the current state in detail, including operating practices, skills and technology; making no assumptions (e.g. based on SOPs, policies, job descriptions)
 - Uncover your operational reality by identifying all gaps related to the future state
 - Set expectations and an objective measure for success and connect to organization and individuals by establishing supporting metrics and ownership
- **Define the transformation roadmap**, including pragmatic steps with stage gates of economic, operating, human capital, and technology requirements to fund the initial project and future steps based on prioritized selection of alternatives

- **Treat technology as one enabler, albeit a major one**
 - Ensure business owns the digital transformation, whatever the scale: drive all decisions there, get a multidisciplinary Steering Team in place
 - Review technology providers' offerings and work the details (e.g. scalability, data integration/visualization) with internal stakeholder groups. This may mean engaging an external consultant if in-house expertise is not available. Don't rely solely on vendors' recommendations.
 - Define best-of-breed solution, covering all needs, assess best fit and select
 - Provide business expertise wherever required (corporate, functional, operational) to ensure use cases drive functionality first
 - Keep requirements simple for any technology solution. This means:
 - Going for off-the-shelf functionality of any technology solution. The best ones will fit most company needs
 - Following well-known principles (e.g. data entry once) to limit system integration requirements and future maintenance costs
- **Make sure to drive true behavior change**
 - Reconsider the organization structure (e.g. delayer, decentralize/centralize) and create/eliminate/revise positions recognizing delegation of decision-making and greater speed for action
 - Define new behaviors required to align with the transformational goals, characterizing the attributes to be role-modeled, starting with leadership (e.g. let a decision happen where it belongs)
 - Break down the measure for success, whatever it is, and flow through organization, functions, divisions, etc. all the way down to individuals. Only so will people link what they are asked to do differently with why they need to and what that means for them. Make sure people understand how this will improve their daily work, "what's in it for them"
 - Embed desired behaviors by changing the underlying work processes, organization, and management systems wherever needed
 - Provide the necessary support (training, coaching, leadership development) while clarifying new responsibilities and accountabilities
 - Understand the impact on people; including perceptions, fears and uncertainties. Use effective change management to maintain transparent communication and frequent updates
- **Apply long-known principles to successfully implement change**
 - Digital transformation or not, it's a change program. Well-documented principles apply including establishing a sense of urgency, leadership drive, creating a vision, communicating relentlessly, enlisting the organization, planning for and measuring results as you go, institutionalizing change, and creating a sustainable foundation for continuous improvement. Refer to "Leading Change: Why Transformations Efforts Fail" written by John Kotter HBR in 1995

Takeaway

Beyond the hype of the digitalization of the work environment remain two essential truths. One, the potential for value creation and the amount of change are both extensive. Two, the fundamentals to effectively transform and successfully implement Industry 4.0 are the same

they have been for many change programs: make a case and spell it out, think holistically and deploy technology as only one enabler, accompany people through the changes with laser-sharp focus on value to sustain the journey.

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