Becoming a Digital Organization:

The Journey to Digital Dexterity

Deborah Soule[1]

Akshita Puram[2]

George Westerman[1]

Didier Bonnet[2]

MIT Center for Digital Business

Working Paper #301

January 5, 2016

[1] – MIT Sloan School of Management
[2] – Capgemini Consulting

Table of Contents

List of Figures

List of Vignettes

So You Want to Become a Digital Organization?

As the digital age unfolds, executives constantly face new strategic choices about how to take advantage of fast-moving technology innovations. Enterprises aiming to transform themselves through digital often focus on technology solutions to achieve specific tactical objectives -- How can we provide our service on a mobile application? How do we implement a cloud computing system? How do we increase our likes on Facebook? However, past research from MIT Center for Digital Business and Capgemini Consulting has shown that value comes not from adopting technology, but from using technology to transform the way a company does business.[1]

While the term "digital transformation" is much in vogue, relatively less attention is paid to how firms organized to fulfill the chosen digital strategies. An enterprise's approach to digital can have an immense impact on the nature of work, the spectrum of jobs, or how people are managed. A critical question remains: *How are fast-moving digital innovations changing the design of organizations?*

Over the past two years, researchers from MIT's Center for Digital Business and Capgemini Consulting have explored this question, drawing on interview and survey input from over 150 organizations. We found that enterprises experience significant organizational changes as they build their *Digital Capability*, to improve customer engagement, internal operations or employee engagement. We also found that some organizations demonstrate *Digital Dexterity,* a sustained ability to rapidly adapt to take advantage of emerging digital possibilities. In a digital economy where technologies continue to improve exponentially, Digital Dexterity is the hallmark of a true Digital Organization.

In order to build an enterprise for long term digital advantage, executives need to cultivate the unique set of characteristics of a Digital Organization that collectively enable both Digital Capability and Digital Dexterity. This paper describes the pieces of that puzzle and provides guidance for the journey to *"*becoming digital." It is *not* simple, but it *is* possible.

"Digital Dexterity is the hallmark of a true Digital Organization."

Digital Possibilities and Need for Digital Dexterity

Organizational design addresses issues of coordination and cooperation among multiple people working together. Organizational designs often embody tension since roles, relationships, and priorities optimized towards one goal are often less supportive of another goal. Consider the choice of **hierarchy or network** to facilitate decision-making. This choice used to involve trade-offs. A hierarchy strengthened control through centralized decision-making, but could hinder adaptation to local needs. For example, large organizations could more efficiently lead armies of employees toward a goal through hierarchy. Decisions were made quickly and there was a clear process for how they were made despite varying perspectives. A network approach ceded more decision-making power to frontline workers, facilitating responsiveness but at the expense of centralized control. Now, with the aid of digitized information and operations, it is possible to be centralized or decentralized while maintaining both control and responsiveness (Vignette 1).

Vignette 1: An Organizational Design Choice - Hierarchy vs. Network

Samsung, repeatedly recognized as an award-winning innovations company, has a strong top-down command structure. For example, before the launch of Samsung's Galaxy S III smartphone, vice chairman Choi Gee-sung ordered half a million cases to be thrown away. Choi finally approved a design on a Sunday, just ten days before launch.[2] Although decisions are made at the top and collaboration across levels is minimal, Samsung is able to act rapidly and effectively -- receiving recognition for ground-breaking technology.[3]

In contrast, The Roche Group has embraced decentralized decision-making and internal collaboration among its 90,000+ employees. By leveraging a digital cloud-based suite of productivity applications, the organization has been able to remove traditional barriers to widespread communication and coordinate seamlessly across its 140 country locations. The productivity platform provides a place to share information with all levels across the organization, and makes it easier for employees to contribute from home or on the go. These digital tools, together with a new set of organizational practices, have created a more transparent, open environment, helping to steer the organization at all levels and functions.[4]

Coordinating decision-making through a hierarchy, network, or some other structure is only one organizational design choice facing executives. Exponentially improving digital tools create many new possibilities for organizing work (Figure 1). Should decisions be made by algorithms instead of people? Could certain tasks be done by customers instead of employees? Could contingent workers contribute key expertise? Should assets be rented or owned?

New digitally-enabled possibilities for designing, organizing, and managing productive work thus require leaders to make choices about *how to operate* (organizational design choices) as well as *what to produce* (strategic choices). Digitally-enabled choices can trigger significant changes such as reconfiguring departments and assigning new responsibilities. For example, HSBC plans to eliminate 25,000 jobs globally and radically restructure as a part of its end-to-end digitization plan.[5] American Express redirected its recruitment effort to hire large numbers of people with the skills to power its digital transformation.[6] Lego, a toy design company, identified adult "superfans" through its online fan forums

and then engaged this new "workforce" in the design of new products, one of the efforts that helped Lego go from near bankruptcy in 2006 to being considered the world's most powerful brand by 2015.[7]

Figure 1: Examples of Expanding Strategic and Organizational Design Possibilities

Note: As digital technologies enable widespread and rapid access to information, they have reduced or eliminated many past constraints on organizing. Digital solutions offer alternative ways to achieve organizational goals.

Often this effort is neither fast nor easy. Jobs can be replaced and new skills can be acquired. As technologies continue to evolve and prior investments become dated, leaders may find themselves in the same predicament in one year or even one month from now, having to adjust organizational design again to meet strategic goals. The real digital advantage comes from having an **organization designed to adapt with dexterity** along with rapidly advancing digital technologies.

Digital Dexterity is the ability to rapidly self-organize to deliver new value from digital technologies. Digital Dexterity is reflected in enterprise ability to respond to customers' individual needs and preferences, and to balance rapidly evolving localized and company-wide needs. Enterprises with high levels of Digital Dexterity establish partnerships, identify talent, or find experts more readily than other firms. They utilize digital information and operations to engage both digital and human resources fluidly. They can detect emerging trends early and reorganize quickly to respond appropriately.

"Digital Dexterity is to the ability to rapidly self-organize to deliver new value from digital technologies."

Designing an Organization for Digital Dexterity

As companies make increasing use of digital resources, their organizational structures and processes start to evolve. Their industrial-age organizing practices, skills, and perspectives give way to digitally-enabled organizing practices, new digital skills, and new digitally-informed mindsets about how work can get done. Many enterprises are in the midst of this process of "becoming digital." Many have developed *Digital Capability* to support different aspects of their businesses. But not all of them should be considered true *Digital Organizations*.

A Digital Organization embodies a unique set of characteristics that collectively enable both Digital Capability and Digital Dexterity (Figure 2). Members of a Digital Organization hold a distinct Mindset reflecting a deep confidence in digitization and an inclination to pursue digital solutions. A Digital Organization reflects this set of beliefs about digital possibilities *and* key Practices, Workforce characteristics and Resources that can make those possibilities a reality. These essential qualities of a Digital Organization are captured as **M-PWR** (pronounced m-power).

"A Digital Organization embodies a unique set of characteristics that collectively enable both Digital Capability and Digital Dexterity."

Digital Capability

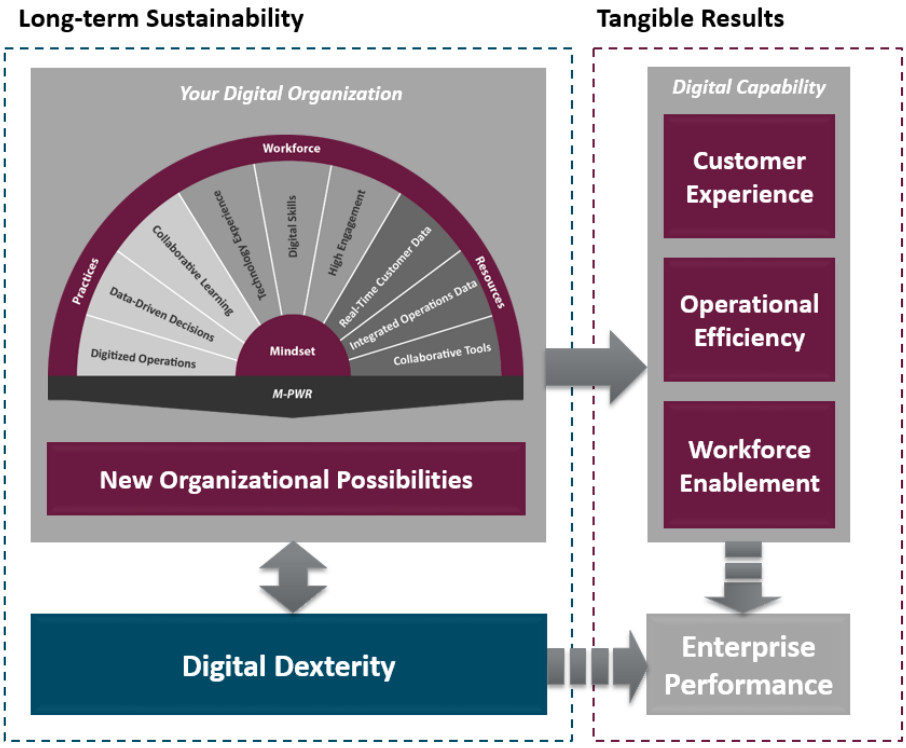
A Digital Organization supports three clusters of Digital Capability:

- *Customer Experience*: using technology to address customer expectations or integrate digital channels for customer communication and interaction
- *Operations Efficiency:* optimizing, automating, or streamlining internal processes with more precise data
- *Workforce Enablement:* using digital tools to facilitate collaboration across boundaries, develop skills, or share knowledge across the organization

Digital Dexterity

Digital Dexterity is the hallmark of a Digital Organization. Digital Dexterity enables a Digital Organization to adapt its roles, responsibilities, and relationships flexibly. With this dynamic capability, an organization can leverage new digital options quickly in the face of changing customer expectations, industry shifts, or internally-driven strategies. Successful experiences reinforce more fluid and collaborative ways of working, which support future Digital Capability and more effective performance in the long run.

Figure 2: Digital Organizational Design Framework

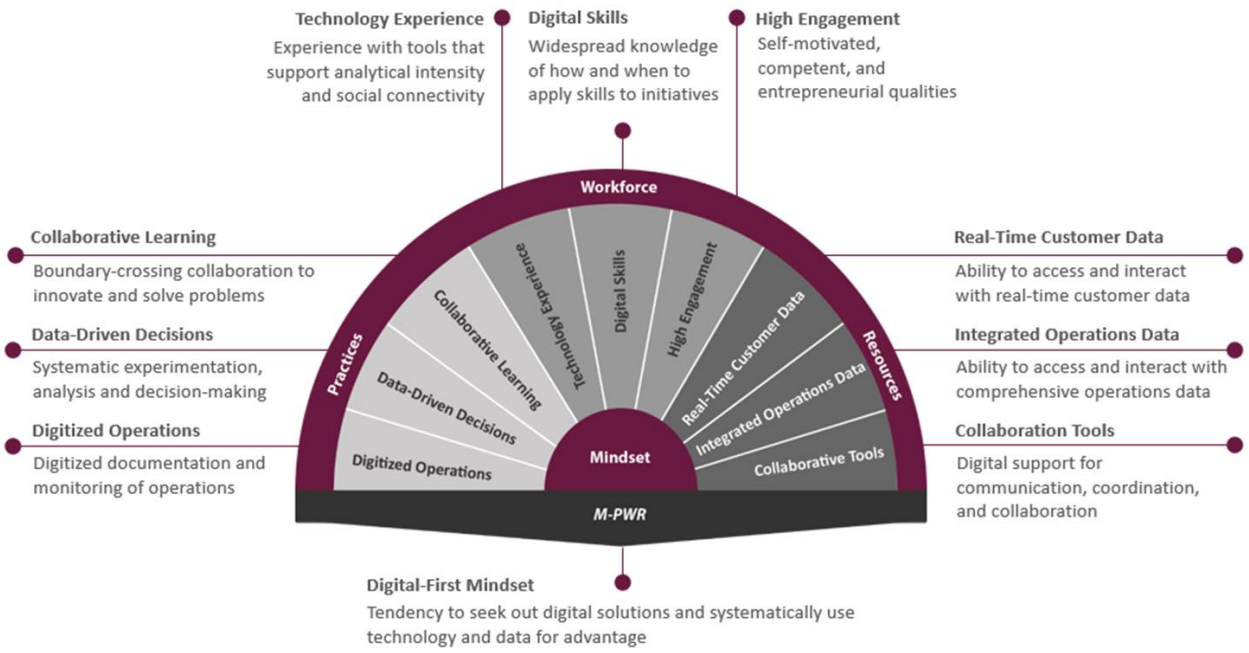


Note: Our interviews suggested an initial set of criteria that were important to organizations that could organize rapidly apace with technology. We used the survey to validate the relationships shown in this framework.

The Characteristics of a Digital Organization: M-PWR

Our research exposes the foundations of a Digital Organization, which include a Digital-First Mindset and key characteristics from three organizational dimensions: Practices, Workforce, and Resources, captured as **M-PWR** (Figure 3). Together, M-PWR characteristics drive Digital Capability in the short term and Digital Dexterity in the long term.

Figure 3: M-PWR Characteristics of a Digital Organization



Note: Our interviews suggested an initial set of criteria that were important to organizations that could (or needed to) organize rapidly apace with technology. The final set of M-PWR characteristics emerged through analysis of survey items.

*"Developing a Digital Organizations requires the combination of a digital-first Mindset and key characteristics from three organizational dimensions: Practices, Workforce, and Resources, captured as **M-PWR.**"*

MINDSET. A distinguishing feature of a Digital Organization is the **"Digital-First" Mindset,** an attitude that reflects a broad tendency to seek out digital solutions first, use technology as a tool for advantage, and approach enterprise data in a systematic fashion. The CTO of ServCo, a *born-digital* services company with more than ten million customers, describes it this way: *"Our approach, in general, is to leverage technology first and think about a technical solution. We're always going in with the assumption of using a digital solution. We may actually use a manual approach, a non-digital approach, to explore possible solutions to a problem, but if it's an opportunity we want to pursue in a way that's scalable, that requires a digital solution."*[8]

PRACTICES: Three fundamental behavioral norms are present in Digital Organizations. Collectively, these norms strengthen an organization's near-term digital capabilities, while simultaneously developing its transparency, fluidity, adaptability, and resilience for the longer term.

1. **Digitized Operations**: the reliance on digitized information to document, automate, and monitor enterprise activities ever more precisely. Through digitization, organizations are able capture an enterprise-wide view of internal processes to enable transparency and inform decisions.
2. **Collaborative Learning**: a readiness for boundary-crossing collaboration to innovate, solve problems, and discover new insights. This practice favors teamwork and partnering without regard to discipline, geography, status, or other boundaries**.** An EVP of a leading technology design firm described high development in Collaborative Learning: *"People have a natural way of working across boundaries, interdependently, which does not resemble a traditional organization chart. …we started to remove business lines, and business groups, and those vertical silos. Now, we have one of the most fluid, dynamic organizations in our company's history."*[9]
3. **Data-Driven Decisions**: a proclivity for relying on digitized information and systematic analysis to make important decisions, a practice that becomes increasingly robust as Digitized Operations become established. Collaborative Learning is informed by Data-Driven Decisions, while insights to refine decision algorithms also emerge more readily through Collaborative Learning efforts.

A Director from a *born-digital* retail organization commented: *"Digital is the backbone of our operations as a company and for how we operate internally. We're the most data-driven company that I've ever seen. We basically capture everything that happens on our website. We capture every click. We capture every piece of the transaction, and store all that data in our backend databases, which are accessible to any employee involved in operations improvement projects. All of the decisions that we make and basically all of the ways that we operate are 100% driven by data and analytics."*[10]

WORKFORCE: Digital Organizations view their "workforce" in broad terms, acknowledging the contributions of employees, contingent workers, partners, and customers to the achievement of enterprise goals. Three characteristics of this extended workforce play important roles in Digital Organizations as technology continues to evolve.

1. **Technology Experience:** experience with digital technologies such as analytics, artificial intelligence, machine learning, social and mobile technologies, and the Internet of Things. This technical experience may be available in individual functions or Centers of Excellence in the organization.
2. **Digital Skills**: widely distributed knowledge of *how and when to apply technology and management skills* to advance digital initiatives. Organizations benefit from their Technology Experience as more people learn how and when they can apply these tools.
3. **High Engagement:** self-motivation, competence, and entrepreneurial effort. To succeed over the long term, an enterprise requires more from its Workforce than just Technology Experience and Digital Skills. As an enterprise digitizes and automates routine work tasks, it depends increasingly on engaged and self-directed workers to tackle the remaining, usually more complex, issues that are not yet automated.

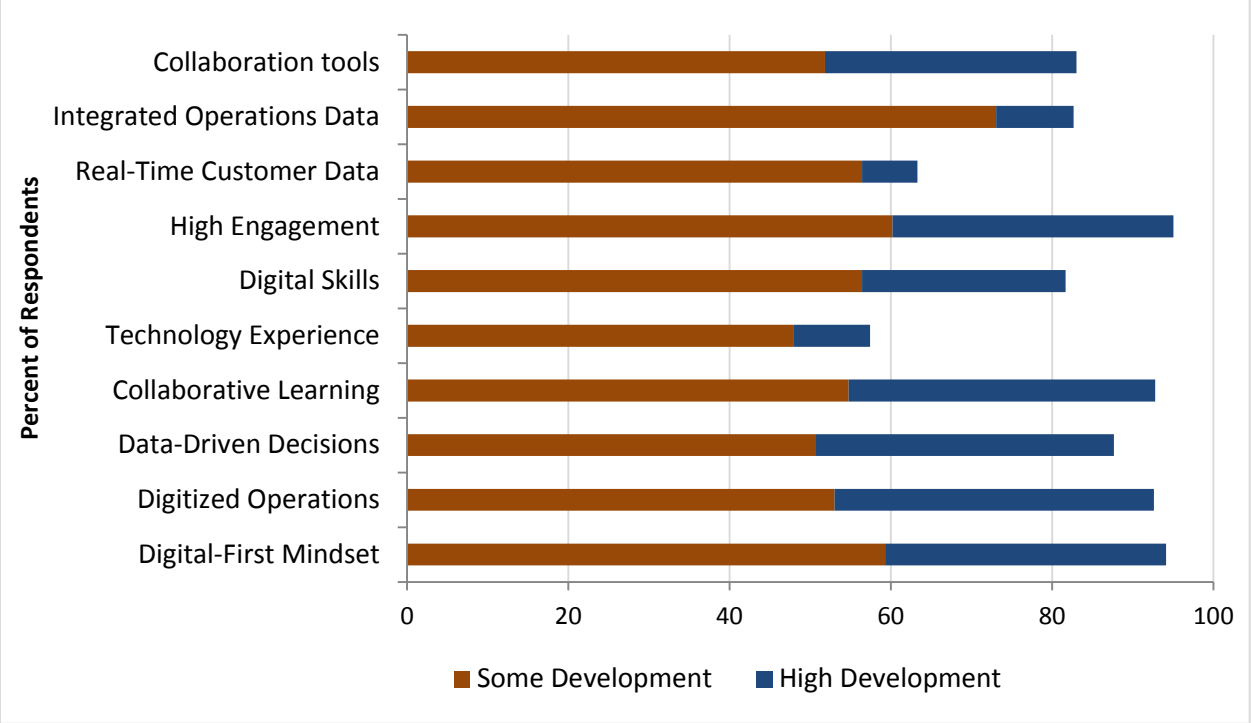
The CTO of ServCo elaborates: *"There's just so much more information these days so employees have to have more discretion and make more decisions independently. So we rely upon individuals to make judgments based upon the information that they have available to them. One of our core values is transparency of information. Employees need information to manage the areas of the business that they're responsible for. We expect them to make decisions independently, so we ensure they have access to the necessary information."*[11]

RESOURCES: Digital tools and data are critical inputs to the functioning of a Digital Organization. Three essential resources permit intense information processing and broad social connections, a combination that enables timely sensing as well as powerful and productive sense-making by both humans and machines.

1. **Real-Time Customer Data:** accessibility to timely and accurate customer and externally-derived data, which underpins their efforts to achieve more intimacy with customers. Digitized Operations use this data to establish even closer relationships.
2. **Integrated Operations Data:** accessibility to integrated data about internal operations to continually monitor, measure, and improve their performance through data-driven adjustments. UPS' ORION system combines knowledge about delivery efficiencies, with real-time package location and destination details from a centralized database, to automatically adjust routes in response to real-time conditions.[12]
3. **Collaborative Tools**: support for communication, collaboration and rapid feedback within an organization. An EVP from a technical design firm described the impact of effective collaborative tools: "*We have a single common social platform where groups form around bodies of work. We also use the platform for real-time messaging from the CEO and the executive staff, to cascade information. Lots of the authentication and approval processes now get done on mobile phones, so again bypassing the more formal ways things traditionally got done. There's just a flow of contingent information – via email, social chatter, texting, digital board content – that creates immediate awareness and builds alignment around goals and procedures in real time. We are making the organization much more fluid with fewer silos and more real-time information as goals get set and cascade through the organization instantaneously."*[13]

The foundational characteristics of Digital Organization are present to varying degrees in many enterprises as the survey distribution data shows, suggesting that *any* enterprise has the potential to become a Digital Organization (Figure 4).

Figure 4: Survey Distribution of M-PWR Characteristics



Note: Each M-PWR measure is based on multiple survey items measured on Likert scales. This graph shows the percent of survey respondents whose average response for a characteristic was "some" (middle third of possible values) or "high" (top third of possible values).

Development of M-PWR Characteristics

Although M-PWR characteristics can **develop at different times and strengthen at different rates,** they are interdependent and mutually reinforce one another**.** Consider an enterprise starting to experiment with digital technologies. As the enterprise develops new data points or new digital capabilities, the way people approach their work begins to change. InvestCo, an established institutional investment firm with over $3 trillion in mutual funds, changed its customer experience by distributing marketing information through digital channels. As a result, sales executives had to change how they interacted with clients who now had more baseline information about InvestCo's offerings (Vignette 2).

As an enterprise experiences success with digital ways of working, attitudes toward using digital technologies begin to change. Those new mindsets, in turn, can inform subsequent decisions. For instance, leaders may invest more in data quality or in gathering additional data. They may try to develop stronger analytical capabilities or expand their workforce with particular skillsets, as InvestCo did, seeking a different combination of marketing design skills.

Increased attention and investment towards particular organizational areas signal what is valued by the enterprise. This further disseminates and reinforces those same behavioral tendencies throughout the enterprise. PharmaCo, a relatively young biopharmaceutical company, put effort into digitizing its operations and capturing development data because regulatory compliance is very important in its industry. It also valued the innovative capacity of its workforce and wanted to engage them in learning rather than routine documentation (Vignette 3).

Vignette 2: InvestCo - Expanding Strategic Marketing Options and Cascading Organization Changes

InvestCo, an established institutional investment firm with over $3 trillion in mutual funds, is relatively early in its digital transformation. Despite its early digital efforts, the introduction of digital marketing content has already triggered a cascade of changing attitudes, roles, and relationships. A marketing executive recalls the introduction of digital marketing materials: "*Only five years ago, people were far more focused on print, thinking about how marketing messages would play out in a brochure or on paper. And now there is much more thought, even a digital-first mentality, of 'How is this going to play on the web?' 'How can we make this visual so it will attract more digital attention?'"* She notes, in addition, *"Digital has also had a significant impact on the skills we have to hire for. So, we had designers with that mentality, thinking about the printed collateral first. Now we have to hire for a much more advanced skillset of rich media design capability, for designers who think in motion, and not simply about something static."*

Digitized marketing materials give InvestCo more control over its marketing messages while also providing its customers more choice, instead of a tradeoff between the two which is more typical in traditional organizations. The executive clarifies: "*Think about a message being dispersed across a whole host of salespeople, or a whole host of client service people, versus being able to push a lot of that content digitally. It does give us more control over the message. We know what the digital message contains versus it being changed to some extent by a person who is delivering that message. However, the biggest shift is the increasing [number of] channels through which to get the message out. Although we still need to present our brand, and shape our message to match our brand and the medium, we're meeting customers where they are."*

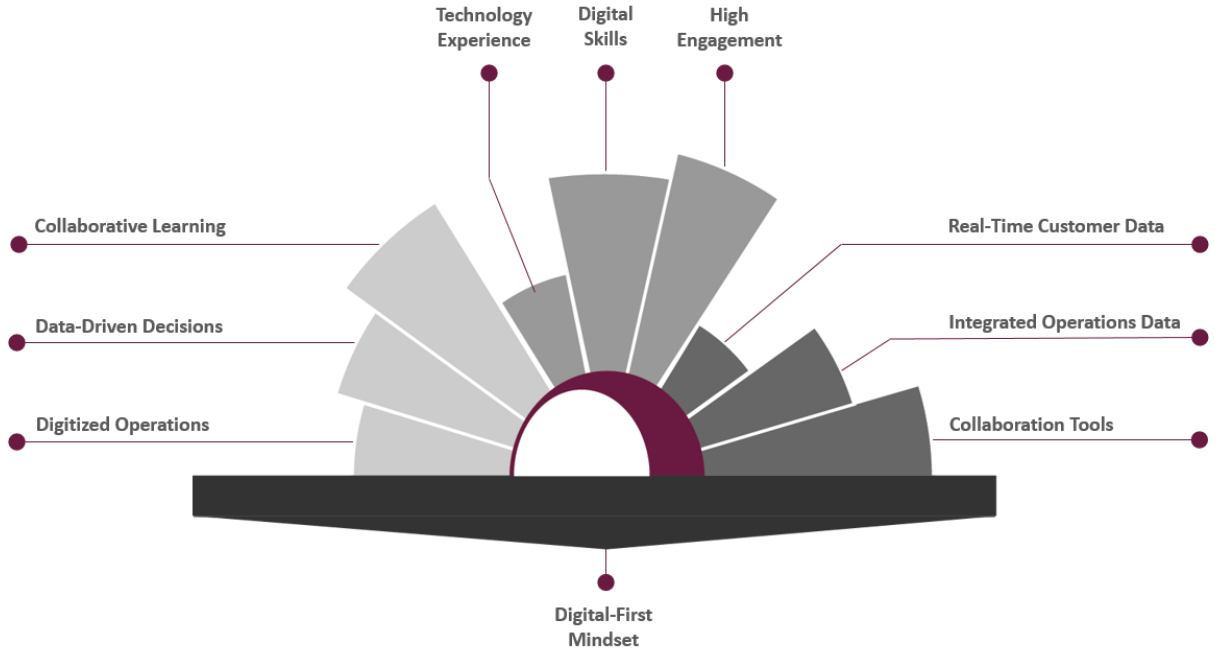
Digital marketing strengthens InvestCo's brand awareness and customer relationships, which shifted the roles and responsibilities of sales representatives. Sales representatives must now approach client relationships differently and work more closely with marketing as information reaches the field more quickly. The large pool of employees, working solely on developing client presentation materials, could also shrink as digital tools and connected data enable InvestCo to develop and deliver legally-required client information more automatically. At the same time, digitally-savvy marketing managers and designers are in more demand. Our contact emphasizes: *"The ability to think through all that digital can bring, and then be able to execute it in terms of rich media, is really powerful. You need designers who can help envision it and build it, and you need managers who can share that vision with the internal client. Both those groups have to think in new and different ways, as well as develop more advanced skills."*[14]

Vignette 3: PharmaCo - Leveraging Digitized Operations for Collaborative Learning and Data-Driven Decisions

PharmaCo, a relatively young biopharmaceutical company, operates within a highly regulated industry where it aims for rapid innovation of new medical solutions. Digital is absolutely critical to PharmaCo's ability to reconcile these competing demands. The COO explains: "*The opportunity for digital systems to deliver real benefits is massive. We have a lot of very, very bright people working in a scientific environment where capturing information to manage the learning from step to step is absolutely critical. But, in a small company, the burden of keeping up with regulations is swallowing up the time of high-quality people. If we can free up key people it has a disproportionately large impact on the business."*

Digitization of PharmaCo's processes reduces the "massive effort" to document its development and manufacturing operations. "*Every time we make a medicine, it must be made exactly the same way. Any deviation needs to be examined, understood, and then recorded as having been resolved. So we have big data challenges around making our medicines."* Data also needs to be kept for many years as a medicine works its way through clinical trials to eventual approval for use. PharmaCo aims to automate as much as possible, while recording everything that may be needed for subsequent investigations. Although documentation efforts may seem "low value," if anything goes wrong that recorded information becomes immensely valuable.

Digitization also drives more effective organizational-level learning over the development life-cycle. PharmaCo has "a fantastic reservoir of fifteen years of research" but, like other small innovative businesses, is populated by "*innovative entrepreneurial types who don't necessarily share information in a structured way.*" As the COO puts it, "*The real value will be in connecting the learning already happening in the organization, providing access to the historical record of mistakes and successes, and having everyone be able to draw upon that knowledge, regardless of whether they've been in the company for one week or ten years*."[15]



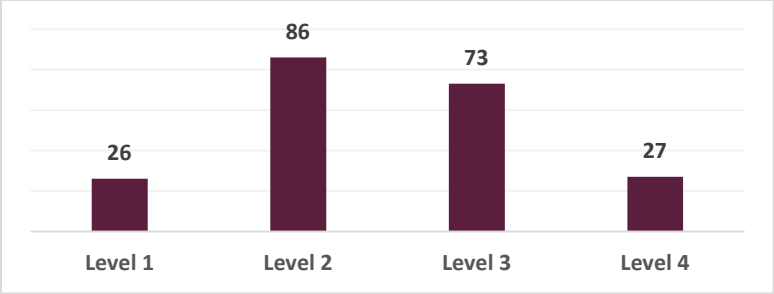
Note: Size of each M-PWR characteristic represents the strength of PharmaCo's characteristic relative to the maximum possible value in our 2015 survey. Each characteristic is comprised of multiple survey items (Reference Figure 3: M-PWR framework).

Tracking M-PWR Development

M-PWR characteristics of a Digital Organization function as a unit to drive Digital Dexterity. Leadership effort is required to cultivate these foundational characteristics. This can take time, but an enterprise's level of Digital Dexterity provides a proxy for tracking progress toward becoming a Digital Organization.

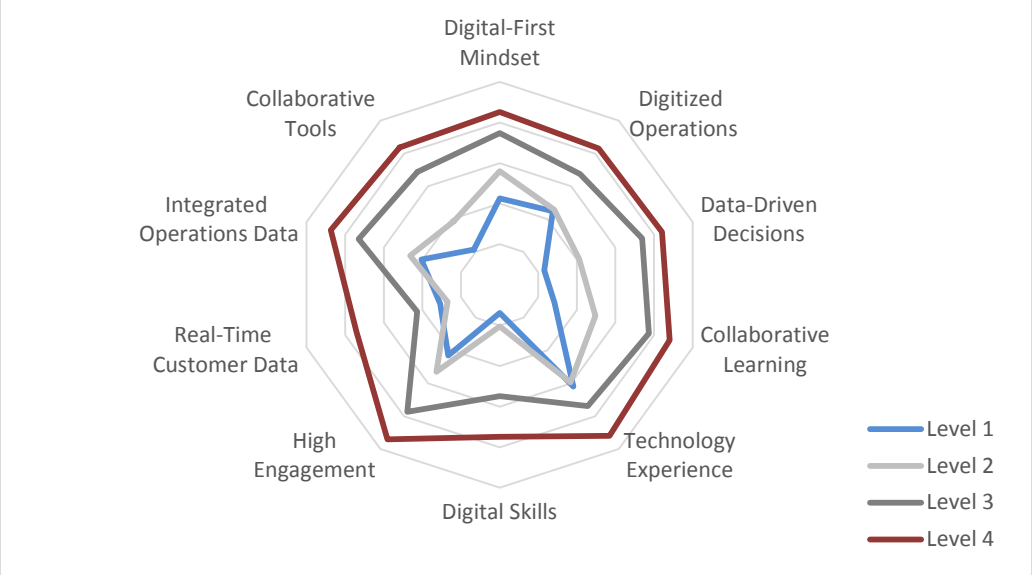
We categorized survey company responses into four levels of Digital Dexterity. Within each level, we examined the average value for each M-PWR characteristic. Companies with Level 1 Digital Dexterity exhibited the least developed M-PWR characteristics on average. Companies with Level 4 Digital Dexterity exhibited the most mature M-PWR characteristics (Figure 6). Our research showed that many enterprises have started the journey to becoming Digital Organizations, but have not yet achieved high levels of Digital Dexterity. Out of 212 survey responses, 75% of respondents either had a Level 2 or Level 3 Digital Dexterity (Figure 5).

Figure 5: Survey Distribution of Digital Dexterity Levels



Note: Number of respondents at each level of Digital Dexterity in a 2015 survey of 212 executives.

Figure 6: Tracking M-PWR Development by Levels of Digital Dexterity



Note: Average values of M-PWR characteristics corresponding to each level of Digital Dexterity in a survey of 212 executives. M-PWR metrics are based on a scale of 0-50. This chart magnifies the 15-40 point range to highlight the different rates of change across M-PWR characteristics, between different levels of Digital Dexterity.

When and Where Does M-PWR Matter?

It is helpful to understand how each M-PWR characteristic contributes to building Digital Capability and developing Digital Dexterity. Besides a Digital-First Mindset, which is consistently important, particular combinations of M-PWR characteristics support different outcomes. The most important Practices, Workforce characteristics, and Resources for Digital Capability depend on what the enterprise is prioritizing – Customer Experience, Operational Efficiency, or Workforce Enablement (Figure 7). Digital Dexterity – the ability to rapidly self-organize to deliver new value from digital technologies – relies heavily on the combination of enterprise Practices and Workforce characteristics (Figure 8). Interestingly, the characteristics most important for developing Digital Dexterity build on those characteristics that drive Digital Capability.

What Matters Most for Digital Capability

Leaders have been advised that their enterprises need to be able to handle immense amounts of information and need a workforce with the skills to implement digital initiatives. This focus has flooded the job market with new roles such as Data Scientist, UX Designer, or Social Listening Manager.[16,17]

Clearly, Digital Skills are important for building Digital Capability in any area. As the CTO of an educational services firm highlighted, "*We're experimenting with capturing all this data. We're starting to understand what it means by running experiments. We're starting to modify our products to capture more data. And we're going to need a lot of new skills. Some of the training people have today is still applicable, but we're definitely going to need people who can understand enormous data sets, and how to interpret that data and analyze it, and make meaning of it.*"[18] After these basics are in place, leaders can prioritize their efforts to develop other M-PWR characteristics based on where their enterprises want to develop Digital Capability most urgently (Figure 7).

---

*"Digital skills are important for building Digital Capability in **any** area – Customer Engagement, Operational Efficiency, or Workforce Enablement."*

Figure 7: Specific Subsets of M-PWR Characteristics Support Different Digital Capabilities

Note: This figure highlights the subset of M-PWR characteristics that most strongly predict the extent of each Digital Capability. Pairwise correlations among M-PWR and Digital Capability variables are all significant at the 0.01 level in a survey of 212 executives.

The ability to **enhance Customer Experience** is strongly influenced by having Real-Time Customer Data available and strong Practices for Data-Driven Decisions in place. These characteristics can enable

enterprises to create an omni-channel experience and interactive platforms that may inform internal decisions later on. A Digital-First Mindset is also highly related to Digital Capability in customer-facing activities. Early success in enhancing Customer Experience can quickly change people's attitudes about the power and potential of digital solutions. These specific experiences stimulate the development of Technology Experience and help companies build widespread Digital Skills, supporting additional customer-facing digital activity.

Digital capabilities to **improve Operational Efficiency** rely most heavily on the presence of Digital Skills and established Digitized Operations. Digitized information is critical for creating seamless cross-functional processes. By digitizing internal operational processes end-to-end, a connected system across functions can be formed. This sets the stage for various initiatives for Operational Efficiency such as predictive analytics, value chain optimization, or lifecycle management. When a Digital-First Mindset prevails, people across the enterprise are more ready to use any available digitized operations data, strengthening the norms of Data Driven Decision and more Collaborative Learning as a result.

Finally, using digital for **Workforce Enablement** is associated with Collaboration Tools, Digitized Operations and Digital Skills. Some examples of workforce enablement include the introduction of productivity tools supporting widespread communications across the enterprise or real-time updates by workers to a system on a manufacturing plant floor. This combination of practices and resources enables workers to use their enterprise's digital infrastructure to learn and become more productive. Norms of collaboration reinforce the effectiveness of these efforts.

What Matters Most for Digital Dexterity

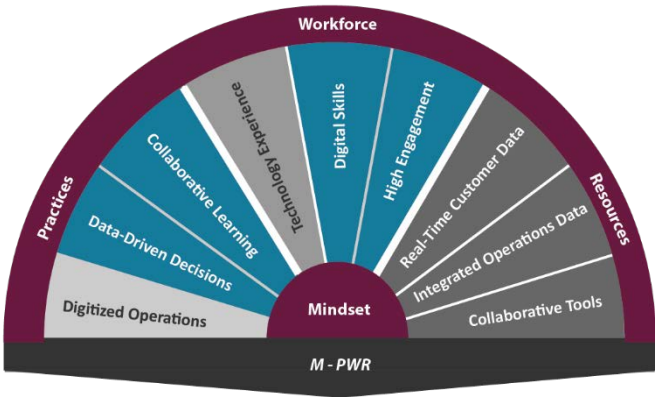
One could say that the essence of a Digital Organization is its ability to mesh digital practices and human power to continually create value. Digital Dexterity is driven by increasingly robust Collaborative Learning and Data-Driven Decision Practices, as well as growing Digital Skills and High Engagement Workforce qualities (Figure 8). It is important for executives to realize that gaining experience with select technologies or in specific departments is not enough.

Collaboration by highly engaged workers, within or beyond the enterprise boundary, is important for achieving greater Digital Dexterity. Collaborative Learning practices enhance the transformation of Technology Experience *into* Digital Skills and the development of a Digital-First Mindset. In the survey, there were large differences between Level 3 enterprises and Level 4 enterprises in the establishment of Digital Skills. In Level 4, 30% more respondents than in Level 3 said that their enterprises have well-established, well-distributed digital skills. As an enterprise starts to develop Digital Skills, Collaborative Learning serves as a powerful characteristic that harnesses widespread skills to build greater High Engagement (Vignette 4). In the survey, 85% of respondents displaying high Digital Dexterity (Level 4) also reported that their leaders encourage Collaborative Learning practices. This was the case for only 27% of respondents reporting low Digital Dexterity (Level 1).

Increasing transparency could have a positive effect on Collaborative Learning. An example of this is an enterprise-view of employee skills sets that could be analyzed for professional development efforts to increase digital aptitude. Another example is a repository of past and current initiatives to promote collaboration among team members with overlapping objectives.

"85% of respondents reporting high Digital Dexterity (Level 4) also reported that their leaders encourage collaborative learning practices."

Figure 8: Specific M-PWR Characteristics Drive Digital Dexterity



Note: This figure highlights the subset of M-PWR characteristics that most strongly predict the extent of each Digital Dexterity in a survey of 212 executives.

Vignette 4: ServCo - Collaboration and Workforce Engagement Support Digital Dexterity

The COO of ServCo captures the experience of Digital Dexterity with the following observation: *"We are very fluid. We tend to organize based on the information and the challenges that we face at hand. So, we tend to reorganize frequently. And sometimes things are centralized, and sometimes things are decentralized."*

The company's dexterity is supported by collaborative flexibility and access to the right expertise. For instance, enterprise divisions are able to "pivot" and regroup quickly by working closely with technology partners and vendors to rapidly take advantage of new business opportunities.

Importantly, customers, employees, and partners alike are considered value-adding members of the community. In addition, enterprise leaders view automation as a means to free workers to engage in more flexible or creative work, not simply as a substitute for human labor, and apply digital technologies to implement creative solutions to employment and staffing. As a result, the company has benefited from talented and trusted workers who actually prefer to work remotely and/or non-traditional hours – an additional source of dexterity.[19]

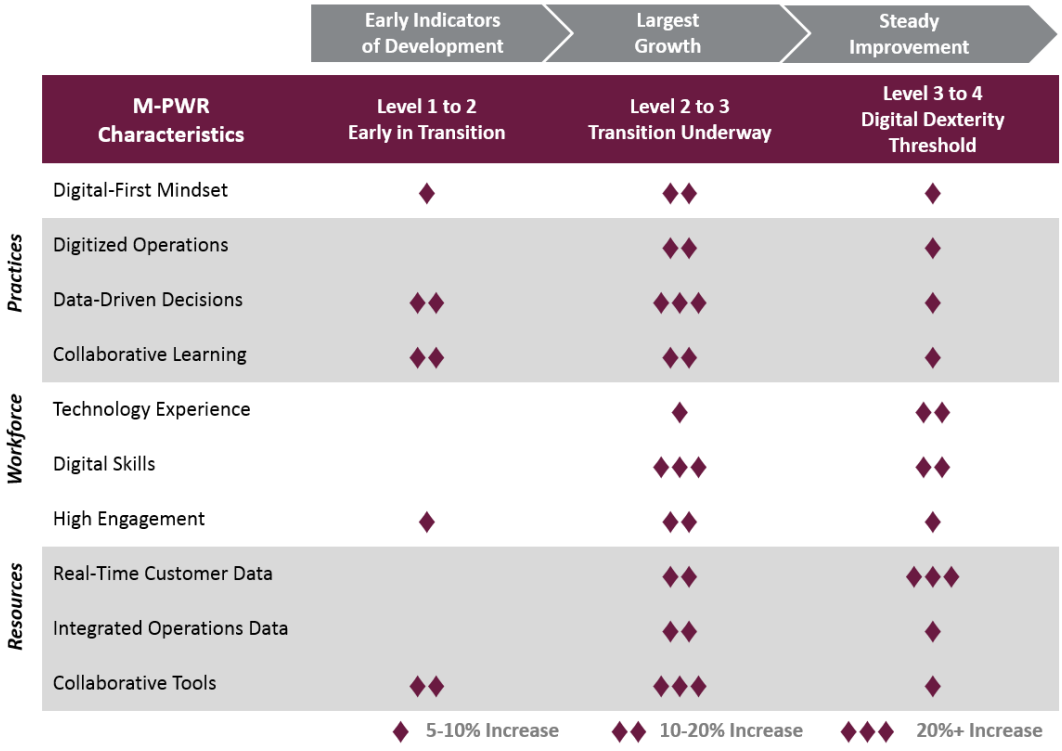
Initial investment in M-PWR characteristics should be driven by enterprise priorities for building Digital Capability in Customer Experience, Operational Efficiency, or Workforce Enablement. As enterprise objectives evolve, additional M-PWR characteristics should be cultivated to support the development of new Digital Capabilities. Although some Digital Capability is possible when only a subset of M-PWR characteristics are in place, leaders should strive to develop M-PWR as a unit. The collective influence of these organizational characteristics is needed to achieve Digital Dexterity and sustain Digital Capability over time.

Becoming a Digital Organization

The path from a traditional to a digital organizational design is usually not intuitive to enterprise leaders steeped in the more control-oriented practices of bureaucratic firms. As a result, many practitioners are caught off-guard by the discomfort and inevitable difficulties they experience during this transition. By conceptually mapping common patterns of experience, executives can gain insights into the digital organization journey. These insights can help executives understand *where* they are in their journeys and identify next steps to further their progress.

Although each enterprise's journey is different, a comparison of survey responses points to **common experiences.** By comparing enterprises rated at Level 1 Digital Dexterity with those rated Level 2, it is possible to identify which M-PWR characteristics typically exhibit the most prominent improvements early on. Early in the transition, the biggest areas of change, on average, concern Collaborative Learning and Data-Driven Decision Practices, and the quality of Collaborative Tools. Other M-PWR characteristics show little to no change when comparing Level 1 enterprises with Level 2 enterprises. Enterprises embarking on their digital journeys may become discouraged due to a perceived lack of improvement. However, large and noticeable gains are apparent across all M-PWR characteristics when comparing enterprises in Level 2 and Level 3. At this stage, all aspects of M-PWR start to strengthen, as Digital-First Mindsets gain traction. Finally, a comparison of Level 3 and Level 4 enterprises suggests that enterprises that are well-advanced on their digital organization journeys continue to exhibit steady improvements in their Workforce skills and aptitudes, and show significant increases in Real-Time Customer Data (Figure 9).

Figure 9: Typical Changes in M-PWR Characteristics During the Digital Organization Journey



Note: The typical experience of *becoming digital* can be described by the average changes in each M-PWR characteristic from one level of Digital Dexterity to the next. Percent changes identified above represent the changes in the average rating per M-PWR characteristic between each pair of levels.

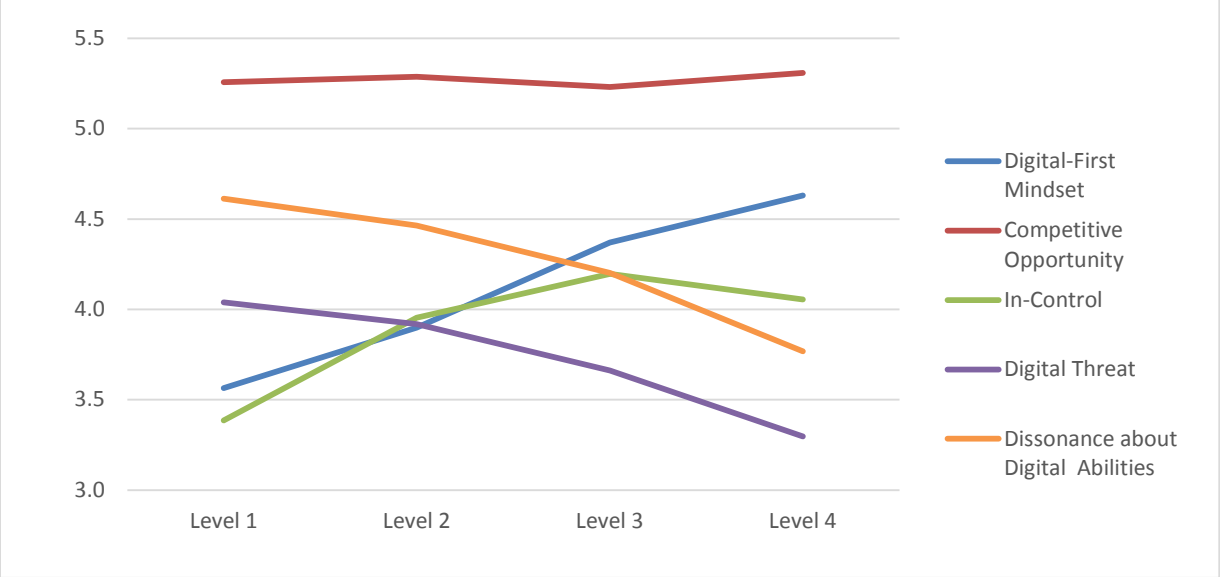
In sum, leaders should prepare themselves for a typical "S-curve" pattern: a slow start, followed by a steep improvement before plateauing at a new level of capability. Survey responses also suggest that early encouragement of more collaborative behavior is likely to yield strong dividends for enterprises wishing to become more digital.

As noted before, Digital Organizations define their workforces broadly and seek collaborative opportunities both within the organization and beyond its borders. A CTO of a global education services company commented, *"We're actively looking for technology partnerships. We're absolutely looking for people who have a shared vision or a shared need so that we could create new technologies together that would be useful for both of us."* [20] At Coca Cola, the use of agile methodologies and tools has enabled more flexible collaboration among internal organizations, particularly around Interactive Marketing initiatives. As one executive explained, *"[internal] clients want to see what we are doing - not in a big bang two months or three months later, but in two week sprint cycles where we show clients how those initiatives are progressing."*[21] Another executive charged with talent development in a strongly "command and control" company emphasized the need for more collaborative engagement of its own employees. She explained that: *"We're trying to change our culture because we're trying to attract a different kind of talent than we ever needed before. The expectations of our [potential] workforce are different. So, for example, we've just added non-financial benefits designed to help people feel that they are involved in the spirit of the company, engaged with the company. Also, we talk a lot with managers about how future employees want to be managed, about managers needing to "coordinate and cultivate" instead of "command and control." That's a new concept. We teach a lot around change leadership, and how to drive change and engage people in a way that we never had to before."*[22]

Leaders should prepare themselves for a typical "S-curve" pattern: a slow start, followed by a steep improvement before plateauing at a new level of capability.

Analysis of survey responses also revealed a variety of manager attitudes and beliefs that can be mapped to different stages of the journey (Figure 10). Not surprisingly, appreciation of the competitive opportunity of digital technologies is high for enterprises across all levels of Digital Dexterity. Other attitudes towards digital shift more substantially as enterprises develop Digital Dexterity: As expected, a Digital-First Mindset becomes stronger along with Digital Dexterity. Concurrently, perceptions of digital as a threat decrease with increasingly levels of Digital Dexterity, the sign of a more mature Digital Organization.

Figure 10: Shifting Mindsets on the Way to Becoming a Digital Organization



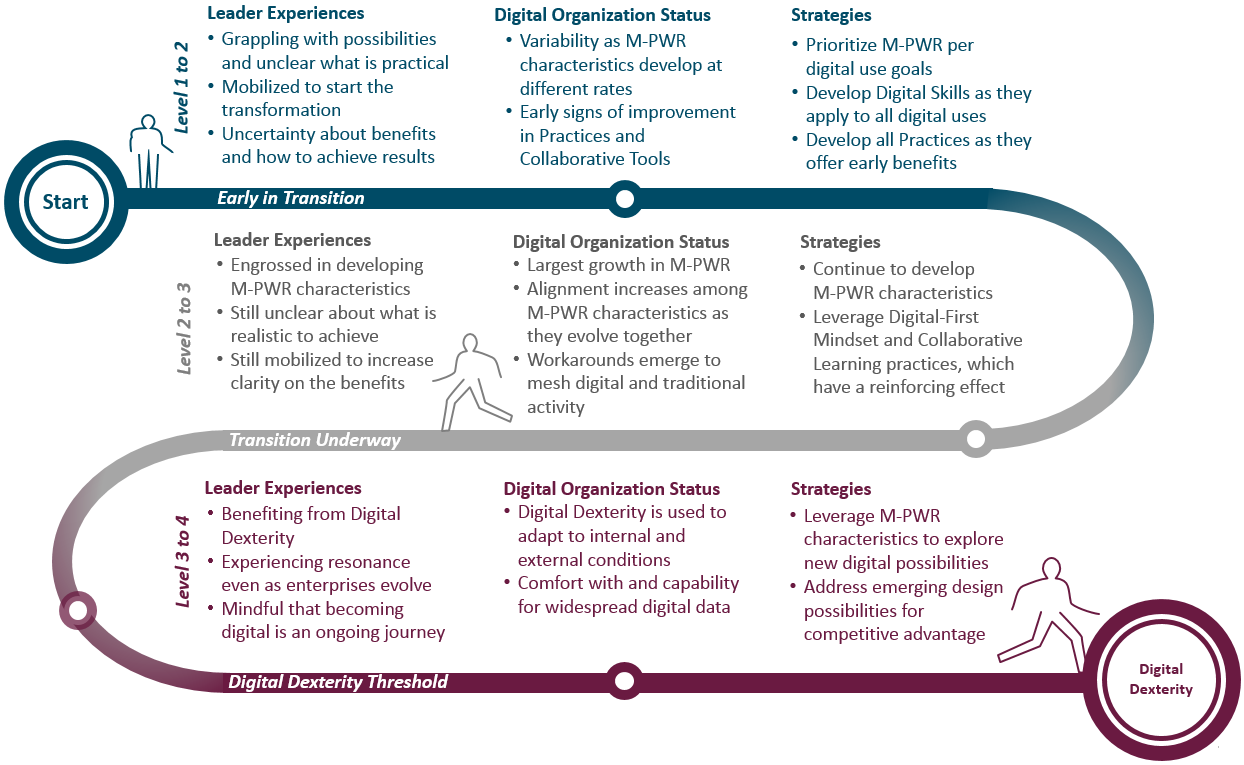
Note: These distinct attitudes towards digital were derived through analysis of clustered items in a survey of 212 executives. Values range along a 6-point scale where 1= No and 6 = Yes.

Practitioners also seem to experience greater dissonance about their enterprise's digital abilities during early stages of the transition. Dissonance captures leaders' feelings that "our digital aspirations exceed our practical capabilities." Often, during early stages of the transition, people recognize that digitally-enabled organizational change is urgent and important, but still perceive risk and uncertainty about their own abilities to follow through with it. As one executive put it," *Everyone understands that we have two or three years to get it [our digital organization] right or we're going to be an 'also-ran.' … So we all need to focus lots of things that we do and do them differently. The question is, can we make the switch while at the same time gaining market share in our traditional business?"*[23] Dissonance can also be traced to practitioners' recognition of specific challenges related to digital skills and tools. In interviews, executives expressed concern about being able to recruit the necessary talent or compared their workplace technology solutions unfavorably to tools available elsewhere. Although this sense of dissonance typically declines as enterprises develop Digital Dexterity, it still remains higher than perceptions of threat because new concerns – such as the *retention* of digital talent – start to become salient.

In contrast to dissonance, strong positive feelings of being "in-control" of digital technologies emerge between Levels 2 and 3, as enterprises gather steam on their journeys and build out the necessary practices and skills. Although some managers may have felt slightly less control in Level 4, the decrease was not significant enough to be identified as a pattern. Companies with stronger Digital-First Mindsets reflect the belief that their aspirations are attainable and view digital as a source of opportunity rather than risk. A senior leader observed, *"We drive a company culture that relies on technology as a way to keep 9,000 colleagues informed on an ongoing basis, as a way to drive our innovation agenda around building great solutions and products for our customers."* [24]

All these attitudes and emotions are a normal part of becoming a Digital Organization. In summary, understanding common experiences along the digital organization journey can highlight strategies and help leaders navigate through the inevitable highs and lows of such a substantial organizational change. (Figure 11).

Figure 11: Digital Organization Journey: Map of Experiences and Strategies



Starting Your Journey

A Digital Organization embodies the set of essential M-PWR characteristics, which supports effective use of current digital technologies and the ability to take advantage of new technologies. Many companies exhibit Digital Capability, but only some exhibit Digital Dexterity. Strong Digital Dexterity is the sign of a mature Digital Organization.

Changing workforce experiences, skills, and attitudes are central to this journey. Traditional mindsets, practices, and resources must evolve into digital mindsets, practices, and resources at every level and within every function. Some readers may find it surprising that Digital Organizations are so marked by their reliance on uniquely human capacities – motivation, engagement, collaboration, entrepreneurship – to continually advance the digital agenda. It is this combined attention to both digital and human capital in organizational design that underpins the development of the Digital Dexterity necessary to sustain enterprise success in a rapidly evolving digital world.

"Some readers may find it surprising that Digital Organizations are so marked by their reliance on uniquely human capacities – motivation, engagement, collaboration, entrepreneurship – to continually advance the digital agenda."

Six Realities about Digital Organizations

Every enterprise has the potential to become a Digital Organization. Even enterprises that already have well-established digital capabilities in many areas can benefit from the simple realities about what it takes to build organizations capable of sustaining their digital successes.

1. Digital Dexterity, the ability to rapidly self-organize to deliver new value from digital technologies, is the hallmark of a Digital Organization.
2. Collaborative effort by a highly-engaged workforce is a key driver to achieving greater Digital Dexterity and developing a Digital Organization.
3. Effective Digital Organizations successfully mesh digital and human power to continually create value.
4. Digital Skills are important for Digital Capability in Customer Experience, Operational Efficiency, and Workforce Enablement. Combinations of other organizational characteristics can be prioritized depending on the capability.
5. The transition to a Digital Organization typically follows an "S-curve" pattern. Change starts slowly, followed by a stage of steep improvement before moving to a period of incremental growth at a new level of capability.
6. Enterprise members can experience a range of emotions throughout the transition to a digital organization. Actual progress towards becoming a Digital Organization is marked primarily by stronger digital-first attitudes and declining perceptions of digital as a threat.

Getting Started

Leaders can use the **Digital Organization Framework** (Figure 2) as a blueprint. The framework outlines key features of a Digital Organization and when and where characteristics are most important. Knowing where to focus your effort and understanding your goal is the first step to taking action.

There is no standard path towards becoming a Digital Organization. However, the **Digital Organization Journey** (Figure 11) maps common experiences and concerns that you may face. This mapping can help you identify where you are in your journey and shows that changing emotions and attitudes are shared by other leaders in similar circumstances. You can adapt the proposed strategies as your enterprise makes progress toward being a Digital Organization.

By taking action to build a Digital Organization, you will position your enterprise to benefit from repeated waves of new technologies.

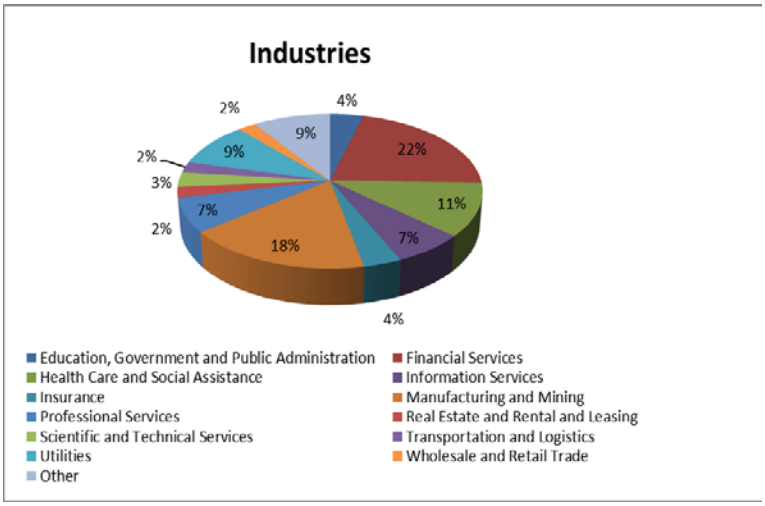
About the Research

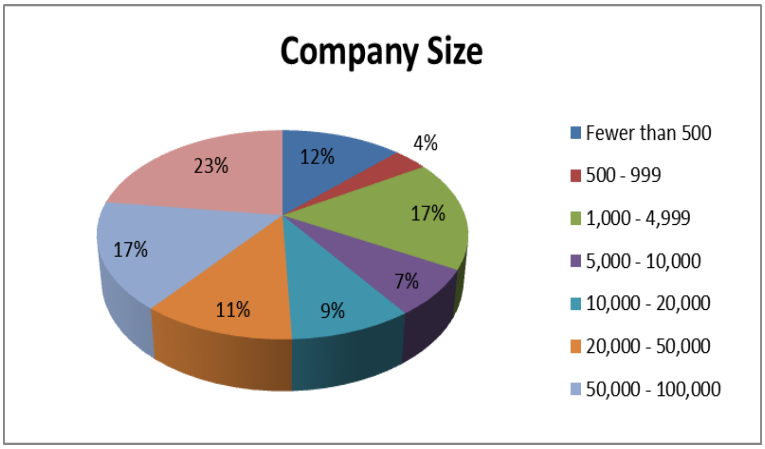
The goal of this research was to explore how pervasive digital technologies and data are changing the nature of organizations. We built on prior research investigating how large firms are using, and benefiting from, new digital technologies. That effort identified technology and management drivers of "digital mastery" and highlighted their implications for the performance of enterprises.[25] This study examined the *organizational* changes associated with becoming a "digital master."

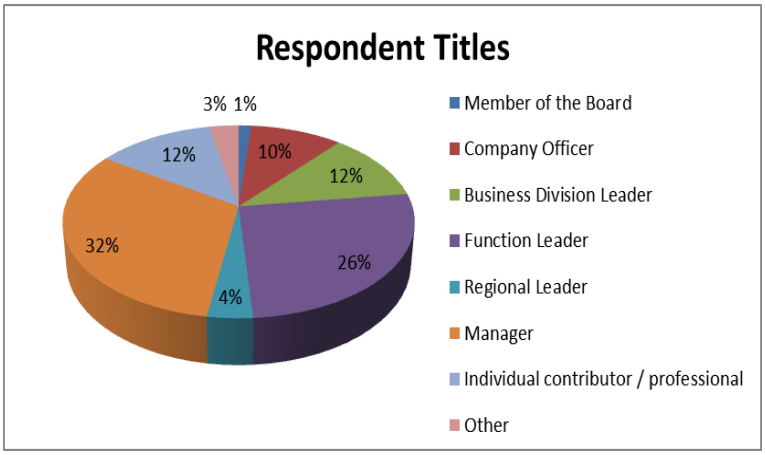
We interviewed thirty one informants representing enterprises from a range of industries. Some informants represented *born-digital* firms, whose businesses were founded on the possibilities of digital technologies. Some of these enterprises were just experimenting with digital technologies while others had much more experience. We asked interviewees about their organizational experiences of "becoming digital," focusing on structural, behavioral and cultural features of organization. We then analyzed these interviews for key themes, which became the basis for the development of survey questions.

We gathered quantitative data on organizational digital experiences through a survey of 224 respondents, yielding 212 usable responses from 133 different enterprises across 28 countries (Figure 12). Our combined analysis of these quantitative and qualitative materials forms the basis for the findings and conclusions of this report.

Figure 12: Demographics of Survey Respondents







About the Authors

Deborah Soule is a Researcher at the MIT Sloan School of Management, bringing an interdisciplinary approach to research about organizations and technologies. She co-authored *Corporate Information Strategy and Management* (8th Ed), and has written extensively for management practitioners on themes related to organizational learning, innovation, and collaboration. Prior to earning her Doctorate from Harvard Business School, Deborah worked in Europe and Africa in information systems.
dsoule@mit.edu

Akshita Deora Puram is a Senior Consultant at Capgemini Consulting and a Visiting Scientist at the MIT Sloan School of Management, leading thought leadership on Digital Transformation. Akshita has nearly 10 years of experience in the technology industry and a passion in helping organizations cross the digital divide from the ground up. Akshita is an alumnus of MIT.
akshita.puram@capgemini.com

George Westerman is a leading voice on how to drive strategic value from technology. As a Principal Research Scientist with the MIT Sloan School of Management, he leads a portfolio of research activities on digital technology leadership and innovation. George is co-author of three award-winning books including Leading Digital and The Real Business of IT. He contributes often to publications such as Harvard Business Review, Sloan Management Review and The Wall Street Journal. He holds a doctorate from the Harvard Business School. In addition to research and teaching, George works regularly with senior leadership teams around the world.
georgew@mit.edu

Didier Bonnet is Senior Vice-President and Global Practice Leader at Capgemini Consulting. Didier has more than 25 years' experience in strategy development, globalization, internet & digital economics and business transformation for large multinational corporations and private equity firms. He is the co-author of the book, *Leading Digital* and has authored several research articles. He is regularly quoted in the press e.g., WSJ, FT, the Economist and provides commentary for broadcasters such as the BBC, CNN, Reuters and CNBC. Didier graduated from a French Business School and holds a DPhil from Oxford University.
didier.bonnet@capgemini.com

We would also like to acknowledge the support of the many colleagues at Capgemini Consulting and the MIT Sloan School of Management who shared their insights or helped with data collection. **Jerome Buvat, Nicholas Carrier, and Michael Welch** from Capgemini Consulting deserve a special mention for their contributions.

References

[1] G. Westerman, D. Bonnet, and A. McAfee, “Leading Digital: Turning Technology into Business Transformation.” (Boston: Harvard Business School Publishing, 2014).

[2] T. Worstall, "Apple v Samsung: Corporate Cultures and Design," Forbes Magazine. Sept. 3, 2012, forbes.com.

[3] Lindsworth, “Samsung’s Win Record CES 2015 Innovation Awards,” Jan. 19, 2015, geezam.com.

[4] R. King, “Roche moving over 90,000 employees to Google Apps,” Feb. 16 2012, zdnet.com.

[5] S. Lauchlan, "HSBC looks to digital transformation to support 25,000 job cuts," Jun. 10, 2015. diginomica.com.

[6] S. Murray, “American Express to Hire 250 MBAs to Drive "Digital Transformation,” Nov. 20, 2015. Businessbecause.com

[7] Huw, “Lego Overtakes Ferrari as the World’s Most Powerful Brand,” Feb. 17, 2015. brickset.com.

[8] Source: interview conducted for this research in June 2014.

[9] Source: interview conducted for this research in November 2014.

[10] Source: interview conducted for this research in December 2014.

[11] Source: interview conducted for this research in June 2014.

[12] Source: interview conducted for this research in June 2013.

[13] Source: interview conducted for this research in November 2014.

[14] Source: interview conducted for this research in November 2014.

[15] Source: Interview conducted for this research in August 2014.

[16] S. Murthy, “Top 10 Job Titles That Didn’t Exist 5 Years Ago,” Jan. 6, 2014. talent.linkedin.com.

[17] M. Casserly, “10 Jobs That Didn’t Exist 10 Years Ago.” Forbes Magazine. May 11, 2012. forbes.com.

[18] Source: interview conducted for this research in July 2014

[19] Source: interview conducted for this research in June 2014.

[20] Source: interview conducted for this research in July 2014.

[21] Source: interview conducted for this research in August, 2015.

[22] Source: interview conducted for this research in June 2014.

[23] Source: interview conducted for this research in June 2014.

[24] Source: interview conducted for this research in November 2014.

[25] Westerman, G., Bonnet, D., and McAfee, A. *Leading Digital: Turning Technology into Business Transformation*. Boston: Harvard Business School Publishing, 2014.