

# Digital Workplace Design: Transforming for High Performance

**Nick van der Meulen**

**Kristine Dery**

**Ina M. Sebastian**

MIT Sloan Center for Information Systems Research (U.S.)

*This is an Accepted Manuscript of a book chapter published by Routledge in "Work, Working and Work Relationships in a Changing World" (2019), available online: <https://www.taylorfrancis.com/chapters/edit/10.4324/9781351125161-9/>*

## Introduction

Advances in digital technologies and (global) competitive pressures have caused a rising tide of uncertainty, ambiguity, and complexity for organizations.<sup>1</sup> To survive and succeed in such environments, organizations need to 1) restructure their internal operations to make it easier for employees to get things done in the organization and 2) create an information-driven test-and-learn environment that enables experimentation and enhanced data gathering (Bennett and Lemoine, 2014; Mocker, Weill, & Woerner, 2014). We learned that in response to these two requirements, organizations are fundamentally redesigning how their employees work by changing various physical, cultural, and digital arrangements—and doing so in a tightly-coupled fashion. We refer the outcomes of these initiatives as "digital workplaces".

The discourse on digital workplace design is difficult to grasp for management practitioners and academics alike (Köffer, 2015). For managers, the large variety of its possible constituent practices makes it difficult to distinguish which design parameters matter most. After all, in practitioner outlets they are encouraged (often by parties with a vested interest) to invest in everything from the latest technological solutions (e.g. Miller and Cain, 2016) to redesigning the physical work environment (e.g. Entis, 2016) or transforming into a self-managed organization (Bernstein, Bunch, Canner, & Lee, 2016). For academics, this problem of scope is exacerbated by the large number of disciplines (e.g. computer science, management, psychology) and theories that these potential individual components of a digital workplace touch upon. In the field of Information Systems alone there are already four major categories of digital workplace-related research streams (Köffer, 2015): 1) collaboration (e.g. Computer Supported Cooperative Work, Media Synchronicity, Social Networks), 2) compliance (e.g. IT Consumerization, Information Security), 3) mobility (e.g. Empowerment, Management Control, Telework), and 4) stress and overload (e.g. Cognitive Load, Technostress, Work-Life Balance). While these mostly disjointed research streams have investigated many digital workplace components in isolation, there is no framework for doing so in unison. As such, we don't know how the components of the digital workplace compare in terms of impact and how they might interact to collectively affect organizational performance. In this chapter, we therefore focus on the following two research questions:

- 1) How are organizations designing digital workplaces to cope with uncertain, ambiguous, and complex environments, and
- 2) How do the digital workplace design choices of organizations collectively contribute to organizational performance?

Answering these questions requires insight into management practice, which is why we have conducted two separate yet complementary empirical studies. In the next section, we will first elaborate on the methodological details of this mixed methods research design. After doing so, we draw on our qualitative results to develop a framework that unpacks the digital workplace into a series of design and management levers. This framework is subsequently applied to our quantitative results section, where we explore how these levers combine and relate to organizational performance. We illustrate our findings with examples from organizations that consider the digital workplace an integral part of their organizational strategy and discuss the relationship of these findings with prior literature. In conclusion, we provide a set of recommendations to management practitioners as well as several possible avenues for further research.

## **Research method**

The datasets used in this chapter originate from two separate studies conducted independently at two universities. The quantitative data was collected between 2011 and 2014, when the first author worked at Erasmus University Rotterdam, whereas the second and third author collected the qualitative data at the MIT Sloan Center for Information Systems Research (MIT CISR) in 2015. While these studies were designed independently, they shared the similar objective of figuring out how organizations were going about designing and implementing digital workplaces for high performance. To leverage the mixed-method benefit of combining the two studies, the authors collaborated closely during the analysis of both datasets, and worked co-located for several months to enhance the critical perspective that has resulted in this chapter. The methodologies used in both studies are discussed in detail in the following subsections.

### ***Quantitative research study***

Our quantitative data was collected by means of an online survey, which was developed in collaboration with a team of 10 subject matter experts from three Dutch research institutes and subsequently pretested with the help of six corporate partners. Invitations to participate in the survey were sent to senior managers and corporate policymakers (i.e. informed respondents) throughout the data collection period by the first author's research team and affiliated research partners. In order to improve their participation rate and the truthfulness of their responses, participants were informed in the introduction of the survey that their data was collected completely anonymously. This meant that even though the data collection process spanned several years, the research set-up had to be cross-sectional.

In total, 318 participants completely filled out the survey for their organizations. Among these, there were 113 organizations that had experience with the digital workplace; other organizations indicated that they were either still learning about or preparing themselves for the digital workplace. Considering our focus on digital workplace design, we examined the 113 organizations in our dataset that had made conscious choices to design a digital workplace.

Table 1 summarizes the characteristics of this sample, which represents a wide range of industries, organizational sizes, and years in operation.

		Absolute	Relative
Usable responses		113	100%
Organizational size	1-50 employees	33	29%
	51-100 employees	13	12%
	101-500 employees	22	19%
	>500 employees	45	40%
Years in operation	0-5 years	19	17%
	6-25 years	40	35%
	26-100 years	37	33%
	>100 years	17	15%
Industry	Banking & Insurance	15	13%
	Business Services	24	21%
	Construction	1	1%
	Consultancy	15	13%
	Government	15	13%
	Healthcare	1	1%
	ICT & Media	14	12%
	Industry	1	1%
	Logistics	2	2%
	Research & Education	7	6%
	Utilities	3	3%
	Undisclosed	15	13%

**Table 1. Quantitative sample characteristics**

### ***Qualitative research study***

Our qualitative data was collected via exploratory semi-structured expert interviews, which invited participants to openly share their experiences. Organizations self-selected into the study based on their response to a 'request for participation' email that was distributed to a broad industry cross-section of large organizations (consisting of at least 500 employees) in the United States of America, Europe, and Australia. Participating interviewees were executives identified as responsible for digital workplace initiatives in their organizations. Each interview was

between 30 and 45 minutes long, and in some organizations multiple people with responsibilities across IT, HR, Facilities, and Digital were interviewed. This led to a total of 63 interviews over 27 organizations. Most interviews were recorded and transcribed, although occasionally it was only possible to gather written notes due to confidentiality restrictions. Interview transcripts were utilized for within-case and cross-case analysis. During the analysis phase, the interview data was coded based on emerging categories that were debated and agreed on by the second and third author. Additional feedback was acquired from the broader MIT CISR research team as the work was frequently presented throughout the data collection period. This ultimately led to the digital workplace framework presented in the next section.

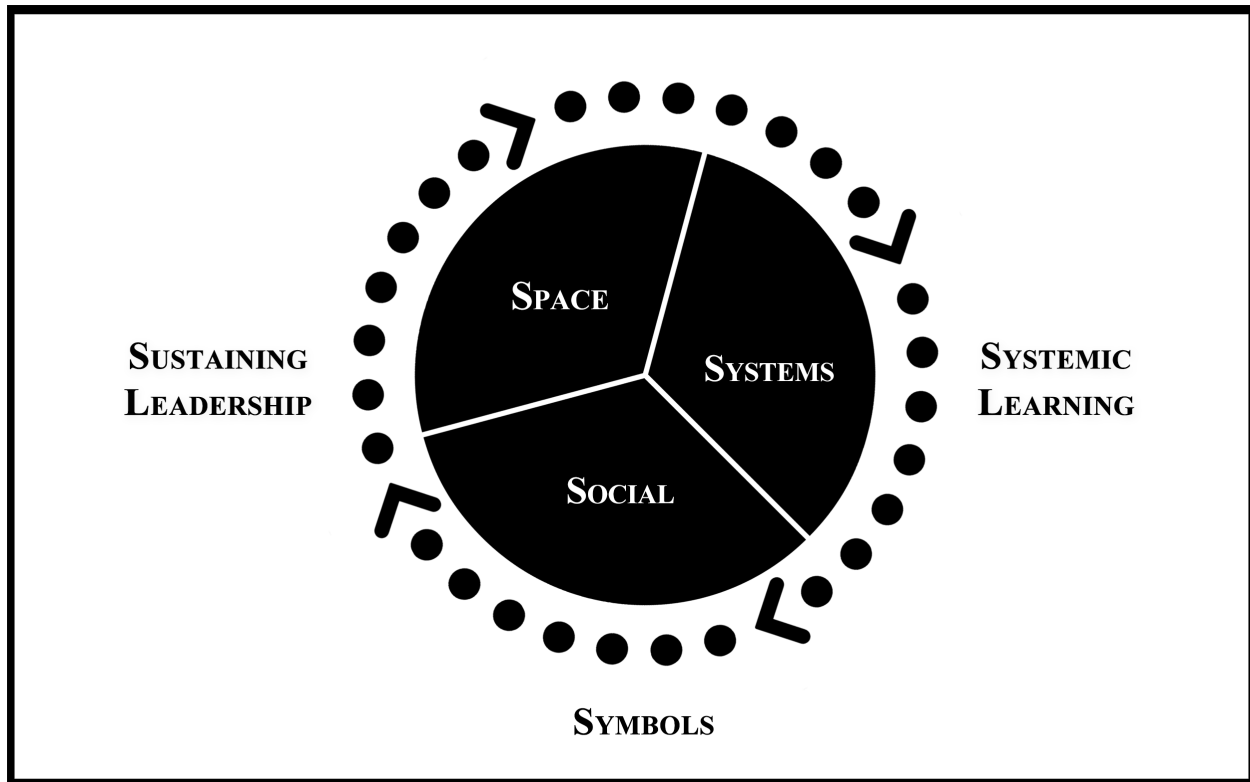
## **The 6s digital workplace framework**

Our qualitative investigation shows that the digital workplace is about a fundamentally different way of working, in which organizations shifted from models with a focus on command-and-control towards a focus on connect-and-collaborate. Doing so required a holistic approach that revolves around the employee, as isolated efforts by facilities, human resources, or IT departments were considered insufficient for effecting meaningful change in the way work was conducted. As one senior executive lamented:

*"If you just imagine the microcosm of an individual workplace in our company, then every part of it is owned by a different part of the company. The screen, laptop and video camera belong to IT, the phone to communications, the desk and chair to facilities, and the person sitting at it is governed by HR. Without all of these parts moving together we are in danger of simply playing an old game with new rules. This is not workplace transformation."* — Facilities manager at a Global Insurance Organization

This description—which depicts a common concern among workplace management in our research sample—supports the viewpoint of an organization as an ecosystem where physical, cultural, and digital elements either mutually reinforce one another or place individual constraints on organizational performance. All elements needed to be aligned and changed in dynamic harmony to create a competitive advantage.

We established that organizations typically transform their workplace using three design levers: 1) physical and virtual space, 2) systems that support getting work done, and 3) enterprise social media. In addition, we identified that successful organizations guide digital workplace transformation with three additional management levers: 1) symbols (branding) that communicate the strategic significance of the digital workplace design, 2) leadership with a sustained focus on supporting the digital workplace design, and 3) systemic learning processes that ensure continuous improvements in the way work is conducted. Without these management levers, organizations' efforts to transform the workplace tended to stagnate in pilot projects and suboptimal designs. Figure 1 provides a graphical overview of the entire framework with its three design and management levers; we will discuss each of these and illustrate them with typical practices derived from our interviews.



**Figure 1. Six Levers for the Digital Workplace**

### *Design Levers*

#### *Space*

The physical work environment is the traditional embodiment of the workplace, and therefore also remained an important cornerstone of the digital workplace. Whether physical or virtual, space refers to those elements that provide choice in the work environment and allow for collaborative behaviors. That is why in nearly all organizations we have studied, decisions regarding the work environment were taken with interaction in mind. The ways in which these goals were to be achieved, however, differed. For instance, some organizations deliberately designed (specific parts of) the work environment in such a way that it maximizes collaboration and the number of 'collisionable hours':<sup>ii</sup>

*"We consider the decision to have a central open staircase a major cause for our success. People meet there by chance and if we wouldn't have these open stairs, they would need to go through several doors to reach another floor. In our view that would lead to a separation of people; obstructing the cooperation and communication that we aimed for."* — Digital workplace steering committee member at a European Research and Advisory Organization.

Employee mobility within offices was further enabled by the use of open work environments with flexible seating. Interviewees indicated that these make employees more visible and approachable, also across hierarchies. Yet while removing office walls altogether may increase interaction, there is a risk of it doing so at the cost of privacy and focus. Several organizations therefore envisioned their work environment around personas—each with its own specific

requirements and experiences. These personas extended to requirements for remote working (at home, at co-working spaces, or on the go), resulting in an integrated perspective on workplace experiences where employees can choose environments in which they can optimally perform. In the physical office, different work requirements by individuals and teams typically led to more nuanced work environments, providing a variety of work settings for specific activities or job functions:

*"We're really looking at a distributed work model now, where we'll have hoteling, we'll have client space, we'll have focus space, we'll have community areas, and we'll have touchdown points where teams can touch down and sit near each other but not have an assigned desk."* — CIO at a large North American Management and Consulting Services Organization

## **Systems**

Digital workplace systems comprise the technologies that support new ways of working. These technologies differ from those that are directly associated with specific work processes and tasks, such as customer relationship management systems or research analysis software. Organizations that successfully leveraged the systems lever addressed three elements (mobility, unified communications and collaboration (UCC), and personalized support) in a coherent approach that focused on simplifying the way work is conducted:

*"A digital enterprise [...] demands a company whose business rules and policies are completely digital, where people's jobs are represented in a digital fashion and, most importantly, a technology ecosystem that makes the company's information both secure and, for those with the right access, easy to find and share. It's a philosophy of how work is going to get done."* — CIO at a large North American Financial Services Organization

Most organizations have enhanced employees' mobility by virtualizing their workflow: all required work-related information is digitized and made available at any time and any place through external access to corporate systems. Whereas some organizations use dedicated devices to achieve this, others rely on virtualization tools in combination with a 'Bring Your Own Device' (BYOD) policy. These policies are typically supported by cloud-based solutions and UCC systems, especially in large, distributed organizations. Organizations in our research sample sought to facilitate collaboration by providing searchable knowledge bases to connect with others, and by making it easy for employees to work together both physically and virtually.

We also learned that organizations are increasingly focused on 1) providing the right technologies to get work done (faster) and 2) removing potential barriers to employee performance. Organizations commonly found that it is difficult to alleviate complexity of workplace systems (such as difficulties with technologies in virtual meeting rooms, log-in issues, printer connectivity, complex travel systems etc.). Providing technological support quickly whenever and wherever it is needed, as well as by constantly servicing technologies to pre-empt problems were crucial elements to personalized support. Additionally, organizations were experimenting with ways to augment office space through location and presence indicator systems, which help employees to quickly find available spaces to work and create awareness of where and when colleagues are available to collaborate (e.g. Randall, 2015). Several organizations have started to extend personalization even further: a large financial services organization for instance enabled employees to choose from personalized technology toolkits based on their work needs:

*"We created a user needs map, which basically said, what are we trying to do from an employee technology perspective? It's to communicate, to get people to collaborate, to improve knowledge management, to facilitate them to get things done on a day-to-day basis. And if that's the goal, then how do you [...] measure it and see progress? How would an employee see a difference? That was an equally important thing."* — CIO at a large North American Financial Services Organization

## **Social**

In many of the organizations in our study, social media played a role in simplifying working life and facilitating access to corporate conversations at different levels. Enterprise social media (ESM) such as Yammer, Chatter, or Jive have the potential to not only build communities to share ideas, but also for discussions to be transparent in ways they have never have been before. Organizational listening via ESM provided opportunities to understand more about customers, identify new ideas and new talent within the organization, find the speed bumps to effective work-practices, and to change conversations through interactions across silos and hierarchies. Just as the amplification of the customer voice constitutes one of the fundamental pillars of successful digital business models, the employee voice seems to underpin the digital workplace:

*"We had to find ways of shining the spotlight into dark corners of our organization to find those people who had much to say, but [who] found it hard to be heard [...] in a traditional hierarchical structure."* — Partner digital transformation at an Australian Professional Services Organization

While some organizations found social media useful to build the corporate conversation and enable broader and more diverse participation, others found that take-up was patchy. Active networks where employees share and build ideas create value for organizations. In many cases creating such active networks was challenging and smaller communities did not always progress to larger communities:

*"[The employees in innovation departments] need the social network tools, and they're very engaged with the technology, and that's a much easier call, but getting it to process oriented work is much more difficult."* — Senior architect manager at a large North American Insurance Organization

IT leadership responsible for ESM often pursued a different and parallel approach for ESM on the team/group level with the purpose of simplifying workflows and collaboration within groups. Some organizations let teams choose which social media platforms they wanted to use for sharing information. Yet other organizations changed how team used ESM through integration into frequently used systems. One executive responsible for ESM in a large North American software organization for example indicated that the most successful implementations occurred when social capabilities were placed in virtual environments where people were already working.

## ***Management Levers***

### ***Sustaining Leadership***

The sustaining leadership lever proved critical to support, project, and promote the (strategic role of the) digital workplace in the organization. In organizations with successful digital workplace initiatives, a broad management mind shift that cascaded throughout management layers reinforced the new ways of working that the design levers enabled. For instance, managers had to provide employees with autonomy to benefit from teleworking arrangements; they had to trust that employees would use BYOD arrangements responsibly; and they had to stimulate transparency in work practices in line with open work environments and digitized work flows:

*"In a world that speeds up it is inevitable that decisions are made lower in the organization. It means that you have to give employees access to required information [...] and also that managers let go of certain responsibilities [...] which means trusting employees."* — Regional director at a Global Information Services & Technology Organization)

Collaboration of digital workplace leadership with management at different levels is needed to ensure alignment of the capabilities of digital workplace design and the day-to-day management of employees. Equally important—and likely critical for this broad management mind shift to occur—is that we found that organizations with a successful digital workplace establish a dedicated digital workplace leadership team with its own accountabilities, goals, and access to ensure strategic relevance and allocation of sufficient resources. These leadership teams were increasingly cross-functional for the benefit of collective expertise and governance, and were typically headed by a member of the C-suite (such as the Chief Information Officer or the Chief People Officer). While it is this leadership team's responsibility to design the digital workplace, we see that successful leadership does not usually organize this design process in a top-down or directive manner, but rather in an organic, facilitative fashion in conjunction with the rest of the organization.

### ***Systemic Learning***

The systemic learning lever refers to the process by which the digital workplace leadership team continuously adapts the design of the digital workplace through real-time experimentation and feedback. Organizations following such an approach recognized that not every element of the design could be an immediate success, and therefore 'failed forward' by continuously fine-tuning or replacing individual elements rather than maintaining suboptimal designs or lingering complexity. In order to learn what works, these organizations openly and continuously gathered input throughout their ranks by such means as employee surveys, ESM discussions with digital workplace champions, or even Internet of Things sensors.

Organizations in transitional phases sought to accelerate learning in several ways. In one particular case, a monthly trophy was awarded to the employee who did the best job in implementing digital workplace principles. We also found that training and coaching were considered essential for the realization of new behavioral norms as well as for creating employee buy-in and legitimacy through storytelling and shared experiences:

*"We spent a lot of time training and talking to managers, to groups, and to all employees. Because we considered the changes as major. It is a completely different way of working where everyone has his own challenges, his worries, his way of accepting it. We had several ways and*



*moments to share information and listen to each other's input."* — Digital workplace steering committee member at a European Research and Advisory Organization

Ultimately, as organizations learned how to effectively measure the digital workplace, systems also began to take a greater role in systemic learning as data on the use of workplace capabilities and associated outcomes were openly provided to employees with complete transparency, in real time. One organization created a dashboard, at which employees could see their individual performance indicators, as well as their use of laptops, printing, and communications platforms, and benchmark all results with best practices in the organization:

*"That's the place where employees can get information about how they're using the tools that they have at their fingertips [...] We're going to propose a challenge to see how many employees use it, and we'll gather metrics to show how effective they are in using the technology and translate that to savings for the company."* — VP of communications at a large North American Financial Services Organization

## ***Symbols***

The third important lever for guiding transitions is management communication through meaningful as well as powerful symbols and actions. Lasting change required that senior and middle management 'live' and communicate the importance of the digital workplace strategy to employees and provide them with a clear vision.

Senior management actions provide high symbolic value for reinforcing the workplace strategy to employees. Many organizations found it essential that senior management exemplifies new ways of working, for example by initiating discussions about innovative ideas with employees on ESM, or by sharing open office space with employees and engaging in more frequent, ad-hoc, informal meetings:

*"The main purpose [...] is to spur collaboration, that you get people to meet that otherwise wouldn't have. We converted all manager offices into collaboration space, and everybody just sits at a table. So I think that's the other, the cultural message we want to send, that this is a flat organization. We no longer have a hierarchy. Everyone has the ability to collaborate with each other without perceived silos, you know, boundaries that people had."* — CIO at a large North American Financial Services Organization

Organizations that conducted major workplace changes with strategic, well thought-out initiatives typically utilized symbols to reinforce communication of how they were transforming to be competitive in the digital economy, and how they expected employees to change with them through the adoption of new behavioral norms (such as being more collaborative, creative, or innovative). Brands or graphic symbols that identify digital workplace initiatives (and the digital workplace team as an entity in the organization) are much more than communication campaigns. Their goal was to initiate changes in the way people in the organization define their working lives:

*"You want to be in a situation where you are able to challenge things that have never been challenged before, whether business ideas or processes. Too often we see things being done because that's how they've always been done."* — Director of strategy at an Australian Professional Services Organization

## Quantitative Results

With the 6S digital workplace framework in place, we proceeded to analyze our quantitative data regarding how digital workplace design affects organizational performance. To this end, we mapped a total of 23 statements representing the six digital workplace levers on our framework. Respondents answered each statement on a five-point Likert scale ranging from 1= 'completely disagree' to 5='completely agree'. In addition, we measured organizational performance relative to direct competitors on five dimensions: revenue growth, profit growth, growth in market share, ability to attract new customers, and employee satisfaction. For this measure, we used a five-point Likert scale ranging from 1='far worse' to 5='far better'. Scores on the five dimensions were averaged to create an overall organizational performance score. Table 2 shows the survey items mapped to the six digital workplace design levers, the means and standard deviations of all measures, as well as their correlations with organizational performance.

By examining the correlation coefficients, we can deduce that workplace design elements for five levers (all except Social) are significantly related to organizational performance. However, not all design elements (items) are equally important. More specifically, we find the most and highest correlations for elements of the two management levers, such as stimulating transparency ( $r=.37, p<.01$ ), finding a balance between trust and control ( $r=.37, p<.01$ ), and enabling autonomous work ( $r=.35, p<.01$ ). With regards to the Space design lever, we see that popular office designs focused on flexible open work environments ( $r=.10, p=.33$ ), specific activities ( $r=.12, p=.22$ ), or the reduction of floor space ( $r=.08, p=.42$ ) do not significantly relate to performance. Instead, organizations seem to derive more value from environments specifically designed to enable and support collaboration ( $r=.33, p<.01$ ) as well as from active telework arrangements ( $r=.30, p<.01$ ). The use of co-working spaces was very uncommon within our sample and proved non-significant ( $r=.08, p=.43$ ). In terms of the Systems and Social levers, we see that technologies that support autonomous and remote work—i.e. any time/any place ( $r=.27, p<.01$ ) as well as digitized work & information flow technologies ( $r=.20, p=.04$ )—relate to performance, but BYOD policies ( $r=-.08, p=.41$ ) and the use of enterprise social media ( $r=.14, p=.15$ ) do not. Finally, we found that providing direction to the digital workplace by means of a clear mission and/or vision is also an important element to take into account, as this Symbols lever is also significantly related to performance ( $r=.24, p=.01$ ).

Yet while such correlations provide useful insights, they fail to shed any light on the ecosystem as a whole or on whether elements from the various levers work in dynamic harmony or constraint. We therefore conducted an additional K-means clustering analysis to determine groups with differing digital workplace strategies. Differences between these groups were subsequently examined using one-way analysis of variance, as reported in Table 3. Consistent with our qualitative findings, we find that those organizations that act on all four design levers as well as the two management levers tend to outperform their competitors the most (as shown in cluster 4: 'Hybrid' with an average performance score of 3.84)—especially compared to those organizations that primarily focus on opening up space (cluster 1, scoring 3.02). There are, however, two clusters with intermediate organizational performance. The first (cluster 2, scoring 3.43) focuses primarily on Space and Systemic Learning levers that derive value from co-location (i.e. activity-based working environments and an open knowledge sharing policy) yet severely limits autonomy and remote working practices and technologies. Whereas the other cluster (cluster 3, scoring 3.64) seems to take the exact opposite approach; here we see hardly any focus on traditional Space elements but a lot of attention to remote working, autonomy, and

employee voice (with management being more open to employee initiatives). We shall elaborate further on these findings and their potential implications in the discussion section.

## Discussion

Our qualitative results point out that organizations consider the digital workplace an important strategic asset for 1) simplifying ways of working, enabling employees to handle more complex work, and 2) creating information-driven test-and-learn environments that cross traditional working silos and hierarchies to tackle uncertainty and ambiguity. We learned that this is not a finite transformation project, but rather a constant re-evaluation of work and subsequent iterative change processes. Evidence-based decision making is critical in these environments to identify the speed bumps that make work difficult. Significant digitization is required to gather data, in combination with effective informal feedback channels.

The primary contribution of this chapter lies in the formulation of a framework that unpacks the components (levers) of digital workplace designs that can be used to examine organizational transformations in a more structured way. One of our expectations was that in order to derive a competitive advantage from the digital workplace, organizations would need a holistic approach in which all design levers from our 6s digital workplace framework are addressed in conjunction with its additional management levers. Our quantitative findings confirm this assertion, showing that such 'dynamic harmony' (as per Becker, 2007) indeed provides the highest average level of competitive advantage—leading to higher scores than the other clusters across the entire portfolio of practices. Yet we also find support for idiosyncratic combinations of individual practices in other clusters, indicating that even partial digital workplace designs (or pilots) can add some value above industry averages.

By examining the extent to which such individual elements relate to organizational performance, we provide a unique comparison between several organizational practices that are rarely investigated in conjunction. Of particular interest is the finding that practices with the strongest relationship to organizational performance belong to the sustaining leadership lever. This is in keeping with the resource-based view (RBV) of the firm (Barney, 1991), which argues that durable competitive advantage comes from the unique interactions between the characteristics of the firm, its management practices, and cultural norms. The RBV would suggest that the adoption of several universal 'plug and play' elements from our space or systems levers might be too easily imitated, thereby lacking the scarcity to be of true competitive value. This does not mean, however, that these elements are unimportant. Open, inspiring, or activity-based work environments and BYOD policies might not directly relate to organizational performance, but our study participants have indicated that these are most definitely pivotal in dealing with expectations from millennials that form today's top talent in the digital economy. The scores on (several of) these elements by the high performing cluster of organizations further indicate that such elements have become so-called 'table stakes'.

The results of our studies enable a more nuanced understanding of the space lever. While previous academic research has found "no common elements of the physical environment (e.g. enclosures and barriers in work spaces, adjustable work arrangements, personalized work spaces, and ambient surrounding) that are consistently and exclusively associated with desired outcomes" (Elsbach and Pratt, 2007), we find that digital workplace designs focused on supporting collaboration as well as telework do seem to add competitive value on an

<i>Statements</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Correlation with org. performance</i>
Organizational performance	3.46	0.77	-
<b>Space</b>			
1. Our work environment is based on flexible (open) workspaces	3.58	1.14	0.097
2. Employees consider our work environment to be inspiring	3.29	0.92	0.185
3. Our work environment enables and supports collaboration	3.57	0.90	0.329**
4. Our work environment follows 'activity-based working' principles	3.48	1.22	0.120
5. We found an optimal balance between required and available workspaces	3.07	0.96	0.079
6. We enable the use of co-working spaces	2.52	1.19	0.079
7. We actively support employees who telework	3.60	0.96	0.300**
<b>Systems</b>			
8. We provide our employees with the technological solutions they need to work (together) at any time and any place	3.68	0.98	0.273**
9. All the work-related information our employees need, is made digitally available to them	3.68	1.00	0.203*
10. Our employees' (corporate) technology use is not limited to the solutions we provide to them	2.59	0.90	-0.081
<b>Social</b>			
11. We use enterprise social media to foster social cohesion/collaboration	3.05	1.16	0.142
<b>Symbols</b>			
12. Our organization has a clear mission/vision that provides direction (to the digital workplace)	3.71	0.81	0.239*
<b>Sustaining Leadership</b>			
13. Our employees are enabled to work autonomously	3.67	0.90	0.347**
14. Our employees can determine their own working hours/times	3.72	0.89	0.206*
15. We hold our employees accountable to pre-set goals or targets	3.54	0.86	0.111
16. We found a good balance between employee trust and control	3.39	0.89	0.366**
17. We follow an organic management approach, without strictly defined job roles and tasks	2.96	0.98	0.139
18. We see management's role as facilitative rather than directive	3.24	0.91	0.265**
19. Our organization stimulates transparency in work activities	3.69	0.80	0.374**
<b>Systemic Learning</b>			
20. Our top management team is open to employees' initiatives	3.72	0.90	0.277**
21. It is our corporate policy to openly share knowledge and information	3.53	1.00	0.256**
22. Our employees openly share their mistakes and failures, so that everyone may learn from them and find solutions	3.31	0.81	0.332**
23. We train our employees on aspects of the digital workplace	3.24	0.98	0.084

\*Significance (two-tailed) at 5%, \*\*Significance (two-tailed) at 1%

**Table 2. 6s statement means, standard deviations, and correlations with organizational performance (N=113)**

	<i>Clusters</i>				<i>ANOVA</i>
	<i>1</i> ( <i>n</i> =34)	<i>2</i> ( <i>n</i> =14)	<i>3</i> ( <i>n</i> =19)	<i>4</i> ( <i>n</i> =38)	
<i>Measure</i>	<i>Open</i>	<i>Activity-based</i>	<i>Mobile</i>	<i>Hybrid</i>	<i>F</i>
Organizational performance	3.02	3.43	3.64	3.84	10.08
<b>Space</b>					
1. Flexible open work environment	3.76	2.43	2.37	4.47	41.37
2. Inspiring work environment	3.21	2.86	2.68	3.82	9.91
3. Designed for collaboration	3.24	3.21	3.16	4.21	12.97
4. Activity-based work environment	3.44	3.71	1.89	4.16	24.12
5. Optimal use of space (reduce m <sup>2</sup> )	2.91	3.43	2.11	3.61	16.15
6. Enable use of co-working space	2.47	2.14	1.95	2.95	3.80
7. Enable + support telework	3.24	2.93	3.42	4.24	12.46
<b>Systems</b>					
8. Any time/any place technology	3.32	2.79	3.84	4.16	10.70
9. Digitized work/information flow	3.29	3.07	3.37	4.42	15.06
10. BYOD policy	2.79	2.50	2.37	2.58	1.00
<b>Social</b>					
11. Use of (enterprise) social media	3.00	3.00	2.47	3.37	2.55
<b>Symbols</b>					
12. Providing a clear mission/vision	3.29	3.43	3.84	4.16	8.96
<b>Sustaining Leadership</b>					
13. Enable autonomous work	3.21	2.64	3.74	4.34	29.35
14. Allow flexible hours	3.35	2.57	3.68	4.47	36.87
15. Output-based management focus	3.18	3.57	3.47	3.89	5.20
16. Trust vs. control balance	2.59	3.36	3.37	4.13	32.57
17. Organic management	2.68	2.86	2.89	3.26	2.40
18. Facilitative management	2.94	2.93	3.00	3.74	6.57
19. Stimulating transparency	2.79	3.57	3.16	3.71	32.26
<b>Systemic Learning</b>					
20. Management open to initiatives	3.09	3.56	3.95	4.29	16.47
21. Open knowledge sharing	2.94	3.93	3.63	4.29	16.62
22. Learning from failure (culture)	2.97	3.07	3.42	4.29	10.43
23. Digital workplace training	3.04	2.71	3.20	3.56	2.04

**Table 3. 6S Statement Means and ANOVAs for K-Means Clusters**

organizational level. This latter finding is also in line with previous studies on the organizational effects of telework (e.g. Martinez-Sánchez, Pérez-Pérez, De-Luis-Carnicer, & Vela-Jiménez, 2007). Our interviews have shown that supporting collaboration means more than opening up floor space, however: it requires thought about how employees will be able to easily interact and find each other in physical and virtual space—also with the help of various systems levers. Enterprise social media may prove beneficial for supporting collaboration within the organization, as they provide networks that enable employees to share and participate in activities outside of their traditional work boundaries. Yet despite the rapid uptake of social media outside of the organization, social media platforms varied in their uptake and importance to the workplace design in organizations we have studied. Large organizations in particular see value in its global reach, ability to bridge hierarchies, and its use as a transparent form of communication. For some organizations, this purpose is akin to the metaphor of a 'leaky pipe' (Leonardi, Huysman, & Steinfield, 2013), without making full use of ESM's capabilities in building communities (i.e. the 'echo chamber') and supporting interpersonal connections (i.e. the 'social lubricant'). For others, however, we saw a centrality of social media that was having a significant impact on collaborative practices. While our quantitative study did not indicate a correlation between social media adoption and performance, we had more positive perceptions reported in the interview data. Given the rapid growth of ESM over the last 3 years, the time difference between our qualitative and quantitative investigations may account for this difference. It could also be explained by the need for better communication systems that offer more than email. The high focus on collaboration as a desirable outcome of the digital workplace leads us to surmise that social media might start to significantly relate to organizational performance when organizations manage to make full use of the range of ESN capabilities.

Of further importance is that organizations in our study treated employee choice and segmentation as part of the digital workplace design rather than idiosyncratic deals on a per-employee basis (e.g. Rousseau, Ho, & Greenberg, 2006). This presents a challenge, however, as organizations need to take a whole-systems perspective on work that accounts for individual requirements. In terms of technology, we thus find that those systems that enable autonomy and collaboration drive organizational performance, whereas BYOD policies do not. Our expectation is that the latter might be due to potentially limited technological support and/or limited integration of employees' own devices into organizational systems, which would only serve to make working life more complex. In that regard, we also learned that the organizations in our study typically define few (golden) rules to counter complexity. Instead, employees are provided a lot of autonomy and trusted to use good judgment and common sense. This approach is in line with findings from previous studies (e.g. Besseyre des Horts, Dery, & MacCormick, 2012) that have found that in more mobile, flexible work environments, work stress is reduced when employees feel supported and have control over the dimensions involved in the execution of their work. In some organizations, these approaches were combined with an output-only focus by management, although we have found no demonstrable relationship with organizational performance in those cases. We did find anecdotal evidence of particularly successful organizations in which employees were also involved in making (or adjusting) the rules. One such organization used a crowdsourcing platform to formulate its social media usage rules. This approach reduced the size of the document outlining the rules by over 80%, it created a wording in plain English that was readily understandable, and it placed control back in the employees' hands.

To ensure that the ambitions for the digital workplace are clearly understood and 'lived', organizations use comprehensive communication strategies and symbols. Whether these are heavily branded campaigns, a regularly repeated set of mission statements, or other symbolic actions by management (such as a tolerance or encouragement of failure), these enacted statements of strategic intent play an important role in the digital workplace success of competitive organizations. This seems particularly evident in arenas where innovation is an important strategic driver and organizations are focused on workplace attributes that encourage sharing and contributing to new ideas.

Finally, we found correlations between systemic learning capabilities and facilitative, open leadership in higher performing organizations—supporting previous findings regarding this type of leadership in the digital workplace (van Heck, van Baalen, van der Meulen, & van Oosterhout, 2012). Leadership teams were dedicated to amplifying the of employee voice (including using digital channels) and had a management style that was more facilitative than directive. There was little quantitative evidence to suggest that the digital workplace leadership of the higher performing firms was more distributed. Instead, we found that successful digital workplace leadership could be top-down or bottom-up, provided there were clearly recognizable channels for employees to provide their input and voice their concerns. Feedback was thus being accessed in many ways, and a dedicated management function or team facilitated decisions on how such input was used for continued redesign of the workplace.

## **Conclusion**

In this chapter, we have combined two consecutive studies to build an understanding of the digital workplace. We clarified what is meant by the digital workplace, developed a framework that can be used by academics as well as practitioners for design and research purposes, and offered insights into how successful organizations gain a competitive advantage with digital workplace design. Our study is likely to invite as many questions as it answers, yet we would like to provide several suggestions to management practitioners as well as proposals for further academic research.

First and foremost, we encourage managers to develop a holistic digital workplace design, in which the four design elements are supported by related leadership practices. In terms of top management support for the digital workplace, we recommend a combination of IT, human resources, facilities, and communications expertise is recommended. All efforts will be for naught, however, without buy-in from middle management. We therefore also advise organizations to invest in middle management to generate their support and help them transition into a more supportive role.

Furthermore, we suggest that managers create solutions that support on a wide variety of personas within the organization and offer choice in where, when, and how employees can work. Learning about the various needs within the organization requires engagement of employees as well as a (management) mindset in which it is common practice—also for employees—to experiment with new ways of working (and occasionally fail). To this end, governance should move from risk minimization to opportunity maximization.

Managers must recognize that a new approach to data is required for reducing uncertainty in the organization. It is therefore important to invest in digital capabilities that enable the organization

to easily collect data as well as to analyze and present it in meaningful ways. Effectively gathering meaningful feedback, amplifying the voice of employees and making evidence-based decisions about workplace design are critical steps to making it easier to get work done in complex environments.

### ***Future Research***

This paper provides a fertile starting ground for future research on whether organizations are deriving value from the digital workplace. First, the 6S Framework can be used to identify digital workplace elements that have not been quantitatively examined. After all, the digital workplace is ever evolving, with new developments such as proactive search, peer-to-peer level IT support, and virtual personal assistants just around the corner (Miller and Cain, 2016). We therefore invite researchers to replicate our findings across larger/wider samples and with additional elements.

Second, larger samples would enable additional tests on the subject of dynamic harmony and constraint. By testing for necessary and sufficient conditions of how design elements impact organizational performance, we could obtain a better understanding of the interaction between the various design and management levers.

Last, we also encourage researchers to develop quantitative models that include causal chains with intermediary effects. A particularly fruitful effort would involve unpacking the relation between digital workplace elements, specific behavioral norms (such as collaboration, creativity, or proactivity) and organizational performance. Alternatively, researchers could investigate the various ways in which the digital workplace reduces off-task complexity.

### **References**

- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99–120.
- Becker, F. (2007). Organizational Ecology and Knowledge Networks. *California Management Review*, 49(2), 1–20.
- Bennett, N., & Lemoine, G. J. (2014). What a difference a word makes: Understanding threats to performance in a VUCA world. *Business Horizons*, 57(3), 311–317.  
<http://doi.org/10.1016/j.bushor.2014.01.001>
- Bernstein, E., Bunch, J., Canner, N., & Lee, M. (2016). Beyond the Holacracy Hype. *Harvard Business Review*, (July-August), 38–49.
- Besseyre des Horts, C.-H., Dery, K., & MacCormick, J. (2012). Paradoxical Consequences of the Use of Blackberrys: An Application of the Job Demand-Control-Support Model. In C. Kelliher & J. Richardson (Eds.), *New Ways of Organizing Work: Developments, Perspectives, and Experiences* (pp. 16–29). New York & London: Routledge.



- Elsbach, K. D., & Pratt, M. G. (2007). The Physical Environment in Organizations. *The Academy of Management Annals*, 1(1), 181–224. <http://doi.org/10.1080/078559809>
- Entis, L. (2016). The Open-Office Concept Is Dead. Retrieved March 6, 2017, from <http://fortune.com/2016/05/12/the-open-office-concept-is-dead/>
- Köffer, S. (2015). Designing the digital workplace of the future – what scholars recommend to practitioners. In *Proceedings of the Thirty Sixth International Conference on Information Systems* (pp. 1–21). Fort Worth, TX.
- Leonardi, P. M., Huysman, M., & Steinfield, C. (2013). Enterprise social media: Definition, history, and prospects for the study of social technologies in organizations. *Journal of Computer-Mediated Communication*, 19(1), 1–19. <http://doi.org/10.1111/jcc4.12029>
- Martínez-Sánchez, A., Pérez-Pérez, M., De-Luis-Carnicer, P., & Vela-Jiménez, M. J. (2007). Telework, human resource flexibility and firm performance. *New Technology, Work and Employment*, 22(3), 208–223. <http://doi.org/10.1111/j.1468-005X.2007.00195.x>
- Miller, P., & Cain, M. W. (2016). Hype Cycle for the Digital Workplace, 2016. Retrieved from <https://www.gartner.com/document/3366717>
- Mocker, M., Weill, P., & Woerner, S. L. (2014). Revisiting Complexity in the Digital Age. *MIT Sloan Management Review*, 55(4), 73–81.
- Randall, T. (2015). The Smartest Building in the World: Inside the connected future of architecture. Retrieved May 8, 2016, from <http://www.bloomberg.com/features/2015-the-edge-the-worlds-greenest-building/>
- Rousseau, D. M., Ho, V. T., & Greenberg, J. (2006). I-Deals: Idiosyncratic Terms in Employment Relationships. *Academy of Management Review*, 31(4), 977–994.
- Schrader, S., Riggs, W. M., & Smith, R. P. (1993). Choice over uncertainty and ambiguity in technical problem solving. *Journal of Engineering and Technology Management*, 10(1–2), 73–99. [http://doi.org/10.1016/0923-4748\(93\)90059-R](http://doi.org/10.1016/0923-4748(93)90059-R)
- van Heck, E., van Baalen, P., van der Meulen, N., & van Oosterhout, M. (2012). Achieving High Performance in a Mobile and Green Workplace: Lessons from Microsoft Netherlands. *MIS Quarterly Executive*, 11(4), 175–188.
- Waber, B., Magnolfi, J., & Lindsay, G. (2014). Workspaces That Move People. *Harvard Business Review*, (October 2014), 69–77.

---

<sup>i</sup> Business complexity deals with the amount of variety as well as the number of connections or dependencies in an organization (Mocker et al., 2014), whereas uncertainty and ambiguity respectively refer to a lack of knowledge and a lack of clarity (difficulty in identifying or defining potential outcomes) in an organizational decision making process (Schrader, Riggs, & Smith, 1993).

<sup>ii</sup> Collisionable hours refer to the frequency of chance encounters and unplanned interactions between employees due to deliberate design choices in the physical environment (Waber, Magnolfi, & Lindsay, 2014).