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How to Speed Up Your Digital Transformation

by Benjamin Mueller and Jens Lauterbach

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The pandemic has given many organizations an unexpected crash course in digitalization. While much progress has been made — from hardware and infrastructure to updated work processes and a rejuvenated corporate culture — many organizations are confronting the question of how to integrate fragmented and often makeshift digitalization efforts in a way that's sustainable.

For any digitalization effort, whether the goal is to safeguard business continuity or enable digital innovations, one of the key questions for managers remains: Are there ways to speed up digitalization and make

outcomes more predictable? This is particularly pertinent for small and medium-sized organizations that need to be more targeted in their efforts and may not have the resources to engage in the "fail fast" approach often heralded by the larger poster children of the digitalization movement.

Based on our research, we recommend three levers for accelerating digitalization projects that will help organizations of any size reap the benefits of true transformations. These levers are rooted in the idea of complexity-in-use, a concept we developed to help understand the difficulties users face when trying to cope with the impacts of new digital tools on their work. Once managers master this form of complexity, they'll be able to plan and focus their digitalization efforts and deliver more effective transformations.

Our study

Our insights are based on a two-year research study at one of the leading banks in Europe, which replaced its core banking system. We shadowed one of the bank's business units that provides shared after-sales services connected to the bank's mortgage and loan business. In our study, we focused on the different teams across the unit's core departments, the differences in their approaches to digitalizing their work with the new system, and their success.

We conducted over 60 interviews with stakeholders at various levels of the unit and closely observed day-to-day operations — starting with employees' established work routines using a 30-year legacy system and ending when unit's executives felt their teams were performing well with the new system. We were particularly interested in the contrast between departments that managed to use the new system effectively and quickly and those that struggled for a prolonged period. Analyzing these struggles allowed us to identify both the underlying mechanisms that constitute complexity-in-use and the responses to it that worked.

Key findings

Complexity-in-use explains why learning and using a digital tool is easy and straightforward for users in one context and difficult and cumbersome in another.

In our study, complexity-in-use led to vastly different digitalization journeys for different departments, even though they all used the same system for their respective tasks. For example, one group of clerks used the new SAP-based loan management system to enter new contracts. For them, learning how to do their work with the new system was easy. In stark contrast, clerks who needed to make edits to loans in stock had a much harder time learning how to work with it. Clerks in the former group achieved effective use within six to eight weeks, but those in the latter group needed over six months to do their work effectively again.

We found that two dimensions explain this difference: The first, system dependency, looks at how much of a user's task is represented in the system — that is, how much of the task and the relevant environment is implemented in the system through data and algorithms. The second dimension, semantic dependency, analyzes the degree to which users need to understand how the business logic of their task is implemented in the system. Digitalized tasks (i.e., tasks that are supported by a digital tool) that have a high degree of both dimensions are the most complex.

In our example, the data entry clerks' task only requires the loan contract data to be represented in the system. Understanding the deeper logic of a loan contract is not required to enter data successfully, nor is understanding how loan contracts are represented or processed in the system. Therefore, learning the system for that specific task is relatively straightforward.

But it's a different story for the clerks editing loans. Beyond just the loan contract data, a significant number of their tasks rely on additional business concepts (e.g., loan status or certain calculation rules) that are

represented in the system. These clerks also need to understand what the data means and how it's being processed in order to make correct edits to the loan. In effect, learning the system is much more complex and effortful.

These examples illustrate the dimensions underpinning complexity-in-use. First, system dependency increases when more business concepts are represented in the system. Second, semantic dependency increases if a deeper understanding of these concepts and how the system processes them is required. The two dependencies complement and reinforce one another — the impact of semantic dependency will be much higher if system dependency is also high.

These dependencies confront users every time they cognitively prepare for doing a task using a system. Of course, users will learn over time once tasks become routine, but in the early stages of a digitalization project, the cognitive efforts of mapping tools and tasks to one another in order to do work effectively and efficiently are often immense.

This complexity-in-use is often overlooked in digitalization projects because those in charge think that accounting for task and system complexity independent of one another is enough. In our case, at the beginning of the transformation, tasks and processes were considered relatively stable and independent from the new system. As a result, the loan-editing clerks were unable to complete business-critical tasks for weeks, and management needed to completely reinvent their change management approach to turn the project around and overcome operational problems in the high complexity-in-use area. They brought in more people to reduce the backlog, developed new training materials, and even changed the newly implemented system — a problem-solving technique organizations with smaller budgets wouldn't find easy to deploy. In the end, our study partner managed this herculean task, but it took them months to get the struggling departments back on track.

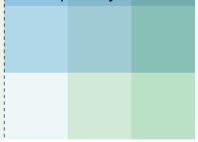
Three levers for accelerated digitalization

Our study provides important lessons for those seeking to push their own digitalization efforts to the next level — and avoids some of the problems and expenses our study partner faced. Informed by our findings and the feedback executives provided, here are our three levers for accelerated digitalization.

First, conduct pre-implementation due diligence. Develop a complexity heatmap that identifies the different degrees of complexity-in-use across the organization. The following table shows what you'll need to build your heatmap.

Develop a Complexity Heatmap

Follow these steps to determine tasks' relative levels of complexity-in-use across your organization and determine their placement on your heatmap.

Step	Input	Output
1 Analyze relevant processes and tasks	Process diagrams, business domain glossary, interviews, observations, etc.	Process overview, list of relevant tasks
2 Analyze features of new system	Screenshots, system documentation, user training, interview data, observations, etc.	Feature and functions catalogue
3 Map system to tasks to understand which tasks are to be digitalized	Interviews with business users or management to extract objectives for digitalization effort	Extent of system dependency for relevant tasks (determines task placement along x-axis)
4 Analyze the properties of the to-be-digitalized tasks and understand how much business logic is involved	Output of step 3	Digitalized tasks and their degree of semantic dependency (determines task placement along y-axis)
5 Draw heatmap of to-be-digitalized processes and compare their complexities-in-use (low vs. high)	Output of step 4	Heatmap for complexity-in-use 

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The first two steps will reveal which tasks will depend on the new system and how the system will be used for them. This allows you to move to step 3, where you'll determine where on the x-axis of your heatmap (see the figures below) individual tasks are located. Once it's clear which tasks are system dependent, step 4 will reveal their degrees of system dependency

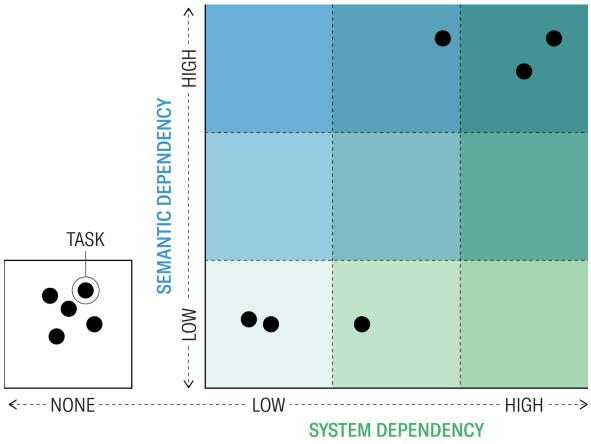
(the y-axis). Once you understand where a task is located on the y-axis, you can start drawing up a heatmap (step 5) to illustrate the relative levels of complexity-in-use in the various tasks that are to be digitalized. Place tasks that don't use the system in the "none" box as shown in the figures.

We drew up complexity heatmaps for the two areas of our case. A number of tasks that the loan-editing clerks need to do come with high complexity-in-use (top figure), an indicator that transformation efforts in this area will be higher than in the low complexity-in-use area of data entry (bottom figure).

Heatmap for a High-Complexity Area

This complexity heatmap example identifies tasks in the higher complexity-in-use area that increased transformation effort.

Example 1: Loan-editing clerks' tasks



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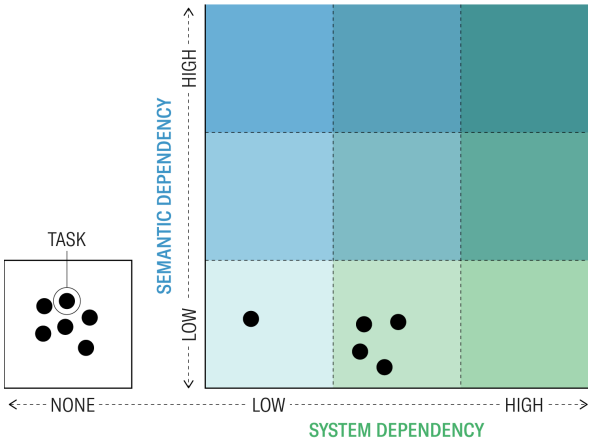
Heatmap for a Low-Complexity Area

This complexity heatmap example shows tasks of the lower complexity-in-use area that managed to transform quickly.

Example 2: Data entry clerks' tasks



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While drawing the maps seems like a lot of effort before the actual digitalization can start, our research shows that this approach can prevent costly mistakes early on.

Second, design a step-by-step transformation plan. This enables you to direct attention and organizational resources toward areas with relatively low complexity-in-use first. Project efforts in these "quick-win areas" differ considerably from high complexity-in-use areas in terms of scope, manpower, and transformation measures. When a new system is rolled out in a low complexity-in-use area, the transformation team can be set up with lightweight project governance and just a few key people, and change management can be reduced to a minimum. Here, digitalization investments are likely to pay off quickly.

Beyond financial considerations, quick wins also have an important psychological effect. Because digitalization projects are often marathons rather than sprints — requiring gradual changes to organizational structures and culture over time — successful pilot projects in the early stages serve as guiding and motivating lighthouses, enabling a lean approach to transformation management that can be adapted and improved.

Applying the first two levers helps recoup early investments more quickly and builds momentum to carry out more complex efforts later on.

Third, develop tailor-made transformation measures. For example, low complexity-in-use areas might only require traditional feature-based trainings to introduce employees to a new system. In contrast, other training measures are required to tackle the difficulties typical of high complexity-in-use areas. Ongoing task-focused trainings are needed here, along with a temporary suspension of performance goals and opportunities for self and social learning, to name just a few measures that worked in our case. Complexity heatmaps help design and direct these efforts to where they're needed most because they allow executives to understand which tasks are the effort drivers in an area's digital transformation. This way, organizations can direct scarce resources to where they're needed most and avoid being bogged down in turnaround mode and losing precious time.

Managerial implications

You'll find that awareness of complexity-in-use provides valuable insights that help speed up digitalization and reveals three important implications for processes, projects, and people.

For processes, system and semantic dependencies, which are important drivers of complexity, call for updated ways to document and model processes. Organizations need to be aware of the dependencies in an area's

tasks if they want to understand where effort in transformation is created and why (our first lever).

For projects, awareness of complexity-in-use opens up new perspectives on how to phase transformation projects. This will, in turn, make transformation efforts easier to plan and execute (our second lever).

For people, our work shows that one-size-fits-all digitalization approaches don't work, and for good reason. Transformation measures need to be carefully calibrated to the complexity-in-use of different areas of the organization (our third lever). This applies to the content of the trainings (learning how to use a tool vs. what the availability of a new tool means for how people do their work), the format of the trainings (lecture-style vs. self-learning or social learning), and the timing of the trainings (pre-go-live only vs. throughout the weeks or months after go-live until work is done effectively again).

Taken together, being aware of complexity-in-use enables managers to apply our three levers to design transformation journeys so that their companies can reap the benefits associated with digitalization earlier.

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