



Skills for Digital Transformation

Research Report 2017

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In Collaboration with



Acknowledgment

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We hope you find the insights and results of the study interesting.

Kind Regards



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Introduction

Digital transformation is one of those topics on management agendas that is here to stay. It is not a fad that is going to fade away but a fashion that constantly evolves in sync with new generations of digital technologies that diffuse into the market. Almost every industry has stories to tell about organizations that, by means of digital technologies, have fundamentally changed the way of doing business in their respective markets and organizations that were caught off guard by changes in competition with business models that virtually turned irrelevant overnight. Not only startups but also incumbents are working on new, exciting business models many of which still need to demonstrate profitability and sustainability. Regardless of whether those business models turn out to be a breakthrough or a nonstarter they shift formerly accepted boundaries.

The increasing digitization of our private, professional, and public life is commonly referred to as a disruptive process that is fundamentally changing the way companies compete, interact, and create value. Therefore, the capability to leverage the business potential of innovative digital technologies is critical for firms. This capability is predominantly determined by the digital skills of the employees a company has access to. In the context of digital transformation, many trends and topics have been discussed – from cloud computing through big data analytics, sensor networks, and internet of things to augmented reality, enabled by new user interfaces like smart glasses. However, sometimes exaggerated expectations relate to those trends and topics. Therefore, they might not necessarily reflect what organizations need for their digital transformation.

The dilemma organizations are confronted with, is that they all too often need to develop new, specialized skills before they can eventually start a digital transformation initiative, geared towards leveraging the business potential of a certain technology trend. But, skill development is

time consuming and return on investment, like in terms of better customer service, increased process automation, or new revenue streams through digitally enhanced products and services, cannot be guaranteed. In addition, resources are limited and therefore, knowing where to invest is critical for organizations.

This study looks at the skills companies might need to be able to (1) design their digital future in terms of a digital vision and strategy and (2) to implement their strategy.

About the Research

The first "Skills for Digital Transformation" study was conducted in 2015. The goal of this study series is to keep track of digital skill development and to help organizations prioritize skill development. The primary target audience are information technology executives and human resource executives.

Industry	
IT services	17%
Energy suppliers and disposers	11%
Consumer goods industry	10%
Other manufacturing industry	10%
Chemical and pharmaceutical industry	9%
Consulting	9%
Automotive industry	7%
Electro and information technology	6%
Machine and plant construction	4%
Media	3%
Banking and finance	2%
Trading and Commerce	2%
Medical engineering	1%
Telecommunication	1%
N/A	8%

Table 1. Industry structure

Executives from the SAP user groups were chosen as the population of clients to be studied.

The survey was promoted via a variety of media such as blogs, tweets, and newsletters. Included were user groups in the Americas, EMEA, and in Asia-Pacific.

The survey was designed as a short online questionnaire comprising 45 questions on digital transformation and technology skills and 6 additional background questions. It started in March 2017 and closed in April 2017.

Overall the survey was completed by 116 executives from 18 countries. The four countries with the most respondents were: Germany (22%), United States of America (19%), India (17%), and China (10%). Industries represented include, amongst others (see also Table 1): IT services (17% of respondents), energy suppliers and disposers (11% of respondents), consumer goods industry (10% of respondents), other manufacturing industries (10% of respondents), chemical and pharmaceutical industry (9% of respondents), and consulting (9%).

25% of respondents are in the position of a CIO or a similar position, 5% in another C-level position (e.g. Chief Executive Officer, Chief Marketing Officer, Chief Financial Officer), and 22% of respondents are in a middle management position.

Digital transformation gains traction as a major topic for companies' business agendas

There are multiple ways digital transformation may get the attention needed to become an integral part of a company's business agenda. One may be the fear of being left behind by competitors: 45% of respondents regard digitalization to be a major threat to their company's business model. Another reason may be that certain digitalization initiatives in an organization demonstrated the benefits of leveraging innovative digital technologies. More than half (56%) of the respondents report to have better understood their customers by means of implementing digital technologies. In addition, about half of the respondents (47%) claim that digital technologies enabled them to develop new business models. Correspondingly, 90% of respondents regard digital transformation as important for their company's overall business strategy (see Figure 1).

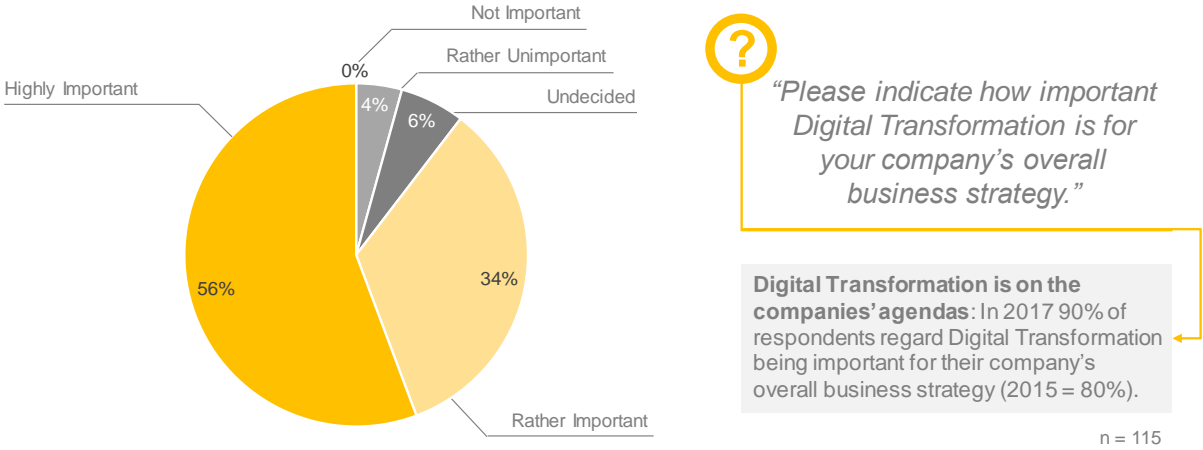


Figure 1. Importance of digital transformation for the company’s overall business strategy (n = 115)

Most companies are lacking a clearly defined strategy for their digital transformation

In our 2015 survey, we concluded that companies are just starting to prepare the soil for digital transformation. Likewise, in 2017 respondents regard their companies as being in an early stage of digital transformation. Still, many organizations are in an orientation phase. Only half (50%) of the companies have established a vision of the digital future of their company and 37% claim to have a clearly defined transformation strategy in place. Not surprisingly, only 26% of respondents have a clearly defined execution plan for implementing their digital transformation strategy.

governing digital transformation projects remains a wishful dream. Therefore, a ready-made transformation blueprint companies can adhere to, simply does not exist.

To compensate for this lack of guidance, we concluded in our 2015 study that the ambiguity inherent to digital transformation projects requires business and IT units to work closely together to be able to design a digital transformation strategy. This is reflected also in the 2017 survey results. Only a fraction (17%) of the respondents regard either the IT side or the business side to be exclusively responsible for setting up the digital transformation strategy for their company. An overwhelming 83% regard this strategy making as a joint effort of both sides.

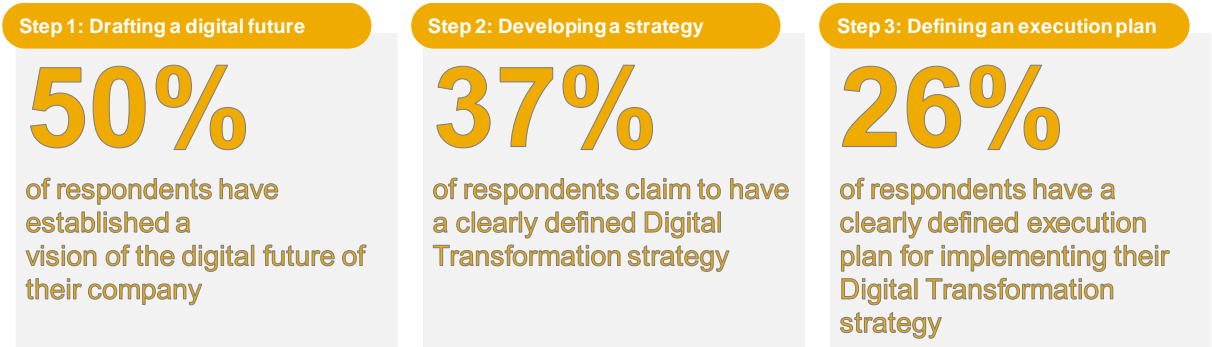


Figure 2. Percentage of visionaries, strategy makers, and actual implementers among respondents (n = 115)

The survey results show that many companies struggle with determining a way forward that may require deviating from known paths. Although many respondents regard digital transformation as being important, only a fraction have set up a transformation strategy. One of the difficulties companies are confronted with when outlining a vision and a strategy for their digital future is the high social complexity, structural rigidity, and procedural ambiguity of digital transformation projects. One can find reports about successful, high-profile transformation projects of established companies in management journals and mass media. However, reconstructing universally valid dos and don'ts for initiating and

However, the 2017 study resembles the results from 2015. Many companies seem to be lacking the cross-functional knowledge on the executive level needed for doing so. Cross-functional knowledge gaps on the business as well as the IT side are substantial. Only 41% of respondents claim that their IT executives possess the business-related knowledge necessary to enable the successful digital transformation of their company. This is even worse on the business side: Only 34% regard their business executives as possessing the technology skills necessary.

Lacking digital skills is still among the top barriers to digital transformation

Compared to 2015, digital security remains one of the central issues CIOs are confronted with in an increasingly digitalized business world. On a large scale, extensive networking, sensory, and computing capabilities find their way not only into consumer products but also into industry goods and hardware. With a view to recent ransomware attacks like, e.g. WannaCry that within days infected thousands of computers worldwide, it is not surprising that 88% of respondents agree on digital security being an important skill domain (see Figure 3).

In the 2017 study, respondents regard mobile technologies, big data analytics, internet of things, cloud computing, and business networks as major business enablers. There is a vast number of examples in almost any industry that demonstrates how mobile technologies can be used to increase the efficiency and effectiveness of business processes. In fact in some industries, like the mobility services industry, mobile technologies have become the central if not the only means to access certain services. Correspondingly, 87% of respondents agree on mobile

technology skills to be of major importance for the transformation of their company. Widespread consensus regarding the importance of specialized skills exists also for big data analytics (84%), cloud computing (76%), and internet of things (75%). Internet of things technologies open opportunities to collect large amounts of data in real time about the condition of a machine in a production line up to how, when, and where the product that has been produced is used by a customer. The ability to store, process, and ultimately make sense of that data enables companies to implement radically new, data driven business models and facilitates the transformation towards a truly customer-centered organization.

However, technology skills alone will not enable a company to successfully leverage digital technologies for business innovation. Implementing digital technologies for business innovation makes changes to established routines necessary and even may deeply affect the culture of an organization. This has been realized by most of the companies in our study. 84% of the respondents regard business change management skills as being important or highly important for the digital transformation of their company.

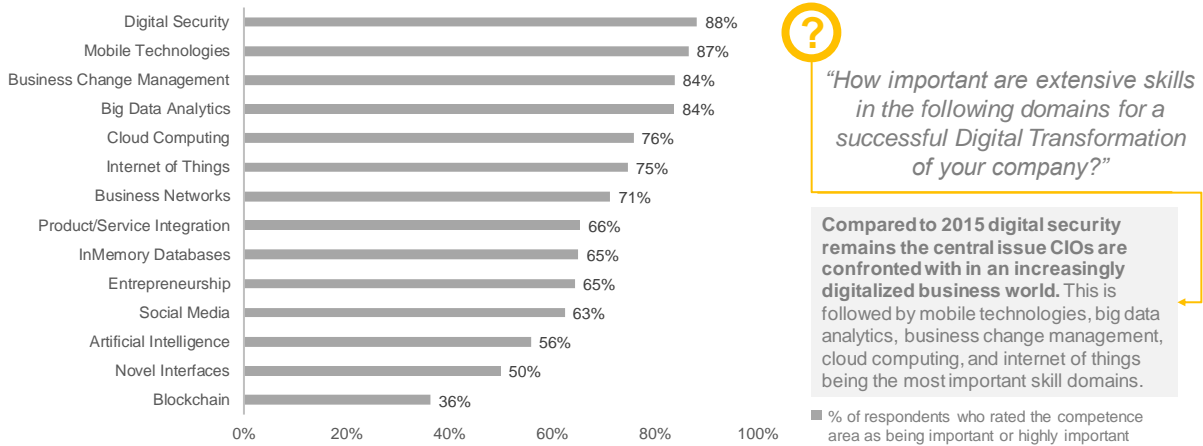


Figure 3. Skills needed for digital transformation

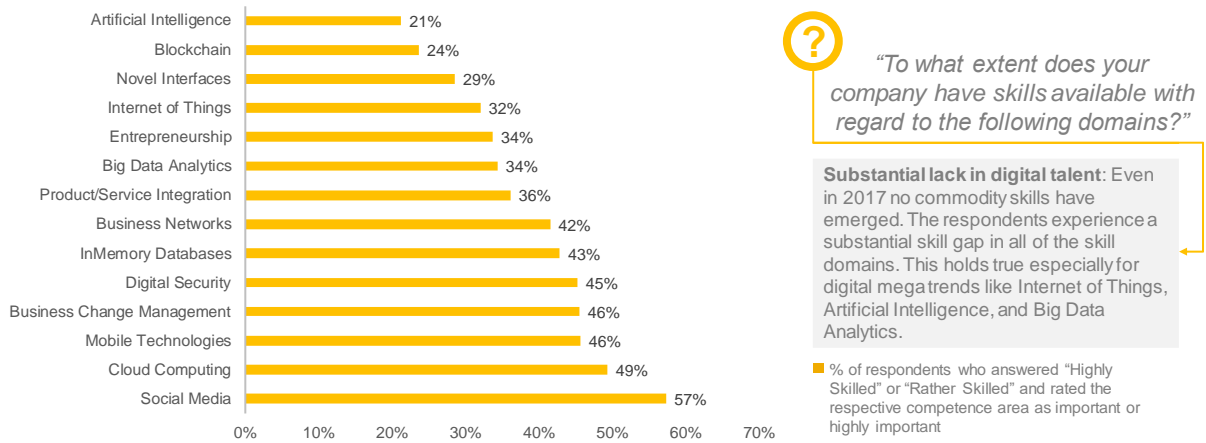
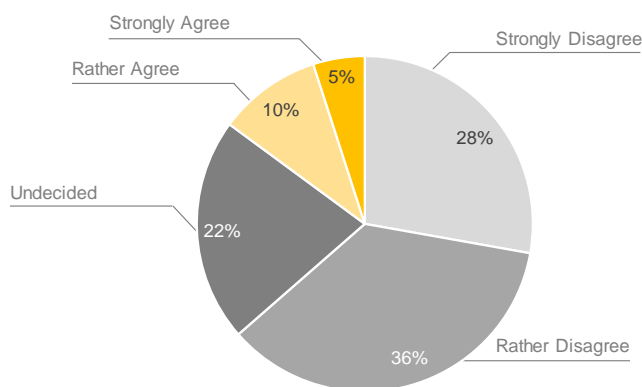


Figure 4. Skills available in companies for digital transformation

Even in 2017, no commodity skills have emerged. Despite the broad consensus regarding the importance of many of the skill domains among the respondents in the study sample, substantial skill gaps in all the skill domains persist (see Figure 4). This holds true especially for digital mega trends like internet of things or big data analytics. Concerning digital security, only 45% of respondents that regard digital security as an important skill domain rate their company's skills in this domain as being high or very high. Even in the domain of social media, only 57% of the respondents that regard it as an important skill domain claim to be skilled or highly skilled.

The skill gap illustrated in Figure 4 is also reflected in the respondents overall assessment of their personnel's skills. To the question: “We have

enough personnel with the skills necessary for the digital transformation of our company” only 15% of the respondents rather agree or agree strongly. With 64%, a majority of respondents rather disagree or strongly disagree with the statement. It can be concluded that the digital skill gap has not closed yet (see Figure 5). Given the short innovation cycles of digital technologies, this is not a surprise. Compared to the study sample of 2015 (53%), in the 2017 sample the skill gap is even bigger (64%). Possible explanations are the increasing speed of technological innovation and the increasing awareness regarding digital transformation. Over time, executives may have developed a better sense for what skills their company needs and what skills are actually available internally.



n = 115

Figure 5. Overall skill gap

Like in 2015, respondents in this year's study report that targeted skill development is a rarity. Only 16% of the respondents set up a dedicated recruitment or training program to build up the skill base needed for shaping the digital future of their company.

Conclusion

The initiation of a digital transformation initiative may be driven by business opportunities inherent to advances in digital technologies or, simply, by the fear of being outperformed by competitors. A substantial part of the companies that took part in this study have recognized that market diffusion of innovative digital technologies has already caused, or will cause major changes in their competitive landscape, putting the value propositions of established products and services at stake. Those companies have understood that to stay relevant, they need to transform. However, a digital transformation initiative makes far-reaching changes to an organization and its value network necessary, potentially affecting organizational structures, processes, resources, and culture. However, the force of inertia in established organizations is high. Therefore, at the time changes in competition become apparent it may be too late to transform.

There is widespread consensus among respondents regarding the digital skill sets needed. With a view to the gap between the skills needed and the skills available internally, access to personnel with specialized digital skills is likely the main bottleneck for future transformation initiatives. It is worth noting that the skill gap cannot only be observed on the staff-level but also on the executive level. The respondents in this survey seem to have a clear perception of what skills they need access to to be able to shape the digital future of their company. Nevertheless, only a fraction (16%) of the companies in this study invests into dedicated recruitment or training programs to extend their personnel's skill base.

Like in the 2015 study, we conclude that many organizations seem to be in their orientation phase regarding digital transformation and thus have not defined a digitalization strategy. A possible explanation for the reluctant skill development may be that the decision on what skills to develop is regarded as being part of the strategy. With a view to the small number of respondents (37%) claiming to have a clearly defined transformation strategy in place, this would explain the reluctance of many companies in our sample.

Technical University of Munich (TUM)

TUM is one of Europe's top universities. It is committed to excellence in research and teaching, interdisciplinary education and the active promotion of promising young scientists. The Chair for Information Systems at TUM applies a research approach taking social, technical and economic perspectives of information systems into account. The Chair analyzes and evaluates information systems and their use and shapes valuable and sustainable innovations to solve today's and tomorrow's business needs.

SAP

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Initiative for Digital Transformation (IDT)

IDT serves as a research platform on the fundamental issues and dynamics underlying the ability of enterprises to leverage their potential for digital technology-driven organizational change. The goal of the platform is to promote innovative business development to create economic growth. The IDT accomplishes its mission by analyzing, understanding, and supporting the design of leadership, innovation, and motivation in the digital transformation. The foundation of IDT emanates from a combined plan established by SAP and TUM (Chair for Information Systems at Technische Universität München, Prof. Dr. Helmut Krcmar) intended to intensify innovative interdisciplinary research. TUM and SAP combine excellence in information systems development and research.

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