

Skills for Digital Transformation

Research Report 2015

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In Collaboration with



Executive Summary

One of the critical resources for successfully designing and implementing a digital transformation strategy are tech-savvy organizational leaders and employees. However, with a view to the wide range of innovative digital technologies that may constitute the technological basis for a company's transformation, understanding what skill set is needed for successful digital transformation is critical for organizations.

As a response to this challenge, the Chair for Information Systems at the Technical University of Munich (TUM) in collaboration with SAP SE launched a survey on skills for digital transformation among executives in the SAP user groups worldwide.

In total, 81 executives from companies all over the world participated in the study. 65% of participants are working as a CIO or in an equivalent position. The study was conducted from July 2015 to mid-October 2015.

The key findings of the survey are:

- Digital transformation has found its way into companies' business agendas: 80% of respondents regard digital transformation as being important for their company's overall business strategy. The driver for this finding is on the dice: 38% of executives report their company's business model to be threatened by digitization.
- Companies are just starting to prepare for digital transformation: According to 42% of respondents, the companies they work for have at least established a vision of the digital future at their company. 35% of respondents claim to have developed a clearly defined digital transformation strategy.
- Gaps in cross-functional knowledge may become a major obstacle for digital transformation: 88% of respondents state that extensive business related knowledge on the IT side is crucial for developing a digital transformation strategy. In turn, 57% state that business executives need extensive technology skills to be able to develop a successful digital transformation strategy for their company. Despite these numbers, most companies seem to be lacking the relevant cross-functional knowledge necessary for doing so. While 58% of respondents claim that their IT executives actually possess the business-related knowledge necessary to enable the successful digital transformation of their company, only 27% said that their business executives possess the technology skills necessary for digital transformation.
- Substantial lack in digital talent: Across all skill domains, respondents note substantial gaps in digital skills. For example, nearly 73% of respondents claim that extensive big data analytics skills are important for the digital transformation of the company. But, only 39% claim to possess the skills necessary in this domain.
- Targeted skill development is a rarity: Despite an apparent lack of digitally-skilled personnel, targeted skill development is rare. Only 10% of the respondents claim that their HR division has implemented a recruitment/training program to close the skill gap.

Acknowledgment

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Kind regards



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Introduction

Digital transformation is a hot topic for debate at the moment and is well-suited to determine the business agenda of companies worldwide in the foreseeable future. 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, create value, and engage with their business partners and customers.

A metaphor frequently used in discussions about digitization is one of a wave that is going to tear all organizations apart who have not specialized in wave riding. In this context, wave riding stands for leveraging the business potential of innovative digital technologies such as big data analytics, sensor networks, or InMemory databases. Digital transformation describes an organizational change process leading to the application and implementation of digital technology.

The metaphor of the digital wave probably draws an exaggerated picture of reality. Nevertheless, an innovation such as cloud computing has been a wakeup call to the outsourcing industry and has reordered the field of competition. Cloud computing has enabled the development of highly agile, cloud-based businesses to enter established markets. These established markets were previously protected from new market entrants through the need to bear extraordinary high investments in specialized IT knowledge and infrastructure.

Striking examples of how companies can leverage digital technologies to transform their businesses can be found in almost any industry (e.g., pharmaceutical giant Roche with its remote patient-monitoring systems, premium fashion brand Burberry with its omnichannel strategy to improve customer experience, or agricultural machinery giant John Deere with its MyJohnDeere platform). These examples provide companies

with a sense of how value propositions and markets might develop in the future.

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) implement their digital strategy.

About the Research

In the context of digital transformation, a large number of trends and topics has been discussed: from cloud computing, big data analytics, sensor networks, and internet of things, to augmented reality enabled by means of novel user interfaces such as smart glasses. However, sometimes these trends and topics are associated with unrealistic expectations as to how businesses might benefit from or use a particular technology. The business potential of digital technology might well be dependent on the industry a company competes in and on its position in the value chain.

A common dilemma faced by many companies is the need to develop new, specialized skills before actually initiating a digital transformation initiative geared toward leveraging the business potential of a certain technology trend. Skill development is time consuming and payoffs, in terms of better customer service, increased process automation, or new revenue streams through digitally enhanced products and services, cannot be guaranteed. In addition, the resources required to develop these needed skills are often limited. In this light, knowing where to invest in order to address and correct a skill shortage of skill knowledge is critical for organizations.

The goal of this study is to raise awareness for skill development and to help organizations prioritize skill development activities. Results of the study are aimed to provide useful information for information technology executives and human resource executives.

Executives from the SAP user groups were chosen as the population of clients to be studied. The survey was promoted via a newsletter sent by the user groups themselves. Targeted to participate in the study were user groups in the Americas, Europe, the Middle East, Africa, and Asia Pacific.

The survey was designed as a short online questionnaire comprising 31 questions on digital transformation and technology skills and 6 additional background questions. The survey was started in July 2015 and concluded mid-October 2015.

The survey was completed by 81 executives from 16 countries. The five countries with the highest response rates were: China (28%), Germany (26%), Italy (10%), Argentina (10%), and Australia (5%). Of the respondents providing annual sales figures, 27% work at a company with annual sales below \$250 million, 21% at a company with sales between \$250 and \$500 million, 11% work at a company with \$500 million to \$1 billion in annual sales, and 40% work at a company with annual sales above \$1 billion.

Percentage of Respondents per Industry, N=81	
Other manufacturing industry	19%
Automotive industry	14%
Chemical and pharmaceutical industry	14%
Consumer goods industry	11%
IT services	7%
Trading and commerce	7%
Machine and plant construction	7%
Electro and information technology	5%
Energy suppliers and disposers	5%
Telecommunication	4%
Consulting	3%
Media	1%
Banking and finance	1%
Medical engineering	1%

Table 1. Industry structure

The largest percentage of respondents worked at “other” manufacturing industries (such as plastic material, steel, paper, or glassware) followed closely by the automotive industry (Table 1).

An overwhelming majority of respondents, 65%, worked as a CIO or in a similar position, and 5% in another C-level position (Chief Executive Officer, Chief Marketing Officer, Chief Financial Officer). The remaining 30% of respondents reported their position as being at the executive level below C-level.

Digital transformation has found its way into companies’ business agendas

Companies recognize the increasing importance of innovative digital technologies for their business. In our study, 80% of respondents regard digital transformation as important for their company’s overall business strategy. The driver for this seems to be obvious: 38% of respondents report their company’s business model to be threatened by digitization. However, deciding when, how, and what needs to be transformed to at least keep pace with competitors is a major challenge. Consequently, it is hardly surprising that only 35% of respondents claim to have clearly defined a digital transformation strategy for their company (see Figure 1).

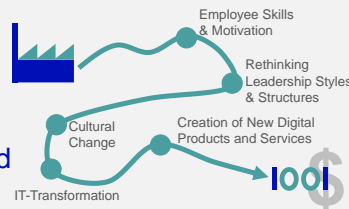
IT executives take a more strategic leadership role. With the recent discussions about new C-Level positions like the Chief Digital Officer IT leaders recognize that securing the IT baseline will simply be not enough in the future. IT and especially the CIO need to become strategic partners of the business side to drive innovation and growth. Accordingly, 62% of respondents claim that defining a digital transformation strategy needs to be done jointly by the IT and the business side, 25% regard the IT department in a leading position for the definition of the digital transformation strategy, and only 13% are consider the business department in a leading position.

42%

of respondents have established a vision of the digital future of their company

35%

of respondents claim to have a clearly defined digital transformation strategy



27%

of respondents have a clearly defined execution plan for implementing their Digital Transformation strategy

Figure 1. Participants' responses to questions on the state of digital strategy formulation at their companies (percentage of respondents answering with "strongly agree" or "rather agree to questions)

Established business models are under pressure

As indicated by the survey responses, companies are just starting to prepare the soil for digital transformation. Of those respondents citing their business model as being pressurized by digitization, less than half (43%) have a clearly defined strategy for digital transformation in place. According to a recent survey conducted by Fitzgerald et al. (2013) a lack of desire, money, and limitations of IT systems are the three biggest hindrances to transformation (p. 7). The responses in our survey provide another hindrance: gaps in cross-functional knowledge on a company's executive level (see Figure 2).

Knowledge about the business side of a company provides partners "the language needed to communicate with and understand"¹ each other. This language is a prerequisite for developing close linkages between IT and the business. 88% of respondents regard extensive business-related knowledge on the IT side as a prerequisite for developing a digital transformation

strategy. This number is complemented by 57% of respondents who agree that business executives need extensive technology skills to be able to develop a successful digital transformation strategy for their company. However, most companies seem to be lacking the relevant cross-functional knowledge necessary to develop such a strategy. Slightly over half of the respondents, 58%, claim that their IT executives actually possess the business-related knowledge necessary to enable the successful digital transformation of their company. Only 27% of respondents said that their business executives actually possess the technology skills necessary for digital transformation (see figure 2).

Overall, companies that have developed a digital transformation strategy have also managed to just about close their cross-functional knowledge gaps – at least on the IT side. 82% of respondents from companies with a digital transformation strategy in place report that their IT executives possess the business-related knowledge necessary to enable the successful digital transformation of their company. In contrast, only 45% of respondents from companies that have not defined a clear digital transformation strategy

¹ Bassellier/Benbasat (2004): Business Competence of Information Technology Professionals: Conceptual Development and Influence on IT-Business Partnerships. In: MIS Quarterly, Vol. 28, No. 4, p. 674

state that their IT executives possess the necessary business-related knowledge. A difference regarding cross-functional knowledge also exists for business executives. Only 13% of respondents working in a company without a digital transformation strategy claim that their business executives possess the knowledge necessary to develop a successful strategy whereas 54% of those working in a company with a strategy in place report that the business executives in their company possess the necessary knowledge.

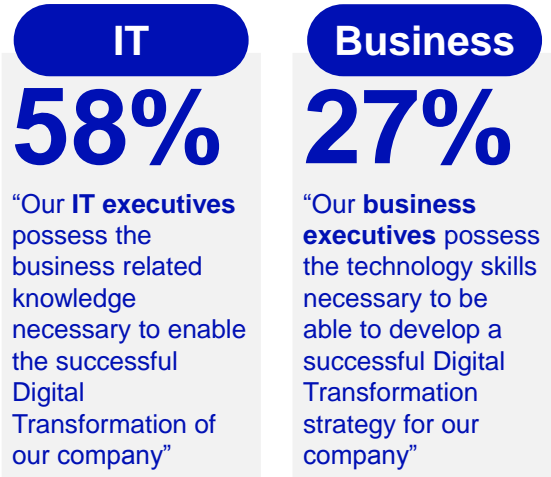


Figure 2. Cross-functional knowledge (percentage of respondents answering with "strongly agree" or "rather agree")

With a view to the importance of business and IT units working closely together to design a digital transformation strategy, closing the gaps in all stakeholders' knowledge of the importance and elements of such a strategy can lead to a positive outcome.

Skills for Digital Transformation

Digital transformation projects are characterized by high social complexity, structural rigidity, and procedural ambiguity. Consequently, a tremendous challenge for today's industry leaders is the

initiation, execution, and governance of the digital transformation in their company. More than 84% of respondents agree that change management skills are of major importance for the transformation of their company (see Figure 3). The only skill domain where consensus among respondents is even stronger is digital security (86%). The high importance of business network skills is not surprising considering the nature of competition is changing from competition between companies to competition between platforms and business networks.

Companies seem to have identified the skill sets that are necessary for being able to compete in an increasingly digitized world. However, there is a substantial lack in digital talent with regard to the respective skill domains. In response to the question, "We have enough personnel with the skills necessary for the digital transformation of our company", only 17% rather or strongly agreed. Contrastingly, 53% rather or strongly disagreed with the statement.

With regard to a topic of high concern, digital security, 67% of respondents who rated skills in this domain as important, claim that their company is highly skilled or at least rather skilled in this domain. In the other skill domains the skill gap is even wider. For example, nearly 73% of respondents claim that extensive big data analytics skills are important for the digital transformation of their company (see Figure 3). But, only 39% of respondents who rated big data analytics skills as important, claim to possess the skills necessary in this domain (see Figure 4).

With a view to the skill gap respondents in our sample identified, it is surprising that targeted skill development is a great rarity. In fact, only 10% of the respondents agree that their human resources division has implemented a recruitment or training program specifically dedicated to digital skills.

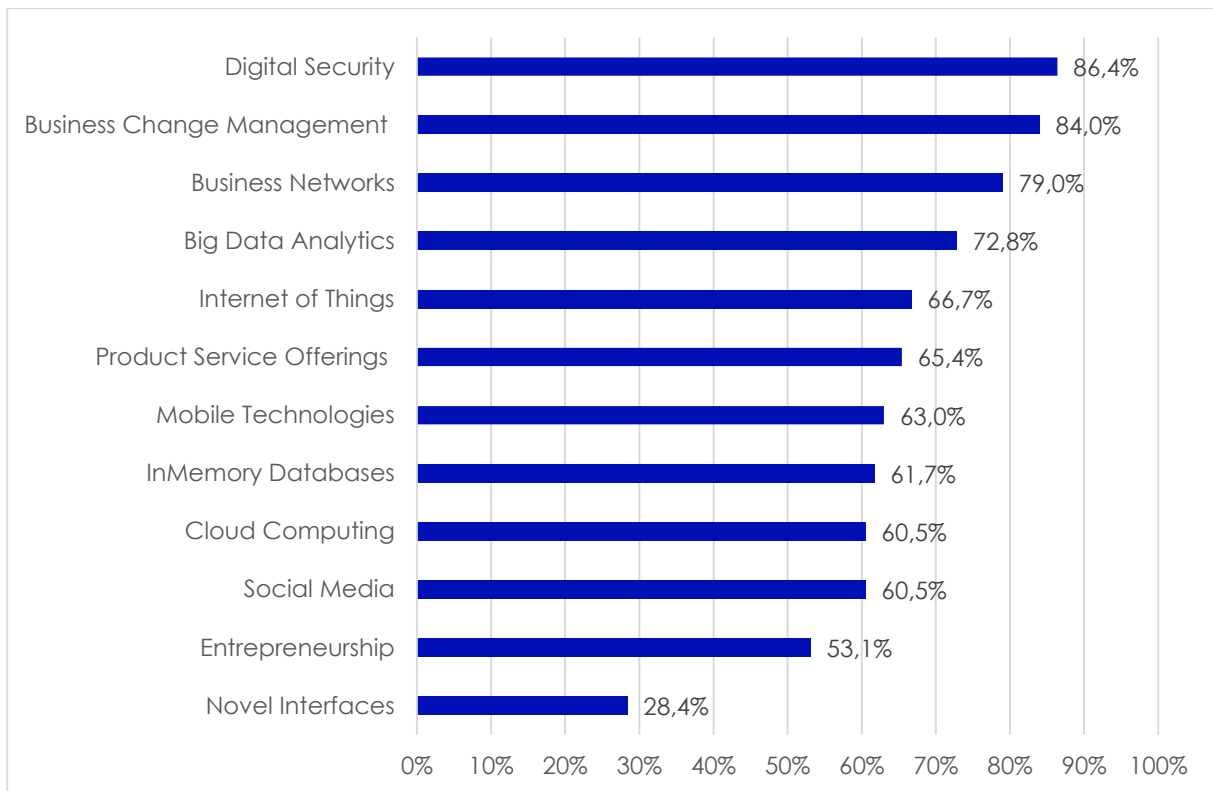


Figure 3. Skills for digital transformation (percentage of respondents answering with “highly important” or “rather important”)

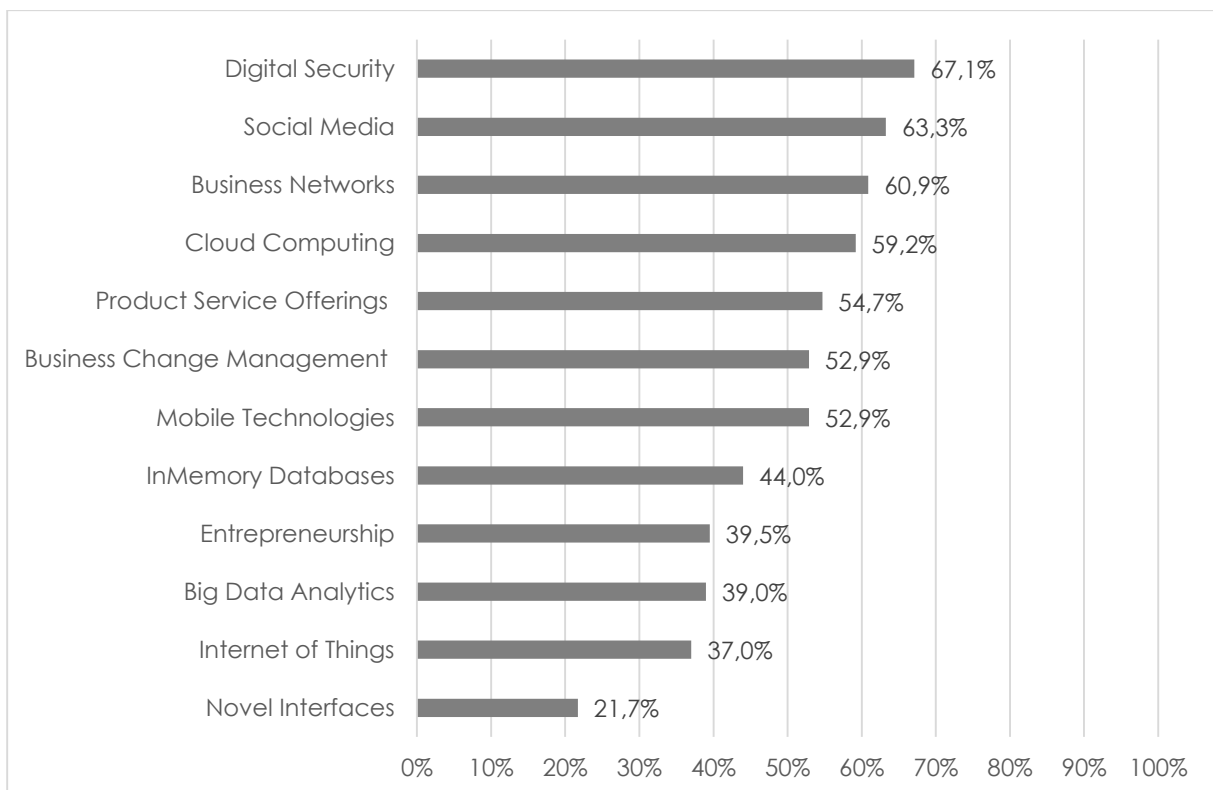


Figure 4. Skills available (percentage of respondents answering with “highly skilled” or “rather skilled” and rated the respective competence area as important)

Conclusion

The analysis shows that skills in various new technology domains may be needed for digital transformation. Therefore, to explore new, digitally-enabled business opportunities companies need to invest in a diverse set of technology skills.

The respondents in our sample clearly see potential in digital technologies for their businesses. This is substantiated by 80% of respondents indicating they regard digital transformation as important for their company's business strategy. Unfortunately, according to a majority of respondents, companies have few (if any) recruitment and training programs in place which are dedicated to either procuring or developing digital skills.

Only 35% of respondents stated that their company has a clearly defined digital transformation

strategy. One could conclude that many organizations seem to have just entered or find themselves in an orientation phase with regard to digital transformation and thus have not defined a realistic strategy. As skill development is part of this strategizing, the real lack of digital talent is threatening to become the major bottleneck to digitization in businesses.

C-Level executives are responsible for creating the digital strategy and a digital vision for their company that can be "articulated to the staff"². However, with a view to the level of digital savviness reported by the respondents in our study, many companies may not be able to appropriately convey their strategy to employees. Consequently, developing cross-functional knowledge is a critical step for preparing the soil for digital transformation.

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

² Fitzgerald/Kruschwitz/Bonnet/Welch (2013): Embracing Digital Technology – A Strategic Imperative, MIT Sloan, Research Report

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 intended to intensify innovative interdisciplinary research. The founding members of IDT are Prof. Dr. Helmut Krcmar (Chair for Information Systems at Technische Universität München - TUM) and Gerhard Oswald (Member of the Executive Board SAP SE). TUM and SAP combine excellence in information systems development and research.

IMPRINT

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