

2017 DIGITAL
TRANSFORMATION
BAROMETER



DIGITALLY
LITERATE LEADERS
ARE ESSENTIAL
FOR BUSINESS
TRANSFORMATION

AN ISACA RESEARCH REPORT

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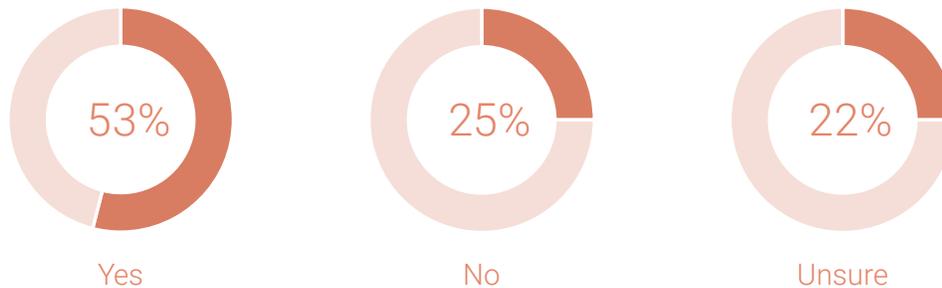
In every corner of the globe and within every industry, organizations are modernizing the ways they interact with employees, partners and customers. This digital transformation promises to change dramatically how companies adapt to new markets and competitive pressures. It also will make them much more responsive and agile.

But to achieve this digital transformation, organizations may have to step out of their comfort zone to evaluate and adopt one or more disruptive, emerging technologies. Ironically, the technologies that are viewed as most transformational often also are perceived as among the riskiest or most challenging to test and implement.

Not every organization is prepared to undertake this challenging journey. Companies that perceive their leadership to be digitally literate generally are far more aggressive and receptive to evaluating and adopting new and emerging technologies in their quests to achieve digital transformation than those with leaders not considered to be digitally literate.

Figure 1—Leadership and Technology Literacy

Do you think your leaders are digitally literate (have a solid understanding of technology, including benefits and risks)?



Source: 2017 ISACA Digital Transformation Barometer Study of 4,164 members.

These organizations—just over half of those surveyed—are more inclined, for instance, to be examining or piloting newer technologies, such as blockchain or big data analytics, as they more clearly see the value of these technologies to fulfill business needs. Overall, the potent combination of big data, artificial intelligence, machine learning and cognitive technologies were perceived to be the most digitally transformational among an ISACA-curated list of emerging technologies.

These are among the key findings of the ISACA Digital Transformation Barometer, which examines the opportunities and constraints of organizations' digital transformation initiatives. The ISACA study, conducted in the second quarter of 2017, surveyed 4,164 information technology, security and business executives, managers and professionals who hail from a wide range of industries, company sizes and global locations.

Digital Literacy, Risk and Digital Transformation

The survey demonstrated that those emerging technologies that are viewed as the most transformational also pose the most organizational challenges in terms of perceived risk and overall resistance to change. ISACA CEO Matt Loeb said digitally literate leaders are more apt to employ due diligence to holistically assess the business value against the organization's risk tolerances: "Organizations with digitally literate leadership are more open to taking risks, more clearly see the benefits of emerging technologies, and are more likely to initiate pilots to thoroughly vet these technologies."

When asked if their leadership is digitally literate, more than half the respondents said their senior executives possessed a solid understanding of technology in general and its benefits and risks in particular. But a concerning one in four respondents said that their leadership lacked digital literacy (Figure 1).

Indeed, digital transformation should be seen as an overall strategy for the enterprise, and its benefits should be highlighted, in order to convince all stakeholders of its value to the organization. Yet, a well-formed digital transformation that builds upon emerging technologies must also include an analysis of risk management or threat assessment to protect the enterprise from possible setbacks. Digitally literate leaders may be somewhat more prepared to undertake this form of assessment.

Let's look at which emerging technologies are of interest to both groups. The study showed that both groups list in roughly the same order the technologies they define as "emerging" (Figure 2).

Figure 2—Most Important Emerging Technologies

Which emerging technologies are most important to your organization?

1. Big data / analytics
2. Artificial intelligence /machine learning / cognitive technologies
3. Public cloud
4. Internet of Things
5. Blockchain
6. Augmented reality / virtual reality
7. 3D printing
8. Nanotechnology

Source: 2017 ISACA Digital Transformation Barometer Study of 4,164 members. Notes: Multiple responses allowed.

Figure 3—How Emerging Technology Leads to Digital Transformation

Emerging Tech Desired Digital Transformation

- Artificial intelligence:** Programs that perform tasks much faster than people, in areas such as medical diagnosis, electronic trading, robotic control, and remote sensing.
- Big data/analytics:** Data sets that allow organizations to analyze, search, share, and visualize massive volumes of data in areas as varied as processing medical information to understanding consumer behavior.
- Blockchain:** Automates an organization’s ledger to facilitate online transactions, including the use of cryptocurrencies like Bitcoin.
- Internet of Things (IoT):** Allows an organization to use “smart” devices that can collect and transmit data in energy, surveillance, transportation, environmental monitoring and other industries.

Recognizing what is emerging is one thing. Testing, piloting and implementing these new technologies to see which may help an organization on its path to digital transformation is quite another.

We have to dig deeper. What motivates one group of companies to use these emerging technologies to transform themselves and another to avoid using them and, thus, slow or prevent their digital transformation journey? The study suggests there are differences in the business drivers that influence each group’s approaches to technology evaluation and implementation decisions.

Differences on the Influence of Business Challenges

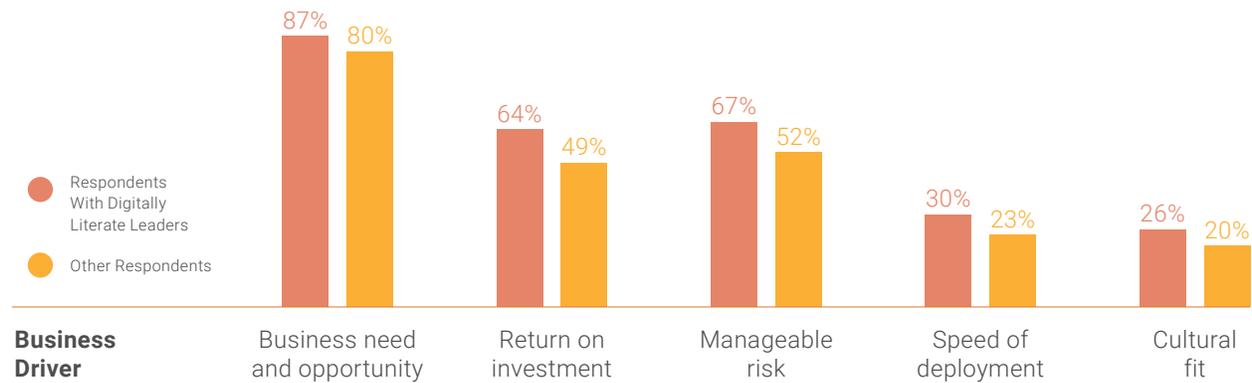
Let’s begin by examining the business drivers for organizations managed by digitally literate leaders. In these organizations, decision-making about evaluating or adopting emerging technologies often is based upon core business metrics such as business need, expected return on investment, and speed of deployment. It’s in these organizations, run by digitally literate leaders, that emerging technologies are considered an important component of change.

When asked about important business metrics, respondents whose organizations have digitally literate leaders were more likely than their counterparts without them to equate business success with emerging technology purchases and deployments. Sometimes the delta was substantial (15 percent for ROI), and sometimes it was more modest (6 percent for cultural fit) (Figure 4).

The implication is that emerging technologies are essential for change. They become table-stakes for digital transformation.

Figure 4—Emerging Technology Must-Haves

Which factors determine whether your organization views an emerging technology purchase and deployment as a “must have”?



Note: Multiple responses allowed.

Base: 2,176 to 2,180 respondents with digitally literate leaders; 1,022 respondents who don't believe their organizations' leaders are digitally literate or are unsure.

Source: 2017 ISACA Digital Transformation Barometer Study of 4,164 members.

It's no secret that not every attempt to transform a business succeeds. If an organization has less of a propensity to try new emerging technologies, is it more likely to fail to complete its digital transformation? Does the very act of trying emerging technologies help an organization on its journey toward digital transformation?

The answer to these questions may be found in the process by which companies evaluate emerging technologies. Those organizations that include more voices—and stakeholders—in the process appear to be more successful. By nearly a 10 percent margin, companies managed by digitally literate leaders rely less on the IT group acting on its own to make technology evaluations (37 percent to 46 percent). And, by nearly the same margin, these organizations rely more on interdisciplinary teams to examine, test and pilot technologies (34 percent to 26 percent) (Figure 5).

Figure 5—Who Evaluates Technology?

Which groups in your organization evaluate technologies?



Base: 2,186 respondents with digitally literate leaders; 1,022 respondents who don't believe their organizations' leaders are digitally literate or are unsure. Source: 2017 ISACA Digital Transformation Barometer Study of 4,164 members.

The implication here is that digital transformation already may be occurring in those organizations with cross-functional, non-siloed decision-making processes. When you expand beyond IT to involve and add business units such as HR, legal, security, finance and operations, you're signaling that your organization has a culture that embraces change and transformation. When the entire enterprise is involved, it's easier to make the business case to test and use the emerging technologies to help you on the path to digital transformation.

Those Who Evaluate New Tech and Those Who Don't

One hallmark of digitally literate leaders is their openness to evaluating new technologies. Some 44 percent say they do so "frequently," with a staggering nine in 10 saying that they do so either "frequently" or "occasionally."

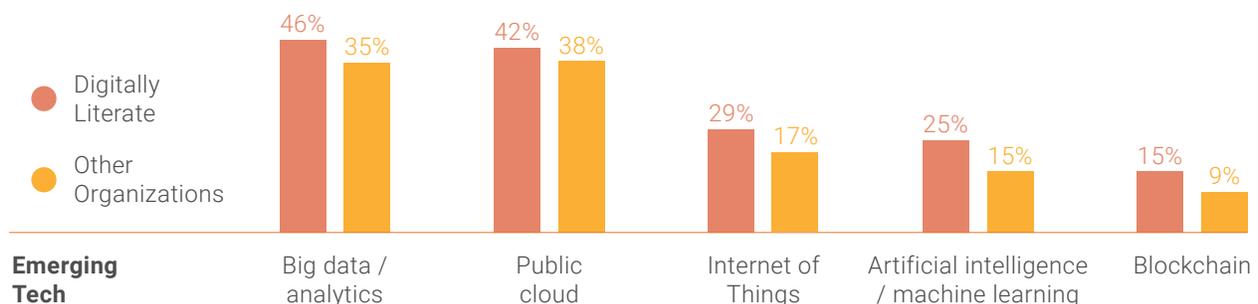
But what about the non-digitally literate leadership group? Only 14 percent say they evaluate technologies frequently, and more than four in 10 say they do so either "rarely" or "never."

"There seems to be a direct connection between companies with digitally fluent leaders and those companies' propensities to evaluate new technologies. To lead effectively, senior leaders have been able to articulate the vision for the future of their companies in the context of the technologies that will get them there," says ISACA CEO Matt Loeb. One reason for the difference may be that the less digitally literate simply have less experience with a new technology. They also may not be as firmly on the path toward digital transformation.

When ISACA asked if there were pilots—or at least R&D activity—regarding specific emerging technologies, the differences between the digitally literate and the non-digitally literate groups were notable: 12 percent with IoT and around 10 percent in artificial intelligence and big data / analytics. The only technology in the survey for which there was a relatively close volume of piloting or R&D was the public cloud (Figure 6).

Figure 6—Organizations With Digitally Literate Leaders Do More R&D and Pilots

Which emerging technologies are most important to your organization?



Note: Multiple responses allowed.

Base: 2,186 respondents with digitally literate leaders; 1,025 respondents who don't believe their organizations' leaders are digitally literate or are unsure.

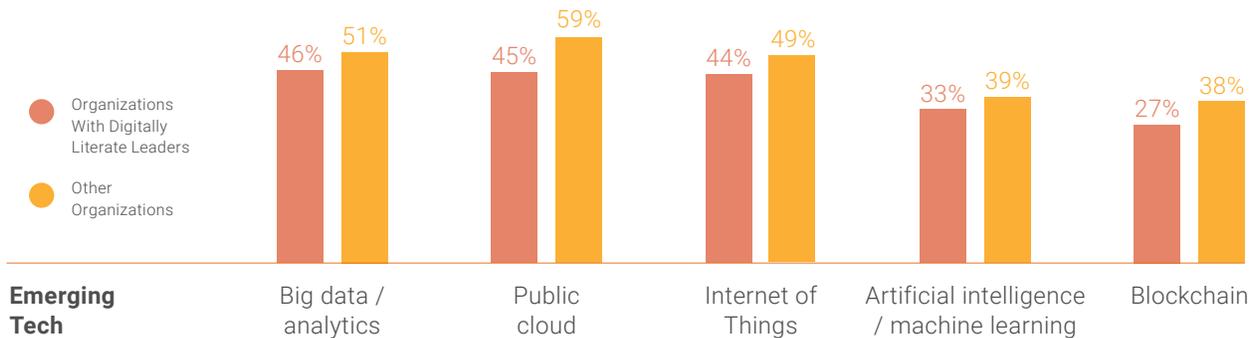
Source: 2017 ISACA Digital Transformation Barometer Study of 4,164 members.

Organizations saddled with non-digitally literate leaders are more likely to face substantial organizational challenges—and resistance—to the adoption of emerging technologies.

The delta between the two groups was highest for artificial intelligence and machine learning (14 percent) and big data/analytics (11 percent). Interestingly, there was a much smaller difference between the two groups for the public cloud (only 4 percent) and IoT (5 percent), signaling that slightly more “mature” emerging technologies that have been well covered in the media may break down resistance to adoption (Figure 7).

Figure 7—Resistance to Deployment is Lower in Organizations with Digitally Literate Leaders

Do you anticipate resistance to deployment in your organization to the deployment of one or more of these technologies?



Note: Multiple responses allowed.

Base: 2,186 respondents with digitally literate leaders; 1,025 respondents who don't believe their organizations' leaders are digitally literate or are unsure.

Source: 2017 ISACA Digital Transformation Barometer Study of 4,164 members.

You can't really assess risk without also examining benefits. As an example, the public cloud provides infrastructure and platform growth flexibility, but comes with a plethora of security and regulatory concerns.

Machine learning and artificial intelligence promise to make the development of new applications and the delivery of services more automated, but come with a social cost of potentially having to retrain or hire for new skills.

Industry Matters

It's important to understand how a particular industry drives views about assessing emerging technologies.

Health care and financial services have a higher aversion to public cloud adoption, primarily because of regulatory constraints and security requirements. By contrast, the technology sector is far more open to the public cloud.

Blockchain, a technology most notable for enabling Bitcoin and other cryptocurrencies, sees its highest resistance

from the financial sector in this study. Despite these concerns, banking, insurance and related industries actually may become the first to test and adopt blockchain because of its perceived strengths at providing secure records.

And, perhaps because of the few, but very public, data breaches in the news that came from IoT devices, the resistance to IoT adoption is high. When asked, would you anticipate experiencing any potential organizational challenges or resistance to the deployment of IoT, for example, 47 percent in the healthcare sector and 53 percent of respondents in the government and military said they would. That said, technologies such as IoT, which deliver information from meters, monitors and tracking devices for thousands of applications, lie at the heart of many companies' digital transformation (Figure 8).

Figure 8—Sample Risk Tolerance by Technology and Industry

Which technologies do you perceive to be high risk?

- 69% of government and military respondents say IoT
- 69% of financial services respondents say public cloud
- 29% of technology industry respondents say blockchain
- 38% of financial services respondents say blockchain
- 60% of government and military respondents say public cloud

Base: 1,114 financial services respondents; 439 military and government respondents; 760 technology industry respondents.
Source: 2017 ISACA Digital Transformation Barometer Study of 4,164 members.

Just as there are differences with respect to industry, there are also regional differences with regard to the relationship between an organization's willingness to test and implement emerging technologies and its digital transformation journey.

Digital Transformation Around the World

It turns out that digital literacy knows no geographic bounds. In most corners of the globe, over half of the respondents called their leadership "digitally literate." The exception was Latin America, where only four in 10 organizations were said to have digitally literate leadership.

Largely, that global consistency also applied to the question of which technologies should be considered "emerging." Two of three respondents from North America and Europe mentioned machine learning and cognitive technology. Africa and the Middle East were most aware of the public cloud.

A typical organization in Europe or Asia is somewhat more likely to implement an artificial intelligence project in the coming year than a similar company that's based in North America. Organizations in Asia, Europe and the Middle East are nearly twice as likely to implement blockchain in the coming year than companies in North America, signaling more initial demand to leverage this technology. A North American organization, however, is more likely than one in Asia, Europe or the Middle East to implement a public cloud project in the coming year (Figure 9).

Figure 9—Global Emerging Technology Adoption

Will your organization deploy one or more of the following emerging technologies in the coming year?

	North America	Europe	Asia	Africa	Latin America	Middle East
Public cloud	26%	18%	17%	20%	19%	17%
Big data /analytics	23%	26%	24%	26%	25%	27%
Internet of Things	13%	12%	15%	13%	14%	13%
AI / machine learning	8%	14%	14%	9%	11%	10%
Blockchain	4%	7%	7%	4%	6%	7%

Note: Multiple responses allowed.

Base: North America, 2,727 respondents; Europe, 1,764; Asia, 1,186; Africa, 370 respondents; Latin America, 319; Middle East, 214.

Source: 2017 ISACA Digital Transformation Barometer Study of 4,164 members.

The geographic data provide a window into which technologies are closer to adoption, and which are more in the evaluation or pilot stage. Along with the public cloud, there will be a large number of big data/analytics implementations in the coming year. That's most likely because analyzing the increasing volume of information from all sources — customers, mobile, IoT, structured and unstructured — is becoming more important as businesses adopt a digital mindset.

Do geographic differences with regard to implementation imply that organizations in different regions are more likely than others to be on the path to digital transformation? Ultimately, that's hard to assess. But one can assume that the more global and international the enterprise and its client base, the more likely that new technologies will underpin transformation.

The key lesson learned from the ISACA's 2017 Digital Transformation Barometer is that there is a direct correlation between the digital literacy of an organization's leadership and that organization's overall appetite to examine, test and implement new emerging technologies.

Digitally literate leadership is vital for any organization to succeed in its digital transformation journey. And that transformation, increasingly, is essential when it comes to responding to the challenges and opportunities in our fast-changing world.

About the 2017 Digital Transformation Barometer

The online survey of ISACA members was conducted during the second quarter of 2017 and included 4,164 respondents from 135 countries spanning Africa, Asia, Europe, Latin America, Middle East, North America and Oceania. The majority of respondents hold titles of Compliance, Risk, Audit, and Security Directors and Managers. Respondents' organizations spanned government, military and a range of industries, including financial/banking, technology services, manufacturing/engineering, healthcare/medical, insurance and retail.

Please visit www.isaca.org/digital-transformation-barometer for more information.