



Strategy | Consulting | Digital | Technology | Operations

Accenture Technology Vision 2016

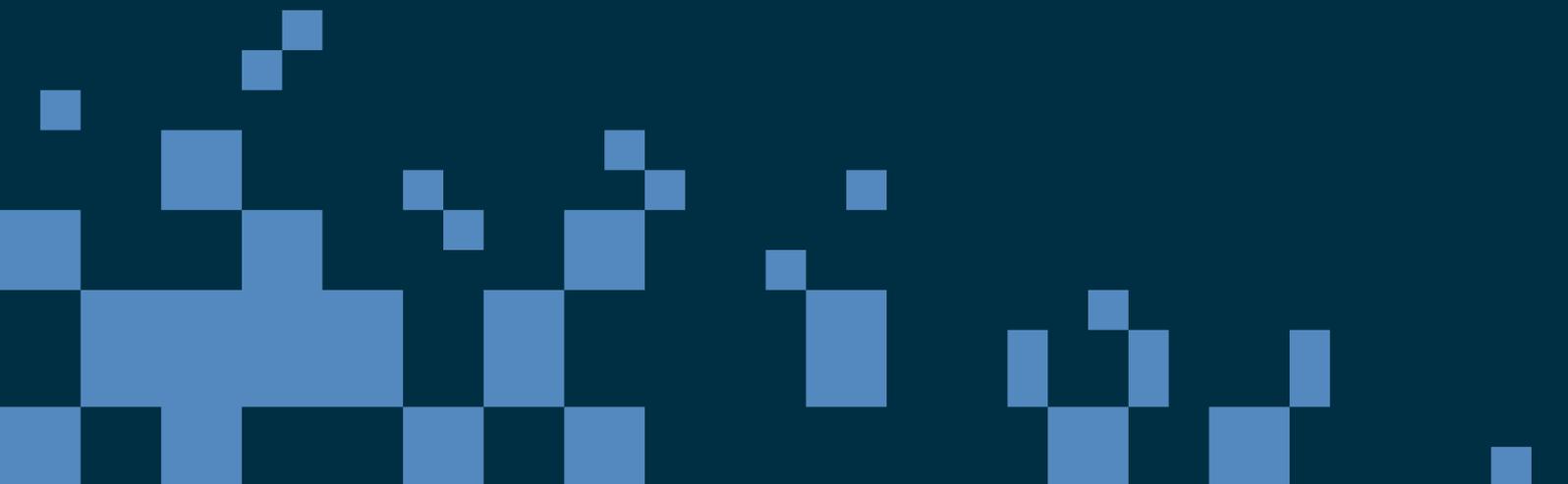
Building a Digital Middle East

A young man with curly hair, wearing a plaid shirt and headphones, is looking intently at a glowing, 3D digital grid structure. The grid is composed of white lines and is filled with red and orange light, suggesting a digital or data environment. The background is softly blurred, showing what appears to be a modern office or studio setting.

High performance. Delivered.

Digital is changing the face of business and government across the world. For countries in the Middle East region, digital technologies are seen as a key driver of efforts to diversify economies and transform communities. Significant programs are now underway in many countries to lay the foundation for digital to deliver on its full transformational promise—including the unique opportunity it affords to develop and expand local talent.

The role of technology has evolved to become an enabler that supports people and businesses to work more effectively and discover and develop unexpected new revenue streams.



Introduction

The central theme for the Accenture Technology Vision 2016¹ is 'People First'. This highlights how the role of technology has evolved to become an enabler that supports people and businesses to work more effectively and discover and develop unexpected new revenue streams. It also empowers governments to improve citizen outcomes and address key national priorities and challenges.

The 'People First' theme plays out in each of the five trends that make up this year's Technology Vision: Intelligent Automation, Liquid Workforce, Platform Economy, Predictable Disruption and Digital Trust. In this report we showcase the impacts that these developments are having in a Middle East context.

Digital, driving economic growth...with 'People First'

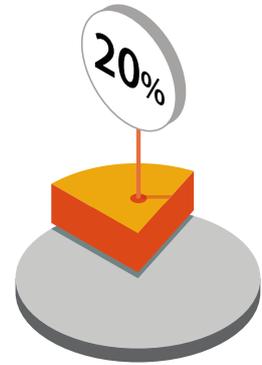
A recent study by Accenture² highlights how digital skills and technologies have the potential to generate an extra US\$2 trillion in global economic output by 2020. At the same time, the report shows how digital is already an enormously powerful driver of economic growth, with over 20 percent of world output now linked to digital skills, capital, good and services.

For businesses and governments in the Middle East, digital is now identified as a vital enabler of economic diversification and growth at a time of uncertainty on a global scale. Research for our Technology Vision 2016 shows that eight out of 10 respondents to our survey expect

rapid or unprecedented acceleration in the rate of technology change over the next three years. That said, any coordinated digital strategy remains in its early stages in most countries in the region. Our research highlights significant variation in the take-up of digital by companies. For example, whereas 44 percent of UAE-based businesses now use customer analytics to drive retail business, just seven percent of companies in Saudi Arabia report doing the same.

At a macro-level, the 'People First' message has particular resonance in the Middle East. Across the region, governments are pursuing 'localization' programs geared to limiting the import of core skills and bringing more nationals into the workforce. Particular areas of focus include using digital to foster growth in SMEs, not least by improving levels of female entrepreneurship (according to The Female Entrepreneurship Index, MENA countries currently rank in the bottom 20 percent).

Digital offers huge potential for the region's citizens. The Accenture Strategy Digital Density index³ shows a direct link between targeted investments across digital skills, technologies and accelerators (collectively 'digital density') and economic growth. For example, a 10-point increase in Saudi Arabia's digital density could see a GDP increase of 4.2 percent by 2020 (equivalent to US\$31.4 billion). The same increase in digital density in the UAE could add US\$13.8 billion to 2020 GDP and in Qatar it could add US\$7.8 billion.⁴



Over 20% of world output is now linked to digital skills, capital, good and services.

Source: <https://www.accenture.com/us-en/insight-digital-disruption-growth-multiplier>

Initiatives geared to accelerating innovation and realizing economic growth are springing up region-wide.

Initiatives geared to accelerating innovation and realizing economic growth are springing up region-wide. In Dubai, for example, we've seen the launch of the Dubai Future Accelerators Program,⁵ an intensive 12-week program hosted by the Dubai Future Foundation and the Government of Dubai. This is designed to identify emergent technologies and businesses with the potential to address the world's most pressing challenges (eg health, policing, transport, and water scarcity), and support them in developing solutions and prototypes for rapid deployment in the Emirate.

In all countries across the region, digital will be key to achieving dramatic improvements in healthcare and education and securing sustainable environmental programs that ensure the prosperity and security of citizens. Very much in line with the Technology Vision's 'People First' agenda,⁶ digital technologies are underpinning Dubai's drive to achieve 95 percent happiness for the whole city by 2021, in line with the 'Smart Dubai Happiness Agenda'. With a 'minister of state for happiness' now in place, the Emirate is monitoring the wellbeing of its citizens through a network of smart devices distributed around the city. Twenty-three touch-

screen terminals (linked to government centers) have been located in public buildings, with individuals encouraged to provide feedback by registering their satisfaction or otherwise with a particular experience. Meanwhile, in Abu Dhabi, the government has an equally ambitious program. The Abu Dhabi Systems and Information Centre (ADSIC) aims to deliver the region's 'leading smart government, driven by innovation and inspired by society.'⁸

Where longer-term growth and development are concerned, digital technologies are at the heart of Dubai's National Innovation Strategy⁹ (of which "Vision 2021" is a key feature) and Saudi Arabia's Vision 2030. In fact, Saudi Arabia has been making headlines recently in this space with global forays into the digital arena including the massive US\$3.5 billion investment by the Kingdom's Public Investment Fund in darling of the platform economy, Uber.¹⁰ Qatar's national digital agenda seeks to leverage technology and innovation to improve the life of its citizens, prioritizing investments that improve living and help address national priorities and objectives. In contrast to some programs in the region whose broad and ambitious scope sometimes leads to a lack of focus, Qatar's initiative marks a clear step forward in its clarity and defined sense of purpose.



Digital has a key role to play in addressing some of the most pressing challenges facing the region—from food security and water wastage to ensuring security in countries where a considerable percentage of the population comprises of expatriate workers. And while demand-side awareness of digital skills and solutions is growing fast, meeting that demand continues to impose a drag on rapid progress. The requisite skills-base within organizations, while growing, is still in its infancy. The broader digital supply chain also needs to expand through, for example, targeted investment and specific policy interventions.

These interventions could include new regulatory frameworks that will actively encourage and foster the evolution of a region-wide, digital ecosystem. However, it should be stressed that the whole issue of region-wide digital ecosystems and the desirability of regulatory initiatives designed to foster them are a source of considerable and ongoing debate among technologists. However, regulation governing core digital technologies such as cloud and big data is clearly needed at a national level, and steps are being taken to address this, such as the launch of the

Dubai Data initiative, decreed by the Dubai Data Law of 2015, guiding the opening and sharing of city data across the public and private sector.¹¹

In addition, there are major gaps in the business and legal frameworks that allow an entrepreneurial culture to thrive. With bankruptcy still illegal in many countries, the 'fail fast' risk-taking mentality will find it hard to gain traction. If issues like these remain unaddressed, innovators are likely to look to more welcoming environments.

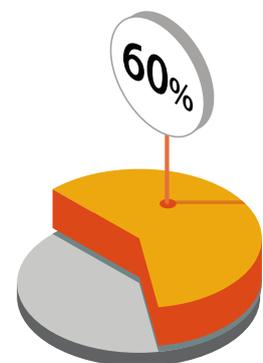
That said there are some encouraging signs of positive change. We're seeing some countries developing digital cluster strategies, identifying sectors where innovative technologies can make maximum contributions to their economies and citizens. These strategies include investigating how partnering with other digital clusters worldwide can accelerate the development of IP and talent. They are also laying the foundations for digital growth in the years ahead by looking at removing the requirement for a business sponsor and introducing 100 percent ownership for technology companies.

We know from our Technology Vision 2016 research that over 60 percent of Middle East companies are now actively investing in digital technologies in select business units. However, marked discrepancies are evident in the impact executives expect digital to have in their respective countries of operation. In Saudi Arabia, for instance, 21 percent expect the industrial internet and the Internet of Things to result in a complete transformation of industry. That contrasts with just 6 percent of executives in UAE-based businesses.

As countries across the region develop and roll-out ever broader digital strategies, we believe that the following five trends will play a vital role in unleashing innovation and realizing the rewards on offer.

60% of Middle East companies are now actively investing in digital technologies.

Source: Technology Vision 2016 research





Intelligent Automation

Intelligent automation is the launching pad for new growth and innovation. Powered by artificial intelligence, the next wave of solutions will gather unprecedented amounts of data from disparate systems and—by weaving systems, data, and people together—create solutions that fundamentally change the organization, as well as what it does and how it does it.

In our Technology Vision 2016 survey, 70 percent of corporate executives said they are investing significantly more in AI-related technologies than two years ago, with 55 percent stating that they plan extensive use of machine learning and embedded AI solutions.

Intelligent Automation is emerging in the region, although far more slowly than in some other locations. Research for our Technology Vision 2016 shows that just 26 percent of organizations have automated knowledge worker tasks, compared to 38 percent of respondents worldwide. That said, there's no question that, over time, its application is likely to have profound impacts in a number of critical areas. Forty-five percent of Middle East executives strongly agree that automation, driven by artificial intelligence, will be embedded in every aspect of their businesses within five years.

Some sectors are already showing how intelligent automation can transform efficiency and take the customer experience to new levels. Mashreq Bank for example, has launched 'imashreq,'¹² giving its

customers access to the region's first fully automated branch. From opening accounts and applying for credit cards to making investments and deposits, imashreq's customers are able to make use of extensive automation technologies that deliver the convenience and choice that they have come to expect from other digital services.

Another key regional sector, construction, is also investigating the potential of smart, automated technologies to create 'connected spaces' that improve the occupant experience and overall building efficiency and sustainability. Elsewhere, the energy sector is now exploring the potential of automation to address one of its major challenges: an aging workforce. Having depended on expatriate workers for many years, major energy businesses in the region are now seeking to use more local talent. In order to attract and retain local workers, they're investing in automation to enable effective knowledge transfer and provide a workplace experience that meets the needs of a digital-first, millennial talent pool. Additionally, a major regional airline, Emirates Group, is making substantial investments in automation as a key part of its enterprise-wide transformation strategy geared to positioning the business as a leading customer-centric, technology-enabled travel experience provider. Specific digital technologies highlighted by Emirates include predictive analytics, AI, machine learning and robotics.¹³



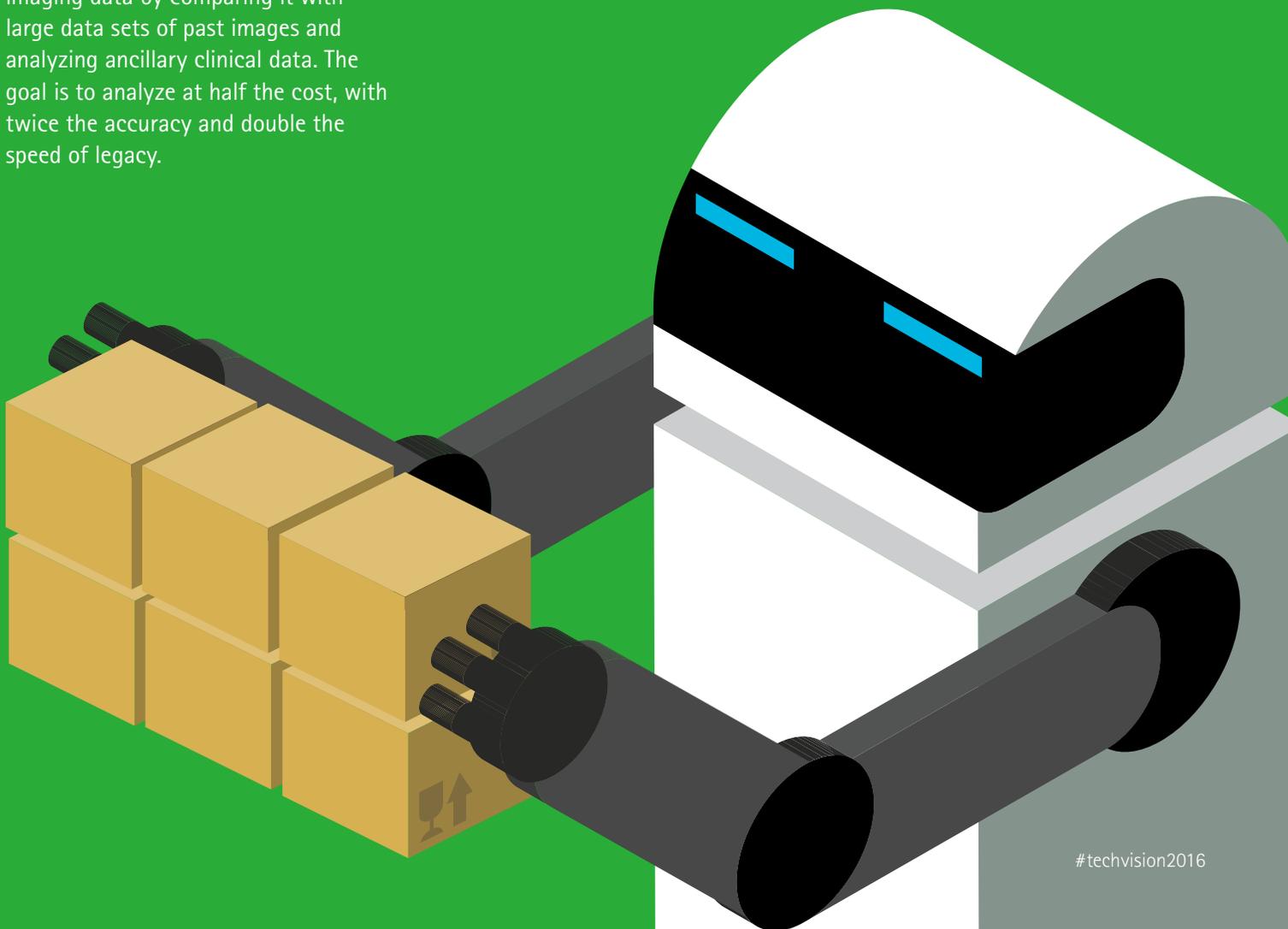
45% of Middle East executives strongly agree that automation, driven by artificial intelligence, will be embedded in every aspect of their businesses within five years.

Source: Technology Vision 2016 report

Other areas where intelligent automation can achieve huge benefits include healthcare: specifically, the prevention and treatment of chronic disease (which accounts for 34 percent of deaths in the Middle East). Remote monitoring of patients, connected to a smart platform, could help to provide much more effective outcomes. As an example, one US company that's doing exactly that is Enlitic, which is using recent advances in machine learning to make medical diagnostics and clinical decision support tools faster, more accurate and more accessible.¹⁴ With the help of deep learning capabilities, it can contextualize imaging data by comparing it with large data sets of past images and analyzing ancillary clinical data. The goal is to analyze at half the cost, with twice the accuracy and double the speed of legacy.

Another area where intelligent automation could have a very significant impact is security. With so many expatriates living and working in the region, security concerns stretch from individuals at their point of entry, through their residency and exit. Being able to automatically gather, manage and analyze these vast volumes of data would substantially enhance situational awareness and greatly enhance citizen and expatriate safety.

Intelligent automation is the launching pad for new growth and innovation.





Liquid Workforce

Liquid workforce describes how, by exploiting technology to enable workforce transformation, leading companies will create highly adaptable and change-ready enterprise environments that are able to meet today's dynamic digital demands. This source of competitive advantage is apparent as IT and business executives surveyed report that "deep expertise for the specialized task at hand" was only the fifth most important characteristic they required for employees to perform well in a digital work environment—other qualities such as 'the ability to quickly learn' or 'shift gears' were ranked higher.¹⁵

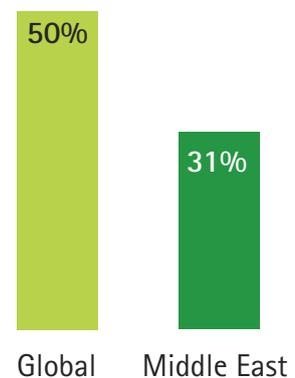
Finding, attracting and retaining the right digital talent is a global problem, but in the Middle East it's particularly acute. For example, many young people still seek the security of an employer for life and are therefore attracted to working with established multinationals as opposed to accepting the higher risks associated with tech start-ups. To overcome this, a more flexible, on-demand liquid workforce will become increasingly important for building digital businesses in the Middle East. Executives in the region are acutely aware of this. Our research shows that they expect internal permanent positions to account for just 53 percent¹⁶ of their workforce by 2019, with temporary positions and freelancers making up the remainder. Growing the pipeline of access to those freelance skills is a clear opportunity for businesses and governments to support the development of an expanded local skills base that can meet the requirements of the new liquid workforce.

Although our research shows that companies in the region have far fewer jobs with a digital component than their counterparts in the rest of the world (31 percent of jobs in the Middle East vs 50 percent worldwide), there are indications that this will change in the next three years (almost 40 percent of jobs in Middle Eastern companies are expected to have a digital component by 2019). We're already seeing how this will play out, with some leading organizations now reaping the benefits of liquid operating models (where flexible skills play a key role in delivering outcomes with speed and efficiency). In the aviation sector, airlines are exploring new loyalty operating models using in-sourced analytics capabilities on an 'as-a-service' basis, as well as new marketing models that make use of networked centers of excellence to provide on-demand skills at the right time and the right place. To meet that need, localization efforts to develop new talent should focus heavily on digital skills.

In some countries, there are moves to develop digital clusters based around digital centers of excellence that can provide hard-to-find design skills, making them available to various digital projects on a flexible, as-required basis. The Abu Dhabi government, meanwhile, is looking to liberate its workforce from operating hardware by drawing on the private sector for cloud services.

Examples like these all highlight the need for continuous innovation in the public and private sectors. Currently, many organizations are still developing the internal culture

Companies with a digital component



and capabilities needed to constantly innovate in a digital world. As a result, some are now developing partnerships with private sector consultancies that can offer 'innovation-as-a-service'. Others, like Emirates Group, are partnering with leading global educational institutions to tap into the innovation they need. As well as partnering with Oxford University to launch the Oxford-Emirates Data Science Lab¹⁷ (examining new ways to forecast demand and optimize seat inventory), Emirates has also launched a Silicon Valley-based Innovation Lab in partnership with Carnegie-Mellon University. This is designed to incubate the ideas and emerging technologies that will transform Emirates' business into a truly data-driven enterprise.



Platform Economy

Across all industries—and many governments—leaders are unleashing technology's power by developing new technology platforms. But more than that, it's the platform-based business models and strategies they enable that are driving profound global change. In the digital economy, platform ecosystems are nothing less than the foundation for new value creation.

Many of the most groundbreaking products and services of the digital economy are based on platforms. The success of the FANGs (Facebook, Amazon, Netflix and Google), on close examination, rests on two key elements: the technology platforms they've built to support their businesses, and the business models these platforms enable.

And it's not simply the high-profile names that are building platform-based business models. In every industry, from agriculture to healthcare, platforms are creating whole new ways of doing business.

In the Middle East region, we know companies are actively targeting new platform-based approaches. Thirty-two percent of executives we surveyed in the Middle East expect platform-based business models to be part of their core business growth strategies within three years. A high proportion of executives (over 50 percent in each case) intend to pursue growth initiatives with new partners. Start-ups outside respondents' own industry sectors are a prime target (for 54 percent of companies in the region and, interestingly, for 66 percent of companies based in Saudi Arabia).

One example of these initiatives is in Abu Dhabi, where the government's cloud platform will adopt G-Cloud technology to raise efficiency, increase productivity, limit costs and drive digital innovation.

In neighboring Dubai, we've seen the recent launch of Intelak, a joint initiative targeting young entrepreneurs and students in the UAE with a platform designed to enable their participation in an innovation incubator.¹⁹ Intelak brings together organizations including GE, Etisalat and Dubai Silicon Oasis Authority (DSOA). Meanwhile, the Emirate's Expo 2020 is serving as a catalyst for the development of a platform that will not only support the event, but also extend into other ongoing areas, such as an integrated mobility and smart payment solutions.

Other areas of activity in the region where platforms are likely to play a key role include tourism, notably in the UAE where there is interest in developing an aggregation platform to optimize and streamline the end-to-end tourist experience. Another example is Saudi Arabia, where a platform providing information and services for religious tourists could support a new integrated experience for both the approximately two million pilgrims making the Hajj each year, contributing more than eight billion dollars to the Saudi economy, and the up to 15 million Umrah visitors expected to visit the Kingdom annually by 2020.



Over 50% of executives intend to pursue growth initiatives with new partners.



Predictable Disruption

Leading enterprises and governments are making big investments in digital platforms. They're uncovering growth opportunities that fundamentally change how they create and deliver their products and services. But these technology platforms and the new business models they drive are only part of the story. As companies and consumers collaborate on these platforms, new digital ecosystems are growing around them. These digital ecosystems will become the foundation for the next major stage of technology and economic disruption. New ecosystems built on platform business models are being used to create communities that coalesce around specific disruptive business opportunities. For example, Beehive, the UAE's leading online marketplace for peer-to-peer has already successfully provided funding for a number of growing businesses, with over 1000 investors plugged into its platform.²⁰

Middle Eastern businesses recognize the imminent threat of disruption in a digital marketplace. Healthcare, communications and banking are identified as prime candidates. Over 80 percent of them expect established companies from outside their own industries to be the greatest risk of disruption from now on. But for the moment, they are less aware of disruption actually taking place. Just 26 percent of them report disruption (of their respective ecosystems) actually taking place. That compares

with almost 40 percent of companies reporting disruption to their industries elsewhere. Again, rather than broad disruption across the whole economy, we're seeing sector-specific developments. For example, fintech—a global market expected to be worth US\$8billion by 2018, is a key focus for both Abu Dhabi and Dubai. Both Emirates are actively exploring technologies such as blockchain that are set to create significant disruptive change in the financial sector. In the telecoms sector, meanwhile, large regional players such as Saudi Telecom Corporation (STC) and Etisalat are investing and developing partnerships that will position them as dominant digital services providers, serving as key enablers of broader digital transformation strategies (eg STC's key role in Saudi Arabia's Vision 2030).

In the private sector, we're seeing the disruptive power of digital at work. In the UAE, for example, the local challenger to Uber, 'Careem' has proved enormously popular. It offers all the regular features of Uber with an additional twist: passengers can make advance reservations.

With governments in the region owning significant stakes in many industries, we're likely to see significant efforts by state bodies to drive disruptive innovation. These could range from state-sponsored open innovation programs spanning start-ups, large companies and government agencies to collaborate,

Leading enterprises and governments are making big investments in digital platforms.

match-make and drive disruptive developments. With this momentum established, there will be opportunities to tap into similar programs at the global level. That's what, for example, Emirates airline is doing through its partnerships with overseas institutions such as MIT and significant investments in Silicon Valley.

Broad-based development of disruptive technologies will only be possible with the right regulation in place, greater willingness and incentives for venture capital firms to fund fast-growing businesses and a broader culture of experimentation.



Digital Trust

In the digital economy, trust extends to individuals, ecosystems, and regulators. Businesses must possess strong security and ethics at each stage of the customer journey. New products and services must be ethical- and secure-by-design. Businesses that get this right will enjoy such high levels of trust that their customers will look to them as guides for the digital future.

Digital trust is a pillar of the digital economy. It's built by enabling citizens, business and governments to feel safe navigating through the digital world. That covers a range of contexts, from safely accessing online services, data privacy, and protection of financial accounts to mitigating damage caused by malicious state-sponsored cyber-attacks. We know from our research that companies in the region are exposed to surging cyber risk: 85 percent of Middle East companies experience at least twice as many privacy and/or security breaches as they did just two years ago (compared to 70 percent of global companies reporting the same thing). Saudi Arabia, for example, is hit by more cyber-attacks than any other country. Little surprise then that governments throughout the region are keenly aware of the need to comprehensively enhance digital security and, by doing so, increase citizens' and businesses'

digital trust. Further evidence of that commitment is the significant proportion of digital spend that security and trust attract.

A number of initiatives are underway. 'Emirates ID' for example, will provide all citizens with a single electronic ID card with which they will be able to seamlessly and securely access a wide range of services, from travel documentation and driving licenses to welfare services and cash withdrawals. Dubai International Airport is pioneering a frictionless passenger experience, using digital technologies to establish the trust and security that will enable passengers to pass through the whole process of arrivals and departures without any human intervention.

Also in the UAE a national cybersecurity strategy, via NESAs (the National Electronic Security Authority) is being rolled out to ensure that every organization in the country meets specific requirements for digital security.²¹ While these are of course essential, they are also very costly to implement. Debate is likely to continue about how—and by whom—they should be financed.



85% of Middle East companies experience at least twice as many privacy and/or security breaches than they did just two years ago.

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