Unlocking the digital economy potential of the Kingdom of Saudi Arabia
What will it take for the Kingdom of Saudi Arabia to become a leader on the world digital map?

With Vision 2030, the Kingdom of Saudi Arabia (KSA) has embarked on a bold national-level change management program driven by the rapid adoption of digital initiatives. The focus is on recalibrating the economic model, which will be based on innovation and driven by future technologies with new business models in place. The KSA has a young demographic base, and digital transformation will help unlock the potential across various sectors by harnessing young talent.

This report outlines the priority areas that will usher in the KSA’s digital revolution, resulting in far-reaching socioeconomic benefits. It also discusses the holistic strategy laid down by the KSA regarding the Vision 2030 implementation plan. The focus is on analyzing the various digital initiatives launched in the country and their potential impact on society and businesses.
Build a diverse digital economy with transformative solutions

A key goal for Vision 2030 is diversification from an economy based on natural resources to become a digitally enabled trade, innovation and investment hub through the use of digital technology. According to estimates, the fourth industrial revolution (4IR) has the potential to generate US$266.6 billion by 2030.1 The only way to realize this opportunity will be through large-scale adoption of transformative digital solutions such as artificial intelligence (AI), 5G, robotics, cloud computing, the internet of things (IoT), and augmented and virtual reality (AR/VR). One way of achieving this economic diversification, led by digital solutions, is through giga-projects, which are aimed at developing the tourism sector; the focus is on creating a state-of-the-art ecosystem to develop the entertainment infrastructure, including theme parks, waterparks, sports venues and family recreational centers, by using global best practices.

Focus on developing the information and communications technology (ICT) sector

ICT will contribute around 5% to the KSA’s total GDP and 8% to non-oil GDP by 2022.2 The KSA is accelerating ICT applications across sectors such as banking, insurance, health care, automotive, power and utilities, and education to drive socioeconomic benefits. Non-traditional ICT segments such as innovation accelerators and third platform technologies will deliver a win-win outcome for businesses and the Government. The most significant impact of ICT will be in unlocking the human potential and accelerating new ways of working – with 58.5% of the population under the age of 30, ICT technologies are expected to provide long-term employment sustainability.

1 World Economic Forum
2 Oxford Business Group
3 Oxford Economics; IDC
4 General Authority for Statistics
On 25 October 2017, at the inaugural edition of the Future Investment Initiative, the KSA became the first country in the world to grant citizenship to Sophia – an AI-based social humanoid robot – setting a landmark milestone for the country’s focus on positioning itself as a digital-first nation.

The KSA’s commitment to embrace the digital transformation is evident from the principles laid out in Vision 2030 – an ambitious reform agenda launched in 2016 that aims to transform the KSA into a digitally enabled trade, innovation and investment hub. There is a sense of urgency in the vision to put the KSA, in its strategic location at the intersection of Asia, Africa and Europe, on the world map as the next digital destination.

To bring this vision to life, the Government recognizes the need for a sophisticated digital infrastructure, which is vital for advanced industrial activities, attracting investments and diversifying the economy – currently, 44% of the KSA’s GDP is based on natural resources. In 2019, record budget spending and pro-growth digital initiatives ensured that non-energy sectors embarked on a faster growth trajectory. Estimates indicate that, in 2018, GDP grew by 2.2% compared with a mere 0.7% in 2017, mainly due to a big push to digital programs in the areas of health, finance, banking and e-government services. The ambition is to become a leader in e-government services in the Middle East and be ranked within the top five globally by 2030.

As part of its commitment to encourage innovation to achieve regional and global leadership in technology, the KSA aims to support the digital economy, including its role in transforming digital products into commodities, reducing financial costs, enhancing transactional transparency, reinforcing competitiveness by promoting access to information and speed of implementation, and creating more job opportunities for the Saudi youth by boosting innovation and growing the start-up ecosystem.

One of the most significant upticks of digital transformation for the KSA is its ability to unlock the human potential and accelerate new ways of working. With a young demographic base – 58.5% of the population are under the age of 30 – digital technologies provide long-term employment sustainability, as there is always a need for a skilled workforce. Globally, a successful digital transformation can:

- Decrease unemployment rates by 1% with investments in communication technologies and building out smart infrastructure
- Contribute an additional 1% to GDP for every 20% increase in transformational technology investment

5G is a technology that will play a transformational role in shaping the socioeconomic development of the KSA. Partnerships and collaboration between various industry players will be crucial for the local ecosystem to develop. Over the next 10-year period, 5G penetration is expected to grow at an astounding compounded rate of 103% in the KSA. The true impact of any new technology will be gauged through its influence on rural areas. 5G will potentially address some of the basic challenges due to the lack of optimum infrastructure for health care and education, among other sectors.

For urban areas, some likely use cases are immersive reality, e-sports, live in-venue digital entertainment, smart homes, smart cities, autonomous driving and robotics. The current goal is to provide high-speed broadband access for the majority of the population. Internet speed has already seen a 300% increase, and 4G-LTE coverage has increased by 90%.

AI is another technology that will offer a host of benefits, from streamlining repetitive processes to handling tasks without human intervention. The smart city project, NEOM, is intended to integrate data analytics and AI into all aspects of modern living. The US$500 billion development project will kick off in 2020, with the deployment of cutting-edge technologies to model, plan and prefabricate parts to reduce labor costs.

One of the most ambition goals of Vision 2030 is to move toward a cashless digital society, driving
the transactions volume from 18% in 2016 to almost 30% by 2020. The Saudi Arabian Monetary Authority (SAMA) introduced a low-value contactless payment service, Mada Atheer, to boost digital transactions and e-commerce, which is estimated to be a US$22 billion market by 2022. Growth is driven by the changing consumer demands of the young demographic coupled with high smartphone penetration. There are significant innovations across the cross-border payments space – SAMA has approved three banks to test connections with Ripple for instant settlement of cross-border transfers using blockchain technology.

Vision 2030 is fueling a social and economic revolution in the KSA, serving as a catalyst for the Government and the private sector to identify the right digital tools and deploy them proactively to help manage businesses and consumers effectively, increase transparency, free up resources and provide a sustainable growth path for the economy – all while maintaining global benchmarks.

Ahmed Reda
Consumer and Technology, Media & Entertainment and Telecommunications Leader
EY MENA
Digital transformation continues to play a fundamental role in shaping Gulf Cooperation Council economies, with the KSA at the forefront.

The economies of the countries of the Gulf Cooperation Council (GCC) have grown substantially over the past few decades. Natural resources are the key drivers of the region’s rapid development and remain major contributors to GDP. The GCC's two largest economies, the KSA and the UAE, together accounted for approximately two-thirds of regional GDP in 2018. Gradually, GCC countries are placing increasing emphasis on the diversification of the economy. This shift in focus is driven by several factors: primarily, the reduction of risks associated with overdependence on oil revenues (i.e., fluctuating prices of oil and a volatile global oil market); and secondly, the creation of jobs by establishing a varied range of industries and providing more opportunities for the private sector.

As a result of the growing digital adoption, GCC governments are launching national policies and visions in sync with the transformation: Saudi Vision 2030, unveiled in 2016; the New Kuwait Vision 2035; the Qatar National Vision 2030; and the UAE Vision 2021. In addition, they are placing digital transformation programs at the core of their national plans: the KSA’s National Transformation Plan 2020; the UAE’s National Agenda 2021; and Qatar’s National Development Strategy 2017–2022. These near-term plans aim to achieve significant modernization and accelerate economic diversification.

As part of the GCC’s overall economy transformation agenda, the region has achieved growth across sectors, with improvement in foreign investments and credit ratings. With the continued growth in device penetration and network connectivity, and the emergence of new technologies, the rate of digital transformation in the GCC region is increasing. This transformation is more prominent in the KSA, driven by enhanced maturity in the ecosystem and in customer engagement. It will disrupt the way people communicate, access media and interact with government across the region.

KSA: the largest economy in the GCC region with a population of 33.3 million – 60% of the total population and GDP of US$702 billion – 51% of the region's GDP (2018)
(Sources: Credit Suisse; Oxford Economics)

In the three years since the launch of Saudi Vision 2030, the KSA has undertaken several initiatives toward the diversification and development of its economy. Many government institutions and sectors have been upgraded, revamped and restructured, and social and economic reforms have been implemented, specifically in the entertainment, cultural and sporting segments. The numbers are a testimony to this – while the KSA's non-oil revenues have increased nearly three-fold since 2016, the country is also enjoying steady growth in non-oil exports, which rose from 2.2% in 2017 to 2.5% in 2018. Additionally, the KSA is ranked 92nd out of 190 nations in the World Bank’s Ease of doing business index 2019, and its reputation for political stability has made it a popular destination for FDI in the MENA region.

In 2018, the KSA Government announced plans to invest US$13.3 billion into entertainment, health, sports and education initiatives, including three theme parks, a waterpark, museums and cinemas. To drive growth in the KSA’s tourism sector, it has launched a series of giga-projects focused on tourism: NEOM, Qiddiya, The Red Sea Project and Amaala. These projects are multifaceted, global in scope, and designed to stimulate overall growth and add significant value to the economy. All the giga-projects that have been launched since 2016 under Vision 2030 are well underway; they are unique to the KSA and provide it with business opportunities across the region as well.

If the Vision 2030 goals are met, this reform process will establish the KSA as one of the 15 largest economies in the world, supported by a broader range of exports compared with the current portfolio, a more productive small and medium-sized enterprise segment, and completely overhauled finance, tourism and industrial sectors. The population, meanwhile, will benefit from a redesigned and refocused education system, a wide range of employment opportunities in the private sector, and a multitude of entertainment and cultural activities.

15 Oxford Business Group, 2019
17 Oxford Business Group, 2019
The KSA’s economy is set for significant growth in the ICT sector, driven by an increased preference for a digital mode of consumer applications and solutions.

The Government of KSA has laid out a strong blueprint with its digital transformation program that aims to build a digital government, society and economy, with an industry based on the 4IR. The 4IR is likely to represent a US$266.6 billion opportunity for the KSA; however, to capitalize on this, the KSA’s industries will have to adapt rapidly by 2030. The KSA is focusing strongly on the development of the ICT sector. Spurred by a young population – 58.5% of the population is under the age of 30 – the KSA is becoming a very tech-savvy nation.

ICT contributes around 5% to total KSA GDP and 9% to non-oil GDP (2018).

KSA ICT market, 2016–22, US$ billion

<table>
<thead>
<tr>
<th>Year</th>
<th>2016</th>
<th>2017</th>
<th>2018F</th>
<th>2019F</th>
<th>2022F</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>33.6</td>
<td>33.6</td>
<td>34.2</td>
<td>34.5</td>
<td>36.4</td>
</tr>
</tbody>
</table>

2017–22 CAGR by ICT category

- **Hardware**: -0.2%
- **Software**: 7.9%
- **IT services**: 6.0%
- **Telecom services**: 1.0%

Source: IDC, 2019

Mobile penetration is high in KSA at 125% and the market is heavily saturated, offering great potential for mobile commerce. KSA accounts for 53% of the total 79.1m mobile connections in the region.

4G adoption level in KSA is 39% – higher than the global average of 38%.

Saudi consumers are avid social media users – 19.0m – and are regarded as the key target market for digital content providers.

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18 World Economic Forum
19 Oxford Business Group, 2019
20 General Authority for Statistics, January 2018
21 “However, in the context of this roadmap, ICT is not a standalone sector, but acts as an impetus for all other sectors to transform through the adoption of digital technologies,” Saudi Gazette, http://saudigazette.com.sa/article/570332, accessed 23 September 2019.
22 Analysys Mason; All figures for 2018
Like all sectors of the economy, growth and development of the KSA’s ICT industry is deeply influenced by the Government’s Vision 2030 strategy that reiterates the need for diversification and modernization. However, in the context of this road map, ICT is not a standalone sector, but instead acts as an impetus for all other sectors to transform through the adoption of digital technologies such as AI, robotics, AR/VR, cloud, the IoT and e-commerce. While traditional ICT segments such as mobile phones, hardware and telecom services will experience a substantial slowdown, innovation accelerators, as well as third platform technologies, will continue to deliver a win-win outcome.

**ICT spending in digital accelerator technologies**

![Graph showing ICT spending in digital accelerator technologies]

Source: IDC, 2019

Digital has the potential to alter industries and their core processes dramatically. The rise of digital is transforming the value chain to a point where every company is a technology company and every business is a consumer business. Digital platforms are displacing physical world ecosystems. From start-ups to traditional titans, there is a 360-degree change in industry dynamics.

As the Saudi market matures, the modus operandi for the majority of organizations is expected to shift from in-house to outsourcing discrete components (managed services), to full-fledged outsourcing, to cloud (utility model). At the same time, businesses and government bodies in the region are undertaking their own digital transformations, rethinking what customers value most and creating operating models that take advantage of competitive differentiation.

A number of innovations are likely to drive sharp growth in machine-to-machine (M2M) interactions. Autonomous vehicles, for instance, need to receive and transmit data captured by sensors – an example of the emergence of the IoT. Another is the upsurge of smart cities, where a wide range of services will be based on remote sensors transmitting information on traffic, weather, medical services, parking, logistics tracking, and power and utility usage, all of which require industrial-level data processing. AI and AR/VR applications will also need 5G infrastructure. 5G technology offers the significant increase in capacity necessary to handle the anticipated rise in demand for data. All these transformations are long term in nature, and the shift to third platform technologies opens new dimensions and offers novel opportunities to transform public services, government administration and the wider digital economy.

At the same time, this shift enhances the complexity of countering and preventing attacks, as well as widening perimeter security vulnerabilities. With multiplied innovation forces powering the region, the challenge is to keep pace with an unprecedented rate of business change. Developing an effective digital transformation platform that offers sustainability, advancement and scalability in business operations is a prime task facing the KSA’s stakeholders in 2019 and beyond.
2.1 5G growth agenda

Telcos invest in 5G infrastructure and gear up to implement new use cases

Growth of 5G mobile services in the country plays a crucial part in the KSA’s plan to modernize and digitize its economy as part of Vision 2030. The advent of 5G also offers a major leap forward in communications quality, which is crucial for the KSA to develop a diversified, globally competitive communications network.

A 5G network would enable faster speeds and higher efficiency, and more data could be handled with lower latency. It will also allow for the connection of a greater number of devices.

The Government is keen to establish the KSA as a world leader in 5G services and has made a major financial commitment to support the rollout of 5G. The National 5G Task Force was set up in early 2018 to bring together government, operators, equipment vendors and potential user groups, and in May 2018, the CITC, the KSA’s telecom regulator, awarded test-and-trial 5G licenses to the three national mobile operators.

Over the last year, multiple 5G-compatible licenses were allocated to telecom players to facilitate the commercial 5G launch planned for 2019. In February 2019, the KSA announced the largest 5G commercial rollout in the MENA region, with an additional 400 MHz mid-band (3.5Ghz) spectrum released to commercial operators in March 2019.23

With its top-down national pledge and commitment, the KSA is already leading 5G development through setting the standard, R&D, network infrastructure technology, building the industry chain and engaging in focused use-case scenarios.

Telecom operators have been conducting multiple tests in partnership with international vendors to develop 5G capabilities. In June 2019, one of the national mobile operators commercially launched its 5G services in select regions in the country. In the same month, another telco entered into partnership with an original equipment manufacturer to launch a 5G rollout plan under a three-year contract.

The disruptive capabilities of 5G will pave the way for new innovative applications that the current LTE technology cannot support. Some of the widely promoted examples include industrial automation and utility services, vehicle-to-vehicle and vehicle-to-infrastructure transportation, home automation and AR/VR.

23 MCIT press release

Driven by multiple 5G launches and strong customer uptake for 5G services, 5G mobile subscription is expected to reach 23.2m by the end of 2028.

5G mobile subscription in the KSA, in ’000s

<table>
<thead>
<tr>
<th>Year</th>
<th>5G mobile subscription</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>23,181</td>
</tr>
<tr>
<td>2028</td>
<td>23,200</td>
</tr>
</tbody>
</table>

Source: IBM
2.2 IoT and big data scale-up

IoT is one of the most prominent growth areas in the ICT industry in KSA

The KSA IoT market is on an upward trajectory. IoT spending reached US$1.3 billion in 2018 and is expected to touch US$1.5 billion in 2019, growing at a CAGR of 19.5% during 2018-23. This will make it the largest IoT market in the GCC region and the third-largest in the Middle East, Turkey and Africa (META), behind Turkey and South Africa.

Factors driving IoT adoption include the announcement of giga-projects and mega-projects by the Government, recent favorable regulations, and nationwide access to reliable and low-cost connectivity. For example, the Ministry of Interior has mandated that all business premises in the KSA be equipped with CCTV surveillance systems by the end of 2019, while the Ministry of Transportation has made it compulsory for all organizations with a fleet of more than five commercial vehicles to implement a fleet management solution. With the rise in connectivity, IoT is facilitating businesses to analyze live data streams from IoT devices to derive intelligent insights and optimize core operations, enhance productivity and increase profitability. This, in turn, will raise the standard of living for the average citizen.

In the KSA, several large diversification projects are rapidly catalyzing the uptake of IoT solutions and services. Key projects include the Riyadh Rapid Bus Transit System, Riyadh Metro, Amaala, NEOM, Qiddiya and the Red Sea Project. Leading IoT use cases can be found in manufacturing, freight management, fleet monitoring, production asset management, and public safety and emergency response. These areas are expected to lead IoT technology uptake in the KSA over the next five years. Technology providers and organizations are creating IoT solutions that exclusively utilize 5G and LPWAN technologies, and more than 60% of the KSA’s biggest organizations are at various stages of deploying IoT solutions. The security and safety of data is becoming one of the major concerns for end consumers across all industries and segments in the KSA region, given IoT connects devices that collect, analyze, process and store sensitive data. To gain a winning edge, technology vendors need to offer products and services that comply with the Government’s national security requirements.

- With ICT regulatory bodies in the KSA starting to understand the security concerns around the deployment of IoT, 2019 and the coming years will be focused on IoT data along with endpoint security.
- The largest growth in terms of IoT deployment in the KSA region will be recorded in the manufacturing, transportation and health care sectors, while the hospitality, retail and entertainment sectors will gradually start adopting the technology to analyze consumer behavior.
- AI will be compulsory to analyze huge amounts of data from IoT devices. Preventive as well as predictive decision-making will likely become a pivotal part of IoT deployment in the region.
- With the growing number of IoT devices, the demand and need for data storage and processing will simultaneously increase, driving edge computing into the mainstream in the KSA region.
- Major communications service providers are expected to launch 5G connectivity in some business zones and civic centers, enabling more devices to be connected. High-speed network rollouts will facilitate faster analysis of the data gathered by IoT devices.

Big data applications jumping on the bandwagon in the KSA

Organizations across the world have turned to data monetization to improve customer engagement and experience. It is rapidly becoming a pressing need, providing opportunities for companies to innovate and leverage untapped sources of information to develop new revenue streams. Connecting seamlessly with consumers across numerous digital channels requires facilitation by analytics-based data and insights. To accelerate decision-making and insight generation, businesses have increased their IT spending on data visualization and data discovery platforms.
Key big data applications and use cases will focus on behavioral marketing, risk management, business operations enhancement and business opportunity development. Key government ministries, including the Ministry of Health, the Ministry of Education, the Ministry of Foreign Affairs and the Ministry of Finance, are huge generators of open data. The Ministries of Tourism, the Ministry of Hajj and Umrah, and the Ministry of Commerce are likely to benefit significantly by integrating their data with several other data sources. Analytics also has the potential to boost process manufacturing through consolidation of data across varied operational arenas in order to develop an end-to-end process.

**KSA big data market, 2016-21, US$ million**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td>23%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services</td>
<td>72%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Current ongoing developments facilitating large-scale big data adoption:

- Seventy-five percent of big data technology spending will be from the Government and the telecom, finance, resource (oil and gas) and manufacturing industries.
- Personalized user experiences will be offered by the Government through integration of public data and social streams.
- Telecom operators and retail owners (online retailers specifically) will focus on monetizing data, demanding the formation of new data privacy and data ownership regulations.
- Educational institutions will adopt high-performance computing (HPC) to utilize big data for academic support.
- IT departments are driving demand for big data analytics solutions in a similar way as for other third platform technologies.
- Data science expertise will generate value for companies in the finance, oil and gas, aviation and government sectors.

In the coming years, a large number of government organizations will generate large huge amounts of data. All these agencies will set up portals for quick and easy access to this data, to facilitate the free flow of information between key government ministries. With open data, there will be a need to create robust data security and governance regulations and policies for public sector entities. In such a scenario, acquiring new skills encompassing data translation and data science will become the new requirement for applying and leveraging data as a decision-making tool.
2.3 E-commerce opportunity in KSA

Vision 2030 has introduced regulations that are expected to encourage greater investment in e-commerce.

The KSA’s large consumer market has always been at the center of discussions about e-commerce potential in the GCC region. The expansion of e-commerce in the KSA is one of the significant goals of its development agenda and is seen as a crucial step in its digital development journey.

Vision 2030 notes that traditional retail practices continue to dominate the domestic market, accounting for around 50% of total market activity.\(^\text{29}\) This is lower than in other GCC countries, where digitally driven retail channels have increased trade penetration levels and compressed traditional retailing to a 20% share of the market.\(^\text{30}\)

E-commerce revenue in the KSA market is expected to grow to US$7b in 2019 and US$10b in 2023.

E-commerce user penetration is 66% in 2019 and is expected to hit 73% by 2023.

Average revenue per user (ARPU) is estimated at US$315 in 2019.

The Government is keen to increase the contribution of alternative retail channels, including e-commerce, to 80% of retail sector activity by 2030. As part of this process, it will encourage regional and international retail investors to increase their participation in the market – a development that is likely to have a significant effect on the speed at which e-commerce platforms are developed in the KSA.

The KSA has shown a keen interest in online shopping, with approximately 12.9 million e-commerce users in 2018 and an expected increase of 6.34 million by 2022.\(^\text{31}\)

The e-commerce fashion segment is a clear winner for majority of the shoppers, with individuals between 25 and 34 accounting for half of all orders.\(^\text{32}\)

\(^{29}\) “Saudi Arabia’s e-commerce market set to take-off,” Oxford Economics Group.

\(^{30}\) IBID

\(^{31}\) Eshopworld.com

\(^{32}\) Ipsos, 2018
2.4 Start-up focus

The KSA has great potential to build its start-up ecosystem to support the digitization plan.

An assessment of the KSA’s current start-ups suggests that the country’s ecosystem is in the early stages of development with significant potential for growth. The Government has focused particularly on entrepreneurship, especially involving technology, and it is one of the cornerstones of Vision 2030.

Numerous public authorities and quasi-government entities have supported and developed the entrepreneurship ecosystem in the KSA. Corporate venture arms have been established by prominent Saudi business organizations to support new businesses with early-stage investments, and there are several public funds and financing programs. The country has experienced an increase in the quality and quantity of deal flow in start-ups, and more professional angel investors and venture capital funds are getting involved.

The most significant stimulus has come from the Government, which has mobilized substantial resources to provide a launchpad for start-ups and entrepreneurship. The funding needs of the KSA’s start-up ecosystem are mainly met via by government-backed funds. In 2016, the Council of Ministers established a “fund of funds” to invest in private equity, venture capital and seed capital funds on a commercial basis, to support and incentivize SME investments. The US$1 billion fund of funds, along with a number of additional public funds, aims to support those funds that will invest in SMEs in the KSA over the next 15 to 20 years.

- The KSA accounted for 11% of deals in MENA in 1H19, up 1% from 1H18.
- It also accounted for 9% of total MENA funding in 1H19, up 1% from 1H18. (Source: H1 2019 Saudi Arabia Venture Capital Snapshot, Magnitt)

The Government has also taken enabling measures to build momentum in the growth of start-ups and entrepreneurship. The KSA relaxed the 49% limit for foreign strategic investors in shares of listed companies. Also, while it ranked 92nd in overall ease of doing business, it was ranked much higher (4th) at the G20 level in terms of the number of reforms that would contribute to improving business environment, according to the World Bank’s Ease of doing business index 2019.

The sentiment of the KSA’s citizens is another positive for the future of start-ups. Around 76.3% of the adult population in the KSA perceived that the current environment offers good opportunities to start a business; this percentage ranks second highest out of the 49 countries analyzed.

The results have already started to show — with 26 investment deals, 1H19 saw an increase of 44% in deal volume compared with 1H18. A total of 30 institutions invested in Saudi-based start-ups in 1H19, with local Saudi venture capital firms, accelerators and other institutions, as well as international investors, participating in funding rounds. 1H19 has already recorded a deal value of US$40 million, which is more than 80% of the total deal value in the whole of 2018 (US$48 million deal value).

Sector focus of top 50 start-ups in KSA ecosystem

<table>
<thead>
<tr>
<th>Sector</th>
<th>%</th>
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<tbody>
<tr>
<td>SaaS and IaaS</td>
<td>42</td>
</tr>
<tr>
<td>E-retail</td>
<td>18</td>
</tr>
<tr>
<td>Marketplace</td>
<td>14</td>
</tr>
<tr>
<td>High tech</td>
<td>8</td>
</tr>
<tr>
<td>Advertising and big data</td>
<td>8</td>
</tr>
<tr>
<td>Content</td>
<td>8</td>
</tr>
<tr>
<td>Social platform</td>
<td>2</td>
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</tbody>
</table>

Prevalence of tech start-ups (per million urban population)

<table>
<thead>
<tr>
<th>Country</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>176</td>
</tr>
<tr>
<td>India</td>
<td>92</td>
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<tr>
<td>UAE</td>
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<td>Turkey</td>
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<td>South Africa</td>
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<td>Russia</td>
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<tr>
<td>Egypt</td>
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<tr>
<td>Nigeria</td>
<td>3</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>2</td>
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</tbody>
</table>

Source: OC&C Saudi Arabian start-up ecosystem report

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34 H1 2019 Saudi Arabia Venture Capital Snapshot, Magnitt
2.5 Innovation accelerated through AI, AR and robotics

The KSA is aiming to become a global leader in the adoption and application of AI, and this is central to the Saudi Vision 2030 reform plan. This ambition spans foreign investments by public investment funds (PIFs) and domestic initiatives by the private sector and the Government. According to industry estimates, AI has the potential to contribute US$135 billion, or 12.4%, to the KSA’s GDP by 2030 – the second-highest share in the region after the UAE compared with 8.2% by other GCC countries.

Adoption of AI systems has the potential to boost the KSA’s gross value added (GVA) by US$215 billion by 2035. AI is set to have the greatest impact on public services, manufacturing and professional services, with GVA gains of US$67 billion, US$37 billion and US$26 billion respectively between 2018 and 2035.

(Source: Oxford Business Group)

In line with Vision 2030, and to achieve performance efficiency through AI and big data applications, the KSA Government recently announced plans to establish the National Center for Artificial Intelligence and the National Data Management Office, which will be directly linked to the Saudi Data and Artificial Intelligence Authority. AI will provide a kick-start to decision-making procedures across sectors, augment productivity, deliver innovative services to KSA citizens and create new avenues to stimulate start-ups and entrepreneurship.

AI, AR, IoT and M2M communication are currently in an early stage of development compared with robotics, which makes it difficult to measure their impact on the industry. While such technologies are not widely deployed across the service sector, they have vast applicability: for instance, autonomous vehicles combine AI, robotics and IoT technologies. To enhance bank operations and achieve efficiencies, these technologies are used to analyze huge amounts of data, interact directly with clients and improve control environment. The high-tech mega-city NEOM is an example of innovation integrated into city infrastructure and will feature AI, robotics and smart city technologies, enabling autonomous vehicles, smart buildings and new mobile services to improve the lives of citizens. Retail operations have improved drastically by leveraging analytics and automation. Telecom operators and handset manufacturers are also adopting AI for smart phone devices.

- AR tests across the manufacturing industry to reduce waste and lower costs
- Neural networks, machine learning, cognitive computing for enhanced efficiencies across large advanced manufacturing organizations
- AR/VR Lounge – KSA’s foremost VR gaming hub, where visitors experience the latest in entertainment
- Piloting Industry 4.0 and robotics in health care, construction, and retail sectors
- Preventing SARS: tracking and analyzing the movement of people affected; analysis to gauge the spread and impact of the disease
- Telco: AI to provide intelligent solutions to manage network infrastructure in an efficient, tailored manner and in real time

Makkah and Hajj – IoT and AI
- Makkah: smart crowd management and traffic management solution, smart waste management, parking and transit initiatives
- Hajj: smart fire alarm system, IoT and AI to provide intelligence and data for emergency response services; mobile AR app for Hajj crowd management (2018)

Riyadh – big data and AI
- AI for automation, decision-making, and civic engagement
- Traffic management solution
- Predictions and simulation of upcoming future events and optimization based on that

The speed and scale of the transformations resulting from AI and associated technologies will create opportunities and social challenges globally. In the KSA, there are also risks associated with these technologies that could lead to high levels of structural unemployment among citizens. According to recent statistics, 46% of jobs in KSA are vulnerable to automation, requiring government policies for increasing human capital to counter the risk of AI-related job losses. However, with the young population, it will be easier for the KSA’s economy to adapt to the transition.

35 Emirates NBD, 2018
36 Harvard Business Review
2.6 Cloud uptake

The cloud market in the KSA is expected to grow rapidly as organizations in both the public and private sectors are keen to adopt a cloud-first approach.

In recent years, the IT sector in the KSA has developed rapidly. The ambitious goal to establish the KSA as a leader in this sector in the Middle East has prompted the Ministry of Communications and Information Technology to adopt fast-paced changes, especially to facilitate digital transformation. A key step toward embracing digital transformation has been the focus on adopting cloud computing.

Over the past few years, the KSA has come a long way on its cloud maturity curve, and cloud has shown tremendous potential as a fundamental technology that can enable digital transformation in both the public and private sectors. An increasing proportion of organizations in the KSA have adopted, or are on the path to integrating, cloud for their computing needs. This has presented IT service providers with an opportunity to increase the revenues associated with cloud (by migrating, monitoring and managing cloud environments for enterprises) at a faster rate than traditional revenue streams.

Even public sector entities that previously had an overtly cautious approach toward cloud are at the forefront of delivering innovation across business functions and lines. In early 2019, the KSA announced its Cloud-First Policy, joining the likes of the US, the UK and Australia, which issued cloud-first policies as early as 2011.

KSA’s Cloud-First Policy

- In February 2019, the KSA introduced the Cloud-First Policy, which encourages public sector migration from traditional IT solutions to cloud-based models.
- The policy recognizes cloud computing advantages such as enhanced agility, reliability, security and innovation.
- The Cloud-First Policy serves as an indication that the coming years will see a growing investment in cloud computing in the KSA.

With the growing uptake of cloud, the annual spending on public cloud services in 2019 is expected to exceed US$260 million, posting a strong CAGR of approximately 33% over the 2018-22 period.

The majority of this public spending on cloud in 2019 will be channeled into software as a service (SaaS) and workloads such as enterprise performance management, human capital management, finance, email, procurement and inventory management.

Public cloud market in the KSA to exceed US$264 million in 2019

<table>
<thead>
<tr>
<th>Year</th>
<th>Public cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>140.37</td>
</tr>
<tr>
<td>2018</td>
<td>191.82</td>
</tr>
<tr>
<td>2019</td>
<td>264.06</td>
</tr>
</tbody>
</table>

Cloud implementation road map

<table>
<thead>
<tr>
<th>Year</th>
<th>Private cloud</th>
<th>Public cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>32%</td>
<td>27%</td>
</tr>
<tr>
<td>2018</td>
<td>43%</td>
<td>43%</td>
</tr>
<tr>
<td>2019</td>
<td>43%</td>
<td>43%</td>
</tr>
</tbody>
</table>

By 2020, 43% of the CIOs in the KSA will have public and private cloud deployments as part of their digital road maps.

From a policy perspective, another key impetus has come in the form of the updated cloud computing framework released by CITC. It reduces a number of the obligations on carrier service providers while maintaining strong protection for consumer rights.

The lower compliance burden should be beneficial for CSPs operating in the KSA and is intended to support the country’s overall development strategy, which is underpinned by technological innovation and e-services.
2.7 Proliferation of over-the-top (OTT) platforms

In 2017, the KSA repealed its ban on a range of social media and OTT platforms, on the condition that they comply with the region’s regulatory requirements. TV in the KSA is in the middle of a huge transition, with more and more traditional broadcasters disrupting the digital user consumption patterns. OTT video streaming services have changed the business model for content creators, TV networks and distributors as the market for on-demand services continues to gain traction.

There are 6.3 million millennials in the KSA: 97.7% are online every day and 97.8% are on smartphone devices. Also, 68% of people in the KSA watch videos through digital means as opposed to TV.

When it comes to the consumption of media on the biggest online video platform, more than 60% of viewers in MENA are millennials, comprising the biggest Middle Eastern audience on the platform. Additionally, Saudis contribute the largest share: an average Saudi internet user watches three times more videos than an average US user.

Rapidly changing media consumption patterns, especially for millennials, provide a plethora of options for industry players to leverage, including the development of immersive reality platforms for users, with the onset of 5G technology and higher network speed.

Subscription video on demand (SVOD) revenues in KSA, US$ billion

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenues (US$ billion)</th>
<th>CAGR 2018–24</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>116</td>
<td></td>
</tr>
<tr>
<td>2024F</td>
<td>402</td>
<td>23%</td>
</tr>
</tbody>
</table>

Source: Digital TV Research, 2019

KSA to quadruple its SVOD revenues by 2024, ranking #2 behind Turkey in the MENA region

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37 Think with Google 2019
38 Think with Google 2019
Way forward

Digital transformation is reshaping the ways in which government and economies are functioning. The benefits this will bring are huge, creating a global willingness to embrace this new era. Statistics prove that economies can gain significant competitiveness and productivity from digital products and services.

Digital technologies have already started to proliferate across industries, sectors, platforms and processes. Adoption of new technologies such as big data analytics, AI, automation and robotics, together with connectivity enabled by the IoT and 5G, are set to modify the way we work and live dramatically. The benefits are all-encompassing: productivity boosts, lower costs, new channels, fresh techniques, leaner business models, faster market access ... the list is endless.

Furthermore, rapid technology shifts are closing the degrees of separation among disparate industries, leading to the blurring of industry walls. ICT was among the first sectors to be impacted and also one of the first to create disruption in the era of industry convergence. This convergence is constantly redefining the opportunity matrix for ICT platforms and solutions.

Horizontal applicability of ICT, cutting across industries such as banking, insurance, health care, automotive, power and utilities, and education, has become a norm. Its constantly lowering cost and increasing impact has made ICT a necessity for every industry vertical and function. Against this backdrop, digital transformation is playing a fundamental role in shaping the way governments across the world are adapting to new opportunities and challenges.

The KSA has all the ingredients in place to dive into its digital ambitions, and government support has facilitated the resources and inputs to achieve them. Well-rounded actionable programs have been put in place, with clear goals and objectives. The success of these programs will be driven by the rapid adoption and well-planned execution of digital programs. The use of technologies such as AI, robotics, cloud, the IoT and AR/VR will drive cross-functional and cross-industrial impacts. Building the maturity of the ICT sector and these digital pillars will fast-track the KSA’s digital revolution.
Unlocking the digital economy potential of the Kingdom of Saudi Arabia
Unlocking the digital economy potential of the Kingdom of Saudi Arabia
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