KPMG

Asasiyat

أساسيات

KPMG Strategy Insight Series

Edition 2

Fueling Digital Success

—

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KPMG in Qatar

Table of contents

Foreword

Venkatesh Krishnaswamy

Partner, Head of Advisory
KPMG Qatar

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It gives us great pleasure to release the second edition of **Asasiyat — KPMG Strategy Insight Series: Fueling digital success.** This thought leadership publication provides insights on the importance of a sound digital strategy in light of constantly evolving customer needs, market challenges and disruptions. Digital strategy is about leveraging emerging technologies and resultant capabilities to redefine financial, business and operating models.

Digital strategy is focused on leveraging technology to enhance business performance, by developing new goods or completely redesigning existing operations and procedures. Developing a blueprint and laying out a digital strategy template can help get a holistic view of the business to pinpoint where digital options can be applied to harness efficiency and effectiveness across the organization.

In this edition, we have highlighted various upcoming technologies, their impact and how various industries have refocused their priorities to redesign their strategies and generated value from digital transformation. We have also highlighted the key triggers, core objectives and approach and methodology for formulating a digital strategy.

With the second edition of **Asasiyat — KPMG Strategy Insight Series**, we aim to establish a dialogue with key stakeholders across sectors on the importance of developing a robust digital strategy.

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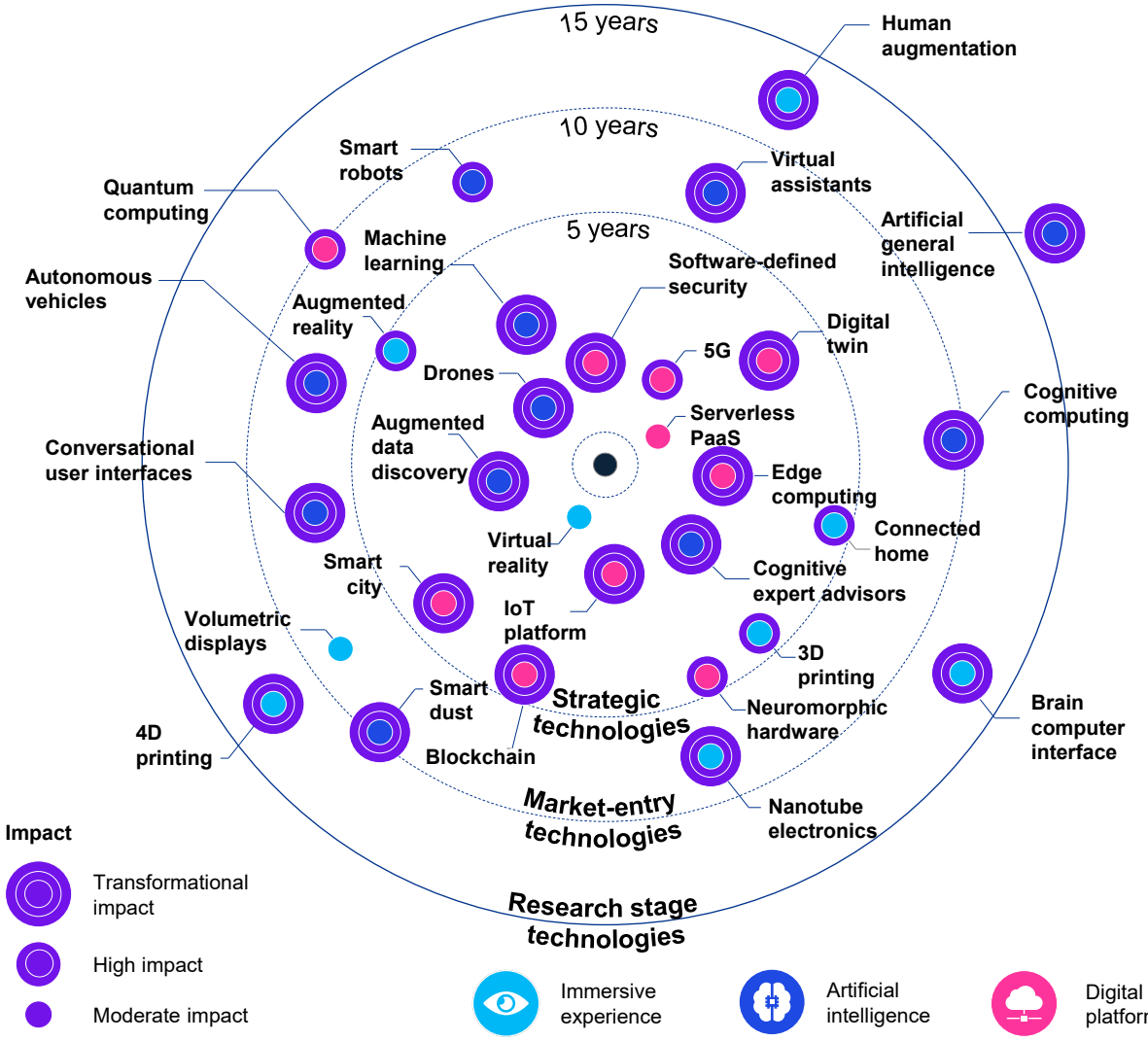
Digital is about the right strategy and not just the technology

Robust digital strategy is a critical enabler for **success**

Nizar Hneini

Partner,
Head of Digital & Innovation

Digital and innovation is about the right strategy, not just the technology. Over the past couple of decades, the speed of innovation has revolutionized the business environment. Formulating a digital strategy is a critical enabler for any organization's success. Implementing a well-developed digital strategy can help the business gain competitive advantage, minimize risks and align with constantly evolving market dynamics.



Note: The technologies mentioned in the infographic are dynamic in nature and are subject to continuous evolution. Their classification based on market entry, impact and type may change over time. They are not mutually exclusive or exhaustive and may overlap in their categorization into immersive experience, digital platform and artificial intelligence technologies and their impact may vary depending on the specific requirements of each industry.

Businesses need to embrace digital strategy to gain competitive advantage and minimize risks

Digital technologies and trends have revolutionized the entire business environment. In any fast-paced transition, evolving consumer behaviors impact business performance and output.

The speed of innovation emphasizes that businesses should consistently be agile and align their functions, products and services to consumer needs. They need to refocus their priorities and embrace digital strategy such that they can, both, benefit from a competitive advantage and minimize risks from the constantly changing behaviors and ever-growing demands.

In recent years, digital transformation has taken a quantum leap and the COVID-19 pandemic has engendered years of change in just a few–months. Due to the pandemic, customers have gained better access to products and services at the click of a button. The bar for delivering exceptional digital customer experiences is high and set to get even higher. Lapses in adoption of digital technologies can not only obstruct sustainable and profitable growth, but also allow the competitors to capture market share from established players.

These digital technologies can be categorized into immersive experience, artificial intelligence and digital platforms technologies and each of them may have a transformational impact, high impact or moderate impact on business dynamics.

Source: KPMG analysis

Immersive experience: These technologies create distinct experiences by merging the physical world with a digital or simulated reality. They facilitate the integration of virtual content with the physical environment in ways that allow the user to engage naturally with the blended reality. Some key examples include augmented reality, virtual reality, mixed reality, etc.[1]

Artificial intelligence (AI): AI is a wide-ranging branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence. It allows machines to model, or even improve upon, the capabilities of the human mind. The most popular AI technologies include speech recognition, biometrics, smart robots, etc.[2]

Digital platforms: Digital platforms comprise software and technologies used to unify and streamline business operations and IT systems. They serve as a company's backbone for operations and customer engagement, enabling them to standardize processes and make workflows more efficient and transparent. Some commonly used examples of digital platforms are blockchain IoT platforms, etc.[3]

Based on the maturity levels and market-readiness, these technologies can further be classified as strategic technologies, market-entry technologies and research stage technologies.

Well-established strategic technologies have accelerated the digital transformation journey

Strategic technologies: Over the past decade and until recently, organizations have sought to accelerate their digital transformation and embrace established technologies with a clear impact on their business. These established technologies have disrupted the industry and will continue to do so in the foreseeable future.

Few examples of strategic technologies impacting the market include:

- **Smart city:** A smart city is a technologically advanced modern city that uses various technologies to collect and analyze to run operations smoothly. In recent times, the world has witnessed development of newly planned smart cities such as NEOM City as well as traditionally and organically developed cities which are being gradually retrofitted to achieve the smart city-level functionality. The latter could be more challenging as it requires integrating technology into existing infrastructure, whereas the former could be custom built to suit the requirements of a smart city.
  - **Singapore:** Singapore's Smart Nation is based on three pillars — digital society, digital economy and digital government. Its notion is based on its ability to digitally collect data, interpret it and translate it into meaningful action. For example, its Lamppost-as-a-Platform initiative works by collecting data on air quality, rainfall, etc. using sensors placed on lampposts for effective urban planning. Some of its other initiatives include dengue hotspot survey drones, smart water meters etc.[4]
  - **TASMU Smart Qatar:** The Ministry of Communications and Information Technology (MCIT), Qatar launched the TASMU Smart Qatar program in 2017. Created as the digital response to Qatar National Vision 2030, TASMU seeks to enhance the delivery of public services across five priority sectors — transport, logistics, environment, healthcare and sports.[5]
- **Drones:** Drones are aircrafts without a human pilot that are operated by ground control stations. Drone technology relies on a combination of hardware and software components such as rotors, sensors, navigation systems, etc. to achieve successful takeoff, flight and landing.[6] Recently, many industries have been exploring uses of drones, as follows:
  - **Prime Air Service by Amazon:** Amazon's Prime Air Service uses a drone delivery service to autonomously fly packages to consumers.[7]
  - **United Parcel Services (UPS):** In 2020, UPS launched a similar service in the USA, Africa, etc. to deliver COVID-19 vaccines and blood to medical facilities.[7]
  - **Bechtel Corporation:** Bechtel has eight drones in its fleet that are used at construction sites and LNG processing facilities to conduct real-time analyses of temperature, air quality, etc.[7]

Source: KPMG analysis

Market-entry technologies can potentially provide first-mover advantage to its early adopters

Market-entry technologies: These are newer technologies and trends that are presently at the market-entry stage and may cause disruption in the near future. At present, these are at a proof-of-concept (POC) stage and less mature than strategic technologies.

Indicative examples of market-entry technologies include:

- **Conversational user interface:** One of the most significant developments in recent years has been the emergence of artificial intelligence (AI) and machine learning (ML) as tools to emulate conversation with human users.
  - **ChatGPT by OpenAI:** One such AI tool that has got worldwide attention is ChatGPT, an AI chatbot released by OpenAI in November 2022. It is an advanced natural language processing (NLP) model designed to respond to prompts in natural language using deep learning algorithms to analyze and understand human language.[8]
  - **Bard by Google:** Bard, developed as a response to ChatGPT, is a conversational AI robot based on Google's most advanced large language model (LLM) PaLM 2, that allows it to be more efficient. It draws on information from the web to provide high-quality responses. Bard was initially based on a lightweight LLM called LaMDA, which required less computing power and could scale more users.[9]
  - **Avey by Rimads, a Qatari startup:** A local example of conversational user interface is Avey, an AI-based healthcare app, that assesses user responses against a large database of medical conditions and provides a medical report to show possible causes of symptoms and their severity.[10,11]
- **Autonomous vehicles:** Autonomous vehicles (AVs) use technology to partially or entirely replace the human driver in navigating a vehicle from an origin to a destination, while avoiding road hazards and responding to traffic conditions.[12] Even with some limitations such as risk of cybersecurity attacks, potential damage of sensors due to the weather, etc.

  AVs have a significant potential to transform mobility. Some of the notable AVs are as follows:

  - **Tesla Inc:** Tesla has launched an AV that uses radar and ultrasonic sensors to gauge how far objects are and assess the distance between cars.[13]
  - **Nvidia Corporation:** Nvidia uses a chip technology in AVs that aims to provide safety with 12 cameras, 9 radars and many sensors to avoid objects and plan efficient routes.[14]

Source: KPMG analysis

At a drawing-board stage, advanced technologies hold significant potential for market disruption

Source: KPMG analysis

Research stage technologies: Technologies at the ideation stage are called research stage technologies. Since these are at a drawing-board stage, it is possible for industry players and sponsors to influence their development and timing of market entry.

- **Brain-computing interface:** A brain-computing interface (BCI) enables a person to control an external stimulus using brain signals.[15] Some of its more commonly known and recognized uses are controlling robotic limbs, aiding people with disabilities improving national defense capabilities, etc.
  - **Neuralink Corporation (USA):** Established by Elon Musk, Neuralink plans to launch a sewing machine-like device capable of implanting very thin threads into human brain [16], which may give people with quadriplegia the ability to control their computers and mobile devices with their thoughts. FDA approved the in-human trials in May 2023.[17]
  - **Synchron (Australia):** A startup, backed by Jeff Bezos and Bill Gates, Synchron developed a system which is implanted through the blood vessels and helps restore motor functions for those suffering from paralysis (neuroprosthetics), treat conditions such as epilepsy (neuromodulation) and map brain injuries. (neurodiagnostic).[18,19]
  - **Thought Qonnect (Qatar):** In 2022, the MCIT organized a hackathon to develop intelligent solutions for real-life challenges. Thought Qonnect, the winning project, built a working solution for school teachers supporting autistic students, using a brain-computing interface (BCI) hardware in response to a use case proposed by Mada Center, an assistive technology center.
- **Human augmentation:** This field creates cognitive and physical improvements with tools that integrate in the human body. Some early-stage success stories that have entered the market include wearable devices such as smart watches, smart glasses, pocket translators, etc.
  - **Naked Prosthetics (USA):** Naked Prosthetics has designed and developed finger prosthetics for people who require finger or partial-hand amputation.[20] These devices imitate the complex function of a finger and help patients regain dexterity and natural grip patterns.
  - **ReWalk Robotics (Israel):** ReWalk Robotics, a medical devices company, is designing and developing a wearable robotic exoskeleton to enable individuals with spinal cord injuries or other lower limb disabilities to stand upright, walk and run.[21]
  - **Timekettle (China):** Timekettle manufactures translation earbuds to provide real-time cross-language interpretation.[22]

Innovation in digital strategy can transform the business and operating models

To compete in this digital era and in the post-COVID-19 age, due to budgetary constraints for technology investments, organizations are focusing on generating short-term benefits over the long-term horizon to realize value.

Rapid changes in the business environment and quick implementation of platforms for ongoing digital transformation can be the real market differentiator. Therefore, the main focus of current investments is on more mature strategic technologies such as AI, cloud, automation and analytics, that pose minimal risks and are easier to implement. However, digital transformation is about the right strategy and not just the technology. It is about leveraging emerging technologies and embracing innovation to redefine the organization's business and operating models, to achieve
the desired state of financial model.

Innovation plays a fundamental role in driving digital transformation. The external stakeholders witness innovation in products and services, which is just the tip of the iceberg and underpinning it are significant transformations in the organization's business and operating models. Innovation in the business model can lead to targeting new customer segments and channels, widening of the addressable market and strengthening the proposition and brands. However, this innovation must be supported by parallel advancement in the operating model.

The organizations must realign their core business processes, optimize their organization structure, governance and risk controls and ensure the culture and workforce capabilities are supportive of the transformation objectives. Optimizing operations through digital transformation is beneficial as it allows organizations to streamline their activities and automate repetitive tasks. This improves efficiency, reduces operational costs and allocates resources more effectively.

Enterprise-wide transformation, comprising interventions in the front-, middle- and back-office, can provide a sustainable competitive advantage. Any organizational transformation exercise focuses on goals such as optimizing cost, maximizing revenue and leveraging synergies. To achieve these while meeting the client needs effectively, the front-, middle- and back-office services need to be digitally connected.

Finally, embracing innovation in digital transformation helps companies to future-proof themselves as they are better equipped to face challenges. Thus, this innovation or the lack thereof can make a critical difference to the financial results of any organization.

However, such a paradigm shift in terms of digital transformation can exponentially increase the organization's vulnerability and risk exposure to cyberthreats. Hence, securing the organization's data assets, company networks, systems, devices, intellectual property, etc. is critical to formulating and implementing any digital transformation strategy.

Source: KPMG analysis

Cybersecurity is a critical component of any digital transformation strategy

Cybersecurity has a significant role in any digital strategy formulation exercise, as it serves as a shield against cyber attacks. Incorporating a cybersecurity framework into the digital transformation roadmap at inception is integral to yielding a resilient infrastructure. A comprehensive cybersecurity framework ensures the following:

Safeguarding operational resilience: Presently, organizations rely extensively on their digital infrastructure and data assets. A cyber attack could trigger significant downtime, disrupting business continuity, and result in significant financial losses.

Solidifying brand equity and customer loyalty: A single data breach can significantly impact the organization's reputation and may also result in regulatory penalties. Thus, cybersecurity measures are essential to maintain customer loyalty and stakeholder trust.

Ensuring regulatory compliance: Cybersecurity ensures regulatory compliance and avoids unnecessary fines and potential legal issues. Due to the increasing trend of data breaches, global regulators have enforced stringent data protection regulations. Key examples include the General Data Protection Regulation (GDPR) in the European Union, Articles 21 and 22 of the Cyber Crime Law, UAE and the Protection of Personal Data (PDPL 2021) in the UAE, etc.

Fueling innovation and competitive differentiation: Cybersecurity is a critical business enabler rather than just a defensive safeguard. A robust cybersecurity framework empowers organizations to deploy innovative digital services without fear. It builds trust and loyalty among stakeholders, serving as a competitive advantage.

Guarding intellectual capital: Enterprises often harbor proprietary intellectual capital that offers a competitive advantage, such as proprietary technology, distinct business methodologies or groundbreaking products. Cybersecurity shields such intellectual capital from cyber theft.

Future-proofing the enterprise: As businesses continue to embrace disruptive technologies such as AI, IoT, etc., they also open new frontiers for cyber threats. A comprehensive cybersecurity strategy can foresee these challenges and support innovation and adaptability to the evolving cyber threat landscape.

Source: Knowledge Hut, Project Cubicle, BCS, KPMG analysis

Digital disruptors and transformation enablers vary across industries

Digital solutions and business model transformation should be industry specific to meet the strategic objectives

Industry-specific digital solutions

- Energy and natural resources
- Industrial
- Construction
- Real estate
- Utilities
- Financial services
- Education
- Healthcare
- Retail

Digital disruptors

- Blockchain
- Internet of things
- Autonomous vehicle
- Design thinking
- Cybersecurity/ Biometrics
- Digital labor
- Fintech
- Mobile economy
- Omni-channel experience
- Platform business models
- Cognitive automation
- Data analytics

Business model transformation

- Accelerating growth
- Optimizing performance
- Managing risk and regulation
- Enhancing compliance and reporting
- Improving customer experience
- Streamlining processes
- Ensuring operational efficiency

Source: KPMG analysis

Adoption of the relevant technology is critical as the level of digital maturity varies across industries

Customizing the digital strategy according to its unique industry requirements is critical to harness any competitive advantage and drive profitability arising from technology adoption. Hence, there is a need for industry-specific opportunities, threats, entry barriers, etc. to be evaluated carefully and for organizations to adopt a tailored approach to develop their digital strategy. Organizations should consider their industry needs to better identify the digital disruptors and select technologies that would aid in business model transformation.

The level of digital penetration varies across industries. Some industries, being early adopters, have higher digital maturity as compared with others which have latent potential and are following trends from the leading industries.

Energy and natural resources (ENR) sector:

- With uncertainty and transformation, driven by three main factors — market volatility, digital innovation and increasing demand for decarbonization, organizations across the ENR sector are exploring how to adjust their businesses, satisfy changing customer demands and take advantage of new opportunities.[23]
- Digital solutions are one of the potential antidotes to disruption as they can provide the oil and gas market with the data to make strategic and operational decisions.
- To realize the value of digital, data needs to be made more accessible and secure. Energy data should not be locked up in siloes, separated between assets and systems. It needs to be integrated so it can deliver actionable insights and enhance operations and supply chain.
- Some technology trends impacting the ENR sector are modern sensors, enterprise mobility, advanced analytics (AA), big data, AI and IoT.
- Some ENR companies that have embraced digital technologies in recent times are as follows:
  - **QatarEnergy – Tawteen:** Tawteen has partnered with Microsoft to leverage the latter's cloud adoption framework and pursue innovative solutions to solve the energy industry's most pressing issues, such as energy management and emissions reduction contributing to safety and environment sustainability.[24]
  - **Climate Trace (USA):** It is a non-profit coalition that uses remote sensing technologies to spot GHG emissions and build models using AI, satellites, etc. to estimate emissions at the right source.[25]
  - **Heliogen (USA):** It uses AI to precisely control mirrors that point sunlight at a tower, generating intense heat to power industrial applications and automation to streamline processes.[26]

Source: KPMG analysis

Impact of digital technologies across sectors

The ENR sector has embraced digital transformation to achieve operational efficiency, customer engagement and decarbonization

> Innovation, particularly with a strong focus on digital, will generate efficiencies, support the creation of new businesses and enable new ways of engaging with our customers.[27]
>
> **Bernard Looney**
> *Chief Executive, British Petroleum*

> This strategic partnership between Schlumberger and PETRONAS will further leverage digital capabilities while supporting the decarbonization of operations through industry-leading technologies enabled by fit-for-basin digital solutions.[28]
>
> **Amy Chua**
> *President of Asia Basin, Schlumberger*

> What we are really focused on is building an entire ecosystem around digital platforms. What you really need are a couple of different things to make it work. The first thing is you need is a user base and that's really our customers. The second piece that you need is a platform. And you need standards, which allow you the ubiquity of the plug-and-play type of applications. So, that's a big task for us, expanding our platform to cover multiple, different applications.[29]
>
> **Girish Saligram**
> *President and CEO, Weatherford*

> Europe's strength is in industrial technology and R&D. India needs technology, whereas India has its strengths in digital and IT sectors, hence it's a win-win. For the green energy business, we are in conversation with European partners for manufacturing electrolysers. We are looking at the manufacturing of green hydrogen, advanced cell, chemistry cells and modules. For this too, we are exploring partnerships with French and other European partners.[30]
>
> **Amit Agarwal**
> *Group Corporate Strategy, Larsen & Toubro*

Note: The quotes have been paraphrased for clarity in messaging and optimum word count, without changing the context or meaning.

Digital technologies can transform the way utilities are produced, delivered and consumed

Real estate sector:

- Real estate developers have embraced digital transformation to improve their operations and customer experiences.
- The rising wave of real estate tech innovation, known as proptech, has the potential to radically transform the housing market. It helps investors simplify the rental processes, including applications, approvals, rent collection and property management, increase efficiencies and drive profitability.[31]
- Companies such as AirBnB, Zillow, etc. have made the business simpler and financially rewarding for renters and homeowners through a unified platform.
- Immersive technologies such as AI, IoT big data analytics, etc. are being used. Key examples include:
  - **Barwa Real Estate:** It has signed a cooperation agreement with Huawei for receiving a full-fledged package of smart products and services, including WiFi6, data center systems, smart lighting systems. etc.[32]
  - **ReUp (USA):** It is a platform for sellers to improve and sell their properties at better prices. It uses 3D modeling and digital twin technology to help potential buyers customize property before purchasing it.[33]
  - **Agently (USA):** It has leveraged the momentum of ChatGPT and AI to launch the first virtual real estate coach advising in the real estate business, from lead generation to marketing and referral creation.[34]

Utilities sector:

- Digital disruption has made it critical for utility companies to adopt various digital changes in their business models and processes to transform the way water and electricity are produced, delivered and consumed across the value chain.[35]
- Historically, traditional utility companies generated electricity from a few large power plants and measured electricity usage with mechanical meters that were occasionally inspected. Now, utility companies rely on smart meters that provide a constant stream of data, enabling efficient monitoring and maintenance.[35]
- The recent key technology trends in the utility sector include advanced use of data, 5G, smart grid, IoT, etc. Some examples of utility companies that use technologies are:
  - **Kahramaa:** It recently unveiled a new large-scale AI and cloud-powered platform powered to improve operational effectiveness and customer experience.[36] It also launched the smart metering system in collaboration with Vodafone.[37]
  - **Siemens Utilities:** It uses an automated pay-per-use offering, which enables users to pay for upgraded services, only when they are used, on a unified platform.
  - **Dubai Electricity and Water Authority (DEWA):** It has launched 'Rammas', a virtual AI employee, to enhance customer service. It also uses big data and AI to detect potential security risks.[38]

Source: KPMG analysis

Anurag Gupta

Empowered Director,

Real estate and utilities sector expert

“The real estate sector has been relatively slow in adopting digital technologies. However, digitalization and innovation have been global disruptors contributing to transformation in business models of the real estate companies. An apt digital strategy aligned with market dynamics can streamline operations across the value chain of a real estate company and help in an efficient use of finite resources, contributing to long-term value creation.”

Proptech and digital solutions can not only disrupt the conventional real estate operations but also transform urban city management

> We are delighted to cooperate with Huawei, one of the largest global companies specialized in smart technology and a pioneer in providing ICT solutions. Such cooperation will contribute to raising the efficiency of the operational and service processes of the group's projects and will enhance its competitiveness in order to maximize the benefit for shareholders. [39]
>
> **Abdullah bin Jubara Al Rumaihi**
> *CEO, Barwa Real Estate Group*

> The rollout of Yardi's real estate technology across property management, property financials, leasing, sales, city management and facility management has delivered a fully connected, single source of truth across multiple asset types. Not only are we managing these processes with greater efficiency, but we are able to gain easier access to a wide range of real estate performance information and KPIs through a single platform.[40]
>
> **Amany Abu-Hassan**
> *Director- IT, Qatari Diar*

> Whether it is virtual reality tours, increased adoption of 3D printing technology, AI becoming a common fixture across the development and management cycle or Web 3.0 redefining how we co-develop and co-design our built and virtual spaces, there has been a transformative shift in how we manage, develop and sell properties today, making every real estate contender rethink its strategy playbook and rightly so.[41]
>
> **Ziad El Chaar**
> *Chief Executive Officer, Dar Global (international real estate arm of Dar Al Arkan)*

> Digital technologies have become deeply embedded in all areas of today's cities and now play a vital role in all aspects of urban city management and citizens' standard of living as well as in the field of enhancing public safety and industrial development. As a result, the race to develop smart cities is accelerating around the world driven by the consolidation of the ever-growing digital economy.[42]
>
> **Alex Zeng**
> *Director, Huawei Enterprise Business Group for Enterprise and Institutions Sector*

Note: The quotes have been paraphrased for clarity in messaging and optimum word count, without changing the context or meaning.

Kahramaa has launched an AI and cloud-powered platform in collaboration with Microsoft and KPMG

In partnership with Microsoft and KPMG, Kahramaa has unveiled a new large-scale platform powered by cloud computing and AI that is intended to improve operational effectiveness and customer experience.

The parties were represented by H.E. Engineer Essa bin Hilal Al-Kuwari, President of Kahramaa, Lana Khalaf, General Manager of Microsoft Qatar, Nizar Hneini, Partner and Head of Digital and Innovation and Ahmed Abu Sharkh, Country Senior Partner at KPMG in Qatar.

KPMG has partnered with Microsoft Azure and developed an analytics platform for Kahramaa, which includes the following use cases:

Use case	Technology area
Validation of meter reading to eliminate human error and increase data accuracy	Machine learning
Identification of electricity cabinet anomalies after uploading an image to aid in immediate rectification	Machine learning
Identification of gaps in ticketing data analysis to improve processes	Analytics
Provision of ChatGPT access to enable employees to generate smart goals	Artificial intelligence
Use of OpenAI to provide information to subscribers	Artificial intelligence

Source: Gulf Times, KPMG analysis

Kahramaa has launched an AI and cloud-powered platform in collaboration with Microsoft and KPMG

Kahramaa significantly focuses on comprehensive digital transformation and plans to achieve corporate excellence in line with the development pillars of the Qatar National Vision 2030 and Qatar Digital Government Strategy.

H.E. Engineer Essa bin Hilal Al-Kuwari
President, Kahramaa

We thank Kahramaa for its trust in our technology, and we remain committed to partnering with it to achieve its vision to become one of the global leaders in customer centricity, performance, innovation and environmental sustainability.

Lana Khalaf
General Manager, Microsoft

Note: The quotes have been paraphrased for clarity in messaging and optimum word count, without changing the context or meaning.

Digitalization has offered the utility sector an opportunity to improve operations, raise standards of service and enhance customer focus

> Digital transformation occupies a central position in Kahramaa's long-term strategy. The implementation of an advanced metering infrastructure in the country is a major milestone in Kahramaa's efforts to introduce the latest smart services in alignment with the Qatar National Vision 2030.[43]
>
> **H.E. Engineer Essa bin Hilal Al Kuwari**
> *President, Kahramaa*

> With the installation of the 10 millionth smart meter, we completed installing and replacing the mechanical meters with smart ones. The smart meters are the company's most important project towards digital transformation, and it is the pivot for its strategy aiming to raise the standard of services for the better. It is also the most promising project towards comprehensive national development and a brighter future.[45]
>
> **Fahd Bin Hussein Al-Sudairi**
> *CEO, Saudi Electricity Company (SEC)*

> Etihad WE seeks to become a global leader and achieve the highest levels of excellence, which means having the best-in-class digital foundation to optimize operations, and employee and customer experiences. As part of the transformation, Etihad WE will transition from the current SAP business suite, leveraging in-built AI and ML capabilities.[44]
>
> **Mohammad Mohammad Saleh**
> *Director-General of Etihad Water and Electricity (WE)*

> Digitalization projects will make us more effective in our operations, save costs and result in fewer problems and complaints from the public. Digitalization is an enabler, but people have to make the decisions. Digital tools will give you more data to work with, more informed options and more confidence in optimizing the system. We need both people and digitalization to work hand in hand.[46]
>
> **Harry Seah**
> *Deputy Chief Executive (Operations), PUB Singapore*

Note: The quotes have been paraphrased for clarity in messaging and optimum word count, without changing the context or meaning.

Digital solutions can enable all-round transformation of the industrial sector

Construction sector:

- The construction sector has traditionally been regarded as conservative in terms of digital maturity due to the uniqueness of each project, multitude of independent contractors having no incentive to embrace technology and harsh environments unsuitable for technological equipment.
- However, increasing pressures to meet deadlines and improve efficiency and safety have initiated a new age of disruption.
- Appropriate technology can make the construction industry more efficient and collaborative. It can enable on-site personnel and equipment to stay connected and avoid rework, errors, etc.
- At present, the construction industry uses technologies such as AI, 3D printing, drones, motion sensors, shared economy and blockchain.
- Key examples of construction companies that use technology include:
  - **Ashghal:** It aims to integrate technologies such as AR, AI, 3D printing, etc. in most of its projects from 2024 and upgrade Qatar's construction industry to international standards.[47]
  - **Larsen & Toubro:** It uses geospatial technology to conduct real-time surveys using drone-based photogrammetry, and connected machines and equipment (IoT) to stream real-time data, without human intervention.[48]
  - **Bechtel Corporation:** It uses drones at its construction sites to conduct real-time analysis.[49]

Industrial sector:

- The adoption of digital solutions to replace legacy or non-digital manufacturing processes and supply chain management can help enhance business.
- The relevant digital solutions can bring assets and data together to add value to every operation and process.
- The industrial landscape is moving toward autonomous factories driven by industrial sensors, equipment connectivity, predictive maintenance, automation, data-based decision-making, AI, etc.
- These technologies enable higher quality products to be produced faster and at lower cost, with lesser waste, lower maintenance, material and energy costs and a more sustainable, low-emission environment. Some key companies that develop industrial technology solutions are:
  - **Qatar Foundation (QF):** It has established the Qatar National Research Fund (QNRF) for the research and implementation of smart manufacturing technologies that can boost productivity and reduce cost and time.[50]
  - **Siemens:** It uses AI and ML to enable industrial automation and data analytics.[51]
  - **Rockwell Automation:** It promotes 'Smart Manufacturing' for the cement industry, automotive industry, etc. by using AI to reinforce systems. Its offerings include independent cart technology, human-machine interface, motion, motor control devices, remote monitoring services, etc.[52]

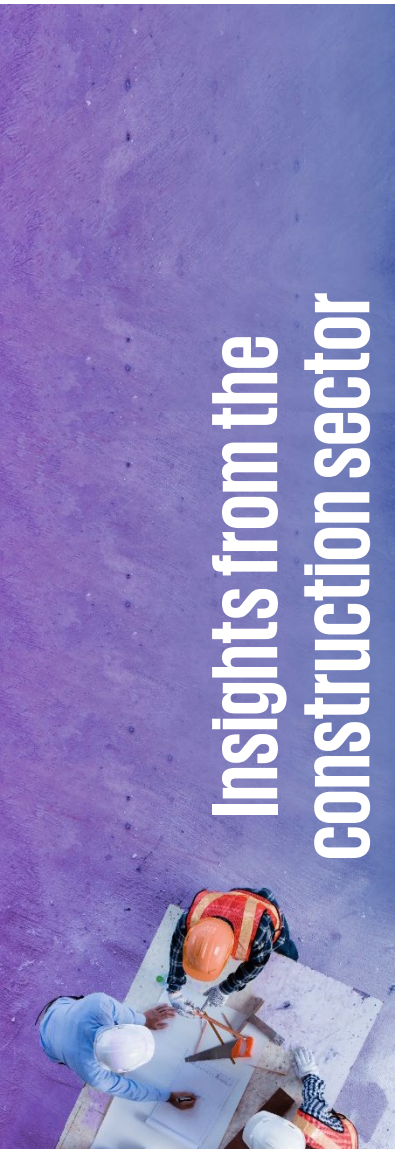
Source: KPMG analysis

Adhishree Jakali

Associate Director,

Construction and industrial sector expert

Despite several constraints, the construction sector has taken strong steps to adapt itself to digital and innovation trends. These can have a significant impact in improving operational efficiency and performance on safety and quality parameters. Digital technologies can help align manpower, equipment and other resources and facilitate agile project management.



Leveraging digital technologies in construction can help equipment and personnel remain connected, leading to smart decision-making

> RISE with SAP was a key milestone for QPMC's holistic digital transformation journey in line with Qatar National Vision 2030 and the country's strategy to diversify its economy. SAP's expertise and cutting-edge technologies and Microsoft's cloud infrastructure will play an effective role in achieving our 2023 goals to drive innovation, enhance our competitiveness and deliver greater value to our customers.[53]
>
> **Abdulaziz Ibrahim al-Tamimi**
> *CEO of Qatar Primary Materials Company (QPMC)*

> We are continually focused on applying proven and emerging technologies to lower carbon emissions. By pairing our data management system with Cumulus' platform (cloud hosting dashboard, mobile application and connected tools), we were able to implement digital solutions using data-backed insights to meet customer goals while continuing to improve safety for our people, our communities and the planet.[55]
>
> **John Tottenham**
> *Innovation Implementation Manger, Bechtel*

> This is the first training for this technology (3D printing of concrete) to be held in Qatar, and we are delighted to share the knowledge with Ashghal. Participants who have completed the training should be able to prepare existing models for printing and transfer the required information to the system. They can also set up the physical components of the system before a printing is initiated and are equipped to assess and maintain the satisfactory status of the system throughout the process. print. Finally, the training will enable them able to identify, assess the status and troubleshoot any component of the system before or during a print.[54]
>
> **Dr. Eyad Masad**
> Mechanical Engineering Professor, Texas A&M at Qatar

> Our digital twin (cement plant digital twin) in Switzerland is a breakthrough for the entire industry. By leveraging digital technologies like this, we are generating massive amounts of data, allowing smarter decision-making to take our operational efficiency to the next level.[56]
>
> **Rozemarijn Wesby**
> *Global Head of Plants of Tomorrow, Holcim*

Note: The quotes have been paraphrased for clarity in messaging and optimum word count, without changing the context or meaning.

Embracing digital tools in the industrial sector can help optimize operations and improve asset productivity across the value chain

> The first step in our journey towards digital transformation is changing the way we think and do our business. By integrating AI and ML in our power assets, we will have better control of our power operations, leverage instant real-time data to boost our productivity and optimize our power plants' performance.[57]
>
> **Ali Al Baqali**
> *CEO, Aluminium Bahrain B.S.C. (Alba)*

> Using ChatGPT through Microsoft as part of the MO360 digital ecosystem is another example of how digitalization is taking production at Mercedes-Benz to the next level. Through new digital tools, employees are further empowered to optimize production processes and quality management in a sustainable way. After a successful pilot phase, ChatGPT will be used throughout the Mercedes-Benz global production network.[58]
>
> **Jörg Burzer**
> *Member of the Board of Management responsible for Production and Supply Chain Management, Mercedes-Benz Group AG*

> The future of Boeing is digital. Focusing our R&D and talent development in areas that support digital innovation will fuel the introduction of cutting-edge capabilities.[59]
>
> **Greg Hyslop**
> *Chief Engineer and Executive Vice President of Engineering, Test and Technology, Boeing*

> With Microsoft Azure as its cloud foundation, Unilever's end-to-end digitization will enable rapid innovation across its entire business. From embracing the industrial metaverse across its factories to reimagining how its lines of business can do more with tools like Azure OpenAI Service, Unilever's digital-first approach will empower it to grow resiliently and exceed the industry's pace of innovation.[60]
>
> **Judson Althoff**
> *Executive Vice President and Chief Commercial Officer, Microsoft*

Note: The quotes have been paraphrased for clarity in messaging and optimum word count, without changing the context or meaning.

Ronald Dias

Manager,

Financial services and education sector expert

The traditional delivery model in financial services and education sector were severely impacted during the pandemic, thus demanding solutions that could eliminate the need for face-to-face interaction. Rapid growth in the use of digital tools, cloud technologies, AI chatbots and cutting-edge technologies have enabled financial service businesses to provide innovative solutions, improve agility and enhance their cost efficiencies.

New technologies are driving innovative solutions and improving cost efficiency in the financial sector

Financial services sector:

- The traditional banking model is challenged by three trends: fluctuating interest rates, extended regulations and increased competition from challenger banks and digital entrants.[61] The need for new banking technologies and cost-cutting efficiency measures is increasing every day.
- Financial technologies facilitate faster, cheaper, more transparent and user-friendly financial services. These raise the prospect of expanding financial inclusion, especially in developing countries. The digitalization of financial services is reshaping the landscape of banking and transactions, offering greater convenience and efficiency to consumers and businesses alike.
- In recent years, cloud technologies, SaaS, digital applications and AI have helped banks overcome business challenges and operate with agility. Now, the use of cashless payments and digital currencies is emerging, and there has been an increase in online investment tools.
- Companies working with AI are exploring credit scoring based on payment data. Fintech startups in Latin America, Africa and Asia are moving toward the use of peer-to-peer lending data and information from mobile phone payments to build reliable credit databases.[62]
- Another area under development is ‘smart contracts’ that enables secure and faster settlement of financial market transactions. [62]
- These technologies inevitably have associated risks. Unregulated sectors could create additional operational risks related to cybercrime and outsourcing.
- Hence, the industry leaders should strike a balance to harness the potential of new financial technologies, fostering innovation while maintaining a strong regulatory framework.
- Qatar has established a comprehensive AI strategy focused on six pillars: education, data access, employment, business, research and ethics, which together will guide it towards the transition to an AI future,[63] which is also expected to boost the financial services sector and increase demand for digital transformation.
- Key examples of financial service companies integrating technologies are:
  - **Qatar Development Bank (QDB):** It launched a digital portal called ‘QDB Digital’ that enables easy transfers, renewals, faster banking, etc.[64]
  - **CapitalOne (USA):** It recently released ‘Eno’, an AI virtual assistant to help users make credit card payments, provide fraud alerts, etc.[65]
  - **Ally Financial (USA):** It has recently embraced the use of AI and ML in its mobile application to assist customers with transfers, payment summaries, etc. Its chatbot is text and voice-enabled, so users can speak with or text the assistant for their banking needs.[65]

Source: KPMG analysis

Financial services have been early adopters of digital technologies driving the growth of fintech companies

> Digital transformation is the adoption of innovative technologies to increase productivity, value creation and social welfare. In 2020, when COVID-19 hit, the adoption of digital banking services increased due to lockdowns and moving restrictions. Financial companies started building remote work models, which accelerated the digital transformation agenda in the banking sector.[66]
>
> **Waleed Ali**
> *Digital Government Specialist, MCIT Qatar*

> Digital bill payments will help clients accelerate revenue realization, reduce costs to serve their customers and improve user satisfaction through convenient and intuitive interactions.[67]
>
> **Max Neukirchen**
> *Global Head of Payments & Commerce Solutions, J.P. Morgan*

> As we go digital and cashless, it becomes absolutely important to ensure that all measures of cybersecurity are in place to protect our customer data and privacy. We are on guard round the clock. And we have invested heavily in the best cybersecurity products to ensure that cyber criminals are kept at bay.[68]
>
> **Dr. Abdulbasit Ahmed al-Shaibei**
> *CEO, QIIB*

> The number of operating fintechs in Qatar has increased threefold in a year, from 20 in 2019 to 60 in 2020. Large banks are tapping into startup systems to incubate and create alliances on a variety of platforms, such as wallets, payments, investment intermediation and online credit acquisitions.[69]
>
> **Dr. R Seetharaman**
> *Former CEO, Doha Bank*

Note: The quotes have been paraphrased for clarity in messaging and optimum word count, without changing the context or meaning.

Digital strategy can transform teaching and learning practices and modernize institutions

Education sector:

- The use of technologies in the education sector can play a crucial role in providing innovative forms of support to teachers, students and the teaching and learning processes.
- The education system has a key role in elevating the level of IT and digital literacy among students and teachers, which contribute to improving the quality of education. Thus, this helps improve the quality of life.
- In recent years, spurred by the pandemic, online resources have been the dominant mode of imparting education. In the future, courses are likely to be delivered by teachers through digital-first method and supplemented by face-to-face human support.
- The introduction of ICT in the teaching and learning process, carried out as per a robust digital strategy, can significantly contribute to enhancing the quality of work in the field of education, thereby improving efficiency and quality of teaching.[70]
- Digitalization of the education system not only involves the introduction of digital technologies in the teaching process, but also in all other processes of the educational institutions.
- These include augmenting efficiency in the administrative processes developing electronic services for students, teachers and parents, and easy data exchange with other institutes. [70]

Source: KPMG analysis

- Some of the technology trends in the education sector are adaptive learning, AR/VR, conversational user interface, chatbots, SaaS digital credentials, etc.
- Key examples of institutions using technologies are:
  - **Qatar University (QU):** QU Digital Transformation Strategy aims at enhancing digital transformation competency, digitalization of QU operations and sectors, implementing a smart campus infrastructure and impacting the national digital transformation ecosystem.[71]
  - **University of South Australia:** It plans to create 'The Innovation Academy in Digital Business', in partnership with Accenture, which offer a unique curriculum focused on digital business from 2024.[72]
  - **The University of Birmingham, Dubai:** It plans to embed technology in its campus, such as IoT using mobile applications that will include quickly identifiable study spaces, directions to lecture halls, notifications of events happening nearby and playback of lectures, through one unified platform.[73]

The education sector is focused on augmenting innovation and building digital competencies to improve learning opportunities and experiences

> Digital transformation is an important part of Qatar University's strategy, and a vital element for continued innovation. Our aim is to build digital competency, digitalization of QU operations and sectors, and implement a smart campus infrastructure.[74]
>
> **Dr. Hassan Al-Derham**
> *Former President, Qatar University*

> Boston University's Digital Education Incubator understands that experimentation is a necessary precursor to innovation, which is why we pilot bold new ideas as we seek to leverage the potential of technology to positively transform learning.[75]
>
> **Diana Marian**
> *Senior Project Manager, Platform Partnerships, Boston University*

> Education currently sits on the precipice of a new age of innovation, where technology is broadening access and growing opportunities for learning. But as these new technologies explode across the sector, knowing how to maximize their benefits in schools and universities is an ongoing challenge.[76]
>
> **Prof. George Siemens**
> *Professor and Director, Centre for Change and Complexity in Learning, University of South Australia*

> Our partnership with ARuVR enables us to provide students with a scalable, cloud-based industry-leading AR and VR rapid application building platform which will help them to develop the skills required to meet the demands of business across multiple sectors. This partnership goes beyond just providing the technology, ARuVR will provide on-going expertise and guidance as well as real-world industry experience and practice which is invaluable as our students' progress in their studies and their career.[77]
>
> **Prof. Rajkumar Roy**
> *Executive Dean, School of Science & Technology (SST) City, University of London*

Note: The quotes have been paraphrased for clarity in messaging and optimum word count, without changing the context or meaning.

Customer-centricity in retail and patient care in healthcare is central to digital transformation

Retail sector:

- As the shift to digital transformation accelerates, retailers have invested in developing a more digital-first approach.[78]
- For companies with physical locations facing a decrease in demand, retailers distinguish themselves from online-only retailers by providing unique in-store experiences that are immersive. For example, Nike's Time Square flagship store has a basketball court with cameras to record shots and treadmills with screens mimicking popular running routes.[79]
- Some of the commonly used technologies in the retail sector are contactless ordering, curbside pickup, self-checkout systems, AR/VR try-on technology, AI-powered recommendations, etc.
- Key examples of companies using technology are:
  - **Al Meera:** Al Meera plans to accelerate its cloud transformation journey by implementing SAP's S/4HANA. It also aims to leverage the advantages of cloud computing and automation.[80]
  - **Walmart:** Walmart has leveraged the metaverse capabilities, with possible future plans to transition virtual experiences into real-world purchases.[81]
  - **Amazon:** The Amazon Go stores have no cashiers or registers. Customers can walk in, pick their choices and walk out. The technology used can detect the items that the customers pick and put in their virtual carts, and it charges the Amazon account with the amount.[82]

Source: KPMG analysis

Healthcare sector:

- The primary goal of digitalization in healthcare is to expedite the work of medical professionals, enhance medical software systems, eliminate human errors, improve patient outcomes and reduce costs by integrating physical and digital experiences.[83]
- Leveraging digital tools can enable healthcare providers to enhance the quality of care that they provide and improve patient outcomes.
- This can include everything from using electronic medical records to track patient data to using telemedicine to connect patients with doctors.
- Technologies such as wearable devices, virtual reality, big data, AI, 3D printing, IoT, etc. have contributed to transforming healthcare business and operations.
- Some companies exploring technologies in healthcare sector are:
  - **Hamad Medical Corporation (HMC):** HMC has introduced various systems such as the Clinical Information System (CIS) that provide each patient with a personal electronic health record. It has also implemented the use of entertainment tech to reduce anxiety for patients undergoing MRI scans.[84]
  - **Google Health:** It uses AI to screen breast cancer, avert blindness, etc.[85]
  - **Mayo Clinic:** It uses technology that remotely connects patients' telemetry and biosensing devices with diagnostic-focused AI algorithms.[86]

Digital tools can help integrate the retail value chain and provide consumers with an enhanced experience

> We now want to transform Carrefour, a traditional retailer with e-commerce capabilities, into a digital retail company, which places digital and data at the heart of all its operations and its value creation model. This profound change, which we intend to carry out by 2026, will unleash the full potential of omnichannel, which is today the DNA of Carrefour and a unique asset in the industry.[87]
>
> **Alexandre Bompard**
> *Chairman and CEO, Carrefour*

> We are leveraging technology and digitization to drive industry-first innovations to provide a superior experience to our customers as well as a better value proposition. We are focusing on driving real-time awareness and transformation within the organization's digital trends.[88]
>
> **Nikunj Jain**
> *CIO & Digital Leader, P&G India*

> We have been working on our own Large Language Models (LLM) for a while now and believe it will transform and improve virtually every customer's experience. We will continue to invest substantially in these models across all of our consumer, seller, brand and creator experiences.[89]
>
> **Andy Jassy**
> *CEO, Amazon*

> We use the data to provide a better experience in the future whereby customers don't have to think about the next products they want. All the insights are being utilized internally in order to provide a better shopping experience.[90]
>
> **Hani Weiss**
> *CEO, Retail at Majid Al Futtaim*

Note: The quotes have been paraphrased for clarity in messaging and optimum word count, without changing the context or meaning.

Digitalization can significantly improve access to healthcare services, productivity and quality of patient care

> HMC started the journey to secure a modern digital workplace to empower employees and care teams to be more productive and to do more with less. HMC's modern digital workplace creates experiences that put our people at the center and provide the collaborative, intelligent and secure experience required for today's fast-paced work environment.[91]
>
> **Richard Storey**
> *Chief of the Health Information and Communications Technology Department, Hamad Medical Corporation*

> By digitizing the specimen slides, sharing them has become faster and has significantly reduced scenarios of loss or contamination of the specimen. Digitization will also improve analysis over microscopy, provide quicker access to prior cases, link to the patient's electronic medical records and generate better predictive analysis over a period of time.[92]
>
> **Dr. Fouad Alchami**
> *Attending Physician at the Anatomical Pathology Unit , Sidra Medicine*

> This new digital check-up will mean people can do simple tests and get tailored advice from their homes while reducing pressure on GP services. This could play an important role in helping people live healthier for longer and saving lives in the coming years, while reducing pressure on the NHS.[93]
>
> **Steve Barclay**
> *Health Secretary, National Health Services UK (NHS)*

> Mayo Clinic has made strategic investments in its digital and analytic capabilities, and this has allowed us to make precise predictions about the COVID-19 cases nationwide in order to provide safe and effective care for all our patients.[94]
>
> **Dr. Sean Dowdy**
> *Midwest Quality Chair, Mayo Clinic*

Note: The quotes have been paraphrased for clarity in messaging and optimum word count, without changing the context or meaning.

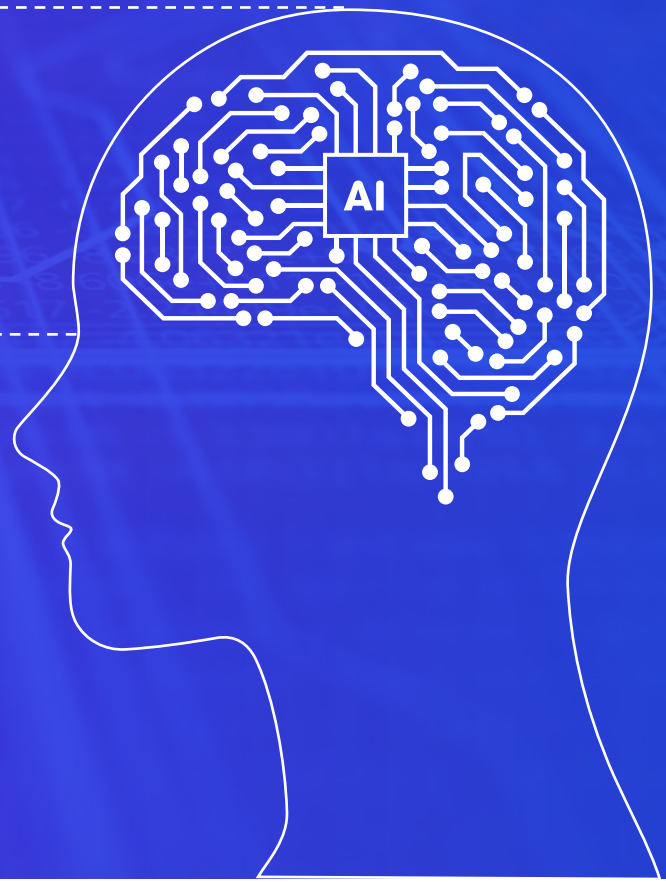
KPMG can assist in answering key questions on your digital transformation journey

1. What are the key technology trends that impact my sector?

2. How will digital transformation help my business become more adaptable and agile?

3. What challenges will my business face during the digital transformation journey?

4. How do I ensure that we are investing in the right technologies while balancing growth and profitability?



A robust strategy can drive the business value to exceed the sum of its parts and...

1. Definition

A digital strategy is the application of digital technologies to transform the business model, operating model and financial model of any organization. It can help specify the direction an organization will take to create new competitive advantages with technology and the approach it will take to manage the transformation.

2. Core objectives

- To align digital technologies with strategic goals and objectives
- To use digital tools and technology to transform the business
- To adapt to the market challenges and evolving technology trends

3. Key triggers

- Disruptions in the industry
- Risk of technological obsolesce
- Agile market dynamics and loss of market share to technologically superior peers and/or new entrants
- Abundance of technological choices
- Change in leadership/corporate structure
- Goals to optimize operations and adopt innovative industry practices

4. Critical success factors

- Strong commitment from the leadership team
- Alignment of long-term strategy with digital transformation goals
- Compatibility of operations and processes with technology solutions
- Selection of fit-for-purpose technology solution(s)
- Robust approach toward governance and project management

Source: KPMG analysis

...is built on a holistic framework to assist the business achieve its long-term goals

5. Methodology

Step 1: Current state (internal and external) assessment: *Where do I stand now?*

Step 2: Benchmarking analysis: *What can I learn and improve upon?*

Step 3: To-be state articulation: *Where do I want to reach?*

Step 4: Operating model: *How should I function at the to-be state?*

Step 5: Implementation roadmap: *How do I reach the to-be state?*

Step 6: Business plan: *What is the financial outcome of the strategy?*

Step 7: Managing performance: *Am I on track?*

6. Tools

- KPMG 9-Levers of value
- Balanced scorecard
- Porter's 5 forces analysis
- PESTEL analysis
- KPMG Connected Enterprise maturity assessment
- KPMG 'U-Collaborate'

7. KPMG 9-Levers of value

Our 9-LoV framework is built around a business' financial and strategic outcomes, the business model and the operating model that is needed to develop a robust strategy.

8. Outcome

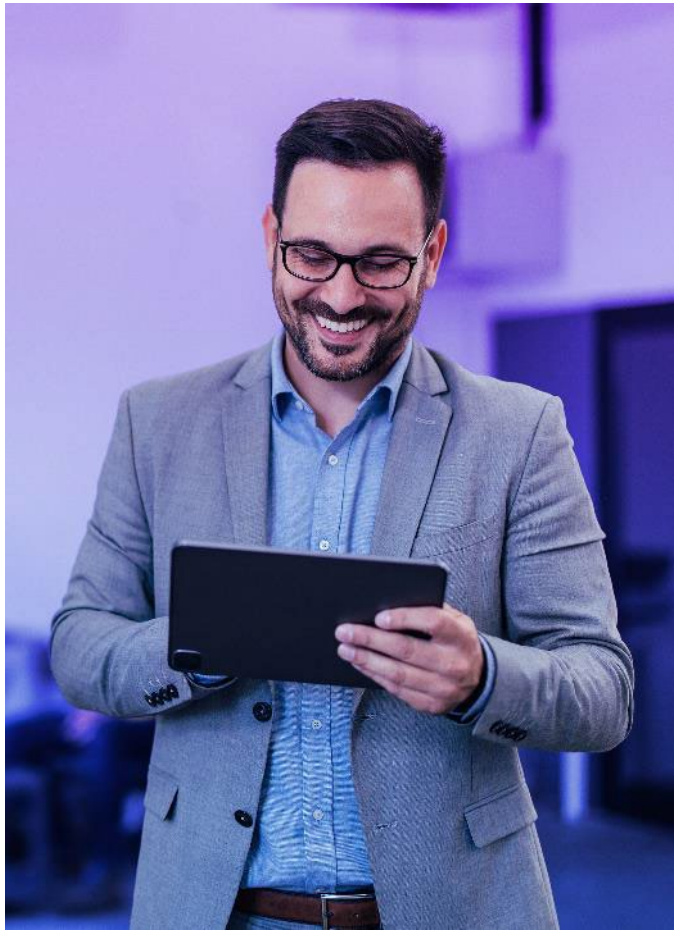
- Effective use of digital technology to achieve business goals and objectives

Source: KPMG analysis

An agile approach adds speed, flexibility and customer-centricity and lowers the risks in digital transformation

In addition to the step-by-step approach in developing strategy, digital strategies require an agile approach that focuses on flexibility, collaboration and delivering value to customers through short, iterative development cycles called sprints. These sprints allow for rapid testing and improvement, which reduces risk. Some of the agile principles such as customer collaboration, responding to change and frequent delivery of working software enable organizations to adapt quickly to changing technologies and customer needs during digital transformation. The agile approach is well-suited for digital strategy and transformation for several reasons:

Source: Simpli Learn, Opin, Cohn Reznick, Infosys, Product Plan, What Fix, KPMG analysis



Speed:
Agility emphasizes on rapid experimentation and frequent delivery of working features in short sprints of 1–4 weeks.

Adaptability:
It provides the ability to continuously adapt the strategy based on changing technologies, markets and customer needs.

Flexibility:
Requirements evolve through constant collaboration and feedback from real users.

Continuous improvement:
Regular reflection promotes continuous improvement.

Customer-centricity:
An agile approach focuses on continuous delivery, customer collaboration and regular feedback, which drives development to deliver value to customers.

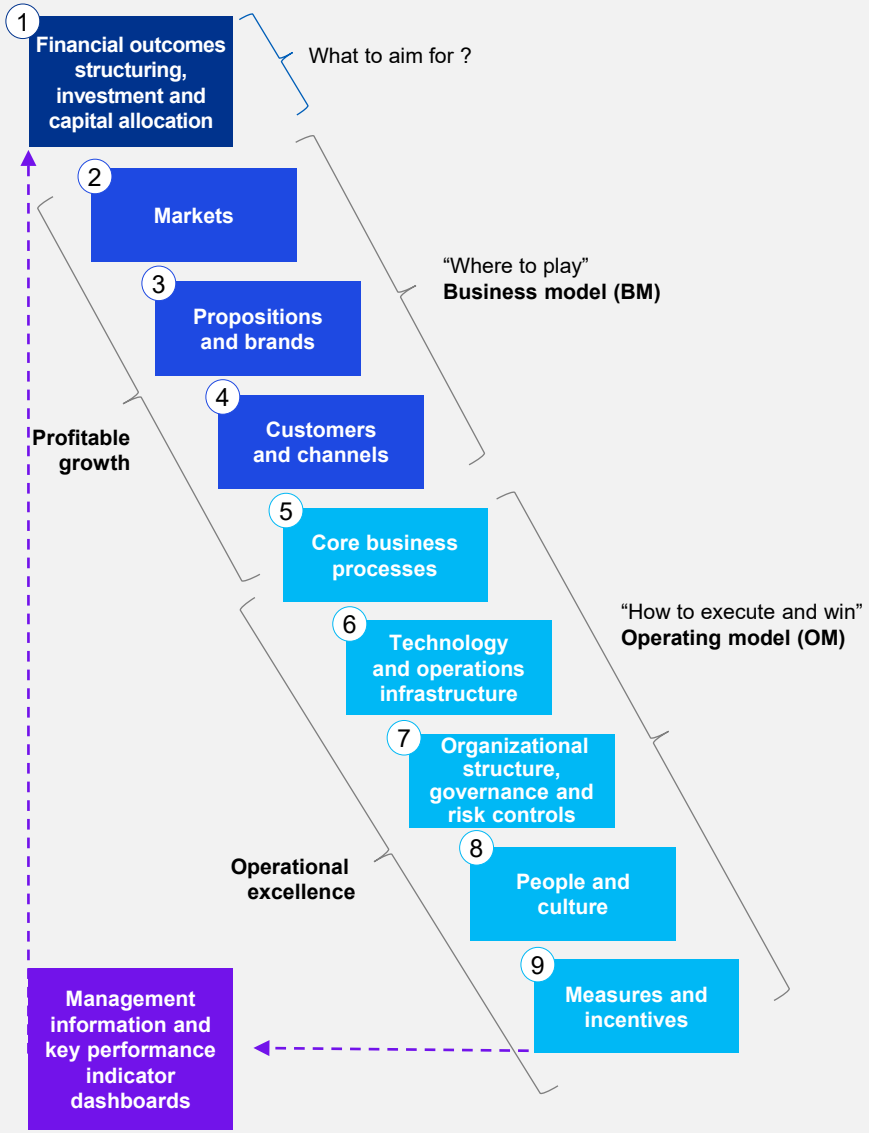
Reduced risk:
Smaller increments allow for regular validation and correction, reducing the overall risk.

Promoting innovation:
Agility empowers teams to experiment and challenge assumptions through rapid testing, which fuels innovation.

Taking data-driven decisions:
Constant feedback loops provide real-time user data to guide strategy.

KPMG framework and tools

KPMG 9-Levers of Value is an established framework to develop your digital strategy



Financial outcomes structuring, investment and capital allocation:
What are the 3–5-year financial and strategic objectives?

Markets:
Does the current portfolio of businesses support the financial and strategic objectives?

Propositions and brands:
How should the portfolio of propositions and brands be managed over time to deliver financial and strategic objectives?

Customers and channels:
What changes to the operating model can enable customer/ channel performance?

Core business processes:
What are the priority business processes to deliver the financial outcomes, and a winning business model?

Technology and operations infrastructure:
What are the priority infrastructure and technology elements that will be required to enable the strategy?

Organizational structure, governance and risk controls:
What does the organizational structure need to enable the strategy?

People and culture:
What leadership is required to drive the transformational change and what culture and behaviors are required as enablers?

Measures and incentives:
What will you measure to monitor progress on strategy, identify issues and enable action where required?

KPMG deploys various tools and frameworks to formulate a digital strategy

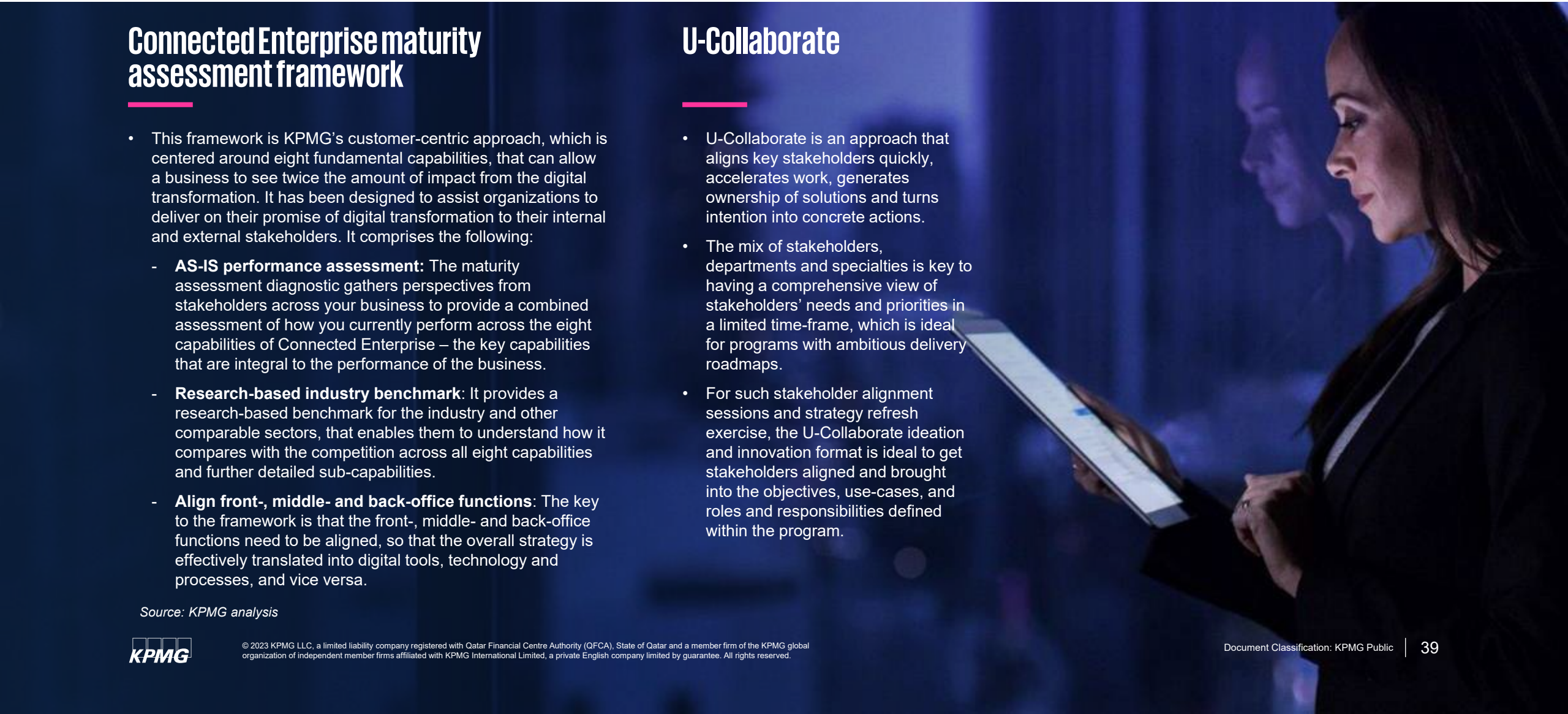
Connected Enterprise maturity assessment framework

- This framework is KPMG's customer-centric approach, which is centered around eight fundamental capabilities, that can allow a business to see twice the amount of impact from the digital transformation. It has been designed to assist organizations to deliver on their promise of digital transformation to their internal and external stakeholders. It comprises the following:
  - **AS-IS performance assessment:** The maturity assessment diagnostic gathers perspectives from stakeholders across your business to provide a combined assessment of how you currently perform across the eight capabilities of Connected Enterprise – the key capabilities that are integral to the performance of the business.
  - **Research-based industry benchmark**: It provides a research-based benchmark for the industry and other comparable sectors, that enables them to understand how it compares with the competition across all eight capabilities and further detailed sub-capabilities.
  - **Align front-, middle- and back-office functions**: The key to the framework is that the front-, middle- and back-office functions need to be aligned, so that the overall strategy is effectively translated into digital tools, technology and processes, and vice versa.

Source: KPMG analysis

U-Collaborate

- U-Collaborate is an approach that aligns key stakeholders quickly, accelerates work, generates ownership of solutions and turns intention into concrete actions.
- The mix of stakeholders, departments and specialties is key to having a comprehensive view of stakeholders' needs and priorities in a limited time-frame, which is ideal for programs with ambitious delivery roadmaps.
- For such stakeholder alignment sessions and strategy refresh exercise, the U-Collaborate ideation and innovation format is ideal to get stakeholders aligned and brought into the objectives, use-cases, and roles and responsibilities defined within the program.



KPMG Connected Enterprise framework is centered around eight fundamental capabilities

KPMG Connected Enterprise is built on findings that determine the eight key capabilities of a truly connected, customer-centric enterprise. This framework helps organizations rebuild their business around customers, with new capabilities enabled by technology, and create a borderless organization to achieve new levels of performance and value.

	Insights	Innovation	Experience	
Customer engagement	1 Insight-driven strategies and actions	2 Innovative products and services	3 Experience centricity by design	
	4 Seamless interactions and commerce	2x Impact*	5 Responsive operations and supply chain	Operations
	6 Aligned and empowered workforce	7 Digitally enabled technology architecture	8 Integrated partner and alliance ecosystem	
	People	Technology	Ecosystem	

Source: KPMG analysis

**Note: (a) Base: 1,299 professionals involved with customer-centric strategy decisions, sourced from a commissioned study conducted by Forrester Consulting on behalf of KPMG, September 2018*

Connected Enterprise can help assess organizational digital maturity

01 | Insight-driven strategies and actions

Insights: Harness data and advanced analytics with a real-time understanding of the business for integrated decision-making

02 | Innovative products and services

Innovation: Develop compelling customer value propositions on prices and products to engage customers and drive profitable growth.

03 | Experience-centricity by design

Experience: Design seamless experiences for all stakeholders supporting the customer value propositions and delivering business goals.

04 | Seamless interactions and commerce

Customer engagement: Interact and transact with customers and prospects across marketing, sales and service and achieve measurable results.

05 | Responsive operations and supply chain

Operations: Operate the business with efficiency and agility to fulfill the customer promise in a consistent and profitable way.

06 | Aligned and empowered workforce

People: Build a customer-centric organization and culture that inspires people to deliver on customer promise and drive performance.

07 | Digitally enabled technology architecture

Technology: Create intelligent and agile services and technologies, that the customer agenda with secure scalable solutions.

08 | Integrated partner and alliance ecosystem

Ecosystem: Engage and manage third parties to increase speed to market, reduce costs, and mitigate risks to deliver customer promise.

Source: KPMG analysis

U-Collaborate is a stakeholder management tool that accelerates work and turns intention into actions

Source: KPMG analysis

KPMG Lighthouse is the center of excellence for intelligent automation and data and analytics

What is KPMG Lighthouse?

It is a global network of experts that helps the world's leading organizations maximize value by combining data and analytics expertise with domain expertise, embedding advanced analytics and AI into everything we do. We work with clients to formulate solutions to leverage pre-built enabling solutions and technology platforms to support their digital transformation across all functions, in all sectors.

Our services leverage cutting-edge data science and computing techniques to solve our clients' specific business needs. This requires a strong combination of analytics experience, trustworthy data and industry/functional knowledge to properly frame the problem and develop continuously self-improving solutions.

KPMG Lighthouse provides functional expertise combined with some of the best-in-tech talent, offerings and alliances, including data scientists, software engineers and data and analytics consultants.

Source: KPMG analysis

4,800+

KPMG Lighthouse professionals globally

30+

KPMG firms in the Global Lighthouse network

10+

Global strategic alliances, including leading technology providers Google Cloud, IBM, Microsoft and Oracle

Alliances with technology powerhouses give KPMG access to a broad range of solutions to support clients (1/2)

KPMG and Microsoft entered into a multi-year cloud and AI alliance

- KPMG and Microsoft have recently expanded their global relationship that has the potential to reshape professional services and the use of AI solutions for clients, industries and the society.
- The Microsoft cloud and Azure OpenAI service capabilities will empower the KPMG global workforce of 265,000 by providing faster analysis so that they can spend more time on strategic advice.
- Developing an AI-enabled application development and knowledge platform on Microsoft Azure will expedite the creation of specialized solutions for clients, helping to enhance their competitive advantage and profitability while putting ethics and security at the very core of the offerings.[95]

> This expansion of our global alliance builds on the combined power of two world-class organizations that share a common set of core values, working together to responsibly use cutting-edge cloud and AI technologies. KPMG is embracing the future, and we believe that AI is key to unlocking sustainable growth in a way that will build a better future for our people, our clients and society.
>
> **Bill Thomas**
> *Global Chairman and CEO, KPMG*

KPMG and ServiceNow

- KPMG and ServiceNow combine leading technologies, industry expertise and intelligent design to help make organizations digitally savvy, interconnected and easy to navigate. They help improve efficiency, reduce costs and unlock productivity, while enabling the flexibility needed to meet clients' evolving needs.
- KPMG professionals, along with ServiceNow, can help to automate, modernize and consolidate service management processes by creating visibility into the technology infrastructure. ServiceNow Certified Master Architects, working in KPMG firms across the globe, offer leading-practice guidance on technology strategy and governance, as well as solution design, architecture and implementation.
- Many service areas offered by KPMG, such as KPMG Powered Enterprise IT, HR, Risk, Global Business Services, Resilience, Cyber, Customer Service Management, etc., are powered by ServiceNow. [96]

Source: KPMG

Alliances with technology powerhouses give KPMG access to a broad range of solutions to support clients (2/2)

Google Cloud

- KPMG's alliance with Google Cloud helps organizations transform their business and operating models with secure cloud computing, ML, enterprise mobility and advanced analytics technologies.
- The alliance-based solutions are 'KPMG Intelligent Interactions' to create a differentiated customer experience and 'General Data Protection Regulation (GDPR) Assessment and Compliance' for managing customer data and privacy.[97]

IBM

- KPMG's specialist industry knowledge, insights and capabilities, along with IBM's technologies and consulting capabilities, aid in clients realizing their business benefits.
- By using IBM's Watson, Red Hat, etc. technologies, KPMG's audit, tax and advisory practices have delivered solutions that enable our clients to benefit from the power of cognitive and AI computing, access an enterprise-wide governance, etc.[98]

ORACLE

- KPMG's business-led transformative approach allows it to align its business strategy with the Oracle enabling technology and realize its full potential.
- Some of KPMG's Oracle-enabled solutions are cloud EPM and finance, accounting hub cloud, PaaS, identity and access management, governance risk and compliance, etc.[99]

Alibaba Cloud

- KPMG professionals and teams from Alibaba Cloud bring together the newest technologies and business expertise to help improve results and drive ongoing growth for businesses.
- The strength of Alibaba's cloud computing and AI capabilities, together with KPMG's global reach, business acumen and sector knowledge, can help clients expand into new markets and realize the full potential of cloud-based digital solutions. It can drive innovation, maximize operational efficiencies and jointly work to address specific needs for scalable, cloud-based digital solutions.[100]

Source: KPMG

KPMG recognized by IDC MarketScape as a leader in artificial intelligence services

- IDC recently released a report called the 'IDC MarketScape: Worldwide Artificial Intelligence Services 2023 Vendor Assessment'. In this report, **IDC recognized KPMG as one of the leaders in artificial intelligence services.**
- KPMG has developed a suite of capabilities that combines a feature-rich AI development platform with a robust portfolio of prebuilt, tested AI-enabled technology solutions, backed by KPMG firms' deep industry and domain expertise.
- KPMG's Data and Analytics and Emerging Technology Center of Excellence, KPMG Global Lighthouse, harnesses the power of AI and allows KPMG firms to help clients establish, deploy and develop environments to scale AI across their organizations.[101]

- IDC considers KPMG's strategies around offerings, delivery model, workshops and stakeholder alignment, growth and technology and business skills as key strengths. KPMG also showcased strengths in achieving business outcomes for clients with AI services.
- Furthermore, as per the IDC report and according to customers, KPMG's strengths are the company's ability to apply functional or industry-specific methodologies and assets to solve their issues, use next-generation tools and methodologies to deliver AI services, conduct workshops that improve their awareness of AI and its value for their business, provide resources with appropriate and quality technical skills and provide customer service (particularly onsite).

  - **IDC MarketScape: Worldwide Artificial Intelligence Services 2023 Vendor Assessment Report**

Note: The quotes have been paraphrased for clarity in messaging and optimum word count, without changing the context or meaning.
Source: KPMG

"We are pleased to have been named a worldwide leader by the IDC MarketScape. KPMG firms help clients discover new opportunities and develop use cases for AI technology solutions through a range of different offerings, helping drive sustainable and successful adoption of their organization's AI initiatives. For AI to create value for an enterprise, human intelligence needs to lead the way, so KPMG professionals combine deep industry experience and AI skills to help business leaders harness the power of AI to accelerate value in a trusted manner, from strategy and design to implementation and ongoing operations."

Paul Henninger

Partner,
Head of UK Connected Technology & Global Lighthouse
KPMG in the UK

Cranium, developed by KPMG's startup incubator (i.e. KPMG Studio), provides an end-to-end AI security and trust platform to various clients

- KPMG LLP, USA has recently announced the spin-out of Cranium, a cutting-edge software company that enables organizations to secure their AI technologies.
- Cranium was developed in collaboration with AI security experts in the firm's advisory practice and KPMG's startup incubator, 'KPMG Studio', that grows internal and external early-stage ventures into high-growth businesses. The incubator is led by Anu Puvvada and its portfolio consists of innovation ventures encompassing generative AI, cybersecurity, new business models, HR, people technology, Web3, the metaverse, etc.
- To keep data and systems secure, Cranium provides an end-to-end AI security and trust platform that operates by mapping the AI pipelines, validating its security and monitoring for adversarial threats. The technology integrates with existing environments without interrupting the way organizations work to test, train and deploy their AI models.
- Both KPMG and the premier cybersecurity investor, SYN Ventures, provided seed funding and have acquired minority stakes in Cranium, enabling the team to develop a future roadmap to support and drive value for customers.[102]

"Cranium is emerging into the cybersecurity market at exactly the right time. As enterprises adopt and deploy AI models, the use of sensitive data and the strategic value of these models to a business requires that enterprise grade security tools be used in tandem. The company's innovative platform is positioned to instill trust in AI and secure AI use across all industries.

Jay Leek
Managing Partner, SYN Ventures, USA

As increased sophistication and feasibility of attacks drive organizations to safeguard their AI, our goal is to empower companies by providing them with a solution to manage AI security threats in real time. KPMG's AI security framework, combined with the Cranium platform, can be tailored to meet the requirements and capabilities of different organizations to deliver an effective AI security strategy.

Kyle Kappel
Principal, Cyber Security Services, KPMG USA"

Note: The quotes have been paraphrased for clarity in messaging and optimum word count, without changing the context or meaning.
Source: KPMG Press Release

KPMG's SAP services and capabilities enable clients realize maximum return on their SAP investment

- KPMG applies a business-first approach to SAP technology transformation projects to address the business and technological imperatives for a greater return on investment at every level of the organization. This helps clients achieve a competitive, resilient and modern business model.
- The KPMG Powered Enterprise approach brings a business-led mindset to transformation projects. It provides leading practices, roadmaps, processes and operating models, along with preconfigured software accelerators to minimize risk and make the transition to RISE with SAP gain faster momentum with less disruption.
- KPMG has acquired two SAP consulting firms to further strengthen its SAP expertise.

KPMG + QUADRIO

- KPMG Germany* acquired the German IT consultancy, QuadriO, based in Dresden in June 2023 to strengthen its SAP consulting in financial services and further expand its technology expertise.
- QuadriO specializes in SAP-based solutions and services, particularly for banks and employs over 70 people. Its customers are primarily major regional and development banks, as well as companies in other select sectors. The company offers support in the development and implementation of IT solutions as well as innovation and transformation consulting at its three locations in Dresden, Berlin and Mannheim.
- During the takeover, KPMG is bundling its SAP consulting specifically for financial services in a separate business unit, which will be headed by Thomas Istel, Partner Financial Services at KPMG.

KPMG + Think180

- KPMG Australia signed an agreement to acquire the Adelaide-headquartered SAP Asset, Work and Project specialist firm, Think180, in February 2023. This agreement will add Think180's team of over 30 people to KPMG's existing SAP team, expanding KPMG's deep capabilities in work execution, asset management, regulatory compliance, analytics, managed services and migrations and integrations.
- Think180 works with energy, mining and construction clients across Australia. Its team has extensive experience in transforming business processes and helping large organizations use SAP technology to drive new insights, innovative thinking and improving investment in asset management.

** KPMG Wirtschaftsprüfungsgesellschaft, Germany*
Source: KPMG

KPMG is home to Global Strategy Group with 2,400 + strategy practitioners from 31 countries

2,400+

A global network of strategy practitioners offering diverse skills and talents

31

Countries within the global network offering key geography-specific insights

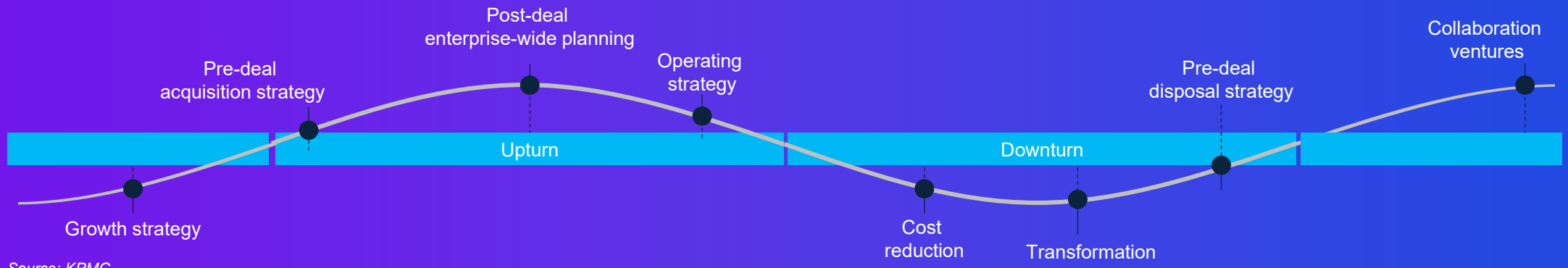
Diverse client and sector experience…

- Financial services
- Industrial markets
- Energy and natural resources
- Government and public
- Private equity
- Healthcare and life sciences
- Consumer goods and retail
- Technology, media and telecom

What makes us special in the marketplace?

- Deep **industry knowledge** from dedicated teams
- Methodologies **proven in the field**
- Track record of **delivering superior client value**
- Integrated **team of experts** to fully execute strategy engagement
- Industry-leading **data and analytics** capabilities

Solutions across the entire economic cycle…



Source: KPMG

We leverage our global network for digital strategy engagements across sectors in Qatar and the GCC region

Utilities

- Defined the long-term corporate strategy, vision, mission and roadmap for the utilities service provider in Qatar

Government

- Updated the National Digital Transformation Strategy for a leading government entity in Saudi Arabia
- Defined a strategy for an incubation center for digital entrepreneurs, under a government body to promote digital innovation and entrepreneurship among the young and general public by providing specific incubation programs and support mechanisms

Construction

- Developed the long-term strategy, including several technology-related initiatives for a leading construction sector entity in Qatar

Financial services

- Developed a customer-led experience strategy and the underpinning Voice of the Customer framework for a leading bank in the UAE

Retail

- Implemented a market analytics program [Marketing as a Service (MaaS)] for a client based in the UAE to increase the value generated from the loyalty card holding customers using predictive models designed for cross-sell/upsell market basket analysis
- Conducted a detailed benchmarking study for a leading retail group in the Middle East to gather insights on potential technologies and customer experience enhancements that the client could adopt

Real estate

- Assisted a leading real estate developer in the GCC region to formulate a digital strategy across the dimensions of business and operational processes while managing risks and meeting compliance requirements
- Supported a real estate and hospitality developer in the GCC region to create one of the leading digitally enabled smart malls, while bearing in mind costs, carbon footprint and efficiency

Financial institutions

- Developed the IT strategy and roadmap for a leading stock exchange market in the GCC region

Education

- Developed and implemented an IT strategy and operation model for the IT department of a government entity in Qatar

KPMG Global Strategy Group has delivered digital strategy engagements across the globe

Mexico

Assisted an insurance company in development of its customer experience and digital transformation initiatives to meet its 2020 and 2023 organizational objectives

United States

Helped a large bank to develop a digital transformation strategy for its commercial credit business

Portugal

Assisted a banking client by providing functional and technical support in digital transformation plan

India

Supported a government client to develop its digital transformation strategy by automating paper-based, time consuming and tedious tasks

Brazil

Assisted a client by designing its center of excellence (COE) for digital transformation and sustainable business approach

Canada

- Undertook digital transformation for a not-for-profit organization to reimagine the future of the organization and its service delivery model
- Assisted in the development of a digital strategy to provide a clear vision and roadmap for the company's digital transformation
- Helped a government entity to assess and design its digital identity strategy for its customer-facing systems

China

- Assisted a client in digital transformation by building a digitization roadmap and developing digital initiatives
- Developed a digital transformation strategy for a player in the premium footwear segment seeking to overcome challenges in the dynamic market

Japan

- Developed a digital transformation strategy for business processes

Italy

- Assisted the client, a leader in premium, luxury and sports eyewear, in its digital transformation journey through project management support

Germany

- Assisted a leading German book retailer in its digital transformation journey and in the redesign of its operating model

Nigeria

- Formulated the digital strategy and provided implementation assistance to drive the execution of digital transformation
- Assisted a bank with its digital transformation program to ensure delivery of tangible business outcomes

United Kingdom

- Helped the client launch its digital transformation strategy based on KPMG's maturity assessment against leading practice
- Undertook the digital transformation program for a leading general insurance company
- Developed a large-scale digital transformation program for an insurance sector client

Spain

- Implemented a new CRM system (Pega Systems) to support digital transformation for a telecommunication company
- Developed a digital transformation plan, including a roadmap with specific initiatives and assessment of strategic guidelines for a power and utilities player

Australia

- Developed a digital transformation strategy for a telecommunication operator
- Delivered a digital transformation program for a bank for enhanced digital-centric customer landscape

Annexure A: Technology overview (1/4)

Note: The technologies referred to below are dynamic in nature and are subject to continuous evolution. Their classification based on market entry, impact and type may change over time. They are not mutually exclusive or exhaustive and may overlap in their categorization into immersive experience, digital platform and artificial intelligence technologies and their impact may vary depending on the specific requirements of each industry.

Sr. no.	Technology	Technology classification	Description	Impact	Companies
1	**3D printing**	Immersive experience	• 3D printing or additive manufacturing is the construction of a three-dimensional object from a CAD model or a digital 3D model.	High	3DSERVZ, Vectorize, etc.
2	**4D printing**	Immersive experience	• It uses 3D printers to create live three-dimensional objects by using intelligent materials, which can be programmed to change shape, color or size when they receive an external stimulus.	Transformational	Hewlett Packard Enterprise, Autodesk Inc.
3	**5G**	Digital platform	• 5G networks are cellular networks, in which the service area is divided into small geographical areas called cells. • All 5G wireless devices in a cell are connected to the internet and telephone network by radio waves through a local antenna in the cell to provide higher download speeds.	Moderate	Samsung, Qualcomm, Intel, etc.
4	**Artificial general intelligence**	Artificial intelligence	• It is an autonomous system that can learn to accomplish any task a human can do and surpass human capabilities in terms of economically valuable tasks.	Transformational	MuZero by DeepMind, Google Brain, Watson by IBM
5	**Augmented data discovery**	Artificial intelligence	• Augmented analytics is an approach of data analytics that employs the use of machine learning and natural language processing to automate analysis processes normally done by a specialist or data scientist.	Transformational	Explorium, DataStories, Quaeris.ai, SAP
6	**Augmented reality (AR)**	Immersive experience	• AR is an interactive experience that enhances the real world with computer-generated perceptual information.	High	Apple, Hypervsn, Meta, Unity Technologies, etc.

Source: KPMG analysis, Investopedia, Iberdrola, Wikipedia, SAP, Government Accountability Office, Tech Target, Chief Digital Officers

Annexure A: Technology overview (2/4)

Sr. no.	Technology	Technology classification	Description	Impact	Companies
7	**Brain-computing interface**	Immersive experience	• A brain-computing interface (BCI) enables a person to control an external stimulus using brain signals.	Transformational	Neuralink Corporation
8	**Cognitive computing**	Artificial intelligence	• Cognitive computing is the use of computerized models to simulate the human thought process in complex situations where the answers might be ambiguous and uncertain.	Transformational	Accenture, Deepmind, IBM Watson, etc.
9	**Cognitive expert advisors**	Artificial intelligence	• Cognitive expert advisors are virtual assistants based on electronic devices that are able to follow user orders; for example, search requests.	Transformational	Siri, Cortana, Google Now
10	**Connected home**	Digital platform	• A connected home is networked to enable the interconnection and interoperability of multiple devices, services and apps, ranging from communications and entertainment to healthcare, security and home automation.	High	Google, Amazon, Xiaomi
11	**Conversational user interface**	Artificial intelligence	• A conversational user interface (CUI) is a user interface for computers that emulates a conversation with a real human using tools such as AI and ML.	Transformational	ChatGPT by Open AI, Bard by Google
12	**Digital twin**	Digital platform	• A digital twin is a virtual model of a physical object. It spans the object's lifecycle and uses real-time data sent from sensors on the object to simulate the behavior and monitor operations.	Transformational	Siemens Digital Industries Software, General Electric's GE Digital, Microsoft's Azure Digital Twins, etc.
13	**Drones**	Artificial intelligence	• An unmanned aerial vehicle (UAV), commonly known as a drone, is an aircraft without any human pilot, crew or passengers on board.	Transformational	Amazon Prime Air, UPS
14	**Edge computing**	Digital platform	• Edge computing is an emerging computing paradigm which refers to a range of networks and devices at or near the user. • Edge is about processing data closer to where it is being generated, enabling processing at greater speeds and volumes.	Transformational	AWS, Microsoft Azure, Dell Technologies

Source: KPMG analysis, Investopedia, Iberdrola, SAP, Government Accountability Office, Tech Target, Chief Digital Officers

Annexure A: Technology overview (3/4)

Sr. no.	Technology	Technology classification	Description	Impact	Companies
15	**IoT platform**	Digital platform	• The Internet of things (IoT) describes the network of physical objects (things) that are embedded with sensors, software and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet.	Transformational	Memfault, Spectrum, Cisco, IBM, Google, etc.
16	**Machine learning**	Artificial intelligence	• Machine learning (ML) is a branch of artificial intelligence that leverages data to improve computer performance by giving machines the ability to 'learn' from the data.	Transformational	AWS, Veritone, MobiDev, etc.
17	**Nanotube electronics**	Immersive experience	• Due to the tensile strength, thermal conductivity and the small size of carbon nanotubes, they allow more data to be crammed into tighter spaces, while also significantly consuming less power than traditional silicon devices. Hence, they are used in next-generation memory, transistors, space exploration, etc.	Transformational	Shuttle Atlantis by NASA, Nantero's NRAM
18	**Neuromorphic hardware**	Digital platform	• Neuromorphic computing is an approach to computing that is inspired by the structure and function of the human brain. A neuromorphic computer/chip is any device that uses physical artificial neurons to do computations.	High	Intel Corporation, Samsung, IBM
19	**Quantum computing**	Digital platform	• Quantum computing comprises aspects of computer science, physics and mathematics that utilize quantum mechanics to solve complex problems faster than on classical computers.	High	Amazon Bracket by Amazon, Google's Quantum AI lab, Microsoft's Azure Quantum
20	**Serverless PaaS**	Digital platform	• Serverless computing is a method of providing backend services on an as-used basis. Servers are still used, but a company that gets backend services from a serverless vendor is charged based on usage, not a fixed amount of bandwidth or number of servers.	Moderate	AWS Lambda, Microsoft Azure, Google Cloud functions, etc.

Source: KPMG analysis, Investopedia, Iberdrola, SAP, Government Accountability Office, Tech Target, Chief Digital Officers

Annexure A: Technology overview (4/4)

Sr. no.	Technology	Technology classification	Description	Impact	Companies
21	**Smart city**	Digital platform	• A smart city is a technologically advanced modern city that uses various technologies such as sensors, IoT, etc. to collect and analyze data that can be used to run operations smoothly.	Transformational	Dubai, Singapore, Qatar
22	**Smart dust**	Artificial intelligence	• Smart dust is a system of many tiny microelectromechanical systems (MEMS) such as sensors, robots, etc. that can detect, for example, light, temperature, vibration, magnetism or chemicals. They are usually operated on a computer network wirelessly and are distributed over some area to perform tasks.	Transformational	Paragon Spce, Hitachi, etc.
23	**Software-defined security**	Digital platform	• Software-defined security (SDS) is a type of security model in which the information security in a computing environment is implemented, controlled and managed by security software.	Transformational	IBM, Oracle, Huawei, etc.
24	**Virtual assistant**	Artificial intelligence	• A virtual assistant is a self-employed worker who specializes in offering administrative services to clients from a remote location, usually a home office.	Transformational	Time etc, Prialto, Upwork, etc.
25	**Virtual reality**	Immersive experience	• Virtual reality (VR) is a simulated experience that employs pose tracking and 3D near-eye displays to give the user an immersive feel of a virtual world.	Moderate	Meta, Nvidia, Apple, etc.
26	**Volumetric displays**	Immersive experience	• A volumetric display device is a display device that forms a visual representation of an object in three physical dimensions, as opposed to the planar image of traditional screens that simulate depth through a number of different visual effects.	Moderate	Coretec Group Inc., Burton Inc., Looking Glass Display, etc.

Source: KPMG analysis, Investopedia, Iberdrola, SAP, Government Accountability Office, Tech Target, Chief Digital Officers

Annexure B: List of abbreviations

Sr. no.	Abbreviation	Description
1	3D	Three dimensional
2	4D	Four dimensional
3	5G	Fifth generation
4	9-LoV	9-Levers of value
5	AA	Advanced analytics
6	AI	Artificial intelligence
7	AR	Augmented reality
8	AV	Automated vehicle
9	BCI	Brain-computing interface
10	DEWA	Dubai Electricity and Water Authority
11	ENR	Energy and natural resources
12	Etihad WE	Etihad Water and Electricity
13	FDA	Food and Drug Administration
14	GCC	Gulf Cooperation Council
15	H.E.	His/Her Excellency

Sr. no.	Abbreviation	Description
16	HMC	Hamad Medical Corporation
17	ICT	Information and communication technology
18	IoT	Internet of things
19	IT	Information technology
20	KPI	Key performance indicator
21	LaMDA	Language model for dialogue applications
22	LLM	Large language model
23	LNG	Liquified natural gas
24	MCIT	Ministry of Communications and Information Technology
25	ML	Machine learning
26	NLP	Natural language processing
27	PaLM2	Pathways language model 2
28	POC	Proof of concept

Sr. no.	Abbreviation	Description
29	PUB Singapore	Public Utilities Board Singapore
30	QDB	Qatar Development Bank
31	QF	Qatar Foundation
32	QU	Qatar University
33	R&D	Research and development
34	RPA	Robotics process automation
35	SEC	Saudi Electricity Company
36	UPS	United Parcel Services
37	USA	United States of America
38	VR	Virtual reality
39	Wi-Fi	Wireless fidelity

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How can KPMG assist?

Our teams on the ground have developed multiple digital strategies, digital transformation plans, IT strategies and cybersecurity strategies in Qatar. Our global network brings in a wealth of international leading practices. We are happy to leverage our local knowledge and global experience to support with various strategy formulation needs.

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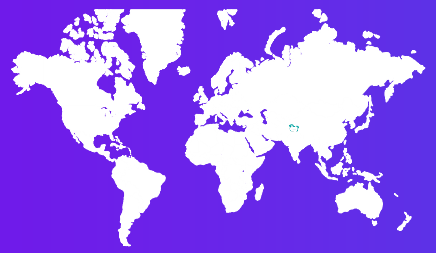

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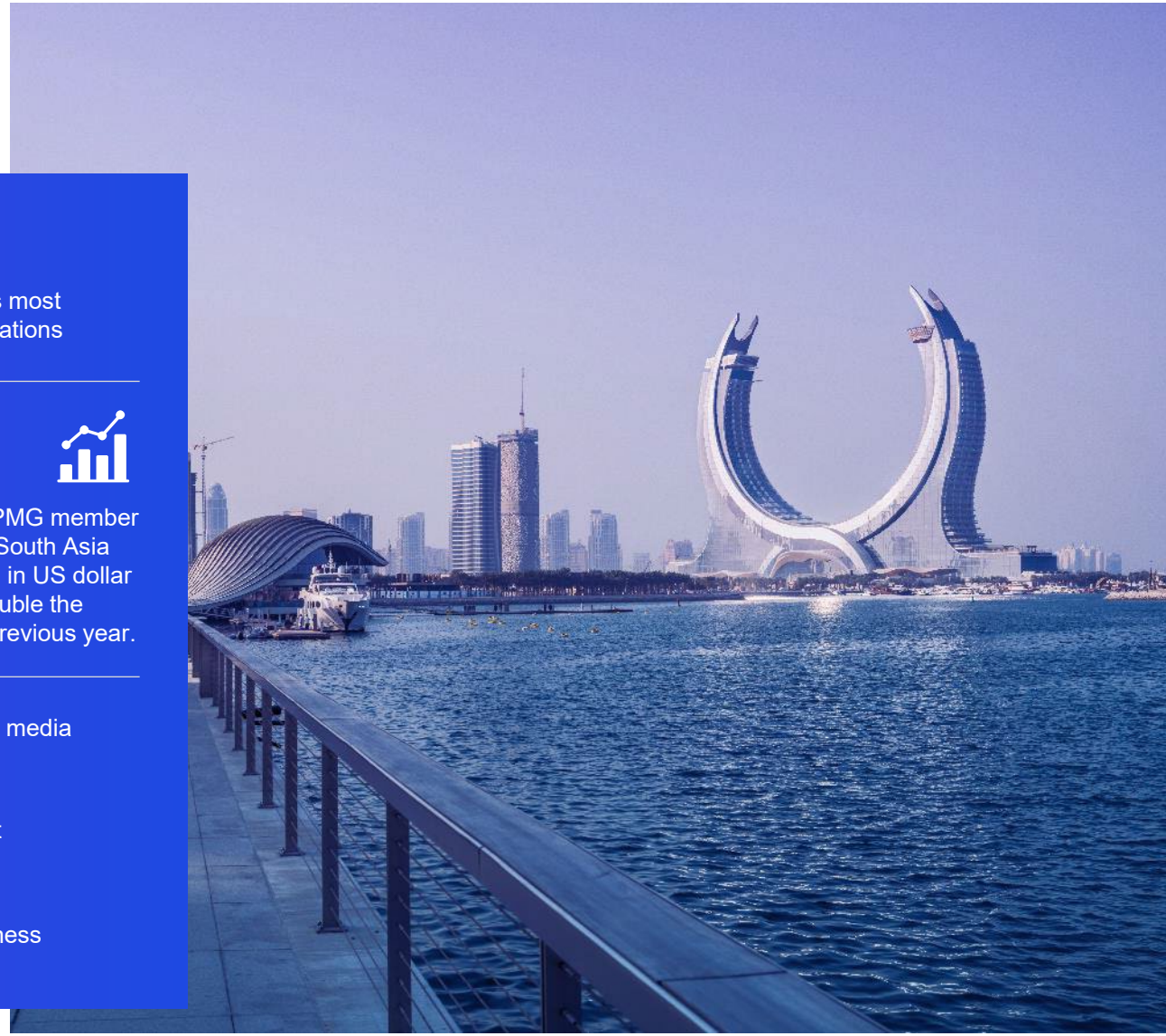

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