KFAS
مؤسسة الكويت للتقدم العلمي
Kuwait Foundation for the Advancement of Sciences

arabnet

Digital Transformation in Kuwait's ICT Industry

ICT Publication 2021

Digital Transformation in Kuwait's ICT Industry

ICT Publication 2021

Table of Contents

About Kuwait Foundation for the Advancement of Sciences (KFAS)

The Kuwait Foundation for the Advancement of Sciences (KFAS), a private non-profit organization, established in 1976 by an Amiri Decree under the direction of the late Amir of Kuwait, H. H. Sheikh Jaber Al-Ahmad Al-Jaber Al-Sabah with a vision to create and nurture a thriving culture of science, technology, and innovation for a sustainable Kuwait.

KFAS operations are funded by contributions from the private shareholding companies of Kuwait as part of their corporate social responsibility. The contributions currently amount to one percent (1%) of their annual net profit.
KFAS mission to "stimulate and catalyze the advancement of Science, Technology and Innovation (STI) for the benefit of society, researchers, and enterprise in Kuwait," continues to be at the heart of all the Foundation's activities and plans.

Since its creation, KFAS has successfully established a number of dedicated research and educational centers of excellence in Kuwait. These are: The Scientific Center, Dasman Diabetes Institute, Sabah Al-Ahmad Center for Giftedness & Creativity, and Jaber Al-Ahmad Center for Nuclear Medicine and Molecular Imaging. These centers are recognized as world-class facilities and pioneering scientific research institutes. In addition, KFAS has established the Advancement of Sciences Publishing and Distribution Company, the Foundation's publishing arm.

About Arabnet

Arabnet is a leading event, insights and innovation program organizer focused on tech business and innovation in the MENA region. We organize major conferences for the tech sector in Dubai, Riyadh, Kuwait and Beirut; publish news and analysis of the sector in our online news portal and produce original research and reports focused on the sector; and organize custom-tailored innovation programs for corporates and governments.

The insights and findings in this publication are based on in-depth desk research, as well as one-on-one, semi-structured interviews conducted with the following entities:

Corporates

Khaled Al-Fraih
Business, Development Manager, Enhanced Engineering & Multi-Technologies Co (EEMC)

Muhammad Hrishiah
Chief Operating Officer, KUWAITNET

Malek Hammoud
Chief Investment and Digital Transformation Officer, Zain Group

Wojciech Bajda
Head of Ericsson GCC, Ericsson

Amine Tazi
Chief Strategy Officer, Ooredoo Kuwait

Abdulla Alajmi
CEO, Knet

Hadiar al Mohri
Innovation and Digital Business Manager, Siemens

Eng. Fahad AbdulRahman Al Ali
Chief Technology Officer, **stc**

Startups

Mahmoud Al Awadhi
Managing Partner, FRM Tech Labs

Antoine Vincent Jebara
Co-Founder and CEO, MYKI

Kiran Narayanan
CEO, UnitX Technologies

Naim Zard
CEO, Zima Cloud

Sahar Salama
Founder and CEO, TPAY MOBILE

Executive Summary

The internet has reshaped the ICT sector: it has triggered the commoditization of connectivity, stirred up new competition for telecom operators from global digital content and services providers (“over-the-top” players), and caused a shift in software delivery from onsite to cloud-based subscription models. The growing demand for digitization has afforded ICT companies with avenues for growth and diversification, with demand for smart, reliable, and secure technology services surging across all industries. This has triggered many leading players to transform into integrated ICT services companies.

One of the key drivers of new opportunities in the ICT sector is the 4th Industrial Revolution (Industry 4.0), defined as “the marriage of physical assets and advanced digital technologies.”[1]

Some of these technology trends, which will play a major role in reshaping the ICT sector, are:

5G
5G’s lower latency and ability to handle a higher number of connected devices will enable and advance applications that hinge on actual real-time communication significantly and will allow businesses to digitize and automate complex manufacturing and logistics processes.

Artificial Intelligence
Solutions based on artificial intelligence are driving efficiencies in data analysis and decision making and are expected to add trillions of dollars to the global economy.

Blockchain
Applications of blockchain technology have only recently started to shift from experimental projects to serious attempts at solving business problems. The technology is expected to play a key role in securing billions of connected devices, increase traceability and create transparency in supply chains. By 2023, the blockchain ecosystem is expected to have overcome the interoperability and scalability issues that have been stumping its growth.

The Internet of Things
IoT is expected to blur the lines between the digital and physical worlds. Networks of connected, smart devices will enable multiple applications in many industries - traffic control, environmental monitoring, smart factories, etc - but the technology needs to overcome its own fragmentation issues and security concerns.

Cybersecurity
As more industries digitize and move online, focus on cybersecurity and privacy will intensify and will lead to a rise in demand for managed security service providers.

In Kuwait, advanced technologies - such AI, big data, cloud computing, and Internet of Things (IoT) - are projected to be main drivers of ICT spending growth in the period between 2019

and 2024, with digital transformation-enabling technologies exhibiting the fastest growth. This trend is in line with Kuwait Vision 2035, which aims to foster digital transformation to drive economic diversification, job creation, and e-government services. All three of Kuwait's telecom operators have already rolled out 5G services, but the country still lacks business use cases - i.e. real world applications of 5G technology that have produced positive outcomes for businesses. Currently, ICT service providers are already offering technologies related to fintech, healthtech, fleet management, data, IoT, and drones. However, the region still lags behind when it comes to other advanced technologies, including cloud capabilities. Surveyed companies also revealed that the shortage of talent and expertise, as well as regulatory obstacles - particularly related to cross-border and cross-industry growth - represented primary hurdles to growth.

The regional ICT startup ecosystem has been producing successful and innovative ventures that leverage state of the art technologies. A number of startups are using blockchain technology to tackle fragmented digital identity issues, for services ranging from security to Know Your Client (KYC) processes in the banking industry. Mobile Payment startups are enabling global players to capture opportunities in smaller and emerging economies, which may not have been attractive from a return on investment perspective. Such platforms are poised to play a pivotal role in growing the digital ecommerce market, potentially unlocking significant opportunities in areas such as transportation and ticketing, insurance and microinsurance, and governmental services. Similarly, cloud technologies are being utilized to enable the provision of connectivity into small, underserved segments in rural and remote areas: another instance where low return on investment has been detrimental. AI capabilities have been made available locally, but they have yet to be operationalized to their full potential, and use cases need to be developed. Lastly, in addition to legislative hurdles, risk-aversion within local enterprises is hampering the adoption of cutting edge technologies from startups, who are then turning to clients in international markets.

In order to effectively capture growth and ensure future competitiveness and success, ICT players should develop the agility needed to respond to an increasingly dynamic market. They need to invest in their IT infrastructure and develop capabilities related to the high-potential technologies that are in demand in today's market. ICT companies should also capture the growing opportunities in developing digital services for the major sectors of the economy that are undergoing digital transformation - from healthcare and finance to education and entertainment. At the same time, they need to explore new delivery and business models - especially cloud-based subscription service models - and keep sight of the increased need and demand for cyber security in an era of unprecedented connectivity.

Endnotes

1 Deloitte; "The Fourth Industrial Revolution; At the intersection of readiness and responsibility" (2020)

Introduction

According to the Organisation for Economic Co-operation and Development (OECD), Information and Communication Technology (ICT) denotes the convergence of the telecommunications industry with the computing and broadcasting industries, and broadly refers to the manufacturing and delivery of goods and services that are related to electronic data capturing, transmission, and display. ICT service providers include hardware manufacturers, software developers, digital service providers, as well as telecommunications companies.

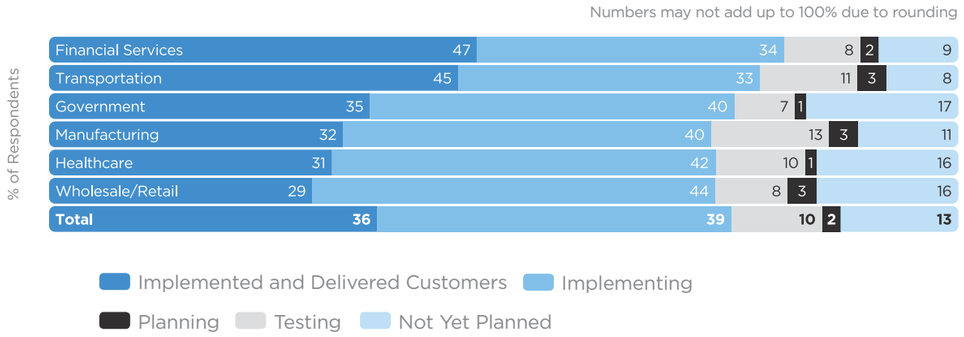
The internet has had a momentous impact on the ICT sector - by 2007, more than 97% of all telecommunicated information was relayed through the internet, growing from 1% in 1993, then reaching 51% in the year 2000. This proliferation presented telecommunications companies with stiff new competition from digital service providers, referred to as over-the-top (OTT) providers, like Skype and Whatsapp, which shrunk their revenue streams and brought about the spectre of commoditization.

Meanwhile, the delivery of software and content on a subscription basis over the internet created new competitors for software developers and content owners alike.

At the same time, digitization opened up new opportunities for ICT players, most importantly by helping to usher in the 4th Industrial Revolution. The 4th Industrial revolution (or Industry 4.0) refers to "the marriage of physical assets and advanced digital technologies—the internet of things (IoT), artificial intelligence (AI), robots, drones, autonomous vehicles, 3D printing, cloud computing, nanotechnology, and more—that communicate, analyze, and act upon information, enabling organizations, consumers, and society to be more flexible and responsive and make more intelligent, data-driven decisions."[2]

Current state of Digital Transformation for Companies Worldwide, by Industry, Feb 2019

Source: Fujitsu Future Insights



The 4th Industrial Revolution is radically remodeling business practices, industrial processes, and service delivery across all sectors – ranging from entertainment, food & beverage and retail, to manufacturing, banking, education, health and science.[3] This creates tremendous opportunities for ICT service providers to

develop, introduce, and disseminate new technologies that are essential for businesses to digitally transform, entailing that ICT service providers are key enablers of the 4th Industrial Revolution.

The role of the ICT sector in driving innovation and productivity growth across other industries is well-documented. A study[4] by the London School of Economics (LSE) found that, on average, ICT technologies generated significantly larger knowledge spillovers than other technology areas, including fields such as robotics, 3D printing technology, biotech, and clean energy. Knowledge spillovers, as the LSE report notes, describe the ability of innovation and knowledge generated by one inventor to enable others to advance knowledge and innovate further.

This digital transformation across industries was well underway before the Covid-19 pandemic broke out. A February 2019 report by the NDP Group indicated that digital restaurant orders in the United States had been growing on average 23% per year since 2013.[5] A study by The Journal of the American Medical Association revealed that annual telemedicine visits in the US, which totaled a mere 206 visits in 2005, were increasing by 261% each year between 2015 and 2017.[6] Meanwhile, the Distance Education Enrollment Report of 2017 showed that close to a third of students (29.7%) in the US were enrolled in at least one distance education course.[7]

The Covid-19 outbreak simply accelerated the need for digitization across industries. For instance, in August 2020, as the Kuwaiti government announced that schools were going to resume following a seven-month hiatus, the Minister of Education, Dr. Saud Al Harbi, issued a ministerial decree that stated that all classes would be conducted online for the first semester. The country also saw the launch of several e-learning initiatives during the pandemic, such as Enara Academy, established in June 2020 as part of an initiative driven by KFAS Academy to support a national forum for online education. Furthermore, as

of September of 2020, Kuwait had spent $1.14B on facilities for e-learning programs and online learning platforms according to the US International Trade Administration.[8]

The acceleration of digitization from the Covid-19 crisis has affected all industries - McKinsey suggests that “businesses that once mapped digital strategy in one- to three-year phases must now scale their initiatives in a matter of days or weeks.”[9]

In the Middle East and Africa region, spending on ICT is expected to grow 2.3% to reach $230B by the end of 2020, with growth being propelled by cloud and big data analytics, mobile and social, as well as a number of emerging technologies including Internet of Things (IoT), Artificial Intelligence (AI), and blockchain according to IDC’s VP Jyoti Lalchandani.

In Kuwait, the ICT sector is set to grow at a markedly faster rate, with spending estimated to grow at a CAGR of 10.2% between 2019 and 2024, exceeding $10B by 2024, according to GlobalData. For Kuwait, this growth will be driven by the increasing adoption of innovative technologies such as AI, big data and cloud computing, and IoT.[10]

Endnotes

2 Deloitte; “The Fourth Industrial Revolution; At the intersection of readiness and responsibility” (2020)

3 Fujitsu Future Insights (2019)

4 "The Evolving Role of ICT in the Economy", London School of Economics and Political Science (June 2018)

5 NDP Group; “Delivering Digital Convenience” (2019)

6 JAMA Network; "Trends in Telemedicine Use in a Large Commercially Insured Population, 2005-2017" (2018)

7 Digital Learning Compass; “Distance Education Enrollment Report” (2017)

8 ITA; “Market Intelligence / Kuwait e-learning” (2020)

9 McKinsey & Company; "Digital Strategy in a Time of Crisis" (2020)

10 Global Data; (2020)

ICT Technology Trends

The era of connected intelligence is already underway. Billions of connected devices and sensors are sharing and processing immense amounts of data, paving the way for businesses to achieve new levels of optimization and efficiency, all while creating new value streams for consumers.

In the coming years, the world will be shaped significantly by five disruptive technologies and disciplines - 5G, AI, cyber security, blockchain, and IoT - and their ability to generate 'combinatorial innovation', an industry term that denotes the creative use of multiple technology stacks to create new business capabilities.

5G networks

5G delivers data at a significantly faster rate than current implementations of 4G/LTE technology. At the same time, the reduced latency of 5G connections, which could be brought down to a millisecond and bring data exchange closer to actual real-time communication, carries the potential to unleash a slew of time-critical applications. For instance, in factories, 5G enables and improves time-critical processes and non-real-time processes - like AR and VR for maintenance or training, machinery inspections, inventory tracking, warehousing and logistics.[11] Autonomous cars will be able to send and receive information almost instantaneously among each other and execute life-saving decisions; surgeons will finally have the responsiveness needed to guide or even perform surgeries remotely across the globe.

5G is also capable of handling a drastically higher number of connected devices than its predecessor – a 5G network can support up to a million connected devices per square kilometer, compared to two thousand connections for the same surface area using 4G. The foremost beneficiary from this development will be IoT applications - such as smart homes, smart grids, industrial automation in farms and on factory floors.

For communication service providers, 5G represents a timely opportunity to tap into emerging revenue streams sprouting from the digitization of industries, and help foster new business models and new ecosystems - Ericsson estimates that the 5G business potential could reach $619B globally by 2026.[12]

Artificial intelligence (AI)

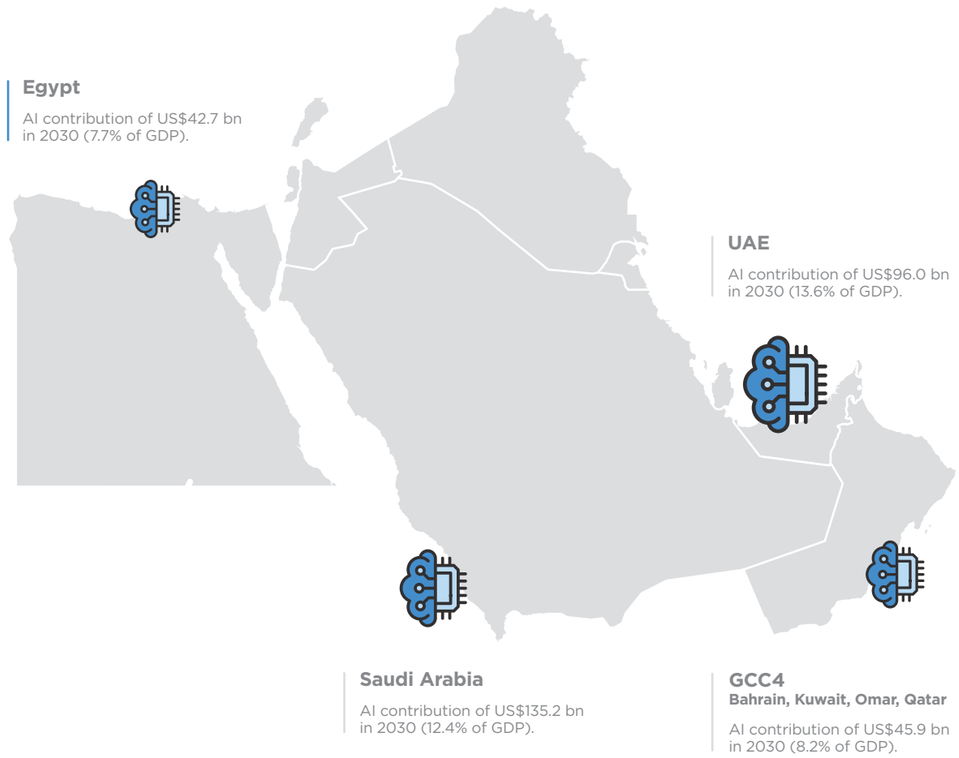
Applications of AI are still a long way from reaching what philosopher John Searle described as 'strong AI', which he defined as the ability of a piece of software to exactly emulate the actions of a human brain. While current manifestations of AI remain limited to accomplishing specific problem solving tasks - customarily referred to as Weak AI - their capacity to carry out these tasks already far exceeds that of humans in a number of disciplines. AI is poised to power remarkable leaps in productivity,

efficiency, and insight. IDC expects that spending on cognitive and artificial intelligence systems in the Middle East and Africa region, which stood at $37.5M in 2017, would grow to over $100M by 2021.

Powered by a growing stock of data, AI applications are far ranging. The most prevalent forms today include chatbots, image and speech recognition, personalization of offering, spam filtering, credit risk and financial fraud detection, predictive maintenance, and so on. Over the coming years, AI technology is expected to deliver more tailored applications and services for specialized tasks in several verticals.

Potential economic impact of AI in the Middle East

Source: PwC



While demand for AI is on the rise, it remains too costly for most businesses to build and run their own AI-based technology systems. For this reason, “AI-as-a-service” is rising in popularity.

“AI-as-a-service” is part of a broader emergent trend in the ICT sector of “-as-a-service” delivery models: cloud-based distribution models that allow customers access to technology capabilities and services through the internet upon request, typically on a subscription basis. Such an AI-as-a-service model allows companies to experiment with AI without large initial investment and with lower risk. As such, the AI-as-a-service market is forecasted to grow at a rate of 45.6% from $1.73B in 2019 to $34.1B in 2027.[13]

PwC estimates that, in 2030, AI will add up to $15.7 trillion to the global economy[14], and that GCC countries along with Egypt will capture 2% of that total, which is worth $320B.

Cybersecurity

The rapid increase in the number of digitally connected devices presents hackers with additional avenues for cyberattacks targeting digital data generated by businesses. The advent of the 4th Industrial Revolution has also accelerated cloud adoption - according to Forbes, 83% of enterprise workload will run on public cloud platforms in 2020[15] - sparking cybersecurity concerns related to industrial espionage and sabotage.

A 2020 study[16] showed that the average company is spending 16% of its IT budget on cybersecurity. A survey by ESG Research[17] further shows that most organizations plan to increase their cybersecurity spending compared to previous years. A report co-authored by Microsoft revealed that while the cybersecurity market had exceeded $124B in 2019, cybercrime still incurred close to a trillion dollars in damages for organizations in the same year.[18]

However, research by McKinsey found that no direct correlation exists between the amount an enterprise spends on cybersecurity and the effectiveness of its cybersecurity program.[19] This is often due to enterprises embracing blanket approaches that do not cater to their specific needs coupled with ad hoc spending, which typically follows a breach. Internal risk culture is also found to be deficient in underperforming companies, as employees often lack awareness of best practices that protect against common threats, such as phishing campaigns.

Furthermore, enterprises often lack skilled administrators to manage advanced security technologies, causing inefficiencies that compromise their cyber defenses. This shortage of talent has resulted in a rise in demand for managed security service providers, or MSSPs, which help companies assess risks and strengthen their security profile.

Blockchain

The blockchain ecosystem is starting to see a substantial shift in the use of the technology according to the Deloitte 2019 Blockchain Survey, from casual and experimental projects to serious attempts at solving real business issues and delivering value.[20]

Gartner named blockchain as one of the top ten strategic technologies for 2020[21], but noted that public blockchains remain too immature for enterprise deployment at the moment, citing poor scalability and interoperability. The research and advisory company however expects the technology to overcome these issues by 2023.

Blockchain has the potential to disrupt all types of industries, particularly due to its ability to guarantee transparency and enable trust. Organizations can leverage blockchain to ensure provenance, governance, validation and auditability. As the IoT market doubles down on cyber security, blockchain is expected to play a key role in protecting billions of connected devices.

Furthermore, the technology can be applied to reduce transaction costs and settlement times and improve cash flow. According to PWC, 77% of financial institutions are expected to adopt blockchain technology as part of a production system or process globally by 2020.[22]

The Internet of Things (IoT)

By 2025, there will be 41.6 billion connected IoT devices generating 79.4 billion terabytes of data, according to IDC.[23] Meanwhile, spending on IoT is expected to reach $1.4 trillion globally by 2021.

The proliferation of IoT-enabled devices is set to dramatically grow the digital net that weaves together societies and businesses. Of note is the role IoT will play in the 4th industrial revolution; through data integration and analysis, IoT is able to make industries more efficient and profitable.

For manufacturing and industry, optimized asset and inventory management can reduce inventory carrying costs and search times. IoT solutions can also drastically shorten the product cycle time, particularly for customized products. In its Pennsylvania facility, Harley Davidson was able to reduce the time it takes to manufacture customized bikes from 21 days to 6 hours by equipping its machinery and logistics equipment with smart sensors. With connected machinery, algorithms are able to continuously process performance data and predict faults ahead of time.

For IoT to truly prosper, two main challenges must be addressed. First, IoT applications remain largely unregulated; as such, social and legal complications are expected, particularly in relation to

data collection and security. Secondly, fragmentation remains one of the biggest challenges for the growth of IoT. Failure to standardize IoT platforms, connectivity, and applications will prove detrimental to the industry.

Endnotes

11 5G PPP; “5G and the Factories of the Future” (2015)

12 Ericsson; "5G Business Potential" (2018)

13 “Artificial Intelligence as a Service Market By Technology, By Component, By Organization Size, By Applications, By Industry Vertical, And Segment Forecasts To 2027" (2019)

14 PwC; "Sizing the Prize: What’s the real value of AI for your business and how can you capitalize?" (2017)

15 LogicMonitor; “Cloud Vision 2020: The Future of the Cloud Study” (2017)

16 IDG; "2020 State of the CIO" (2020)

17 ESG Research; “2020 Technology Spending Intentions Survey” (2020)

18 Marsh; “Global Cyber Risk Perception Survey Report” (2019)

19 McKinsey & Company; “Cyber Risk Maturity Survey” (2015)

20 Deloitte; "5 Blockchain Trends for 2020" (2020)

21 Gartner; “Top 10 Strategic Technology Trends for 2020” (2019)

22 PwC; "Global Fintech Report" (2017)

23 IDC; “Worldwide Global DataSphere IoT Device and Data Forecast, 2019-2023” (2020)

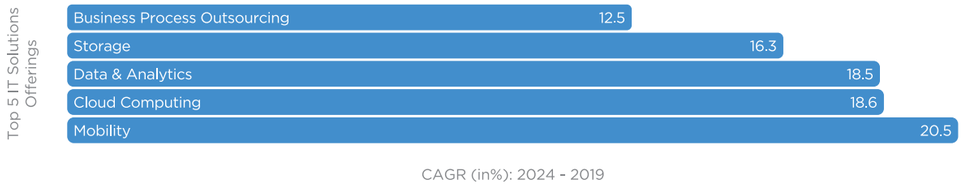
The Role of the ICT Sector in Enabling Digital Transformation in Kuwait

Between 2019 and 2024, the growth in ICT spending in Kuwait will be largely fueled by the increasing adoption of advanced technologies, such artificial intelligence, big data, cloud computing, and the Internet of Things, according to Global Data.[24]

A breakdown of the IT solutions market in Kuwait reveals that digital transformation-enabling technologies are exhibiting the fastest growth. By 2024, revenues from cloud computing are expected to reach $1.6B, having grown at a CAGR of 18.6% from 2019. This growth will come as a result of increased activity related to digitalization, led primarily by enterprises in retail banking, energy, and government. Furthermore, revenues from data and analytics will grow at a roughly similar CAGR - 18.5% - due to strong demand from large as well as small and medium enterprises looking to optimize their operations and monetize data-driven models.

IT Solution Offerings Market in Kuwait (2019 - 2024)

Source: Global Data



Overall, enterprises in Kuwait are expected to continue to focus on modernizing their IT infrastructure by implementing high-end enterprise solutions. Meanwhile, the continued roll-out of 5G connectivity is expected to contribute significantly to enabling digital transformation.

State of Enabling Technologies: 5G, Cloud and Data

Launched by Zain and **stc** Kuwait in 2018 and shortly after by Ooredoo in 2019, 5G networks have already been deployed by all three of Kuwait's mobile operators, as they aim to capitalize on its potential to fundamentally accelerate and evolve technology application and business models.

"5G for us is the infrastructure," stated Malek Hammoud, Chief Investment and Digital Transformation Officer at Zain. "We invested early in this to make sure we are among the market leaders," he noted, adding that Zain is already building new businesses around 5G.

Wojciech Bajda, Head of Ericsson GCC, noted that network developers in the Middle East and Africa region can expect an estimated potential revenue opportunity ranging from $15B to $46B to emerge by 2030, “provided they adapt their business model to become service enablers and creators,” he added.

However, technology providers are still “in the first steps” of leveraging 5G’s full potential according to Amine Tazi, Chief Strategy Officer at Ooredoo Kuwait. The technology’s low latency will open up opportunities for real-time logistics “across the board,” he added. That means up-to-the-second tracking of various elements of a supply chain, such as inventory, vehicles, equipment, and people. To realize the full potential of 5G, Badja notes, two main areas need to be addressed: namely spectrum availability and use case development. “Mobile service providers need considerable support from regulators to carve out enough spectrum in existing mid and low bands,” he added.

The other trend that is driving improvements in latency reduction, according to Tazi, is edge computing. Edge computing is the use of dynamic distributed cloud models to move processing capabilities closer to where the content is being created and consumed.

Hammoud, on his part, was also keen to highlight the foundational role that advanced cloud computing capabilities play in enabling the development of disruptive technology applications, stressing the importance of having advanced data centers available locally before noting a massive untapped opportunity in the region in this regard.

Muhammad Hrishiah, Chief Operating Officer of KUWAITNET, who cited a general lag in adopting new technologies in Kuwait. That lag has shrunk, he says - “We have seen a lag of 3 to 5 years in the past. Now we see technologies being adopted by the early adopters in a year or maximum 2 years.” However, he highlighted that mass market adoption still averages between 3 to 5 years.

“A good example is cloud computing, it’s been now highly adopted in the US but we hardly have 10% to 20% exposure to cloud in the local market, based on what we see.”

Additionally, having the infrastructure and technology is not enough, as what’s also needed is the right type of talent and skills. “In terms of having the technology, Kuwait is very advanced; in terms of having the expertise to leverage this technology, it is unfortunately not,” explained Haidar al Mohri, Innovation and Digital Business Manager at Siemens. The core component of the digital transformation is data, he says; what’s lagging, in his opinion, are specific aspects related to leveraging data, such as developing applications of artificial intelligence.

Connected Verticals - Telecom Riding the Digitization Wave

Telecom operators’ foray into connected verticals is not new - a 1998 Insight Research Corp. report had already identified several vertical markets, including government, healthcare, education, and financial services, as revenue-generating opportunities for telecoms. Until recently, though, operators had moved too slowly on these new opportunities.

“Let me let me start by giving you a background of where we started and what we went through,” said Malek Hammoud. “Telecom was a very rich industry, where you could charge whatever you want,” he recounted. Roughly five years ago, when competition from nontraditional operators emerged, particularly from media and tech players for over-the-top (OTT) services, “for some reason, the telecom industry decided to ignore that.”

“It’s always the same old story. When telecoms woke up,” he explained, billion dollar companies were using telecom networks,

monetizing data while operators had virtually turned into "dumb pipelines." At the same time, consumer telecommunication products became more commoditized. "We were turning into a utility company," concluded Hammoud.

Digital transformation has expedited enterprise demand for digital solutions, a trend that telecom operators are already capitalizing on; data from Future Market Insights indicates that the global B2B telecom market is set to reach $107B by 2026.[25] Driving the growth will be increasing demand for cloud, IoT, video, and enterprise communications technologies.

In Kuwait, telecoms currently provide a host of technology solutions, in fintech, healthtech, and drone technology, with plans to expand into insurtech over the coming year, connected cars, education, gaming, security and surveillance, and oil & gas.

Timeline: B2B Telecom Solutions in Kuwait*

OCT 2017 — Ooredoo Kuwait launches Data Center targeting corporates and businesses, allowing them to move to smart managed solutions to enhance IT infrastructure availability and security.

AUG 2019 — Zain announced Zain Health, a digital healthcare platform that allows remote patient monitoring using smart devices over Zain's network.

MAR 2020 — **stc** Kuwait launched an advanced fleet management solution.

AUG 2020 — Zain offered a Vehicle Tracking System (VTS) and Fleet Management services, which allow corporate customers who own fleets of vehicles for e-commerce or other purposes to track their vehicles.

OCT 2018 — Zain became the first operator in the MENA region to offer Zain Drone as-a-Service (DaaS).

DEC 2019 — **stc** Kuwait announced the launch of its new Video Surveillance as a Service (VSaaS) and Video Management as a Service (VMaaS) solutions.

JUL 2020 — **stc** Kuwait rolled out plans to explore machine-to-machine (M2M) and Internet of Things (IoT).

* This list is indicative and non-exhaustive

Local IT solutions provider KUWAITNET is betting on fintech for growth. While the company helps enterprises across multiple sectors digitally transform, it recently launched Ottu, a software-as-a-service fintech solution, and KNPay, a middleware payment gateway that connects e-commerce sites to payment gateways.

The company's commitment to fintech stems from its belief that the growth in the payments has been very promising in the country, particularly noting collaboration between private and public actors. "We have seen many public and private institutions working together on new initiatives and the market is recognising the power of collaborative approaches in fintech," said Muhammad Hrishiah, Chief Operating Officer at KUWAITNET. He lauded the role of the Central Bank of Kuwait as a driver for major growth in the fintech sector in Kuwait, which he believes "will exceed its counterparts in the Middle East."

Regulation as a Barrier

Regulatory issues, however, still present a significant hurdle to digitization. "We're not as advanced as the biggest players in the world, the biggest reason being the system is not as flexible and the regulators aren't as flexible," said one of the interviewees, who wished to remain anonymous, noting difficulties of having to deal with regulatory authorities in different industries in particular.

The regulatory hurdles were also echoed as noted by Khaled Al-Fraih, Business Development Manager at Enhanced Engineering & Multi-Technologies Co (EEMC). An IT solutions provider focused on cloud solutions, EEMC's most active market has been the Food & Beverage industry. "Regulation in this sector is not as restrictive as some of the bigger sectors," he explained. "For a company wanting cloud and digital transformation they have to look at the region and check the legal framework before doing anything else while for an F&B company, things are not limited by regulations."

The Impact of Covid-19

As the coronavirus pandemic spread in major cities around the world, it brought entire industries to a halt and slowed down the global economy. With government mandated lockdowns, curfews and work from home orders, the conformity to social distancing has created tremendous opportunities for the ICT sector.

In May 2020, the International Data Corporation (IDC) updated its Worldwide Digital Transformation Spending Guide[26] to show that global spending on digital transformation would grow 10.4% in 2020 to total $1.3 trillion by the end of the year. While significantly lower than the 17.9% growth rate of the previous year, IDC noted that digital transformation spending in 2020 still represented "one of the few bright spots in a year characterized by dramatic reductions in overall technology spending."

Compared to pre-Covid-19 forecasts, the pandemic will have effectively reduced worldwide digital transformation technology investment in the period between 2020-2023 by $500B.That being said, the new landscape still presents opportunities for growth in many industries, particularly related to use cases that solve emergent business problems.

For instance, the global video conferencing industry has gained massive traction during the outbreak as private enterprises and government institutions have looked to remotely connect their employees and customers. Telecom operators are seeking to capitalize on this surge in teleconferencing use across industries and verticals. "Lots of people are being pushed to use platforms like Teams and Zoom. It will require us to work more on availing these tools for the customer - whoever they are - because, at the end of the day, we need to have these as part of the portfolio," explained Malek Hammoud, Chief Investment and Digital Transformation Officer at Zain. Hammoud highlighted education

and healthcare as two sectors that will benefit from technology's ability to minimize interaction, "but if we think about the list it can be very long," he concluded.

stc Kuwait is also capitalizing on emerging trends, specifically in healthcare. In May 2020, the company unveiled connected thermal cameras that are able to detect elevated body temperatures and recognize whether individuals are wearing protective masks. Eng. Fahad AbdulRahman Al Ali, **stc** Kuwait's Chief Technology Officer, also commended the "encouraging step" undertaken by the government in adopting digital solutions throughout the pandemic, including digital signatures, digital appointment systems and passes, as well as the launch of Kuwait Mobile ID. Hawiti is an application that provides citizens and residents in Kuwait with a digital ID, which can be used to authenticate government and non-government e-services, as well as digitally sign electronic documents and transactions.

Similar to teleconferencing and e-health, the e-payment industry has witnessed considerable increase in activity since the outbreak began. "In January we used to do about five million transactions, now we are doing almost eleven million transactions," explained Abdulla Alajmi, Chief Executive Officer of KNET - The Shared Electronic Banking Services Company. KNET's other lines of business were affected too. Point of Sale (POS) products were the main worry for the company going into the lockdowns, Alajami noted. However, following the reopening, POS continued growing, with growth averaging 7-8% since the beginning of the pandemic, driven by both consumers and businesses' reluctance to exchange cash. ATM deployment, on the other hand, has been on the decline. "ATM has dropped even after opening all these malls, it has dropped because people moved to the two other channels," he concluded, referring to online payments and POS services.

Interestingly, Alajami noted that the number of transactions did not dip even after lockdowns were removed. “It’s been two and a half months and people haven’t stopped, so once they start on something they won’t change,” he concluded.

Endnotes

24 Global Data; (2020)

25 Future Market Insights; "B2B Telecommunication Market: Global Industry Analysis and Opportunity Assessment, 2016-2026" (2017)

26 IDC; “Worldwide Digital Transformation Spending Guide” (2020)

Entrepreneurial Success Stories

The Middle East region is host to a number of highly promising startups that are tapping into growth opportunities in the ICT sector - especially around cutting-edge technologies. A recent report[27] by IDC expects that 'New Technologies' - such as AI, blockchain, augmented and virtual reality, and robotics - will grow to represent a quarter of all ICT spending in the next 10 years, and will raise the growth rate of overall ICT spending to twice the rate of GDP growth thereon.

Meanwhile, the growth of traditional IT (hardware, software, services, and telecom) will be almost entirely driven by four trends over the next five years: social, mobile, cloud, and data and analytics. Lastly, the report notes that next-generation security related to new technologies will drive significant growth. ICT startups in MENA are capturing opportunities in many of these high-growth areas within the sector.

FRM TECH LABS

One startup that is focusing on blockchain technology is Kuwait-based **FRM Tech Labs**. The company was founded by ex-bankers Mahmoud Al-Awadhi and Fady Khalifa to serve information security products and is currently working with the Central Bank of Kuwait and local banks to establish a unified, digital Know Your Customer (KYC) network in Kuwait.

KYC is a process of client identification, and refers to the minimum amount of information that a bank is legally required to collect from its customers to be able to have a relationship with them. Traditionally, every financial institution maintains its own KYC records, which creates a fragmented, inefficient, and often ineffective environment. This, in turn, leads to a poor customer experience, added costs, and exposes banks to the risk of fines and reputational damage from compliance breaches.

FRM Tech Labs' solution uses blockchain technology to create a highly secure network that syncs KYC profiles between all the connected financial institutions. Any time a user profile is created or updated, all the information becomes immediately available for everyone on the network.

"The beauty of using blockchain is that the actual network doesn't store anything, there are no actual files saved on it, it's only hashing the verification of both fields" explains Al-Awadhi. "Whenever a bank uses this [KYC] information, it just checks the blockchain to verify it."

The company is currently focused entirely on Kuwait, but Al-Awadhi suggested that the company would look to grow to the GCC and beyond in about a year's time. "Whatever end product we get to the banks and the Central Bank could be implemented elsewhere as well," Al-Awadhi said.

Currently in its second year of operation, FRM Tech Labs has not raised funding yet and is focused on growing the business with their internal resources to achieve a higher valuation.

MYKI

Another company tackling the issue of digital identity is cybersecurity startup **MYKI**. Founded in 2015, MYKI offers identity management solutions for both consumers and enterprises. The company develops and maintains a freely available password manager and authenticator for individuals, and decentralised identity management solutions for enterprises.

MYKI's decentralized approach was inspired by the advent of blockchain, according to its Cofounder Antoine Jebara. The idea was born in a coincidental conversation with MYKI Cofounder Priscilla Elora Sharuk, over what Jebara perceived as flawed identity management solutions that he had encountered frequently in his previous job.

"There was the blockchain revolution that had already started, that was in 2013, Bitcoin was talked about a lot," he explained. "So we thought our way would be to actually create a decentralized identity management solution for consumers and enterprises; no cloud storage, that's centralized; and no on-premise storage, that's inconvenient."

MYKI works with Managed Service Providers (MSP) as a key sales channel, and they represent the company's biggest revenue stream. MSPs are companies that remotely manage the IT infrastructure and end-user systems of organizations. MSPs can deploy MYKI's technology to either secure and manage the security of their own customers or provide the solution to their customers as a Value Added Reseller - "they become our sales team at a certain point in time."

While the company was born out of the Middle East, it currently only serves customers in the US and across Europe. "Decentralized identity management is a new concept, and it was just easier to find an audience of early adopters in the US, and later in Europe," explains Jebara. However, the company has kept its engineering hub in Beirut, opting to invest in local talent to develop its global products. Jebara attributes this decision to the "solid mentality and work ethic" of local engineers, namely, their multipurpose nature, a quality that "we can't find easily in Europe or in the US; people tend to be very specialized in one thing there, and they like to be that way. Here, everyone wants to learn a little bit about everything."

Jebara doesn't rule out moving into the Middle East market, but for the time being the company is focusing on growing their market share in the US and Europe, he explained. "We're thinking that we need to have significant market share there, to start focusing here," he concluded.

MYKI has over 250 MSPs that manage over 50,000 companies on the system, and that's growing 100% quarter over quarter according to Jebara. Overall, the company has raised $5.2M million to date, $4M of which came from its latest funding round.

UNITX

Operating at the intersection of cloud computing and artificial intelligence is **UnitX**, a spin-out startup from King Abdullah University of Science and Technology (KAUST) that provides on-demand supercomputing over the web.

Tapping into a network of 14 supercomputers, UnitX's software is able to smartly allocate spare supercomputing capacity to its clients. This model effectively allows smaller companies to overcome the cost and skills barriers of using supercomputing

capacity and execute tasks that require artificial intelligence, deep learning and machine learning. Currently, the company is focused on four sectors: banking, insurance, e-retail, and healthcare.

UnitX is growing steadily according to its CEO, Kiran Narayanan. In 2019, the company received a $2M investment from the KAUST Innovation Fund and Saudi Aramco's Wa'ed fund. "There are revenues coming in," Narayanan notes. "We don't have a hyper-growth rate. It's normal. We're a platform-as-a-service in terms of business. So in two to three years, that's when your revenues are less than your costs and then they scale up and grow."

As the company pushes onwards in democratizing the power of supercomputing, Narayanan believes that the future of AI lies in the ability to operationalize it. "There's a lot of low-hanging fruit in terms of AI models now. Machine learning and deep learning models are available, you can train them in a cost-effective manner these days. Now the key is to operationalize it, to take that model and deploy it in an industrial scenario or business process and to actually shape it to our way."

ZIMA

Another company employing cloud technology to innovative ends is **Zima Cloud**, a cloud-based management and billing platform that caters to small Internet Service Providers (ISPs). The platform comprises an integrated system with multiple services, which are often sold separately to ISPs: a Customer Relationship Management (CRM) solution; a billing system; a network monitoring system, which works to ensure that client connections are running smoothly; as well as a bandwidth management system and a rules engine to help ISPs manage and control bandwidth allocation to users.

Zima Cloud's cloud-based service represents a cost effective way for small ISPs to set up their business. Deploying the solution is also significantly quicker compared to traditional solutions. Zima's solution is a particularly attractive proposition for small ISPs in remote and low population density areas, which are typically neglected by bigger providers since they do not generate a high enough return on investment. "By just reducing a portion of their upfront costs, we would be effectively enabling a proliferation of small ISPs," explained CEO and Cofounder Naim Zard.

Zima's solution allows small ISPs to smartly balance bandwidth allocation among different types of clients in a way that reduces cost without hampering performance. For example, ISPs serving both residential and business users, two groups that have different peak consumption times, can choose to allocate the same purchased bandwidth capacity to each category during their peak times instead of dedicating the same capacity for both at all times. Done properly, this could double profits for ISPs according to Zard.

By March 2020, Zima was serving 50 paying ISPs scattered across 14 countries around the globe, including Lebanon, India, Pakistan, Nepal, Bangladesh, and South Africa, and Lebanon, as well as the United Kingdom and Ireland.

TPAY MOBILE

TPAY MOBILE's vision is to leverage the power of mobile network operators in the region Middle East, Africa, and Turkey to enable cross border transactions and business," explains Sahar Salama, CEO and Founder of TPAY MOBILE.

Established in 2014 and headquartered in the UAE, TPAY MOBILE is a cross-border mobile payment platform that leverages direct carrier billing and mobile wallets to enable payment for digital

services and products. The company covers 24 countries across the Middle East, and Africa, and Turkey, potentially unlocking new audiences for digital goods for over 610 million consumers.

TPAY MOBILE processes payments related solely to digital services and products, such as: videos and music content, online health services, online gaming, and e-education. Salam attributes the exclusion of physical goods to the Middle East's outdated mobile payments regulations, which still don't allow for such transactions. "The evolution of the regulatory environment that happened in other countries is still in progress in our region," she noted, before adding that the situation "is changing faster than expected in countries like Egypt, the UAE, and Saudi Arabia."

Furthermore, Salama was keen to note that, while regulatory hurdles did play a part in restricting their the company's offering, the company is still pursuing growth in the digital ecommerce market, adding that there is significant potential for business in areas such as transportation and ticketing, insurance and microinsurance, and governmental services to name a few.

Finally, TPAY MOBILE's service enables global players to capture opportunities in smaller and emerging economies, which otherwise may not have been attractive from a return on investment perspective. Salam notes that 95% of their partners are international players - including global content providers such as Google and Apple. "When all of those international players come to the region, they always say we have to start with the big economies," she explained. Once they've launched and achieved success in their selected markets, "we take them across very fast, even to the smallest opportunities, even to the underserved countries," Salama concluded.

Endnotes

27 IDC; "Global ICT Spending Forecast 2020 – 2023" (2020)

Recommended Steps for Digitization

As noted earlier, spending on digital transformation remains one of the few areas driving growth in the technology sector. To ensure future success, information and communication technology companies must be well equipped to capitalize on the emerging demand for digitization across industries.

Build Cutting Edge Technology Capabilities & Agility

Modernizing IT infrastructure and investing in cutting-edge technologies will be fundamental to staying competitive for ICT companies. Developing strong capabilities in high-demand technologies like AI, IoT, data analytics, and blockchain will enable ICT players to quickly and effectively develop smart solutions for customers across industries.

Furthermore, adopting agile principles and modern software engineering practices has the potential to improve infrastructure service delivery as well as shorten the time to market for technology products and services. According to McKinsey[28], agile approaches can increase productivity of IT infrastructure groups by 25 to 30 percent over a period of six to 18 months.

Explore 'X-as-a-service' Business Models

ICT service providers should explore consumption-based pricing models as businesses have been shifting from capital expenditures to operational expenditures. A 2018 Deloitte survey[29] found that 71% of the US-based companies spent more than half of their enterprise IT budget on everything-as-a-service offerings, or XaaS.

Everything-as-a-service is an emergent trend in ICT delivery models: it comprises cloud-based distribution models that allow customers access to technology capabilities and services through the internet upon request, typically on a subscription basis.

Technology licensing and delivery models are an increasingly attractive proposition for businesses for various reasons. Generally speaking, flexible consumption models allow companies to access cutting edge technology and services with less risk and at less cost. In return, these models allow companies to increase efficiency and innovate faster.

Cater to Growth in Industry Verticals

ICT vendors should explore opportunities in vertical industries that are exhibiting a growing demand for specialized systems, notably banking, financial services, and insurance, which have commanded

the largest share of the global digital transformation market in 2019[30], and education, which is projected to exhibit the highest compounded average growth rate over the next 15 years. Other verticals to look out for include healthcare, retail, media/entertainment, manufacturing, government, logistics, and travel/hospitality.

In order to successfully cater to an industry vertical, technology service providers must acquire a full understanding of the workflows, processes, and procedures, compliance and regulatory standards employed by industry operators. Internally, companies should invest in gaining industry specific knowledge via training programs, workshops, hiring industry experts. Furthermore, ICT companies could explore avenues of collaboration through partnerships, joint ventures, and joint R&D programs with relevant stakeholders in the target industry.

Capture Increased Demand for Cybersecurity

Research conducted by the Ponemon Institute[31] has concluded that the rapid adoption of digital transformation is creating considerable vulnerabilities in most organizations - 82% of respondents reported suffering at least one cybersecurity breach as a result of digital transformation in the last year. Furthermore, Gartner[32] predicted that cybersecurity spending would reach $123.8B in 2020, driven primarily by spending in five markets: security services, infrastructure protection, network security equipment, identity access management and consumer security software. Together, these markets account for 89% of all cybersecurity spending.

ICT companies should capture these growing opportunities in the cybersecurity market and should focus on providing Security-as-a-service (SECaaS) offerings, which have been gaining traction particularly among SMEs. Cloud-based cybersecurity platforms allow vendors to spread the cost of human capital across its user base to offer cost-efficient solutions for businesses.

Endnotes

28 McKinsey & Company; "Transforming IT infrastructure organizations using agile" (2018)

29 Deloitte; "Accelerating agility with Xaas" (2018)

30 Meticulous Research; "Market Opportunity Analysis and Industry Forecasts" (2020)

31 CyberGRX, Ponemon Institute; “Digital Transformation & Cyber Risk" (2020)

32 Gartner; (2020)