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Kuwait Foundation for the Advancement of Sciences

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Digital Transformation in Kuwait's Healthcare Industry

Healthcare Publication 2021

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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:

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Executive Summary

The healthcare industry in Kuwait is entering the era of digital innovation, as both public and private players pull resources into their digital transformation. The current state of the 4th Industrial Revolution, however, remains fragmented. A number of prominent healthcare institutions have, or are in the process of integrating innovative digital solutions into their operations - primarily in areas such as health records, telemedicine, and mobile applications - yet there is no linkage between institutions as of yet. While some companies have taken the necessary strategic and managerial steps required for the process, the implementation is piecemeal and shy of a national interconnected environment, a necessary precursor to unleashing the full potential of the revolution using advanced technologies such as cloud computing and artificial intelligence.

The Covid-19 outbreak has accelerated digitization across all industries, including healthcare, with remote e-health solutions in specific standing out as clear winners. This boded particularly well for healthcare startups in the MENA region, namely those that offer telehealth solutions as well as digital services aimed at healthcare incumbents. Overall, the healthcare entrepreneurial sector has been exhibiting remarkable strength and innovation, with startups developing patient centric digital health solutions that leverage state of the art technologies such as artificial intelligence (AI) and blockchain. At the same time, the pandemic has forced healthcare institutions to rethink their priorities and strategies: organizations have sought to enable remote work, reduce spending, and accelerate the incorporation of digital solutions that increase efficiency. In the long run, healthcare institutions will have to grapple with the long term effects of the epidemic, with mounting evidence suggesting that survivors could still face complications for years ahead.

Introduction

The ongoing coronavirus outbreak has pushed healthcare systems in many parts of the world close to the brink. The unforeseen and sudden surge in demand put immense pressure on healthcare institutions, stretching some beyond their capacity, but it also pushed digital health solutions to the fore - to cite one example, according to Frost & Sullivan, the US telehealth market is projected to grow seven-fold come 2025.[1]

Even in the years leading up to the pandemic, healthcare systems in many major cities were already facing growing financial and organizational strain. Population ageing and the growing prevalence of chronic and complex diseases were pushing the demand for, and cost of healthcare services up. This, in turn, led healthcare companies to look increasingly to digital and innovative solutions to improve both quality and accessibility of healthcare, all while keeping costs in check. Overall, the global market size for digital transformation in healthcare could reach $210B by the end of 2025, according to Adroit Market Research.[2]

Digitization is also enabling fundamental paradigm shifts across the industry, such as the shift in healthcare delivery towards patient-centered care, whereby patients are empowered to play an active role in managing their own health; and towards predictive and preventative care, shifting away from what has been aptly described as a ‘sickcare system’ - that is, a healthcare system focused on curing ailments, rather than working on keeping customers healthy.

The digital transformation in healthcare will be largely driven by ‘radically interoperable data, artificial intelligence, and open, secure platforms’, according to Deloitte, which will bring together several key, yet currently disconnected components: hospital systems, pharmaceutical companies, medical device manufacturers, and health insurers.[3] These forms of collaboration will enable new combinations of services that place the patient at the center of the healthcare model. The global healthcare big data analytics market, it should be noted, was estimated at $19.6B in 2018 and is projected to reach $47.7B by 2024.[4]

Looking at the Gulf Cooperation Council (GCC) region, healthcare service providers are expected to increase their annual investments in digital infrastructure anywhere between $500M to $1.2B over the next two years, according to a joint study by Frost & Sullivan and Mashreq.[5] This represents a 10% to 20% growth rate, up from the 3% to 4% pre-pandemic growth projections. Frost & Sullivan and Mashreq also projected virtual patient visits to quadruple by the last quarter of 2020.

In Kuwait, demand for healthcare was already on the rise in both the public and private sectors according to Ken Research,[6] owing to an ageing demographic, an increase in the incidence of non-communicable diseases, a higher prevalence of chronic and lifestyle diseases, as well as compulsory health insurance. The rise in demand has spurred the Kuwait Ministry of Health (MOH) to sign several contracts for erecting and equipping new public

hospitals and healthcare centers. Meanwhile, having taken note of the lucrative potential of the healthcare market, private players have also started to invest in new private medical facilities. In early 2019, Ken Research also projected that Kuwait would likely witness the establishment of approximately 15 new hospitals in the next 5 years.

Historically, the global healthcare industry has lagged behind when it comes to digitization according to a 2018 study conducted by Forrester Consulting.[7] The study developed a digital transformation maturity index that ranked institutions' innovation readiness and competency across six industries, including healthcare. The study concluded that healthcare institutions lagged about a decade on average behind other industries in adopting technologies that enhance customer engagement, which it attributed to regulatory requirements that pertain to patient data. Furthermore, the study noted that healthcare institutions struggled most when it came to self-service, digital marketing, and their readiness for disruptive business models, ranking last in the study.

The healthcare sector currently stands at the centre of an unprecedented global crisis that has led to a drastic increase in the rate of adoption of digital health solutions and a real acceleration of the 4th industrial revolution, which, in effect, engenders a strategic advantage for institutions that undertake the transformation journey.

Endnotes

1 Frost & Sullivan; 'Telehealth—A Technology-Based Weapon in the War Against the Coronavirus' (2020)

2 Adroit Market Research; 'Global Digital Transformation in Healthcare Market Size by Region and Forecast 2018 to 2025' (2019)

3 Deloitte, 'Forces of Change—The future of health' (2019)

4 IMARC Group; 'Healthcare Big Data Analytics Market: Global Industry Trends, Share, Size, Growth, Opportunity and Forecast 2019-2024' (2019)

5 Mashreq, Frost & Sullivan; 'GCC Healthcare: A Glance into the Future' (2019)

6 Ken Research; 'Kuwait Hospital Market Outlook to 2022- By Public and Private Hospitals, By Inpatients and Outpatients, By General and Specialty Hospital and By Region (Al Asima, Hawalli, Al Farwaniya, Al Ahmadi, Al Jahra and Mubarak Al-Kabeer)' (2019)

7 Forrester Consulting; 'The Digital Transformation Race Has Begun' (2017)

Healthcare Technology Trends

Healthcare institutions are leveraging digital technologies to improve health outcomes and provide innovative care delivery models that cater to evolving customer expectations, all while keeping costs in check. In the years to come, telehealth, Insurtech, wearables, big data & AI, as well as electronic health records, will come to dominate the industry.

According to the World Health Organization, **Telehealth** refers to the remote delivery of health care services, using ICT for the exchange of information for the diagnosis and treatment of diseases and injuries, research and evaluation, and for the continuing education of health professionals. One of the more popular forms of telehealth is telemedicine, which specifically refers to remote clinical services, such as screening and assessment, treatment planning, counseling, and case management. Other applications of telehealth include, but are not limited to, remote robotic surgery, physical therapy administered via video conferencing, home monitoring of vital signs, and so on.

Telehealth was already on the rise before Covid-19. Market Research Future's pre-pandemic predictions had shown that the global telemedicine market would grow at a 16.5% compound annual growth rate from 2017 to 2023,[8] while Forrester Research had estimated that virtual healthcare interactions will exceed a billion interactions in the US alone by the end of 2020.[9] In fact, Forrester's revised predictions, which account for the effects of the pandemic, showed a surge in demand so high that it led its analysts to foresee a supply crisis in virtual care.

How Has COVID-19 Changed the Outlook of Consumers for Telehealth?

Source: McKinsey & Company; "Telehealth: A quarter-trillion-dollar post-COVID-19 reality?" (2020)

Shifts from: To:

11%

of consumers used telehealth in 2019

76%

of consumers now interested in using telehealth going forward

While the surge in telehealth has been driven by the immediate goal to avoid exposure to COVID-19, with more than 70 percent of in-person visits cancelled, 76 percent of survey respondents indicated they were highly or moderately likely to use telehealth going forward, and 74 percent of telehealth users reported high satisfaction.

The benefits of telehealth extend to both doctors and patients. For physicians, remote interactions mean that they are able to

extend their services beyond brick-and-mortar facilities. This translates into a more convenient experience for many patients, and oftentimes at a lower cost. For patients, it extends access to medical specialists in remote and underserved areas and for those that lack mobility.

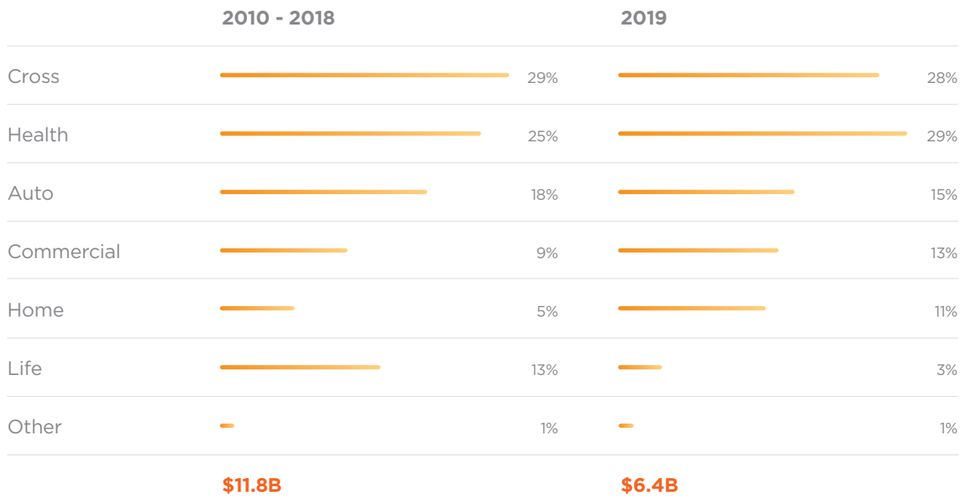
However, telemedicine, in particular, exhibits intrinsic limitations of its own. For one, there is an inherent limitation to diagnoses and treatments that do not involve physical interaction. Secondly, without adequate data solutions, on-demand telemedicine services that connect patients to random healthcare providers would reduce the quality of care. Furthermore, the use of telehealth carries notable privacy and security concerns, as electronically stored and transmitted health data is inherently vulnerable to cyberattacks. In 2019, healthcare compliance analytics company Protenus counted 572 data breaches globally, involving 41.4M patient records.[10]

Medical insurers have a vested interest in collaborating with health-care institutions to push telemedicine, according to Wolters Kluwer, some insurance companies still do not cover the cost of telehealth visits, which leads to out-of-pocket costs for some patients.[11]

In a 2019 article, Forbes described the adoption of digital solutions by the health insurance sector over the previous decade as being 'limited'.[12] Insurers, the article notes, had largely failed to successfully deliver consumer-centric insurance programs, and, as a result, the global health insurance market growth rates dropped from 9% in 2014-2015 to 6% or 7% in subsequent years. However, in spite of the sluggish start, **insurtech** is still poised to disrupt the insurance market, evidenced by the growing share of global investments flowing into the space, which hit an all time high in 2019 with a record $6.37B according to Willis Tower Watson[13] - up by more than two billion dollars from the previous year. Insurtechs with a focus on healthcare accounted for 29% of the total.[14]

Health Insurtech Investment Led Other Lines of Business in 2019 After a Strong Showing Since 2010

Source: NTT DATA and everis



A portmanteau term combining 'insurance' and 'technology', Insurtech generally refers to the use of modern technology to disrupt the insurance industry, namely: improving customer experience and carving out savings across the insurance value chain. More broadly, the term serves to denote "the ecosystem that brings together adjacent industries to provide an improved service of greater value to insurers and their customers. Adjacent industries of particular relevance include agriculture, health, cybersecurity, the sharing economy, wealth management, transportation and more." according to PwC.[15]

Insurtech solutions range from workflow automation (automated data entry and document processing for example), claims management tools, and AI-powered risk assessment and

management, all the way to customer-facing mobile applications as well as monitors and trackers for individuals and automobiles.

According to McKinsey,[16] digitization will help stem the tide of the rising costs of insurance claims and reduce the complexity of claim management in the healthcare industry. The McKinsey report notes that while full digitization of the claims process is not yet possible in most countries, digitizing portions of the process has the potential to bring about increased efficiency and accuracy, as well as lower costs and better customer experiences.

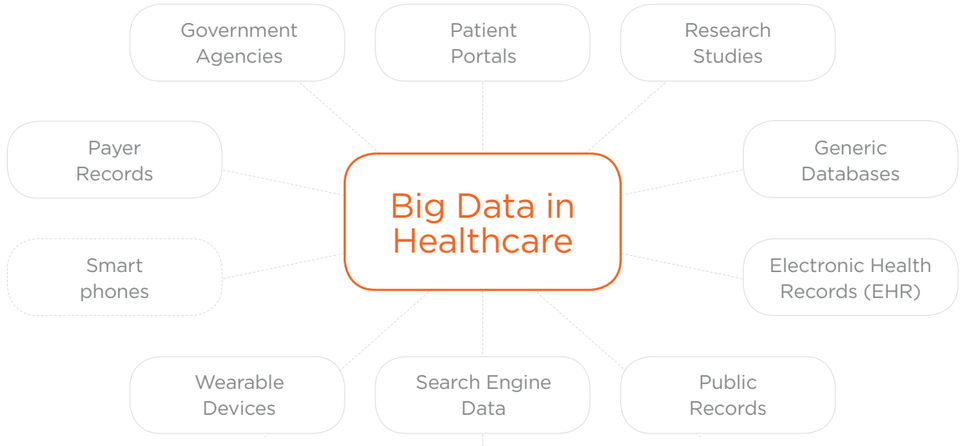
Furthermore, digitization will enable health insurance companies to provide more appealing, personalized policies to their clients, namely by leveraging digital channels, such as health apps and wearables. Wearables, according to Investopedia, is “a category of electronic devices that can be worn as accessories, embedded in clothing, implanted in the user’s body, or even tattooed on the skin.” These devices typically have the ability to send and receive data via the Internet.

The growing pervasiveness of connected portable and wearable devices is transforming how health insurance risk is assessed; by collecting and analysing granular customer data, insurers are able to more accurately identify risk factors. These inputs also make it possible for insurers to incentivize good behavior.

The Insurtech industry faces several challenges. For many consumers and small business owners, interacting with an chatbot or virtual assistant may not inspire enough trust to purchase insurance products. The growth of the industry has also been hampered by regulatory barriers, particularly in countries where supervising authorities lack the technical knowledge required to evaluate products and services that fall outside of the scope of existing regulation. Finally, the reliance on granular information raises obvious data security and privacy concerns, particularly with regards to devices that are able to track a person’s whereabouts.

Sources of Big Data in Healthcare

Source: NEJM Catalyst 9catalyst.nejm.org) © Massachusetts Medical Society



The first incidence of a smartwatch summoning an ambulance that saved its owner has already been reported. Smartwatches are one type of **wearables** that can seamlessly monitor various physiological parameters on the move - such as heart rate, steps walked, blood pressure, seizures, physical strain, or the release of certain biochemicals. That data can then be interpreted by algorithms to spot alarming vital signs in just about real time. As the demand for telehealth balloons, more and more medical home-use devices and direct-to-consumer models will come to the fore.

Wearable technology does face several challenges however. There is an inherent design constraint of balancing increased functionality with ergonomics - the small form factor poses significant challenges for manufacturers trying to fit additional hardware. Furthermore, the extended use of power hungry functions, such as wireless networks and GPS, significantly shortens battery life. Wearables can also be subject to cybersecurity attacks, which could have severe consequences for users related to privacy as well as health safety.

This seemingly ever growing inflow of granular, personalized health data presents medical professionals with a dilemma. Receiving medical information and failing to act on it could potentially expose clinicians to medical liability. As a result, **big data and artificial intelligence** will be paramount for this emerging paradigm.

Data-driven, predictive algorithms can potentially identify patients that are likely to benefit from an early intervention, consequently eliminating the need for emergency hospital visits, leading to fewer admissions and readmissions. Furthermore, by being able to more accurately predict the trajectory of a patient's disease, particularly in relation to cases in which diseases affect multiple organ systems, these algorithms would enable doctors to more efficiently tailor treatments and therapies.

Moreover, come 2025, as much as half of the world's population could be relying on so-called "virtual personal health assistants" Gartner predicts.[17] These AI-powered virtual assistants are privy to each user's medical history and genetic makeup, which it leverages for better decision making. AI technology will also play a key role in drug development, exponentially speeding up the process and reducing cost.

AI technologies could have some adverse effects. As AI systems become more complex, it becomes harder for medical professionals to fully comprehend how they process information and produce end results, which, in turn, makes doctors susceptible to becoming less diligent by blindly accepting the guidance of the system.[18] This phenomenon is known as automation bias.

Meanwhile, the adoption of electronic health record (**EHR**) systems will finally unleash the potential lying in the troves of data that hospitals already possess. Each patient will have a digital twin - an individual's life-long data record - which would improve medical decision making and overall patient experience by assisting physicians in assessing the potential effectiveness of medical treatments and procedures as well as eliminating the risk of medication errors. Furthermore, data record analysis would be able to anticipate patients' future needs for hospitalization, particularly for those that exhibit high frequencies of hospital admissions, and create preventative plans for them. Lastly, EHR could help predict future admission rates, allowing hospitals to allocate resources and staff more efficiently.

As healthcare institutions increasingly integrate digital technologies into their functioning and become more digitally mature, the sector is on course to improve its operational efficiency and elevate the standards of medical care, enhancing the overall experience of healthcare professionals and patients alike.

Endnotes

8 Market Research Future; 'Telemedicine Market Research Report, By Service Type (Telenursing), Component (Software, Hardware), Deployment (Cloud-Based, On-Premises), Application (Cardiology, Radiology, Dermatology) End Users (Hospitals, Clinics, Home Care) - Global Industry Size, Trends, Growth, Analysis, Share, Forecast till 2023' (2017)

9 Forrester Research; 'Predictions 2020: Healthcare' (2020)

10 Protenus; 'Breach Barometer' (2020)

11 Wolters Kluwer; '6 Telehealth Trends for 2020' (2020)

12 Forbes; 'Top Five Digital Health Technologies in 2019' (2019)

13 Willis Tower Watson; 'Quarterly InsurTech Briefing Q4 2019' (2019)

14 NTT DATA; 'Insurtech Global Outlook' (2020)

15 PwC; "This is InsurTech's moment. Will insurers seize the opportunity?" (2019)

16 McKinsey & Company; 'For better healthcare claims management, think "digital first"' (2019)

17 Gartner; 'Maverick* Research: Endangered! How Technology Will Cause Extinction of the Primary Care Tier of Medicine' (2016)

18 BMJ Quality & Safety; 'Artificial intelligence, bias and clinical safety' (2019)

Corporate Digital Transformation in Kuwait's Healthcare Industry

Though possessing a young population, Kuwait has a rising burden of diseases, including elevated rates of diabetes, cancer, and obesity, which has accelerated the development of both the private and public healthcare industries.

> A Global Burden of Disease study ranked Kuwait as the fourth most obese country in the world

In 2016, the Kuwaiti government awarded $11B worth of healthcare infrastructure projects, with a strong focus on prioritizing the transformation of the sector, according to the US International Trade Administration.[19] Meanwhile, there has been a momentous drive by the government to shift healthcare services from the public sector, onto the private sector. This comes in line with the healthcare development strategy laid out in Kuwait's Vision 2035 plan, which seeks to stimulate the role of the private sector into providing health services. At the timing of the report, private hospitals were planning to increase the number of available beds from around one thousand beds to over 2,800 beds.[20]

> Kuwait is a Healthcare Pioneer; the first country in GCC to have sizeable (500+ bed) hospitals.

It must be noted that, while the government offers free healthcare services, a 2016 QuintilesIMS report noted the propensity of Kuwaiti patients to spend on private treatment, typically to be accommodated by more convenient treatment schedules and other high-end services offered at private hospitals.

The Revolution's Backbone

Healthcare institutions are turning to information and communication technology to digitize their systems and operations in order to effectively grow and scale, improve efficiency and optimize health outcomes. Central to the feasibility and success of digital transformation are Electronic Healthcare Records (EHR).

Several private hospitals in Kuwait have already implemented EHR systems, including Dar al Shifa, Al Salam Hospital, and Royale Hayat Hospital. Launched in 2006, Royale Hayat's Chief Strategy Officer, Abubakr Elmardi, highlighted several of the hospital's digital transformation initiatives, which include: an EHR system - Trakcare, provided by US-based computer software company InterSystems; and a mobile application - developed by India-based mobiCare - which connects to the hospital information system (HIS) and is able to relay advice by the hospital to the patients through the hospital's HIS.

Elmardi noted that the hospital has not had any obstacles when it comes to regulation; however progress in implementation remains slow and difficult. Overall, “change is difficult,” he said, “but that’s how it is.” Looking ahead, the hospital is negotiating with Austria-based Medicus AI to be able to add more telehealth solutions to its offering, a move described as “do-or-die” by Elmardi following the pandemic.

Mobile Experiences

Another company that has leveraged mobile technology to great effect is Asnan Tower, the largest dental center in the Middle East. Asnan Tower developed its own app following a rigorous process that lasted two years: the company studied five competing systems, purchased two, but eventually created its own application, as it looked to exceed the global standards of dental clinic management systems according to Essa Nabil Al-Essa, Chairman and CEO of Asnan Tower.

Overall, the ‘Asnan Tower’ mobile application works to improve the customer experience and reduce costs for the company. For instance, following any dental procedure at Asnan Tower, the patient will automatically receive informative aftercare videos specific to his or her case. Users can also request, confirm, or cancel appointments, pay fees, and hail their car from the parking.

On average, the ‘Asnan Tower’ app handles about 30% of the daily 1800 customer interactions, and El-Essa expects that portion to double over the coming two years. “There are so many little things that can increase revenue and reduce cost,” he concluded.

El-Essa was keen to highlight that Asnan Tower fosters a culture of intrapreneurship, where employees are encouraged to pitch ideas and, if approved, are rewarded and given a specific time frame to officially submit the idea, which then gets handed to and managed by the IT department. Asnan Tower’s innovation ethic is based largely on their core belief that the market is hungry for quality. “I think especially in the GCC we are so cash rich and competing on price alone I think is a mistake; it’s the opposite of what the market is asking for,” he concluded.

Digital Diversification

Central Circle Company was established in 1979 with the aim to provide medical equipment and turnkey solutions. Since then, the company has grown significantly and expanded its services, to include a number of other verticals, including pharmaceutical products, which has witnessed the most notable growth.

Central Circle Company’s client list is primarily made up of government entities - such as the Ministries of Health, Defense, and Social Affairs - which puts the company on an unsustainable path according to Yasmin Abdulghafour, its Chief Operating Officer. “The market is shrinking,” explains Abdulghafour, adding that, while the company is currently generating healthy revenues, “once the Ministry of Health and all their mega projects are done, we are going to be generating money literally out of consumables and service contracts, which isn’t sustainable or effective.”

As such, the Central Circle Company’s digital efforts aim to cut waste: “The number one goal is cost control,” stated Abdulghafour, “working with pharmaceuticals and working with medical equipment generates lots of waste, whereas technology is literally waste free so we’re definitely trying to create efficiency and better manage the operation.” Beyond cost cutting, the company plans to focus on additional medical service for private players, such as diagnosis, operative procedures, follow up and after care. Furthermore, as a turnkey solution provider, the company has started exploring new avenues, such as artificial intelligence to generate automated medical services. Most recently, the Central

Circle Company started testing new waters by launching an online pharmacy, called PHARMAC, built in-house, to capitalize on the success of its pharmaceuticals vertical.

Central Planning is Key

Ali Abdulwahab Al Mutawa Commercial Co. (AAW) is one of the largest trading and commercial companies in Kuwait, operating across seven different business sectors, including pharmaceuticals and insurance. The company has been undergoing a digital transformation across the whole organization, seeking to utilize resources efficiently, as well as save cost and time for all business lines. The digitization efforts are led by the Technology and Digital Transformation Manager Duha S. Shubair.

Shubair highlighted that managing transformation proved to be particularly challenging in this environment. The first priority, according to Shubair, is ensuring that the Board sees the value in digital transformation; she noted that, "you need to be involved in your projects. How is this going to affect your revenue... the work you've done... your employees... how efficient is going to be the whole operation... You need to highlight these things to them."

Secondly, when it came to coordinating multiple efforts across a fairly large institution with multiple departments, efficiency was scarce. Namely, Shubair pointed out that the lack of a central authority within the company had led to repeated and redundant processes. "So when you come to work on another project you have to reinvent the wheel and convince those in charge that they need to support the effort.

To solve this problem AAW has created a new unit, which it dubbed 'Center of Excellence.' The Center brings together managers from different departments for the purpose of aggregating their needs or requirements. That information feeds into a central digital plan, which was still being designed at the timing of the interview.

Private Insurance & Regulation in Limbo

"If you're talking about the fourth industrial revolution in any advanced economy, the starting point or the spark starts with the regulator," explained Dr. Mussaad Al-Razouki, Chief Business Development Officer of Kuwait Life Sciences Company, a technology transfer and investment company. He is adamant that regulators need to set policies that push all players to move to the digital space, in a manner similar to what has already happened in the UAE, Saudi Arabia, and Qatar.

Expanding insurance coverage is also key to bringing the healthcare industry into the information age according to Al-Razouki. Today, in Kuwait, the important step of creating a national insurance program finally happened, he says. However, the program currently only serves a very small percentage of the population - effectively the percentage that carries the highest risk - which is made up of the elderly and the retired members of the population (around 120,000 individuals out of a four million population).

As a final step, Al-Razouki highlighted that insurers must be encouraged to cover more preventative health care services, which would be used as KPI when it comes to evaluating the success of a private insurance company or private insurance plan.

The insurance industry in Kuwait is undergoing a period of change according to Farid Saber, Assistant Group CEO at the Gulf Insurance Group (gig). Established in 1962, gig is the largest insurance Group in Kuwait with insurance networks Jordan, Bahrain, Egypt, Turkey, Algeria, Syria, Iraq, Lebanon, Saudi Arabia, and the Emirates.

Saber mentioned that since the 1960s, the insurance sector has been governed by the Ministry of Commerce. "So you're dealing

with a law that has no mentioning or tools to support any digital transformation," he continued. However, in September of 2019, a new insurance law was approved by the Kuwaiti Parliament - one that took into account observations from insurers, including gig - but has yet to take effect. While a dedicated public insurance authority was formed, it has not yet started operating yet in light of the coronavirus outbreak.

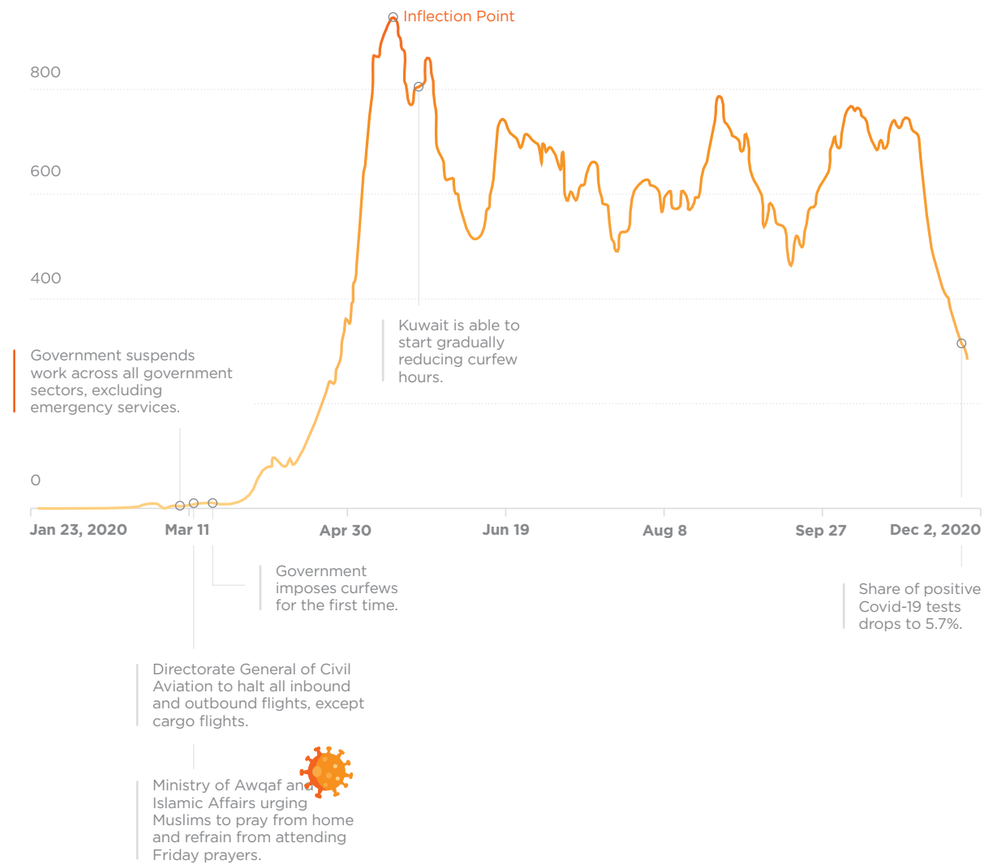
However, Saber expects the newly enacted authority to build the necessary internal capabilities to drive and impose change in the remaining part of this year. "So we're in a grey area today. If I want to implement a certain initiative or idea I have no place to go do it: if I go to the Ministry of Commerce, they will tell me they are no longer the right party to deal with it, and if I go to the Insurance Authority they will say they haven't yet formed their capabilities. We're hopeful in the next year for things to improve," Farid concluded.

The Impact of Covid-19

On February 24, 2020, Kuwait officially announced its first recorded case of a Covid-19 infection. By mid-December, Kuwait accounted for over 145,000 confirmed cases, 140,000+ recoveries, and over 900 deaths according to the Ministry of Health.[21]

Daily New Confirmed Cases

Source: John Hopkins University CSSE COVID-19 Data



Kuwait was able to significantly stem the spread of the virus shortly after mid-March, 2019. The inflection point of March 22 followed a government decision to suspend work across all government sectors, excluding emergency services on March 11, as well as a decision by the Directorate General of Civil Aviation to halt all inbound and outbound flights, except cargo flights, starting on March 13, 2019. The beginning of travel restriction also coincided with the closing of public parks, and an announcement

by the Ministry of Awqaf and Islamic Affairs urging Muslims to pray from home and refrain from attending Friday prayers during the pandemic. The government also imposed curfews for the first time on March 22. By May 30, Kuwait was able to start gradually easing restrictions and allow citizens a return to normal life by reducing curfew hours - in the period extending from May 30 until the end of November, the share of positive Covid-19 tests dropped from over 26% down to 5.7%.

MAR 22 — Curfews were implemented for the first time and were limited to the hours between 5 pm and 4 am.

APR 6 — Curfews extended from 4 am to 6 am as the number of daily new cases started to increase.

MAY 10 — Following a brief period of relaxation of curfew hours that started at the beginning of the holy month of Ramadan (April 23), the country was placed under full curfew based on the recommendation by the Ministry of Health as new daily cases were rising sharply.

MAY 30 — Kuwait was able to start gradually reducing curfew hours following a drop in the share of positive Covid-19 tests from over 26% down to 5.7%.

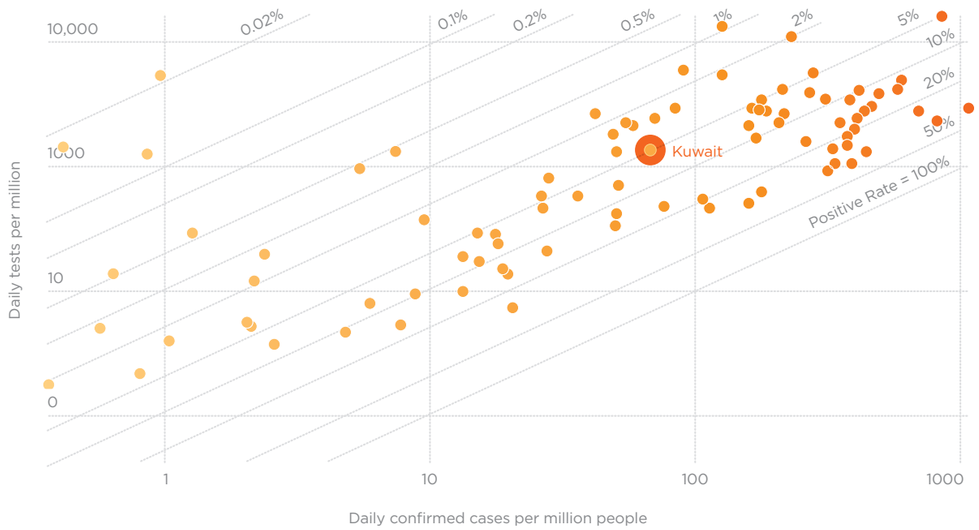
Kuwait's success in containing the outbreak also depended on its continuous effort to increase testing capacities, which was reflected in a decreasing test positivity rate. Positivity rates measure the extent of testing relative to the scale of the outbreak - a high number of positive tests relative to total number of tests indicates that there are not enough tests being carried out and suggests that the actual number of infections is likely higher than the recorded number.

While Kuwait's test positivity rate was exceeding 20% by the end June, 2019 it had fallen closer to 5% by the end of November, 2019.

> The World Health Organization recommends that countries not exceed 5% test positivity rate for 14 consecutive days before beginning reopening.

COVID 19: Daily Tests vs. Daily New Confirmed Cases per Million

Source: Testing data from official sources collated by Our World In Data, confirmed cases from Johns Hopkins University CSSE



The drop also roughly coincides with the announcement of Kuwait's Ministry of Health on July 23, 2020, that government-run hospitals would be providing Covid-19 diagnostic tests free of charge for citizens and expatriates.

Healthcare Institutions React

The Kuwaiti government allocated $1.6B in additional funds to support efforts in fighting the spread of COVID-19. However, while the healthcare industry has already experienced the severe immediate and short-term impacts of the Covid-19 pandemic, the delayed or indirect implications are expected to far exceed them according to forecasts by McKinsey & Company, which projects annual cost increases ranging between $125B to $200B for the US healthcare system alone.[22] So how are healthcare institutions in Kuwait managing the repercussions of the pandemic?

The economic aftermath - namely drops in GDP, income levels, and employment - has taken a heavy toll on the health insurance industry. “This is a starting point for us, to see how the economy is performing, then we start to reflect internally within our budget,” explains Farid Saber, Assistant Group CEO at the Gulf Insurance Group (gig). For instance, while the hotels business shrunk by 30 to 40 percent, other industries, such as ecommerce, witnessed an increase in operations. “First we look at the impact on our customers and determine how that reflects on us from a premium and turn over perspective. Then we build our budget based on those segments and we do benchmark and budget adjustments,” he continued.

When it comes to healthcare specifically, the months-long lockdown resulted in a drop in ‘normal’ utilization levels in hospitals, as capacity was shifted to emergency situations related to coronavirus cases. However, following the easing of lockdowns, normal utilization saw a sharp increase, which, in effect, compensated for the initial drop “Overall, the drop and ensuing increase balanced each other out,” says Farid.

“We were very prudent in the way we looked at it,” he continued. While the pandemic forced people into driving less, which meant less claims, the gradual reopening of the economy would still

entail a sharp rise in the utilization related to the automotive and medical markets specifically. “You cannot be optimistic. After the lockdown, some people stopped paying for premiums as people lost their jobs or had to leave the country, so overall you have to be prudent in the way you look at these sharp highs and lows.”

In anticipation of the impact of the pandemic, gig initially built three scenarios based on assessing the financial impact on the company and the healthcare industry: a three months scenario, a six months scenario, and a scenario for the whole of 2020, before adding a fourth scenario in light of the news of a potential second wave and another lockdown.

Internally, gig has sought to adapt its business model and operations by launching a number of digital projects, which aim to improve their performance. “We have a project that restructures our operating model so now we’re looking at areas of shared resources, at areas where we can consolidate departments together or outsource for certain functions.”

Meanwhile, for Central Circle Company, the outbreak meant that the company had to cut down on spending, specifically marketing expenses, according to CEO Yasmin Abdulghafour. “As a medical supply company, we spend a lot on marketing, such as hosting and attending events, both in Kuwait and abroad, but technology made it feasible to attend virtual events.” On the other hand, Central Circle Company increased its spending on cybersecurity to ensure business continuity since almost all of their operations are online.

The medical distribution sector is a critical part of the healthcare value chain during an outbreak, and as such, CCC has been keeping a close eye on supply chain management since the outbreak has the potential to disrupt the supply, leading to shortages in critical medical products. Furthermore, curfews and lockdowns have added pressure on medical distributors to

ensure efficient logistics and operations to avoid delays and meet delivery deadlines. Moreover, demand shifted to COVID related medical supplies - such as face masks and PCR kits. “It was not easy given the increase in demand globally; logistics became more challenging in getting the required products on time, in addition to increased costs,” adds Yasmine.

In light of these hurdles, Yasmine was entrusted by the executive management to advance the adoption of technology, including AI and cloud based supply chain management solutions, in order to anticipate such future events and administer appropriate safeguards. “We haven’t yet formulated a full plan for that but we are testing the waters in more than one area, both internally to enhance operations, and externally in the market to widen our revenue modalities.”

“The outbreak proved the need to change the way we conduct business and swing to full digitalization,” she concludes. “The benefits go beyond the ability to work from anywhere, and into the way to store data, monitor, control, analyze, and ultimately save time and money. We are looking currently at systems to link all operations together, along with controls and dashboards.”

Endnotes

19 International Trade Administration; ‘Healthcare Resource Guide: Kuwait’ (2016)

20 QuintilesIMS, Kuwait Life Sciences Company; ‘Kuwait Healthcare Market Report’ (2016)

21 https://ourworldindata.org/coronavirus/country/kuwait?country=~KWT

22 McKinsey & Company; ‘Understanding the hidden costs of COVID-19’s potential impact on US healthcare’ (2020)

Entrepreneurial Success Stories

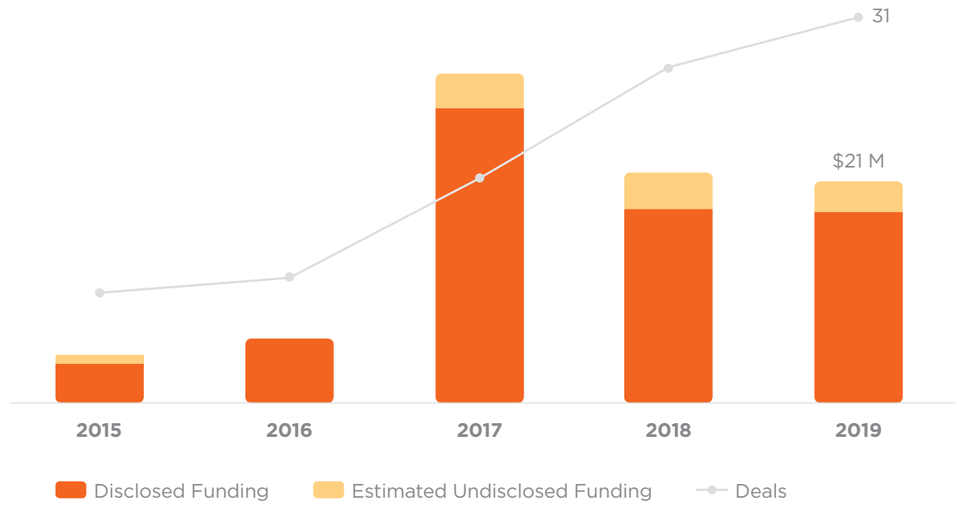
The e-health startup sector in the Middle East is growing. 2019 held the record for the highest number of investments made into the sector, with 31 out of the 472 active healthcare startups in MENA receiving $21M worth of investments that year.[23]

This steady rise in the number of investments in digital health startups resonates with a 2016 study[24] conducted by GE and Wamda, in which 48% of respondents aged between 15 and 35 stated that information and communication technologies should be used to address quality, access, and costs in the region's healthcare systems. Furthermore, an earlier PwC report had indicated that two-thirds of people living in the Middle East were willing to replace human doctors with AI and robots.[25]

At the same time, the ecosystem is quite young, with 84% of venture capital funding made into e-health that year were early stage investments; this trend - of early stage eclipsing both series A and series B investments - has been ongoing for the past 5 years.

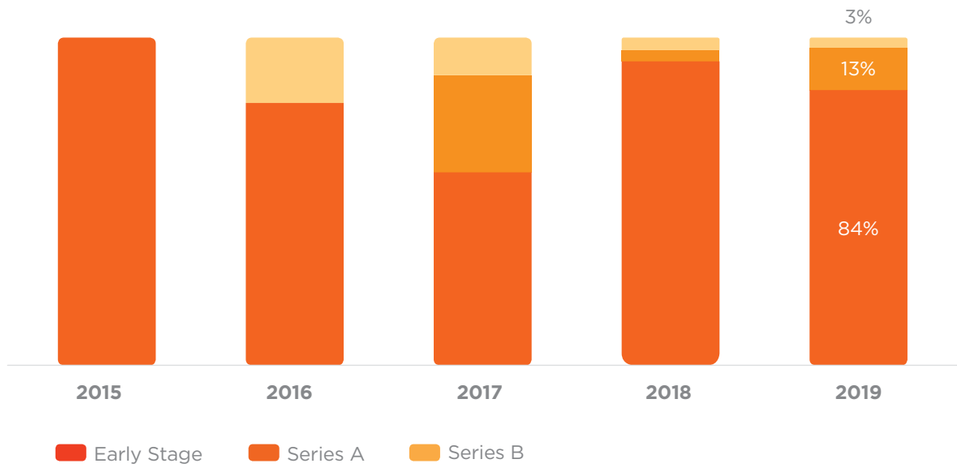
Number of Deals and Total Funding in MENA-Based Healthcare Startups

Source: GE & Wamda



Percentage of Healthcare Deals in MENA by Funding Stage

Source: GE & Wamda



Successfully providing digital health solutions typically hinges on a delicate balance involving a number of critical factors: attracting wary users, building technologies that plug into workflows dictated by incumbent providers, navigating often hazy and fragmented regulatory environments, as well as winning over physicians and healthcare organizations. Yet despite the challenges, the region is home to a number of remarkable healthtech startups that encapsulate the entrepreneurial spirit and journey.

Dhonor Health is a UAE-based organ donation access and allocation app. It is a blockchain-powered platform that enlists potential donors and patients, and uses smart contracts and DNA signature verification to indelibly document provenance and consequently prevent organ trading. The company was founded in 2016 by seasoned business executive Wassim Merheby, but credit for the creation of the company goes to his then 14 year old son, Ryan.

Ryan presented the solution at a local hackathon, where it was spotted by officials from the UAE Ministry of Health. They approached parent and son and commissioned them to build a donor registry that aspires to expand into the rest of the GCC.

In 2018, Dhonor Health was subsumed into **Verofax Limited**, a company cofounded by Wassim that provides traceability-as-a-service utilizing blockchain and near field communication (NFC); Verfox later launched a verified medicine delivery service that integrates with track and trace systems, as well as e-prescriptions and insurance e-claim solutions. At first, Dhonor Health financed its operations with grants - including $140,000 awarded by multinational pharmaceutical corporation Pfizer - as well as the money from its contract with the UAE Ministry of Health. Following the launch of Verofax's first service, the company sought and secured a pre-seed investment from UAE-based Privity FZ LLE.

Another notable example is **CardioDiagnostics**, a leading provider of cardiac monitoring technologies, which has raised $2.2M from the Lebanon-based Berytech Fund. The company produces an end-to-end solution that enables remote cardiac monitoring. Patches collect electrocardiograms (heart signals) that are analyzed locally on the device before being sent to a cloud-based system. The findings are then analyzed by the clinicians and summarized in a record before being presented to a cardiologist for the corresponding diagnostic and treatment.

CardioDiagnostics' largest market is the United States. In total, the company operates in 14 markets, including countries in Europe, the Middle East, in addition to India, Pakistan and Australia.

The Middle East market, in particular, has proved to be quite challenging according to the company's founder, Ziad Sankari, namely, for lack of early adopters. Sankari explained that even when potential buyers in MENA were convinced of the solution he presented, their decision always hinged on the fact that it was already implemented by US or European counterparts: "nobody was willing to use or touch the technology without knowing that a US or a European counterpart has actually used it."

Sankari also highlights another issue, regulatory fragmentation, which significantly burdens companies looking to penetrate new markets. "For example, we just received approval from the Saudi

Food and Drug Authority in December, after more than a couple of years of hard work to get the certification, despite the fact that we have USDA and European CE marks on our devices."

Another company that has struggled with fragmentation is **SihaTech**, a technology company that focuses on care and patient financing solutions. Sihatech did not start as a fintech company. In fact, the company debuted in 2014 as a doctor and patient portal. In 2017, the company raised $1.33M in Series A funding in 2017, but its founders decided to pivot the year after, when they concluded that "the marketplace model doesn't really work in the Middle East," according to Al-Razouki. "First, it is not one common market, so you don't have the scale that you need to easily ramp up a pure technology platform," he explained. Secondly, because the "the unit economics of expecting a doctor to pay to be listed on the website also are not in line with international benchmarks in the US or in Europe."

"The problem is very clear when it comes to telemedicine specifically," he continued. "I think that was back in 2014 or 2013, the CMS [the Centers for Medicare & Medicaid Services, a federal agency within the United States Department of Health and Human Services] put the price of $45 for a 15-minute telemedicine consultation, and therefore the private insurance industry followed suit and started offering similar reimbursement models. Today, this doesn't exist in the Middle East; neither with the government, because we don't have government reimbursements, nor with the private insurance companies."

As a financing solutions provider, SihaTech has partnered with Riyadh-based Maalem Financing, a non-banking financial institution (NBFI) that offers personal financial products to consumers in Saudi Arabia, to help finance medical procedures that are not covered by private insurance in an Islamic structured way. The market for these procedures - such as hair transplant, beauty and dental surgeries - is worth roughly $6B in Saudi Arabia alone according to its founder, Musaad Al-Razouki.

The company currently is working on launching a blockchain token system using the Ethereum blockchain to replace the agreement with Maalem Financing. The system is currently under development and will launch in the near future.

Interestingly, the competition in this niche market stems primarily from the doctors themselves, who offer financing solutions through their clinics or hospitals according to Al-Razouki. Yet Sihatech's competitive edge lies in its ability to increase pricing transparency: its extensive network - of 1,500 healthcare providers and 20,000 doctors - offers it a comprehensive view of the market, which allows it to bring some clarity in terms of pricing. "The only way you can do that is by having a lot of data," he concluded.

One telemedicine startup that is overcoming regulatory fragmentation is **Shezlong**, the Egypt-based mental health platform that offers anonymous, online channels for patients to reach certified therapists. The platform currently hosts 180 licensed therapists from 18 countries, who undergo a rigorous vetting process that starts with one-on-one interviews with the therapists and includes market surveys to gauge their qualification. While Shezlong's 65,000 users span 70 countries, the company focuses on Arabic speakers. Roughly 60% of its user base hails from Egypt, while the other half is mainly from GCC countries, in addition to Arab speakers from all over the world.

The company was founded by Ahmed Abu ElHaz, currently its CEO. Back in 2013, Abu ElHaz was suffering from severe depression after a horseback riding incident had left him with paralyzed arms. Unable to locate a therapist either online or offline, he embarked on the journey of building a platform that would allow anyone to talk to any therapist around the clock and from any location.

As a platform that caters exclusively to mental health issues, Shezlong is in fact aiming to solve two specific challenges. Firstly, it alleviates the social pressures that accompany seeking mental health specialists by offering a safe and secure medium; and secondly, it plugs a jarring gap in supply of psychiatrists and psychologists - in Egypt, for instance, there are only 0.4 therapists for every 100,000 patients.

Asked about whether he was concerned that users would opt to cut out the middleman, Shezlong, in the long run, Abu ElHaz says that it is simply a different behavior when it comes to his customers. The appeal of Shezlong, he says, is not primarily the convenience of finding a therapist, but the fact that the medium is online, and hence private, convenient, and affordable. A good indication of the success of the model is the fact that a number of participating doctors have ceased to operate offline, he said, as they were able to generate higher revenues from Shezlong. Furthermore, in June of 2020, the company closed a third, undisclosed round of funding that follows two earlier rounds that totalled $500k.

Unlike Sihatech, Shezlong operates in a highly competitive market that includes the likes of US-based Talkspace and Doctor on Demand - which, for comparison, have raised $110M and $95M respectively. Zooming in on the region, Abu ElHaz singles out Saudi-based Cura as a direct competitor, while also paying tribute to Egypt-based Vezeeta as an indirect, yet “tough” competitor.

Vezeeta.com

Vezeeta is an online booking platform for clinics that has been used by more than 7 million patients so far. In early 2020, the company closed a $40M series D funding round, bringing the total capital raised to a remarkable $63M. Vezeeta was founded by Amir Barsoum and Ahmad Badr, starting off initially as an electronic medical records company, introducing solutions that automate medical data, and later evolving into a leading digital healthcare booking platform and practice management software.

Similar to its compatriot, Shezlong, Vezeeta has stretched into the region and beyond - its services are available in Egypt, Saudi Arabia, Jordan, and Lebanon, and more recently in Kenya and Nigeria. In total, the platform hosts 25,000 doctors and no less than 50,000 healthcare providers, and is verging on surpassing a million bookings per month.

Barsoum strongly notes the importance of building technology in-house. “I don’t think we have a choice in that,” he said; “building the innovation”, as he put it, is key to avoiding being a copycat. Furthermore, the company has fostered a culture of intrapreneurship to drive innovation in the company: “Computer science engineers are not supposed to be given what they’re supposed to build. I think they’re supposed to be involved in it and enjoy it.”

Another startup working on improving access to healthcare in the region is Health at Hand, a telehealth company allowing patients to engage with doctors via app-based video consultations. The company was founded in the UAE, where it serves over 350,000 patients, and recently expanded into India, with plans to enter five additional markets soon, including Kuwait.

Health at Hand

Echoing Barsoum, **Health at Hand** founder Charlie Barlow identifies in-house technology as a key to success, particularly noting its advantages when it comes to delivering new solutions to the market. He explained: “if you don’t own it yourself, you are very reactionary; you can’t build new features as quickly as we can.”

Health at Hand has built its own health care records system, its own vault and video conferencing technology, to cite a few examples. Barlow also highlighted strategic hiring as another critical component of success; adding that most of the company’s tech team previously worked at Careem.

As the telehealth market heats up, Barlow noted the positive consequence of increased competition. “We’d like it to be more crowded,” he said, as more competition helps educate consumers that online solutions are safe. “One of the challenges of a new disruptive technology is the consumer behavior change piece… Trying to educate the consumer is hard when you’re on your own,” he concluded.

According to Barlow, reform regarding mandatory health insurance plays a key role in popularizing telehealth. “When you have mandatory health insurance, you cannot do that without the assistance of telehealth. You can’t just tell every employer that you have to now ensure your workers; it is far too expensive, far too inefficient, and business will go under unless you have telehealth tools to make it much more efficient.” Such reform will sweep across the Middle East region, says Barlow.

The impact of government reform cannot be overstated, a fact that human resources management and automation solutions provider Bayzat can attest to. A big reason for the success of the startup goes back to a 2013 decree in Dubai that sought to push healthcare expenditure unto the private sector, by mandating employers to provide medical cover for their employees, recounts its founder, Talal Bayaa.

BAYZAT

Bayzat is a human resources management and automation solutions provider that has so far managed to attract $31M from investors, roughly half of which came in a series B round in October 2019. The company built a platform that allows businesses to manage HR administration and benefits, including health insurance, payroll, attendance, and employee records, which it offers free of charge, and designs fintech solutions around the data that it collects from employers. This has enabled the technology company to efficiently deliver health insurance products from regional providers, as well as developing proprietary insurance products designed in-house in partnership with a global reinsurance company, according to Bayaa.

Bayzat currently operates exclusively in the UAE, where it recently started receiving direct competition from a newly launched Insurtech startup Aqeed. Regarding expansion, Bayaa is not wary of the legislative fragmentation. “As long as the market is worth it, you can scale into it regardless of what state it is in,” he said.

Endnotes

23 Magnitt; “2019 MENA Healthcare Venture Investment Report” (2020)

24 GE; Wamda; “MENA’s Health Startups - Unlocking the Path to Scale & the Future of Healthcare” (2016)

25 PwC; “Middle East consumers ready to embrace AI and robots for their healthcare needs” (2017)

Recommended Steps for Digitization

The digital transformation has the potential to augment clinical efficiency, engender cost-savings, and deliver hyper-personalized care to patients. In order to do so effectively, digital strategies need to involve every facet of the organization, including technology, management, and culture.

Best practices dictate that healthcare institutions looking to transform digitally must have a holistic approach and make an organization-wide commitment to develop and deliver a digital transformation plan with data at its center.

Preliminary Diagnosis

As a first step, healthcare institutions must conduct a company-wide assessment of their current systems to ascertain pain points, identify key areas for improvement, as well as determine opportunities for improvement.

To drive this evaluation - and, at a later stage, the execution - institutions must form and empower interdisciplinary teams that combine clinical, IT, and facility personnel. Forming these teams also guarantees organizational alignment, which is essential for ensuring leadership buy-in, as well as consistency in execution across the establishment.

Goals, Prioritization, and KPIs

Healthcare institutions must then establish wish lists for each department, prioritize and offset them against available funds, and set KPIs to measure and track performance, such as ROI, staff and patient satisfaction, and Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) ratings - a standardized survey instrument and data collection methodology used to measure patients' perspectives on hospital care. Setting up clear and viable goals is critical in managing executive-level concerns.

Technologies and Processes Mapping

The next step involves determining which technologies and/or processes are needed to achieve those KPIs, as certain goals will require implementing new processes, others will require integrating new technologies, while most will rely on a combination of the two.

For an effective digital transformation roadmap, healthcare institutions should employ a three-dimensional approach that takes into account people - those that deliver and those that receive services; processes - or usability; and technology - tools that improve the running of operations and delivery of care.

Privacy and Security

Digital health carries inherent data security and privacy risks, which represent a major barrier to adoption according to PwC. Compounding the risk for users is the fact that health institutions collect data that goes beyond medical histories, to include other types of sensitive information such as genetic information, financial histories, as well as purchasing habits.

The relationship with third-party vendors, in particular, represents a notable concern for healthcare institutions, often due to the latter's limited internal capabilities, lack of know-how related to data science, and reliance on outsourcing. It is critical for healthcare companies to consider and manage risk across the entire value chain by requiring vendors to adhere to specific security standards.

Healthcare institutions should also adopt fair and transparent regulations and processes when it comes to data custodianship and access, as well as guarantee customers' right to access, amend, or delete any individually identifiable health information.

Execution and Continuous Innovation

The first phase of digital integration should involve rigorous iterative testing of the digital solutions and processes. In the long term, the transformation plan should evolve into a continuous feedback process that aims to improve and augment the digital quotient of the institution.

Successful implementation of a transformation strategy largely rests on rigorous monitoring of its KPIs, adherence to the rules and protocols, as well as smooth coordination between the

parties involved. Failing to keep track of the progress could prove detrimental, which is why it is paramount to clearly establish points of responsibility along with tangible incentives.

However, companies that embrace digital agility will reap competitive advantages beyond those that don't. Agility empowers companies to constantly evolve their digital strategies based on outcomes and feedback and allows organizations to continuously experiment, adjust and refine their approach in iterations.

Furthermore, organizations should foster a spirit of intrapreneurship as a means to capture emerging opportunities and new paths for a digital transformation. This is done by cultivating a culture of innovation and risk tolerance that stimulates and rewards novel ideas - be it developing new processes, products or services - that have the potential to create additional revenue streams.

Digital Challengers & Collaboration

The demand for digital health is growing, all while technology is becoming more accessible. Nimble in nature, Small to Medium Enterprises (SME), and particularly startups, must capitalize on their natural advantage in delivering in-demand tech-focused, patient-centric solutions faster than larger incumbents, as they are less encumbered by slow bureaucracy, and large and difficult-to-update legacy systems.

SMEs as well as startups can seek opportunities through collaboration with big healthcare enterprises looking to foster their own digital transformation as well - either through partnerships, mergers, or acquisitions - particularly since these big organizations often lack the technical capabilities as well as culture to drive their transformation.

Furthermore, startups and SMEs should also look for cooperation opportunities with their competitors, as they tend to deal with similar challenges generally. A study by the Multidisciplinary Digital Publishing Institute[26] had found that the benefits typically outweigh the disadvantages - competitors that had collaborated from three to five years had more than a 50% chance of mutually reducing costs.

In order to succeed - whether in developing their own customer-facing solutions or developing technology that plugs into the healthcare value chain - these SMEs and startups must prioritize developing and building trust with both consumers and enterprises. Companies also ought to consider hiring experienced talent, particularly during the critical stages of fast growth or expansion.

Endnotes

26 Benefits and Drawbacks of Coopetition: The Roles of Scope and Durability in Coopetitive Relationships (2018)