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“Startups should focus on staying agile and experimental”

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A flurry of innovations, R&D, and technologies such as artificial intelligence (AI) have been deployed at the peak of the pandemic, when the future looked bleak. Post-pandemic we require new solutions to tackle the myriad problems within healthcare, and for that, the startup ecosystem will surely rise to the challenge.

In conversation with BioSpectrum, Kumara Raghavan, Head - AWS Startups India, Amazon Internet Services, Bengaluru shares some insights on the growth of the healthcare startups in the coming years.

Edited excerpts-

There has been a rise of digital health startups during the last couple years, how has AWS worked with some of these startups to provide successful growth during these uncertain times?

In the past 18 months, Indian healthcare startups have leveraged technology to drive transformation and innovation to enable people across Asia Pacific access healthcare in remote conditions. According to CB Insights data from Q1 2021, healthtech was India’s fastest growing vertical by investment, receiving $280M in funding, a YoY increase of 2,650.4 percent. AWS has worked with healthtech startups and has been a part of this growth.

AWS solutions provide proven and easily accessible capabilities that allow startups to increase their pace of innovation, unlock the potential of health data, and develop more personalized approaches to therapeutic development and care.

Let me put this in perspective. One of the startups that has seen successful growth with us is **1mg**. Since mid-2019 to date, the company has witnessed over 100 percent growth in the average number of orders per month. It built a patient-centric digital health repository using the AWS analytics stack to provide a 360-degree view of a patient's health. They use Amazon Redshift, a fast, simple, cost-effective data warehousing service, and Amazon Athena, an interactive query service that makes it easy to analyse data, to do this. Today, 1mg processes over 50,000 prescription orders, diagnostics reports, and e-consultations each day, and these health records are digitized and stored in a single patient repository. Having data in a standardized form in a single place has improved patient experience through personalized offerings and a single view of the health records.

Can you share some more examples for the above?

The pandemic has propelled digital transformation a few years ahead of schedule. Through innovations for diagnostics, patient care, and vaccination drives, healthtech startups reduced the impact of the pandemic on India's healthcare infrastructure. However, this was not without its own challenges. Startups had to scale rapidly to accommodate surge in users, reduce latency in responses to customers and deploy solutions for services like remote patient monitoring, online pharmacies, and telemedicine to remote parts of the country. AWS empowered these startups with cloud services to solve these challenges.

For example, **VaccinateMe**, an application to get notifications of vaccine availability and to book vaccine slots, was launched in two weeks once the Indian Government announced vaccine registrations for the public. Using AWS, VaccinateMe enabled 15 million people across 700+ districts in India to search for vaccination slots nearby and receive notifications as they become available. Available in 10 languages, VaccinateMe uses the CoWIN application programming interface (API) to fetch data. To ensure a one second response time and accommodate traffic spikes seamlessly, VaccinateMe uses Amazon Elastic Container Service (Amazon ECS), a fully managed container orchestration service to easily deploy, manage, and scale container workloads in the cloud.

What are the tech trends that health-tech startups must look at, for scalable growth in the next few years?

The pandemic has highlighted the importance of a strong, technology-driven response for better healthcare delivery. From this digital disruption, several technology trends have emerged which health-tech startups can build on for scalable growth in the coming year.

Remote patient monitoring (RPM) - During the pandemic, RPM became integral due to the shortage of staff and the risk of infection from in-person contact with a patient. RPM uses sensors to monitor patient vitals remotely and raise an alarm in case of any deterioration. Startups use RPM to manage chronic conditions such as diabetes and asthma, with connected devices to capture data, and a personalized mobile application to show progress, set pill reminders, book appointments, and generate alarms.

Telemedicine – We expect telemedicine to rise in a big way in the coming years. During COVID first wave, as per a BCG survey, 80 percent of the teleconsultations were from first time users and 44 percent of them were from non-metro cities. **MFine,** a HealthTech startup, registered 3X growth in tele-consultations in 2021 with 45 percent users from non-metros, reaching a user base of over 4 million. MFine leveraged AWS to build microservices based architecture that scaled seamlessly in response to this increased demand.

Preventive healthcare – This has gained prominence due to the high cost of healthcare and a change in mindset towards staying fit and monitoring health. Startups are using innovative business models to tap into this opportunity, for example, the use of wearables to monitor parameters like step count, calorie burn count, pulse rate to manage health and take preventive action. Startups are using AWS solutions to store all this data, analyze it using ML and send out alerts using AWS messaging services.

Artificial Intelligence (AI) and Machine Learning (ML) - We see startups leveraging AI/ML in healthcare across the value chain. Healthtech startups are using AI/ML in diagnostics to interpret various scans, blood tests, eye check-ups, and medical images such as X-Ray, CT scans, and MRI Scans accurately and quickly. AI/ML is also being used to extract information in standard medical terminology, from discharge summaries, prescriptions, doctor's notes and more.

How are healthtech startups leveraging cloud for expansion globally?

As a global organization with cloud services in 25 regions and staff in many more locations, AWS employs a network of people with a deep, local understanding of the geographies within which they work. This global technological expertise streamlines a startup's entry into a new region. Through our worldwide footprint, we support startups in expanding geographically by connecting them to potential customers, partners, and investors who will enable the expansion.

An example of this is **Qure.ai**, a healthcare startup built on AWS, that has developed a machine learning powered solution, qXR, which uses X-rays to classify patients as high, medium, or low risk for COVID-19 in less than a minute. Since Qure.ai launched, it has deployed its chest X-ray solution in over 40 sites across South Asia, Europe, and North America, identifying approximately **5000 suspected cases on a weekly basis.** With AWS, Qure.ai has been able to scale and deploy the solutions quickly and robustly across the world.

Do you think Asia can become a global leader in healthtech?

According to CB Insights, healthtech is one of the fastest growing vertical across Asia Pacific and Japan, having recently experienced 194.8 percent YoY in funding growth, or $767.64 million in investment, in Q1 2021.

Several startups in the Asia Pacific region are leveraging cloud technology for speed and agility to pivot business models in response to the pandemic. For example, Halodoc, a healthtech startup from Indonesia, uses image and video recognition technology to screen images or videos when patients have online consultations. Halodoc merges 22,000 doctors and 1,500 pharmacies across 50 cities in South East Asia. After a teleconference with a patient, doctors can then upload medical prescriptions to Halodoc. The patients' script is automatically processed by a pharmacist and the medicine is delivered to the patient by a rideshare driver.

Similarly, Biofourmis, from Singapore, describes its end-to-end Biovitals platform as a "physiology-based data analytics engine" for health care providers, payers, and pharmaceutical companies. Since July 2019, Biofourmis has worked with companies and universities across the world to develop digital therapeutic programs and assist monitoring and tracking COVID-19.

Given the rapid pace of innovation, technological prowess and increasing investments, Asia is one of the leaders in health-tech.

What according to you is potential of AI, ML and analytics in the health-tech startup sector in India?

As mentioned earlier, we see healthtech startups continue to innovate using cloud-based technologies, analytics, and AI/ML to better patient outcomes. With more machine-readable data generated for analysis and ML model building, I foresee this to increase exponentially. Startups in India are using AI/ML in diagnostics to accurately and quickly interpret various scans, tests like blood tests, eye check-ups, and medical images such as X-Ray, CT scans, and MRI Scans. Startups storing electronic patient data have started running predictive analytics on top the data to alert patients of a potential adverse event, and provide personalized care or wellness tips. AI/ML is also being used by startups to extract information in standard medical terminology, from discharge summaries, prescriptions, doctor's notes and more. Hospitals are also looking at using clinical decision support tools built using ML to screen large amounts of digital data to suggest future treatment steps, and detect potential issues such as adverse medicine interactions.

Innovaccer is a good example of this, an Indian healthtech startup that uses analytics and ML. Innovaccer launched COVID-19 Management System, a Health Insurance Portability and Accountability Act (HIPAA) compliant solution that can conduct early community-based triage of COVID-19 patients through automated assessments in minutes. It also provides remote patient monitoring and treatment to offer a safer environment for healthcare workers. The multi-platform system is used by more than 10,000 leading healthcare organizations, and government agencies in 500 locations worldwide, including the Governments of Goa, and Puducherry in India, Physicians of Southwest Washington (PSW), and community health organization Elevate Health in Washington state. Innovaccer also leverages AWS SageMaker to enable its customers to build and deploy ML data models on their platform.

As an industry leader, what would you say are the key things that a startup must keep in mind for success?

Think big and build for tomorrow: Technology has levelled the playing field, allowing startups to think big and push the envelope of innovation. With cloud, startups even at the earliest stages have access to the same level of technology, security, and global scale that the world's biggest companies have.

Stay customer obsessed: It has never been more important to stay close to customers, listen to their needs, and pivot quickly to meet them. Startups should focus on staying agile and experimental – which are key capabilities needed in any business' survival toolkit. **Cult.fit** successfully did this by quickly pivoting from offline gyms into online streaming when the pandemic initially hit in 2020.

Be resourceful: It's a small world within the Indian startup ecosystem so it is critical to tap the opportunities and build positive relationships. Ecosystem support is available for startups such as VC funding, mentorship, networking events and the programs that AWS offers.

Dr Manbeena Chawla

(manbeena.chawla@mmactiv.com)