Digital health solutions:

Lessons and best practices from implementers

September 2019

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Introduction

Digital technologies offer tremendous promise to reduce costs and expand global access to healthcare. Telehealth solutions, for instance, can help deliver basic healthcare services outside of traditional facilities and reach the most marginalized individuals and communities. Artificial intelligence, meanwhile, can enhance diagnostic capabilities, help predict disease, and perform other tasks that normally require human intelligence. Even the digitization of health records and communications systems for sharing health information open up major possibilities to scale and improve global health.

The international community recognizes that digital technologies are critical to achieve both the Sustainable Development Goals (SDGs) and Universal Health Coverage (UHC). Through the Declaration of Astana, heads of state as well as health and finance ministers identified "digital and other technologies" as key drivers to deliver on the promise of affordable, quality primary care for all. The Political Declaration of the High-level Meeting on UHC endorsed more investment in technologies and innovation to increase access to quality health. Philips' most recent Future Health Index revealed that healthcare professionals are increasingly using and advocating digital health technology and patients can be empowered through more access to and control of their own health data.

Yet, the actual implementation of digital health technologies remains complex and challenging, especially in low-resource settings. Despite widespread belief in the potential of digital technologies, many countries, donors, and UN organizations lack the capacity to design holistic digital health transformation plans and have yet to fully adopt digital health solutions in their strategies. While the global health community has witnessed many successful examples of technology for health, most stakeholders admit that too many pilots fail to scale and too many quality projects fall off the radar of governments that could benefit from them. Other challenges, such as the global shortage of qualified health professionals, poor patient referral systems, and unreliable digital infrastructure, also negatively impact the prospects for digital health initiatives.

This Devex special report, produced in partnership with Philips, seeks to contribute to important digital health conversations by examining digital health solutions at the implementation level. In doing so, we hope to identify and illustrate a series of common challenges organizations face when implementing digital health solutions and best practices that drive scalable and successful projects. To gather varied perspectives and insights, we interviewed project staff of implementing organizations across five different countries: the Netherlands, India, Rwanda, Indonesia, and Kenya. We spoke to many of the players that comprise what is an increasingly diverse and evolving health ecosystem – for instance, donor agency representatives, NGO health specialists, and leaders of private sector health firms.

Executive Summary

The global health community understands that bringing digital health to scale means we must get the implementation basics right. But while digital health implementers across the world have many valuable lessons to share, there are few forums or platforms that allow them to do so. This report aims to capture and communicate these important implementation insights. Through our research, we learned that even though health professionals come from different worlds, they share many of the same opinions when it comes to digital health solutions. They articulated the roadblocks they have faced when trying to work with the government and collaborate with other partners, but also the profound success when cross-sector partnerships are established. Respondents from low- and middle-income countries agree that technical factors, such as infrastructure dependability and consistent data standards, often obstruct implementation. But the majority of our interviewees across sectors and countries emphasize that getting the fundamentals right – building demand for the digital health service or technology tool, planning for contingencies and the long-term, thinking of the end users and customers, and providing the necessary training to drive sustainability – dramatically increase the chances of implementation success.

> "eHealth, digital health, telehealth, all these things are actually going to solve many challenges in healthcare, but if suited to the right environment, in the right location, with the right business model. Technology is already there, but the implementation is really going to matter here."
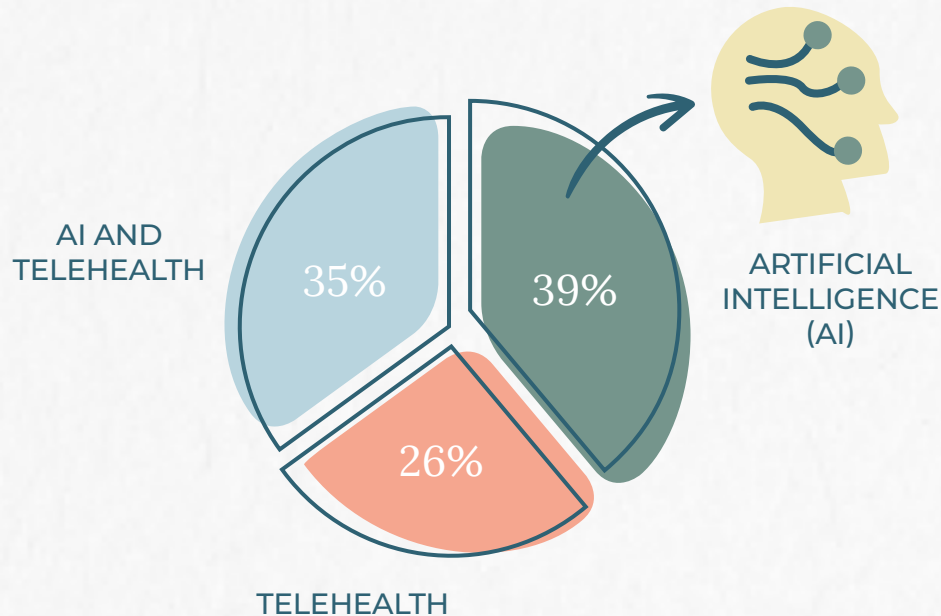>
> **Arun Agarwal, Janitri, India**

Methodology

IN-DEPTH INTERVIEWS

This report is based on over two dozen in-depth interviews with project staff from organizations that implement digital health solutions. To limit the scope, our research focused on AI and Telehealth projects at the primary care level or within referral systems. We chose AI and Telehealth projects for their practical application and focused on primary care and referral systems as essential components to achieving UHC. To gather diverse perspectives and insights we spoke to a diverse set of individuals representing donor agencies, NGOs, entrepreneurs, and leaders of private sector health firms from five countries: the Netherlands, India, Rwanda, Indonesia, and Kenya. While countries and project faces unique challenges and solutions, we discovered many similarities that bind them together.

INTERVIEWEES WORK FOR THE FOLLOWING TYPES OF ORGANIZATIONS:

Organization	Percentage
PRIVATE SECTOR STARTUPS	34%
NGOs	31%
PRIVATE SECTOR	27%
UNITED NATIONS	4%
FOUNDATIONS	4%
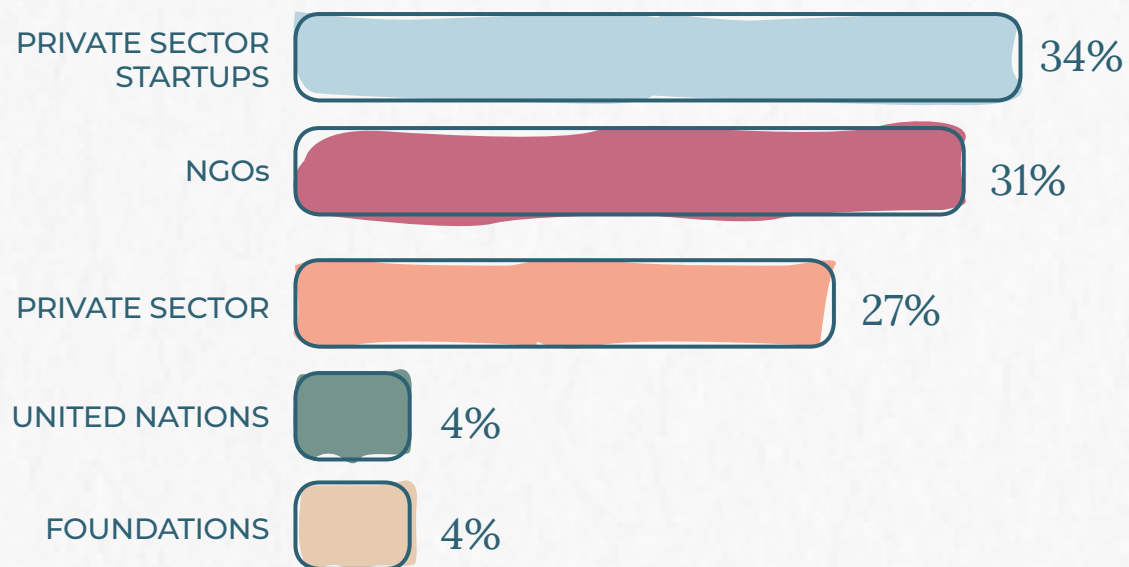
INTERVIEWEES WORK ON THE FOLLOWING TYPES OF TECHNOLOGIES:

AI AND TELEHEALTH — 35%

ARTIFICIAL INTELLIGENCE (AI) — 39%

TELEHEALTH — 26%

DIGITAL HEALTH SOLUTIONS - The WHO defines digital health as "the field of knowledge and practice associated with any aspect of adopting digital technologies to improve health, from inception to operation."[1] This encompasses the use of information and communication technologies (ICT) for health, which includes a broad spectrum of technologies including mobile apps, wearable gadgets, machine learning, and digitized records. For the purpose of this report, we narrowed our focus to two specific areas:

- **TELEHEALTH:** The use of telecommunications and virtual technology to deliver healthcare outside traditional healthcare facilities.
- **ARTIFICIAL INTELLIGENCE IN HEALTH:** The use of computers, digital programs, apps using advanced data analytics and machine learning to improve decision-making to help healthcare providers achieve better outcomes, and help consumers live healthy lifestyles.

PRIMARY CARE - Essential healthcare services such as comprehensive health promotion; and protective, preventive, curative, rehabilitative, and palliative care required throughout different stages of an individual's life.

REFERRAL SYSTEM - A process in which a health worker at one level of the health system, having insufficient resources (drugs, equipment, skills) to manage a clinical condition, seeks the assistance of a better or differently resourced facility at the same or higher level to assist in, or take over the management of the client's case.

[1] https://extranet.who.int/dataform/upload/surveys/183439/files/Draft%20Global%20Strategy%20on%20Digital%20Health.pdf

Key Findings:
Implementing digital health solutions

Digital health technology has received significant attention and support in recent years. Yet, the majority of pilots fail to scale and achieve their potential impact. Global challenges including a massive shortage of qualified health professionals, poor patient referral systems, weak regulatory frameworks and limited digital infrastructure all negatively impact the success of digital health initiatives. In order to build ecosystems and scale digital health solutions, the global health community must start with successful project implementation. So what are the biggest challenges and best practices at the project level? Here is what our respondents think.

1 Develop capacity and technical know-how amongst stakeholders, including government partners

The majority of governments across the world now recognize the value and advantages of digital health technologies in building high-functioning health systems. According to Devex interviewees, the primary role of government is to establish a digital health vision, strategy and plan and help coordinate the diverse set of implementation stakeholders to execute. They say the government should also facilitate the involvement of the private sector and invest in ICT skills and infrastructure to pave the way for the implementation of digital health programs and tools. Both the national ministry of health and ministry or department of ICT must work together to devise the policies and lead the activities that foster an enabling environment for digital health technologies to flourish and scale.

58%
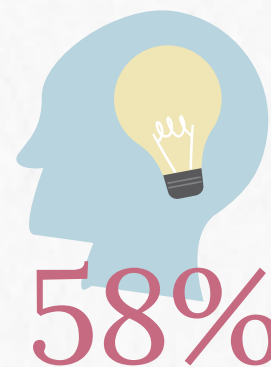
of Devex interviewees find that limited technological understanding among public sector partners and the lack of local government support obstruct digital health implementation

According to our interviews, governments struggle to prioritize digital health solutions amid competing priorities, identify the digital tools that are best-suited to address the prevailing health issues on the ground, and choose whom to work with. More than half of our interviewees note that government officials are ill-equipped to make the right decisions when it comes to choosing the optimum digital health option due to their lack of technological understanding. They report instances when government health officials are simply overwhelmed with options. Because so many technologies are available but so few have demonstrated results and scale, they suggest that governments and donors lose trust in technology providers, forcing them into long and sometimes counterproductive patterns of evaluation and due diligence.

Top governmental challenges to digital health project implementation

Lack of technological understanding

Lack of local government support

Government turnover halts progress

Bureaucracy
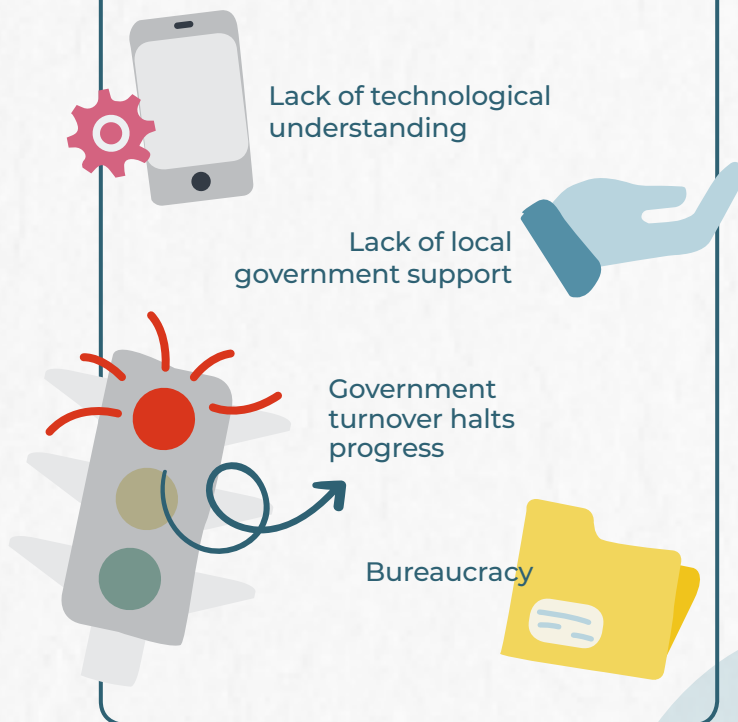
"How do you convince local governments when they have a number of priorities to take care of? Especially when they're all competing priorities. For some, maternal health, child health, or neonatal mortality is an issue. And then you come with a digital health solution for diabetes and hypertension, which has not been a priority for them so far. So gaining local support takes a while."

Nayanjeet Chaudhury, Medtronic Foundation, India

Interviewees also highlight the nuances between working at different levels of government to further the prospects of digital health project implementation. One major decision is whether to start at the top level, for instance the Minister of Health, and get permission to conduct a pilot. The advantages of this approach, according to interviewees, include the potential to attract national-level exposure and champions which can increase chances for scale down the road. The other option is to start at the provincial or district level to first prove the benefits of a concept or technology. While this tactic also has its advantages, interviewees say that implementers can run into any number of obstacles, such as local restrictions on procurement and issues related to public-private partnerships.

"I think the government also realizes eHealth can be a major game changer. The challenge they face is that there are more than 350,000 health-related apps globally. So any government and any institution is struggling to assess which ones are reliable, accurate and relevant and which ones are not. 350,000 is a lot of solutions and there is a lot of unreliable technology out there as well. So how do you filter out the good ones?"

Loes van Egmond, SkinVision, The Netherlands

2 Build an inclusive approach to stakeholder management and align key initiatives

We know by now that collaboration between stakeholders is central to implementing any health project and achieving universal health coverage. All Devex interviewees believe that partnering with relevant stakeholders is absolutely critical to overcome digital health technology challenges and implement digital health initiatives. Yet, interviewees reveal that digital health implementers rarely pursue the integrated stakeholder management and engagement necessary for digital health projects to succeed. They also cite frequent breakdowns of cooperation, communication, and trust between public and private sectors and institutions.
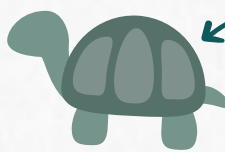
62%

of interviewees say that there is a lack of effective collaboration between stakeholders which hampers digital health technology implementation

Top partnership challenges to digital health project implementation

Lack of an integrated approach

Rift between public and private institutions

Stakeholder engagement is painstaking and slow

Interviewees emphasize the importance of a strategic, measured, and inclusive approach to stakeholder management that builds relationships and educates stakeholders while gaining valuable perspectives on the benefits that digital health technologies can deliver. Because health ecosystems and stakeholder groups are increasingly diverse, our interviewees recommend starting with a detailed stakeholder assessment that helps digital health providers understand diverse stakeholder interests, level of influence, and potential contributions. For instance, interviewees stress the importance of including local pharmacies, clinics, and community health workers because they actually deliver health services and commodities and can provide vital intelligence on the health and wellness needs of local communities. At the same time, they highlight the importance of identifying senior-level influencers and champions for any digital health solution to get adopted and scale.

The right forms of collaboration can result in the necessary cross-sector partnerships that promote and drive digital health solutions. Over half of all interviewees note that engaging government bodies is crucial for success and cite the importance of aligning digital health initiatives with existing government programs and systems. One in five respondents explicitly cites how partnering with local telecommunications companies and internet service providers can be beneficial in order to delegate critical digital health functions, such as server hosting. Partnering with utility companies, including energy and water service providers, can provide the basic

services that are necessary in order for digital health technologies to thrive, particularly in underserved areas. Other interviewees recommend building trust and credibility by engaging organizations already working with the government, including NGOs, civil society organizations, and traditional health implementers.
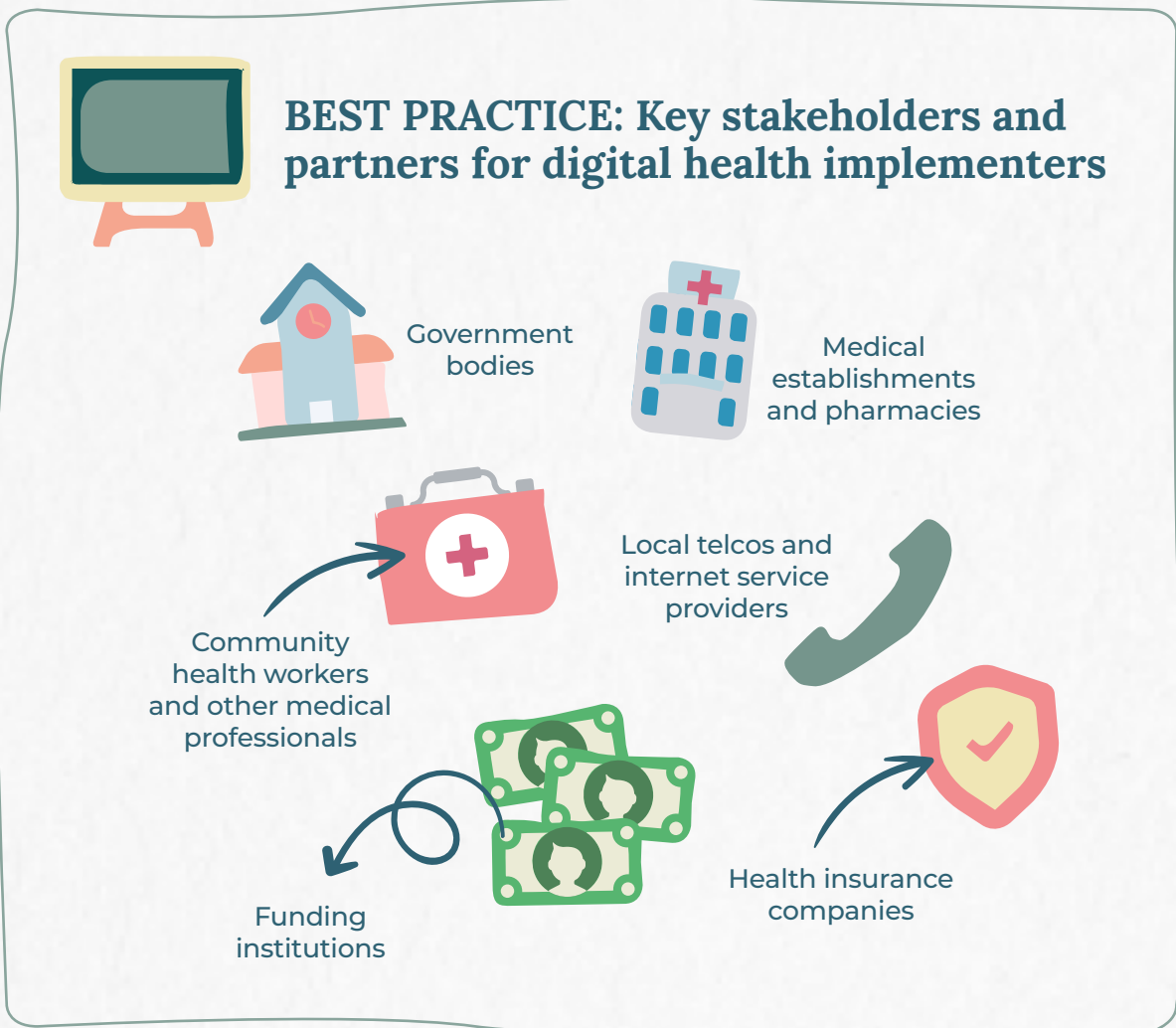
80%

of interviewees that have worked or are working in India, Indonesia, Kenya, and Rwanda cite the importance of engaging public sector partners

"Private healthcare providers are not usually supervised or regulated by the Ministry of Health. So our challenge is to establish a link between the Ministry of Health and private healthcare providers. It begins with trust. The Ministry of Health, they have in mind that private businesses are after profit. Private healthcare providers feel like the Ministry of Health are always performing an extra level of supervision, and not to support them."

Rashed Shah, Save the Children, Kenya

BEST PRACTICE: Key stakeholders and partners for digital health implementers

Government bodies

Medical establishments and pharmacies

Community health workers and other medical professionals

Local telcos and internet service providers

Funding institutions

Health insurance companies

"We look to partner with pharmaceutical distributors, such as mPharma, that can track where drugs are stocked, at what price and can guarantee their authenticity. We need that type of data to flow into a system like ours so we can tell the patient that this drug is available at a nearby pharmacy, what it costs, and possible even offer a discount. That's the sort of digital integration that heralds a whole new experience."

Michael MacHarg, Babyl, Kenya

The WHO/ITU National eHealth Strategy Toolkit cites a diverse set of stakeholders operating across the eHealth ecosystem:

Health sector stakeholders:

▸ health professional associations
▸ hospital and health-services associations
▸ academic, research institutes, and think-tanks
▸ health and disability insurance entities
▸ patient associations and advocacy groups
▸ general public
▸ national, state, and local public health and healthcare authorities
▸ private care providers including private health organizations, nongovernmental associations, and charitable affiliates
▸ health ICT vendors (local, national, and international firms)
▸ media – national and local, general and specialized (e.g. healthcare)
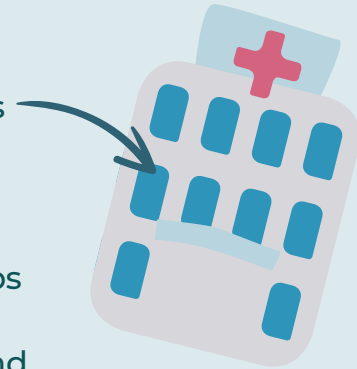
Stakeholders from beyond the health sector:

▸ national civil services, vital registration and statistics offices
▸ ICT/telecommunications ministries
▸ private sector ICT infrastructure and service providers
▸ education, social welfare, and community services
▸ defence and civil protection entities
▸ innovation, industry and science institutes, and ministries
▸ treasury and finance institutions
▸ international organizations and donors such as the European Commission, the World Bank, the International Monetary Fund, and United Nations specialized agencies
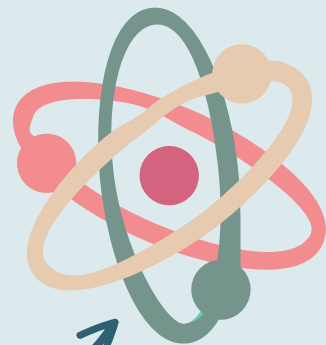
"You don't find private sector partners who can provide the total solution. You need to have an energy provider to provide access to energy. You also need access to clean water because you don't have maternity services when you don't have clean water and waste management. They are connected and it requires inter-sectoral approach."

Eddine Sarroukh, UN Senior Adviser on Innovation and Technology, Kenya

CASE STUDY: Collaborating with diverse telehealth partners in Indonesia

From 2013 to 2017, World Vision piloted the mPosyandu Project in Indonesia, which uses mobile phones to increase the efficiency and quality of services in community-based health clinics for children and pregnant women (known as Posyandu). Each Posyandu is responsible for providing growth monitoring and nutrition counselling, and promoting proper nutrition in local areas. By adding mobile technology and ICT to the existing national nutrition service platform, mPosyandu helps nutrition counselors assess underlying illnesses and feeding practices by automatically processing growth and nutrition measurements, flagging any nutritional risks and providing tailored nutrition advice – all in real time. The mobile application also enables each Posyandu to deliver diagnostic and counseling services remotely. mPosyandu provides doctors and health workers easy access to patient medical records and other important healthcare information.

In an effort to foster sustainability, World Vision engaged government partners who maintain the data systems. "The first thing we did was talk to the government, relates Yosellina, Maternal Child Health and Nutrition Specialist at World Vision. "We needed to bridge our system into their system so our data can be streamlined with theirs."

World Vision acknowledges that partnering with government institutions and engaging other members of the community are equally important. For instance, involving local health facilities and commodity suppliers is critical for building a robust supply chain. Also, talking to religious leaders in Indonesia is critical to understand local attitudes and traditions. Xu also points out the importance of collaborating with the right partners. "You need to talk to a lot of people if you want to succeed.

Women coming together for the mPosyandu Project. Photo by: World Vision, Indonesia

Normally we'd like to have one real partner who can work together with us hand in hand, and from there we can collaborate with other groups. You need to collaborate with everybody and inform everybody but I think it helps to figure one or two main partners to really make it work.

Establish reliable physical infrastructure and data standards to generate and share meaningful health information

3

The expansion of digital health solutions and wide-scale implementation of digital health technologies faces a number of technical obstacles, particularly in low- and middle-income countries. Devex interviewees believe these technical issues, like infrastructure connectivity and data standards, are borne from inadequate policies and unclear regulations governing digital health technology. They say that many healthcare players are simply not mandated or incentivized to employ digital technology or share health information. The 2019 Future Health Index found that the biggest factor affecting the reluctance or inability of health professionals to share patient information inside their facility is lack of access to data sharing systems and the biggest factors outside their facility are concerns related to data privacy and data security.[2]

65%

of interviewees note that the lack of digital health policies and regulations contribute to reluctance to use digital health solutions and difficulty integrating technology

In order for digital technologies to scale, our interviewees say countries must build reliable physical infrastructure and software platforms to support the sharing of health information across geographical and health ecosystem boundaries. This includes high-speed data connectivity to support digital health applications and facilitate health services in rural communities. But interviewees say prospects for digital health solutions in low- and middle-income countries are hindered by poor connectivity, particularly in rural areas. They also say that many health service providers lack basic computing infrastructure, such as PCs, laptops, and mobile devices, to enable the collection, recording, and exchange of critical electronic health information.

[2] www.philips.com/futurehealthindex

42%

of interviewees say the lack of infrastructure and connectivity hinders implementation both at the national and local level

"Infrastructure is a challenge because not all puskesmas have electricity or signal. For some puskesmas that are near the city, it's easy for them to send their reports via email or WhatsApp. But for puskesmas that don't have signal, it's difficult to upload data."

Selwin Leokuna, Save the Children, Indonesia

Interviewees also cite inconsistent data standards that prohibit the accurate collection and sharing of health information, such as Electronic Health Records (EHRs). They indicate that health authorities should focus on establishing the common data structures and terminologies for describing symptoms, diagnosis, treatments, and other health and clinical event information. All interviewees admit that they witness cases of data fragmentation in their work which complicates digital health system interoperability. At the same time, the majority of interviewees report a distrust in how data can be used, while policies regarding data privacy and security impact the backend of digital health technologies, such as hosting capabilities and data storage regulations.
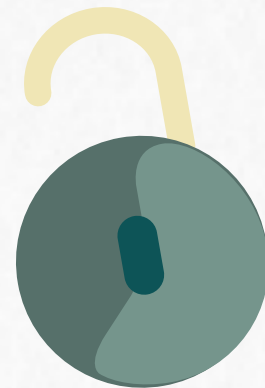
62%

of Devex interviewees reveal that data ownership, privacy, and security are factors that need to be taken into account and affect project implementation

CASE STUDY: Data fragmentation and ownership in Rwanda

After requesting an appointment through SMS, a user is called at a scheduled time for a consultation. Photo by: Babyl, Rwanda

More than half of Africa's 54 countries have no data protection or privacy laws.[3] Following advancements in computer and information and communications technologies, the Rwandan government has prioritized data protection.[4] For project implementers based in Rwanda, this has raised a few concerns. For instance, Babyl – an app that connects citizens with an AI-powered chatbot, which triages a patient's medical problems and offers treatment recommendations or sets a doctor's appointment – experiences challenges with the country's data storage laws and hosting capabilities. According to a Rwandan regulation, all data has to be stored in the government data center located within a Rwandan jurisdiction. Data cannot travel across certain borders and boundaries. For Babyl, having to store data physically in country, rather than on the cloud, is expensive. Babyl sometimes deploys employees into the field

[3] https://www.newtimes.co.rw/news/africa-ready-protect-citizens-personal-data
[4] https://www.newtimes.co.rw/section/read/207958

to collect data. Zenysis – an interoperability platform that is integrating fragmented data into an analytical view for the Rwandan government – aims to make data easier to access for the government in a centralised location. The company has collaborated with the Rwandan Biomedical Center to develop algorithmic standardization of data sources, including consistent language and naming conventions.

"What really lacks in a context like this is the ability to pull data from these disparate sources into one analytic view for decision makers. There's so much eHealth, so much excitement about the data, and what one could do when you collect the right data. But different people or different organizations are collecting different pieces of the puzzle."

Claire Cravero, Zenysis, Rwanda

4 Build demand for digital health services and tools

The growth of mobile phones has skyrocketed in recent years. Today, over 5 billion people are subscribed to a mobile service and over 700 million more are expected to join a mobile network by 2025.[5] However, adoption of digital technology is uneven between and within countries. Older generations and the global poor are largely excluded from the digital revolution.[6] As a result, many individuals struggle adapting to digital technologies. Devex interviewees indicate that end users are often unfamiliar with AI and telehealth solutions which presents a critical challenge to project implementation. Patients and health workers that lack basic technology skills struggle not only with using digital health solutions, but are also wary of the technology itself. Patients, for instance, often believe that health consultations are only trustworthy when they are face-to-face with a doctor – a serious challenge for telehealth projects.
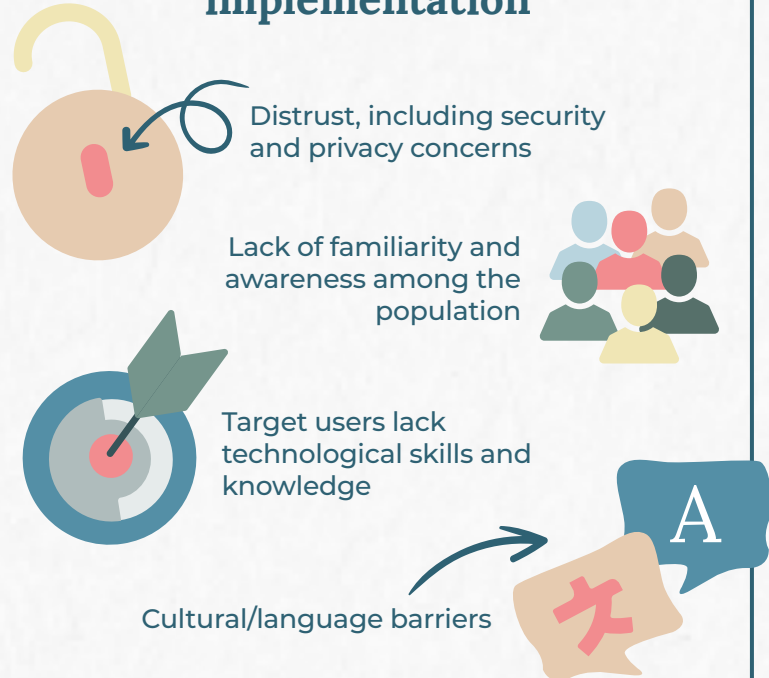
[5] https://www.gsmaintelligence.com/research/?file=b9a6e6202ee1d5f787cfebb95d3639c5&download
[6] https://www.pewinternet.org/2017/05/17/tech-adoption-climbs-among-older-adults/; https://www.itu.int/dms_pub/itu-s/opb/pol/S-POL-BROADBAND.18-2017-PDF-E.pdf

73%

of Devex interviewees say that limited technological literacy and understanding remains a key barrier to digital health project implementation

Top technology challenges to digital health project implementation

Distrust, including security and privacy concerns

Lack of familiarity and awareness among the population

Target users lack technological skills and knowledge

Cultural/language barriers

Devex interviewees believe that raising awareness of and increasing familiarity with digital technologies among communities and end users are effective strategies to build trust and increase demand for services. Information and advocacy campaigns can pave the way, but too many digital health projects fail to articulate a clear action plan. Effective advocacy campaigns are built on multiple outreach models from tapping local leaders to demonstrating impact and results through data. Building trust with individuals should be at the center of any advocacy effort. Individuals that trust a brand or technological solution are the best advocates for digital health services. Interviewees note that in many regions of India, for example, communities are highly suspicious of new technology until advocates from within the community mitigate mistrust and doubt.

> "The really important issue is that the patient needs to be involved more actively to define meaningful outcomes for himself, and also that the eHealth intervention educates patients, support self management and is 'conversational with all healthcare providers involved with the treatment."
>
> **Pieter-Joep Huige, Umenz, Netherlands**

85%

of Devex interviewees say that information and advocacy campaigns are critical to build demand for digital health solutions

All interviewees from the Netherlands say that it is critical to conduct information campaigns to create trust among end users.

BEST PRACTICE: Effective advocacy strategies

Devex interviewees believe advocacy and communication strategies are critical. The following are some of the most important aspects of effective advocacy tools for digital health technologies:

- Tap local community leaders and trusted health professionals
- Build a brand name
- Make use of data and evidence
- Conduct community information and training sessions
- Tap into innovative and traditional marketing tools from engaging videos and radio to social media
- Conduct hands-on technology demonstrations

5 Community and human-centered design drives digital health project sustainability

Local context and culture differ significantly from one community to another. But Devex interviewees believe that many digital health projects lack a clear understanding of local dynamics, fail to effectively include communities in project design, and lack thorough evaluation of project sites. Successful digital health projects require human-centered design that takes the local context and situation into account. Understanding and integrating local issues into project design ensures that the right technological solution can be identified and social aspects that enable digital health technology to thrive are considered. Devex interviewees note that successful project design is community and end-user driven. Integrating communities and users into the design process and co-creating solutions ensures that digital health solutions addresses unique local needs.

CASE STUDY: Understanding local attitudes and practices to improve nutritional status monitoring of children in Ban Village, Indonesia

In 2016, Medic Mobile partnered with East Bali Poverty Project (EBPP) to develop the Yayasan Ekoturin app that improves nutritional status monitoring of children in Ban Village, on the Indonesian island of Bali. An isolated community, Ban Village struggles with malnutrition in children.

Over the span of two years, EBPP collected inputs from the community, local cadres, Puskesmas (primary health center) representatives who are general practitioners, local nutritionists, and midwives to ensure that the technology would effectively

A cadre from Posyandu Darmaji delivered the nutritional status result to a mother (2019). Photo by: East Bali Poverty Project, Indonesia

meet the health needs of the community. EBPP also conducted meetings with the Indonesian Association of Clinical Nutrition Doctors in Jakarta, the Health Department at the provincial level, and Health Department at the district Level to ensure that Yayasan Ekoturin complies with guidelines and has full government buy-in.

To date, the app is being used by 54 nutrition cadres across 27 health posts in Ban Village, benefiting over 1,000 children. Karina Suryawinata, health team leader at EBPP, credits the project's success to the demand for digital platforms and the preparations that ensured the technology adapts to the unique local situation. While the unique features make the technology a success it also creates challenges to scale. Karina notes that: "Our goal is to replicate our success in some adjacent villages, but our concern is the content of the dashboard itself. It is designed specifically for our village so it has to be developed again according to the needs and guidelines of each area."

> "Considering the financing and sustainability of the business model, and providing the right incentives for players is very important."

Eddine Sarroukh, UN Senior Adviser on Innovation and Technology, Kenya
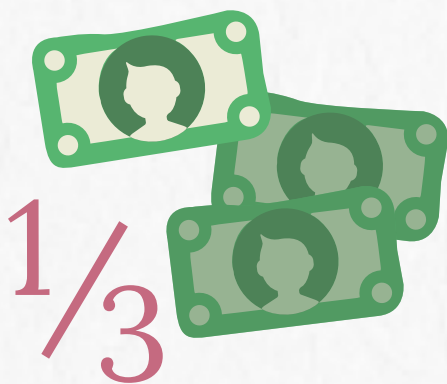
1/3

of Devex interviewees say that building long-term financial sustainability into project design at the start is critical for long-term success

Devex interviewees also note that holistic design and planning must integrate financial considerations. Many digital health projects are donor reliant and fail to integrate financial sustainability into project design. Yet, interviewees stress that projects will simply not be sustainable without a clear funding plan. Interviewees recommend planning for financial sustainability early on through public-private partnerships and profit oriented business plans.

## BEST PRACTICE: Designing Impactful Digital Health Projects

Interviewees believe that well designed digital health projects incorporate:

- Feasibility studies that focus on local context and health needs
- Consultations with experts from multiple sectors
- Cultural considerations including language barriers and stigmatization
- Community and end user engagement
- Long-term financial sustainability considerations and an effective business plan

6 Develop technology solutions that are user-focused, user-friendly and adjust to the local context

While standardized digital health solutions are easier to scale from a technological perspective, Devex interviewees note that in most cases such one-size-fits-all models fail. Local context, work practices, technical know-how and skills all differ and so must digital health solutions. According to interviewees the most impactful solutions adjust to the local context and focus squarely on the end user. This means that technology design is based on local needs and aspirations, takes work practices into account, aligns to local skill levels and builds in incentives for the individual to use the system.
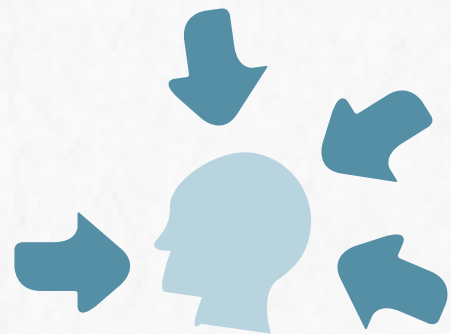
96%

of Devex interviewees believe that user-centered technologies generate and sustain the most impact

CASE STUDY: askNivi - user-focused and simple

Digital engagement enables easy social sharing. Photo by: askNivi, Kenya

Founded in 2017, askNivi is an AI-enabled consultation program that provides answers to often sensitive reproductive and family health information. The platform now counts 200,000 regular users in Kenya alone. Much of this success can be attributed to a stern focus on the end user. The platform responds to user's needs and incorporates simple technology design with user friendliness. Developers monitor how the technology is used and make constant adjustments to ensure maximum user satisfaction. askNivi was originally designed as an Interactive Voice Response-based screening system for family planning. However, to increase the reach and scale, the platform is now accessible through Facebook Messenger, WhatsApp, SMS, and Nivi's online platform.

Sidd Goyal, founder and CEO of Nivi, Inc. notes that: "I think the concept of putting the consumer in the driver's seat is relatively new. People are hungry for health information. When we make it consumable in a way that the information is understandable, they readily engage. We constantly learn from our users, from the people we're trying to serve at the end of the day and this shows in our user growth."
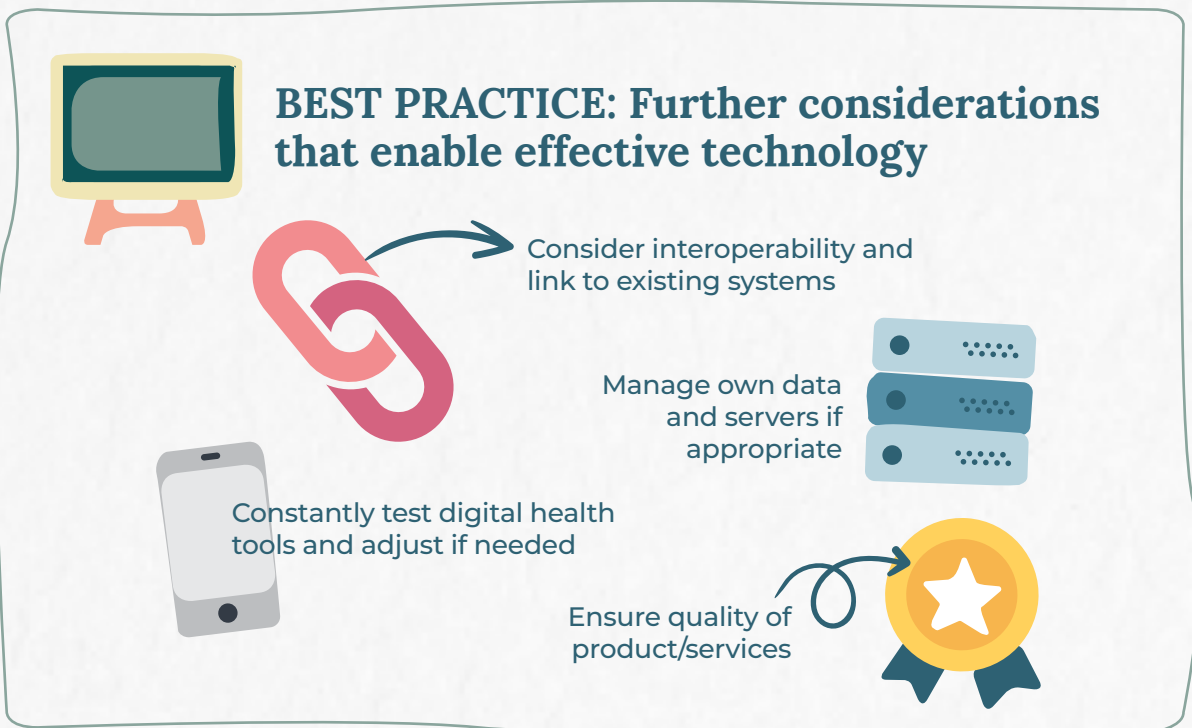
"We also need to look at how we develop these solutions because just developing a solution for a country from a technology point of view is the easy part. But you need to make sure that it really fits the purpose."

Eddine Sarroukh, UN Senior Adviser on Innovation and Technology, Kenya

Interviewees insist that effective technology is also simple to use and low-cost. This reduces barriers to entry. Over-designed and complicated solutions are difficult to maintain and operate. Gaining stakeholder acceptance around sophisticated technologies is similarly challenging. Simple solutions that rely on robust channels such as short message services (SMS) or simple voice are particularly important in low- and middle- income countries. The mDiabetes project in Senegal, for example, is able to effectively reach last mile users through a simple daily SMS service that advises patients with diabetes on health issues and diet.

"When we first transitioned to using digital tools, we preferred using an SMS based technology as most of our health workers did not have smart phones then. You need to devise technologies that could work for and be operated by them. You cannot have this futuristic technology and then not simplify it; you have to simplify."

Monalisa Padhee, Barefoot College, India

BEST PRACTICE: Further considerations that enable effective technology

Consider interoperability and link to existing systems

Manage own data and servers if appropriate

Constantly test digital health tools and adjust if needed

Ensure quality of product/services

7 Focus on training and workforce development to increase adoption

Devex interviewees note that healthcare workers, particularly in low- and middle-income countries, are often reluctant to change long established work practices in favour of new digital systems. Moving towards digital tools requires behaviour change. Shifting from manual recording and filing practices to digital systems is simple in theory, but often adds to medical staff workloads. Health professionals struggling with more immediate problems such as a lack of staff or medicine, find it difficult to make time to learn about new digital systems.

50%

of Devex interviewees find that in low- and middle-income countries, there is a reluctance to use digital health technologies among healthcare professionals

The 2019 Future Health Index uncovered that 39% of healthcare professionals believe that a lack of training is a key barrier to telehealth adoption.[6]

[6] www.philips.com/futurehealthindex

"On an average, in India, doctors get to see close to a hundred patients on a given day. They prefer using paper and pen vis-a-vis using technology. They would like to see the immediate benefit of using technology, but it's a gradual process, right? This is something that needs to be considered."

James Francis, Cooey, India

Interviewees note that most formal medical education programs pay little attention to digital technologies. A lack of computer skills and technical abilities among health professionals are common cited roadblocks that impact implementation and acceptance of digital health solutions. Devex interviewees believe that only regular and strategic training can overcome such skill barriers.
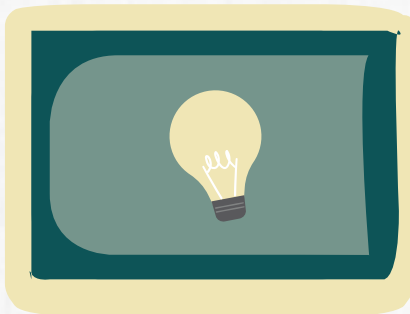
Devex interviewees say that increasing technical knowledge among the health workers leads to effective digital health project implementation

"You always have to stay updated with all the newest technology applications, so there's an aspect of investing more in training people so that they become tech experts. eHealth has its foundation in technology, so for it to grow in any country there just needs to be a focus on having more people that are trained in technology. It's the way you apply technology that makes it eHealth or not eHealth."

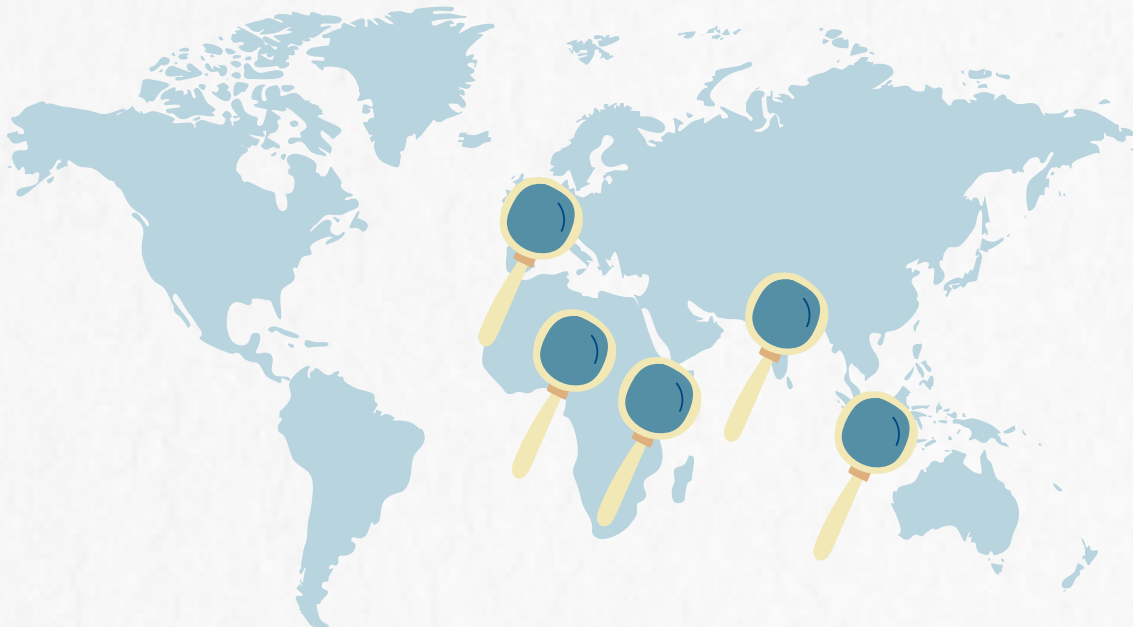**Malyse Uwase, Kasha, Rwanda**

Where we go from here

High-impact and sustainable health projects share certain characteristics. They are results-oriented. They are compatible to the local context. They build and rely on strong partnerships. But too often we stop at these descriptions without digging deeper into the tactics that make a project successful. In this report, we aimed to shed light on some of the actual implementation challenges digital health providers and practitioners face and the best practices to overcome them. If digital health solutions are to ever reach their potential, we should know which implementation approaches work and which ones do not. Government partnerships are important, but implementers should think through the differences between engaging government at the national and local levels. Communication and advocacy are critical, but a market mindset that builds demand for a digital health technology is far more likely to make an impact. Digital health technology increases efficiency, but it should not be overly complicated - successful implementers focus on building user-friendly solutions and employ unique training approaches in order to increase the chances of adoption and scale. These are just a few of the important lessons we learned in this report. We hope it advances the conversation around digital health technology so providers and practitioners are better positioned to succeed in the long-term.

> "eHealth, generally, is a new field; it is a new sector. And so there needs to be a push at the global level to provide guidance. This can then be used for legislation, policy and compliance at a more local level. So whether we're at the global or local level, guidance is needed."
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> **Malyse Uwase, Kasha, Rwanda**

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