

A woman in traditional African attire, including a black headwrap with a yellow patterned band and a black and yellow patterned top, is holding a baby wrapped in a white cloth. The background is a blurred outdoor market setting with other people and structures.

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mHealth Challenges and Opportunities in Emerging Markets


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Introduction

Mobile health (mHealth) solutions have the potential to address long term healthcare challenges in many parts of the world.

mHealth is revolutionizing traditional health care service delivery, making services that were once unattainable accessible to a large segment of people, especially in developing countries.

mHealth facilitates interactions between different stakeholders in the health care value chain, including patients, caregivers, health care providers and regulators. In the developing world, players in the health care value chain are separated by vast distances and are further hamstrung by poor communication infrastructure: outdated IT equipment and paper-based solutions inhibit their ability to collect, store and share information. mHealth now has the potential to introduce mobility of services, new delivery models and channels to connect last mile players in the value chain. In addition, innovative ways of collecting and sharing data are reducing the cost to serve patient demands, helping to support the development of healthier populations.

mHealth enables developing countries to leapfrog less efficient, more expensive and less sustainable devices such as desktop and laptop computers and move directly to lower cost mobile device options. The increasing ubiquity of mobile phones in the developing world reduces the capital investment required to enable these solutions because workers can frequently use their own handset, rather than requiring the government, or their employer, to build technical infrastructure or provide bespoke devices.

This paper addresses health care challenges that are specific to emerging markets—which must typically deal with a lack of resources, lack of infrastructure, lack of qualified health care workers and lack of data to draw insights—and discusses how Accenture can positively reshape patient outcomes by leveraging mobile health applications. It also highlights critical success factors that need to be taken into consideration and recognizes the importance of convergence between government, private sector and development organizations when implementing mHealth solutions.

mHealth

mHealth encompasses a wide range of products and services under the umbrella of mobility. It includes, but is not limited to remote diagnostics and monitoring, management of chronic conditions, clinical information systems, targeted health promotion, data gathering for public health, hospital administration, and supply chain management. The spectrum of impact of mHealth technologies varies tremendously depending on the market. There is no one-size-fits-all mHealth definition or a solution for all markets. The demand for, and the nature of mHealth services depends on the degree of development and the specific characteristics of individual markets.

In developed markets, mHealth technology is used to deliver better patient-centric services, while in emerging markets it can solve systemic service delivery issues.

In developed markets, mHealth will supplement the traditional landline and desktop solutions in the exchange of data, focusing on convenience, prevention and wellbeing factors. Patient-centered services may include use of remote devices to monitor a patient's condition so that the patient does not need to leave home. This will be particularly impactful amongst aging populations. Personal health applications and devices that promote nutrition and lifestyle improvements are emerging. These applications make use of mobile phones or are coupled with electronic devices which gamify and socialize physical activity within the community, promoting exercise. Improved two-way communication between service administrators and patients via scheduling tools and portals can increase

the convenience of service delivery and allows maximum use of available health care capacity. For example, mobile devices used in hospitals to aid decision-making increase the capacity of clinicians, provide real-time reporting and performance management, and ultimately drive efficiencies.

In emerging markets, mobile communication devices play an important role in offsetting issues that prevent data access, and by removing the time lags that impede decision-making. For example, mHealth could replace paper forms for medicine procurement at remote facilities making it easier to satisfy their demand in a short time-frame. Feature phone applications can make medicine orders immediately visible at a national level, making planning and budgeting more dynamic throughout the public healthcare system. Data gathering applications can also provide a means to conduct disease surveillance, allowing real-time mitigation planning and historical trend analysis to inform long-term prevention strategies.

In clinical terms, mHealth can mitigate the challenges related to limited transportation infrastructure and lack of access to referral health care facilities. Mobile health applications can be used to inform patients when and where medicine is available, and how to find the nearest service location with a health care worker on duty. Patients can also benefit from remote diagnoses from doctors and specialists in cases where physical travel is not an option either on the basis of high cost or lead time.

The demand for mHealth continues to grow as healthcare costs and the prevalence of non-communicable diseases continues to increase. A growing trend in emerging markets is integrated healthcare which is driven by consumers and often delivered with the aid of a mobile device. Integrated health care is focused on faster access, informed choices, enhanced quality, user satisfaction and efficiency.



Health Care Challenges in Emerging Markets are mHealth Opportunities

There are many challenges specific to emerging markets that can be addressed with mobility. There are four key opportunity areas where Accenture has gained experience, helping to enable better access to health care, raising the quality of health care and reducing costs.

Lack of resources

Public health care providers in emerging markets lack funds to buy medicine, hire health care workers, and set up health care systems to gather data and generate reports for efficient health care. Mobile devices offer a decrease in device cost compared to traditional computing. As private ownership of mobile phones increases, adoption of a bring-your-own-device policy can help lower costs.

Resource constraints mean that stock outs and sporadic staffing are a fact of life in emerging markets. If patients make the laborious and time consuming voyage to a health care facility just to be informed that the doctor is not there or that the medicine is not available, they are discouraged from coming again. Mobile solutions can be used to guide the patients and caregivers to the right place at the right time.

In Tanzania, Accenture Development Partnerships collaborated with Vodacom to create a mobile stock management solution. The system tracks the available inventory of essential medicines on a facility-by-facility level, as well as instances of specific diseases. The inventory and epidemiological data is captured using simple SMS (short message service) and USSD (unstructured supplementary service data) technology on cheap and ubiquitous feature phones using a simple interface. At regional and national headquarters a suite of management reports then provides supply chain managers with relevant data in quickly graspable reporting formats.

Our experience suggests that it is critical to make the application as simple as possible at the facility level, and then leverage the desktop environment available to more senior managers to produce intuitive reports such as color coded maps to identify events such as stock outs, low stock or missing deliveries.

Lack of Infrastructure

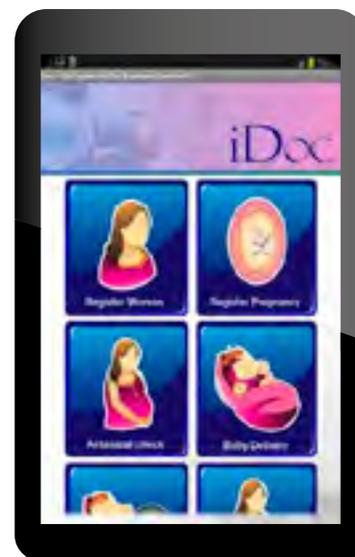
Infrastructure in emerging markets is not ideal. There is a lack of electric grids, a plethora of power cuts, few landlines, fluctuating network connectivity, poor roads and limited public transportation. There are also rural or nomadic populations living in completely, or seasonally inaccessible areas.

With little regard for limited access to electricity and troublesome logistics, mobile network connectivity is spreading even to the most remote parts of the world. It is a strong game changer in terms of development, inclusion, and communicating to populations in remote areas. **The mobile Internet combined with smart phones is seeing the emergence of a whole new set of capabilities that can be leveraged for better mHealth applications.** Even where there is a lack of coverage, native applications can be used to store data offline. The data can be uploaded when the network is up again or when the phone is transported to an area with connectivity.

To tackle infrastructure challenges, Accenture's Tech Lab focuses on frugal innovations to provide solutions that

address the challenges of quality, cost and access to health services in rural areas. The Field Coordinator Locator and Inventory Management System (FLIMS) addresses tracking, compliance, fraud prevention and consumer education through inventory management and for last-mile distribution. This mobile cloud-based platform is a micro-inventory management system that allows real-time stock updates to take place. Its GPS location awareness allows for tracking of sales agents and generates alerts if they do not comply with route schedules.

iDoc, another frugal innovation, provides access to healthcare providers and health facilities. This tablet-based decision support system empowers rural health workers through knowledge and training, helping them make local decisions for community patients, while also assisting them to refer patients to appropriate facilities at the right time.



Lack of qualified health care workers

Africa represents 11 percent of the world's population, yet carries 24 percent of the disease burden and only hosts 1.3 percent of the world's health care workers.

In emerging markets, in general, there is a low doctor-to-patient ratio and community health care workers with minimal education are often hired to fill the gap left by a lack of qualified staff. Mobility provides a mechanism to up-skill and support these workers. Among others, SMS and IVR (interactive voice response) curriculums, peer group communication, and off-line material can be downloaded to smart phones.

Accenture Development Partnerships partnered with the African Medical and Research Foundation (AMREF), Kenya's Ministry of Health, Mezzanine and Safaricom to develop a Health Enablement and Learning Platform (HELP) solution to address the skills and learning challenges facing community health workers.

The HELP training model uses a combination of classroom and mobile techniques to deliver critical health content in an effective manner. Utilizing the most basic mobile communication channels, (SMS, IVR and USSD) training, up-skilling and developing the capacity of pre-service and existing in-service Community Health Volunteers (CHVs) and Community Health Officers (CHOs) is now feasible. To date, 318 CHWs have enrolled in the program and have demonstrated 20% higher learning competency vs CHWs who benefit from pure classroom training.

The ultimate vision is to build a sustainable platform that integrates with third-party solutions across Kenya and other geographies to support the most vulnerable African communities to achieve lasting health change.

Lack of data to draw insights

Paper-based reports take time to compile and circulate throughout public health management hierarchies. This results in the data often being irrelevant by the time it reaches the intended audience. As a result, disease epidemics are acted upon retrospectively, and prolonged stock outs are addressed reactively rather than on a proactive basis during planning and forecasting.

Mobile solutions can help by providing timely, continuous and comprehensive data at a low cost. They can reduce the time needed for gathering of information, the delivery of reports and the transfer of data to electronic format for analysis.

As a result, front line health care workers have more time to dedicate to patient services and the data can be better leveraged.

Accenture Development Partnerships is working with the children's development organization Plan International to develop the Digital Birth Registration project. This project looks at the potential to use mobile phones to extend the reach of Civil Registration services (primarily birth and death registration) to help make children visible and provide complete and accurate population data to better inform public administration. Registration of births helps provide the child with a legal identity and enables access to essential services, such as health and education, whereas registration of deaths shows the frequency, cause and location of deaths—both are required to support targeted health programs and good governance.

Accenture Development Partnerships has worked with Plan International to shape the concept alongside mobile operators, private sector partners and governments.



Critical Success Factors for Implementing mHealth Projects in Emerging Markets

Have sustainability in mind from the beginning

Access to funding to ensure the sustainability of mHealth initiatives is a perennial issue. Many business cases for mHealth initiatives rely largely on seed funding from philanthropic organizations or are part of a corporate social responsibility initiative. Early implementations often succeed to demonstrate proof-of-concept but terminate or stagnate prematurely once funding dries up. Funding may also be disproportionately focused on the creation of the technical solution, with critical change management, training and on-going support activities omitted from budgets. To succeed, ensuring the sustainability of projects should be an initial consideration.

The scalability of projects is often a prerequisite for sustainable operations. Because mobile health projects rely heavily on local operators, handset and application providers, project scalability is important to achieve desired revenue goals. Oftentimes, pilot projects succeed but struggle to expand, thus, sustainability suffers and projects can be terminated. mHealth projects should be developed from the start with scale in mind, and pilot projects should seek to test the scaling mechanisms themselves in addition to the core technology.

Understand the existing mHealth landscape before embarking on new projects

Many emerging markets have experienced a fragmentation of the mHealth landscape in recent years, in part due to issues of short term funding. It has been relatively easy to get funding for pilots, but not to scale solutions. As a result, there are few genuinely nationwide applications in use, and there has been little impetus

for consolidation of functionality into one national platform. The result in many countries is a patchwork of small-scale mHealth solutions that only cover a small area and have a narrow range of functionality. In order to avoid duplication of efforts, new projects should take the time to understand the nationwide mHealth landscape and relevant government strategy, and seek, where possible, to collaborate on consolidated, scalable solutions rather than new pilots.

Choose the right partners

In the developing world, governments are normally the biggest health care providers. **Obtaining support from the Ministry of Health or a similar entity will be a prerequisite for impact in most cases.**

Support from a telecommunication provider will be critical as mHealth projects require data exchange through network connectivity. However, the operators' contribution may go far beyond infrastructure provision. Network operators have a ready-built customer base and an understanding of consumers which enables them to market new mHealth technologies effectively. They also have large distribution footprints, making it easier to introduce new technologies and applications across a wide population. To reach genuine national scale the service must be accessible from any in-country network. But penetrating the market via an all-network solution can be difficult, in which case partnering with a mobile aggregator can be more effective than dealing directly with each network operator.

Most importantly, partnering with the right resources to bring expertise in mobility and health to help navigate and integrate the other public-private players and civil society can be integral to the success of a mHealth project.

Select the right device

Feature phones are prevalent in emerging markets. Today, lower cost devices with mobile Internet capability are being introduced, changing the technology landscape. However, the pace of change differs from market to market as the support structure for the devices needs to mature in parallel with demand for services. This includes network connectivity, affordable data access and maintenance. When embarking on a new mHealth project, get to know your users and what kind of devices they are currently familiar with, but be aware of market evolution and design handset improvements into a three to five-year roadmap to avoid either overcomplicating the initial solution or constraining it unnecessarily.

Make the solution easy to use

Despite high mobile phone penetration, mobile illiteracy remains a challenge in emerging markets. Many users in primary health care target audiences will be familiar with the basic functions of a phone, but may not be familiar with SMS, USSD or mobile applications. Information should be made available in a simple user friendly format. Reports and action triggers should be designed into the system so that information drives decision-making and preventive health care efforts.

Conclusion

Mobility's ubiquity and potential to leapfrog fixed line connectivity offers significant benefits for stakeholders across the health care value chain. If done right, mHealth projects can enable better access to services, raise the quality of care, and reduce costs to serve.

mHealth is especially suited to the context of emerging markets but projects must pay as much attention to the complexities of implementing financially sustainable and broadly adopted solutions as to the underlying technology that supports them.

Accenture's experience suggests that countries that develop an mHealth strategy and achieve alignment of multiple donor and implementer's efforts will realize benefits faster and with greater overall impact, avoiding the pitfalls of "pilotitis."

Accenture recognizes the power of mobility in health care, and understands the common pitfalls and critical success factors of implementing such projects.

We see the power of convergence between government, private sector and development organizations in bringing solutions to fruition.

We also understand the importance of implementing holistic mHealth solutions and are working with private sector clients to develop mHealth platforms that can satisfy a range of specific data capture and reporting needs without the need to develop new applications from scratch, for each new mHealth requirement.

Building ecosystems of solutions onto common platforms will allow countries to benefit from the economies of scale that a platform approach can offer while allowing investment to be prioritized according to country specific constraints and requirements in their particular healthcare IT landscape.



