frog

mHealth Design Toolkit

Ten principles to launch, develop and scale mobile health services in emerging markets

GSMA

mHealth
Design Toolkit

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An instrument to provide guidance to the development and implementation of mHealth services.

Access to health care remains a major challenge across the developing world. Rural populations, which, in the case of Africa, account for of over half of the population, often have little or no health care facilities near their communities. The prevalence of counterfeit drugs and lack of trained medical professionals furthers aggravates this challenge. Nutrition holds a special place in this context. Malnutrition is associated with over half of all child deaths worldwide and harms human developed by causing conditions such as stunting and reduced mental development. While malnutrition is deeply linked to economic hardship, a significant root cause is lack of education, resulting in poor health practices, such as not exclusive breastfeeding, insufficient intake of vitamins and diets high in cholesterol.

As the most ubiquitous ICT platform in the developing world, mobile offers a unique opportunity to address this knowledge and information gap, especially for pregnant women and young mothers. Mobile health services (mHealth) delivered over voice (e.g. IVR, helplines), text channels (SMS and USSD) and, increasingly, rich media (online content and apps), provide much-needed information on balanced diets, early disease detection, immunization tracking, and everyday healthy living. By transforming the mobile phone into a trusted companion for pregnant women and young mothers, mHealth services can generate positive socio-economic change. For the mobile industry, these services are a way to target the fast-growing rural segment more effectively. Over the last two years, GSMA's mHealth programme has worked through the mNutrition initiative with mHealth service providers and mobile network operators (MNOs) across 8 sub-Saharan African countries to develop and launch live-changing mobile health services with a focus on nutrition for pregnant women and young mothers.

The GSMA mHealth Program partnered with frog to bring the user-centered design approach into the product development process, to better connect the mHealth services with the needs of pregnant women, young mothers and other key actors in the ecosystem.
frog has been coaching UX experts within each of the mHealth service providers, working closely with them to establish and practice user-centered design methods tailored to the mHealth context and needs.

For mobile network operators (MNOs), reduced churn rates and indirect business benefits of mHealth services will be the main drivers of these initiatives. In a congested marketplace, services that are highly valued by the user have the potential to increase market share and rural acquisitions, increase usage of core services (SMS and voice), drive data usage and improve customer loyalty and overall brand awareness.
For governments, mHealth services can reduce the cost of health care delivery and reduce the burden on existing infrastructure.

The design toolkit is intended as an instrument to provide operational guidance to the development and implementation of mHealth services. Designing services around the needs of the intended user is critical to the success of mHealth services. Besides service design, MNOs and service providers must form partnerships with ecosystem players, including health content providers. They must also identify the best-suited technology delivery channels for their target markets, and then implement viable marketing strategies, including both above-the-line (ATL) and below-the-line (BTL) marketing. All of these elements are intertwined with user design and are critical to a viable and sustainable mHealth business model.

The user-centered design approach helps mHealth service providers to get a much better understanding of this customer segment and their ecosystem, and then design appropriate products and services that meet the real needs and challenges of the customer. This approach is not typically followed by many MNOs or mHealth services, which has resulted in several poorly designed products that do not meet the demand and have gained little traction with users, especially pregnant women and young mothers.
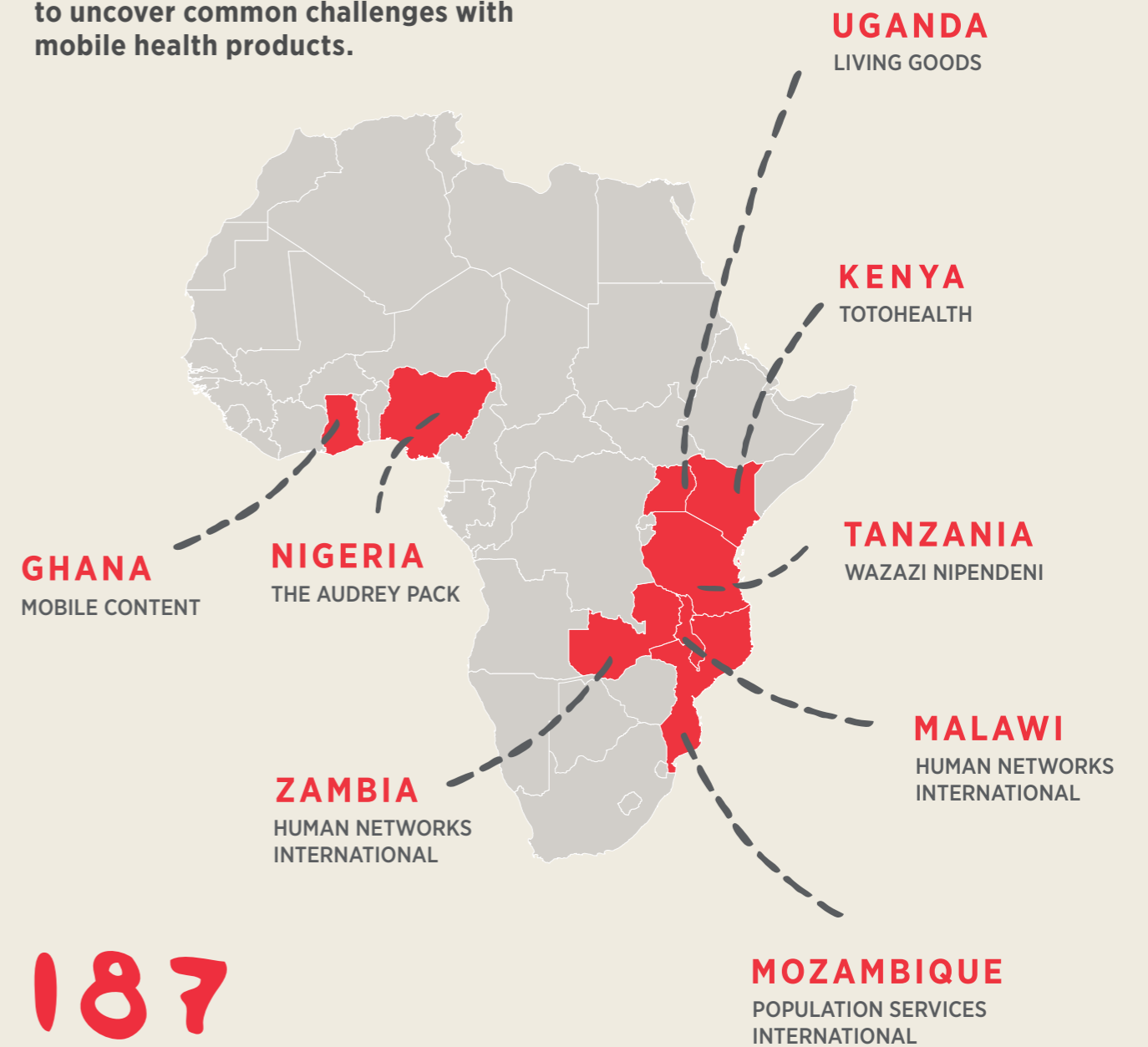
The user-centered design approach puts users and their experience at the center of the product and service design, and is grounded on a continuous and structured interaction with end users. This method helps to translate the solid understanding of users into a product and value proposition, and ensures that all aspects of the service — from the overall experience to each detailed feature and content — are verified with target users. By integrating a deep understanding of the user when designing or adapting an mHealth product, service providers can drive successful innovation in the mHealth sector and generate services that can be commercialized faster and become more widely adopted.

This toolkit is the outcome of various user research projects that we have conducted together with frog and our mHealth partners in eight countries: Ghana, Kenya, Malawi, Mozambique, Nigeria, Tanzania, Uganda and Zambia. While the services and markets are diverse and the insights context specific, we identified several common challenges that mHealth service providers are facing around key business, product, content and marketing considerations. This toolkit offers a practical guide for services to apply user research and the user-centered design approach in an on-going basis to address these challenges.

WHAT IS IT?

GSMA mHealth Program together with frog interviewed a wide range of users and their communities across Africa to uncover common challenges with mobile health products.

UGANDA
LIVING GOODS

KENYA
TOTOHEALTH

TANZANIA
WAZAZI NIPENDENI

GHANA
MOBILE CONTENT

NIGERIA
THE AUDREY PACK

MALAWI
HUMAN NETWORKS INTERNATIONAL

ZAMBIA
HUMAN NETWORKS INTERNATIONAL

MOZAMBIQUE
POPULATION SERVICES INTERNATIONAL

187
Total number of people we spoke to

38
Pregnant mothers

61
Mothers

19
Fathers and grandfathers

29
Teenagers

24
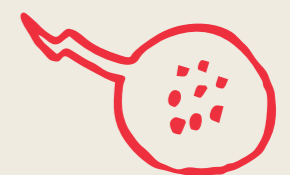Community Visits

32
Local Health Experts

8
Mobile Operators

Notably, this toolkit takes a slightly different approach than most toolkits, as it does not offer step-by-step instructions on how to use common research tools.

During our research, we found that many service providers already have a variety of tools at their disposal, for example, the mAgri toolkit, which was published by frog design in partisanship with the GSMA mAgri programme in 2015 provides a step-by-step guide and a set of tools to design rural value-added-services (VAS) for M4D service providers. However, service providers often struggled with asking appropriate questions while using these tools and with incorporating these tools into their daily operations. While offering references to research tools throughout, the focus of this toolkit is on 'asking the right questions' and helping services to incorporate user research into daily operations.

1. Chapter cover

Each section opens with a key consideration for mHealth services. These include business, design, content and marketing considerations that each mHealth service should address in order to succeed.

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2. Description and instructions

The main body of text contains a detailed description of each consideration and explains how mHealth services can conduct user research to address the consideration.

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3. Stories from the field

Some chapters include real stories from the field that help put a specific consideration into context and provide additional suggestions on how to apply it.

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4. Questions to ask

Each chapter concludes with suggested questions to ask users and other relevant stakeholders during research.

Following a user-centered design approach does not guarantee a successful product; other factors need to be in place to get the desired outcome.

It is important to consider these factors when adopting a user-centered design approach for an mHealth service.

1. Internal buy-in

Our experience with mNutrition has shown that only through C-level support is it possible to deploy dedicated teams in mHealth projects with KPIs that are specific to these projects.

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2. Market size assessment and business case

Conducting a market sizing assessment and developing a business case for the mHealth service is critical to get C-level and organizational buy-in.

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3. Budget

Organizations must secure budget for the research and design process. Throughout this toolkit, we are offering simple and cost efficient approaches that will uncover meaningful insights about users.

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4. Partners

mHealth services should find the right partners to work with. MNOs and other mobile service providers need to partner with organizations (such as government and local non-profits) that can bring the health knowledge and support the research.

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5. Success criteria

Stakeholders must agree on what they are trying to achieve with the research. The team should agree on research goals and determine success criteria for each goal. These goals can be business objectives, health impact objectives or product objectives.

#01

SEGMENTING CUSTOMERS
BY GENDER AND AGE ONLY
DOES NOT REVEAL WHO
YOUR USERS ARE

PAGE 14

#02

A SERVICE SHOULD BE
CREATED WITH THE
WHOLE COMMUNITY
IN MIND, NOT JUST ONE
SINGLE USER

PAGE 24

#03

THE ASPIRATIONS OF
MHEALTH SERVICES OFTEN
DO NOT RESONATE WITH
USER ASPIRATIONS

PAGE 30

#04
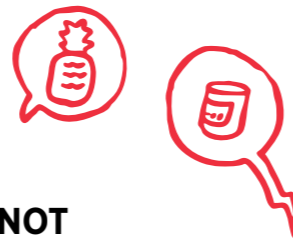
NUTRITION IS NOT
SCIENTIFIC, IT IS
SUBJECTIVE AND
HIGHLY CULTURAL

PAGE 36

#05

DO NOT REPLACE
HUMAN NETWORKS
WITH VIRTUAL
NETWORKS

PAGE 44

#06

LOCALISING THE SERVICE
DOES NOT JUST MEAN
TRANSLATING WORDS
INTO LOCAL LANGUAGES

PAGE 50

#07

WORDING MATTERS,
EVEN IF IT IS ONLY 20
CHARACTERS LONG

PAGE 56

#08

IT IS NOT ONLY
WHAT YOU SAY, BUT
HOW YOU SAY IT

PAGE 64

#09

CONTINUOUS
ITERATION: YOU
WILL NOT GET YOUR
SERVICE RIGHT THE
FIRST TIME

PAGE 72

#10

SUSTAINABLE REVENUE
WILL NOT COME ONLY
FROM ONE SOURCE

PAGE 78

Service development is an on-going cyclical process and it is important to involve the users in all stages of the development process.

As long as an mHealth service is live, it is never fully complete. A service should continuously improve and adopt to changing user needs. While we recommend to pay special attention to some considerations depending on the stage of the development cycle, stakeholders should always be aware of all ten considerations discussed in this toolkit.
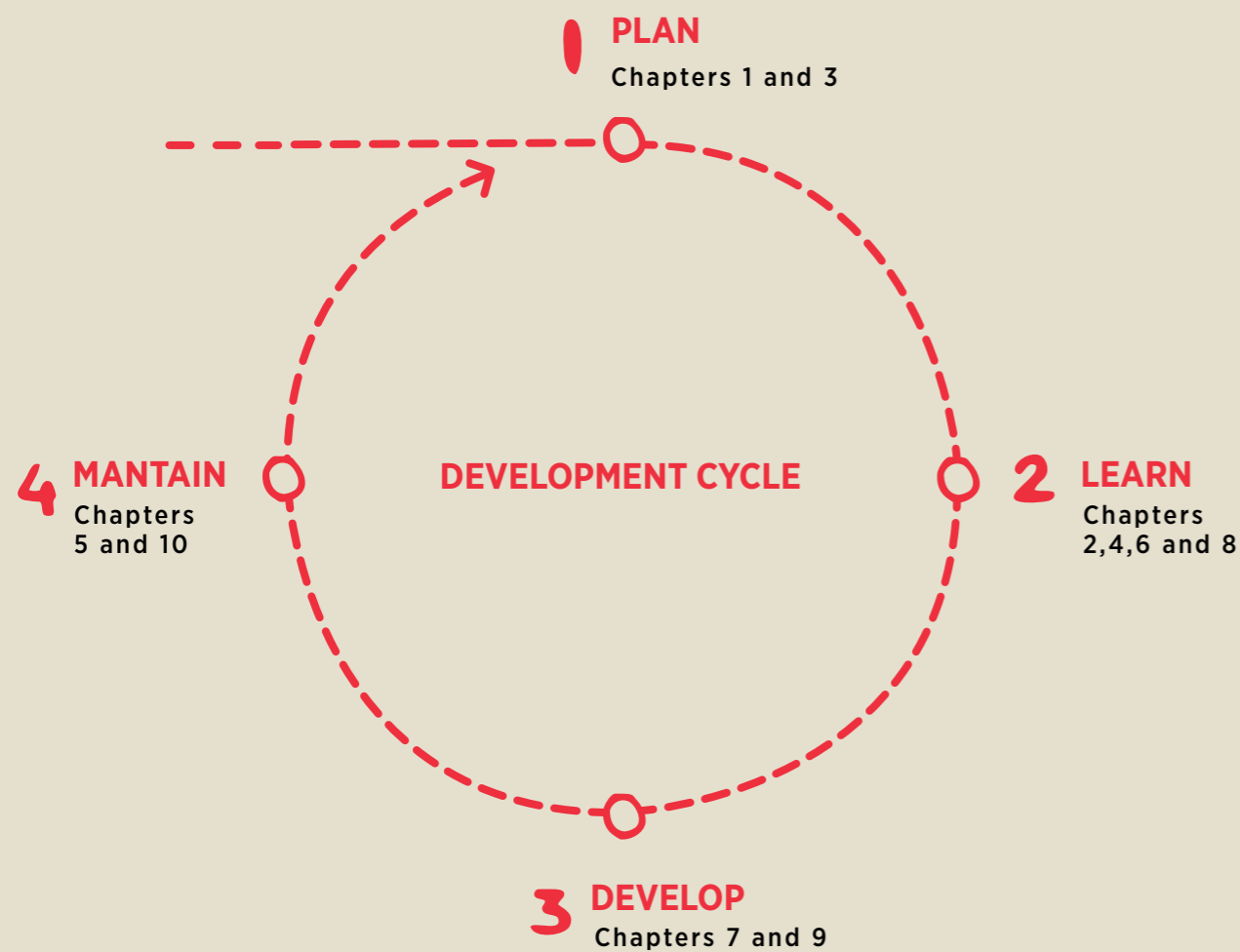
Based on where you are in the Product Development Cycle please refer to the chapters below

PLAN

1. Segmenting customers by gender and age only doesn't reveal who your users are

3. The aspiration of mobile health products often doesn't resonate with user aspirations Description and instructions

2 LEARN

2. A service should be created with the whole communityin mind, not just one single user

4. Nutrition is not scientific, it's subjective and highly cultural

6. Localizing the product doesn't mean just translating the words

8. It's not just what you say, but how you say it

3 DEVELOP

7. Wording matters, even it's just 20 characters

9. Continuous iteration: you will not get your service right the first time

4 MANTAIN

5. Don not replace human network with virtual network

9. Sustainable revenue will not come only from one source

PLAN
Chapters 1 and 3

4 MANTAIN
Chapters 5 and 10

DEVELOPMENT CYCLE

2 LEARN
Chapters 2,4,6 and 8

3 DEVELOP
Chapters 7 and 9

#01

SEGMENTING CUSTOMERS BY GENDER AND AGE ONLY DOES NOT REVEAL WHO YOUR USERS ARE

Most countries have significant diversity within their own borders. There are traditional demographic divides between urban and rural populations, young and old, women and men.

Beyond demographics, there are often significant cultural differences between different groups and geographies. For example, Southern Mozambique, with its easy going and liberal culture, seems a world away from the conservative and religious north. Culturally, cosmopolitan Nairobi, Maasai herdsmen and coastal Swahili people do not share much more than their Kenyan passport. Considering these diverse groups brings us to the big question: Who are the intended users of a service? How to design a perfect service for them? How to talk to them in a meaningful and relevant way?

A first step towards answering these questions is segmentation. An essential marketing concept, segmentation divides customers into sub-groups based on shared characteristic, usually:

• **Demographics** (age, gender, income, education, etc.)

• **Geography** (city, region, urban, rural, etc.)

• **Psychographics** (attitudes, interests, values, lifestyles, etc.)

Combining these characteristics allows to create more relevant segments such as "young rural pregnant women" or "mid-income urban men interested in music".

This is a fundamental first step toward developing a service, however relying on segmentation alone is likely to create a rather abstract, two-dimensional portrait of users.

A next step is to develop user personas and archetypes. UX professionals, such as user researchers and interaction designers, regularly debate the exact differences between personas and archetypes, and which of these two is more useful for the design process. An archetype is a real person who is a typical user of a service[2].

In summary, a persona is a detailed description of a fictious person that is based on behaviours, attitudes and segmentation data of real people and users[1].

When developing a new product, it is difficult to know who a typical user will be, hence it is difficult to determine an archetype. Because of this, we prefer personas when developing new products. Personas create empathy with users. They bring users to life, along with their needs and struggles, hopes and dreams.

Personas can be developed through formalisd methods such ethnography and interviews. However, what matters the most is spending time with users to understand their world, who they are, and what matters to them. For mHealth services, important considerations when developing personas are:

• **Knowledge:** Where do users get information? Which information sources do they trust? Which sources do not they trust? Why do they use these sources?

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[1] More detailed information on Personas: https://www.smashingmagazine.com/2014/08/a-closer-look-at-personas-part-1
[2] More detailed information on Archetypes: http://johnnyholland.org/2010/05/archetypes-and-their-use-in-mobile-ux/

• **Pregnancy:** What is the most difficult part about being pregnant and/or being a mother? Who helps in raising children? What do they worry about most?

• **Nutrition:** What do users eat day-to-day? What is their favourite food? Who cooks? Who decides what to cook? Who purchases ingredients?

• **Finances:** What do users normally spend money on? Why do they spend money on these things? How much money is left at the end of the month? How do they save money?

• **Technology:** How do users use their phones? Why do they use them this way? Who else controls access to the use of the phone?

We recommend spending time with 12 to 16 users and/or potential users who represent a variety of segments.

Who exactly to talk to depends on what the service is trying to do. For example, based on our experience conducting UX research for the mHealth programme, we typically suggest spending time with both urban and rural users. However, if the mHealth service consists of a smartphone app that targets young people in cities, talking to off-the-grid rural users might not be as valuable. Based on the conversations with users, patterns in their behaviours and attitudes will begin to emerge.

A SWAHILI MAN INSIDE A 300 YEAR OLD CORAL HOUSE ON LAMU ISLAND, KENYA.

These patterns will form the foundation of user personas. Most services should aim for three to five personas that represent a variety of patterns.

Based on personas, a service can develop specific features, and service providers are in a better position to implement marketing activities that deeply resonate with your users. Sometimes this can be as simple as having different ethnic groups be represented in advertising. Other times, it can lead to the realization that new users require in-person registration at hospitals, paired with a community health worker that offer continuous emotional support.

A MOTHER IN RURAL BARINGO COUNTY, KENYA, NURSING HER 12-HOURS-OLD SON.

How does a persona look like?

A persona turns "young rural pregnant woman" into "Samantha", who is about to give birth, but struggles to decide whether to give birth at home or in a hospital. The old folks in the village want her to give birth the traditional way. She does not want to upset them, but she does not really trust their methods. She likes the idea of having expert help at the hospital, but the hospital is far away and expensive. Also, some people say that the hospital is not very clean. Everyone is telling her something different. Who should she trust? What should she do? Samantha allows mHealth services to respond in a much more meaningful way than "young rural pregnant women". Knowing "Samantha", product teams can design more meaningful services and marketing departments can develop more resonant marketing. Samantha could be based on the following pattern that emerged during user research: Pregnant women get information from many different sources, but they do not trust any of them, hence they does not know what to do.

To be clear, this toolkit does not want to suggest that a service provider should create custom products or marketing campaigns for every possible persona in their market. Rather, segmenting users and using personas at the early stages of service inception is about understanding who the core users of a service might be and how a service provider can develop the most impactful use cases for them.

This kind of research can seem rather daunting and expensive. However, there are simple and cost-efficient approaches that will uncover meaningful insights about users. Based on knowledge about its current or intended users, a service can develop a theoretical user segmentation. Using this theoretical segmentation, team members can visit public locations and conduct intercept interviews with real representatives of each segment. These interviews can form the basis for personas. In our research for the mHealth programme, we talked to women selling fruit at the local market, we visited clinics to speak with waiting mothers, and intercepted young men playing pool at a pool hall.

There are simple and cost-efficient approaches that will uncover meaningful insights about users.

CONDUCTING INTERCEPTS AT A LOCAL BAR IN NAMPULA, MOZAMBIQUE.
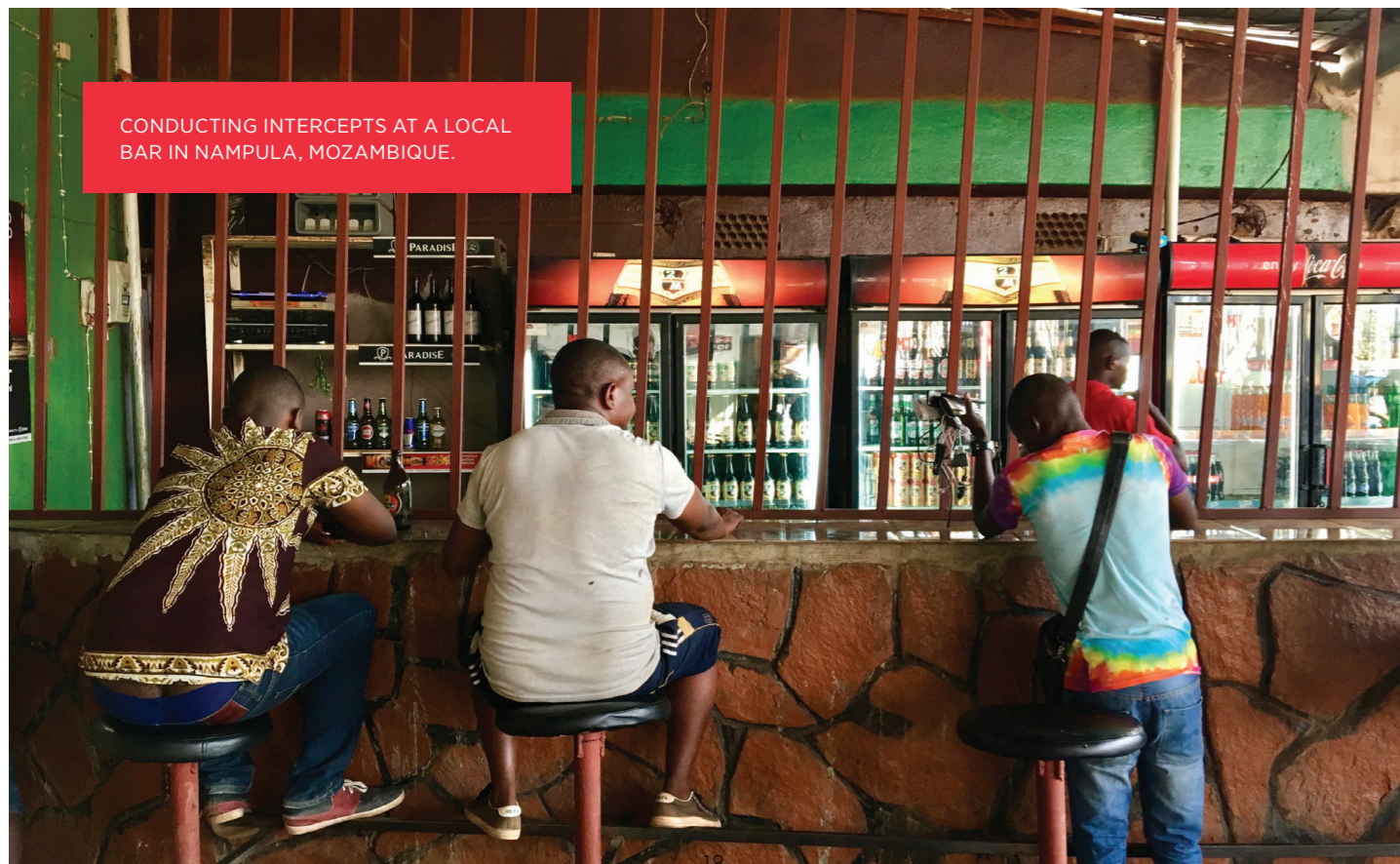
Questions to ask:

1 Identify target users:
**Who are the intended users of the service?**

2 Determine context in which the service is offered:
Are the users in urban areas with a relatively stable mobile network and electricity? Do users in off-the-grid rural areas have a reliable mobile network?

3 Identify the different cultural groups in the market:
What cultural differences might impact design and usage of the service?

Examples of Personas

#1 Motivated Pioneer

	LOW	MEDIUM	HIGH
TECH USE			
INFO RESOURCES			
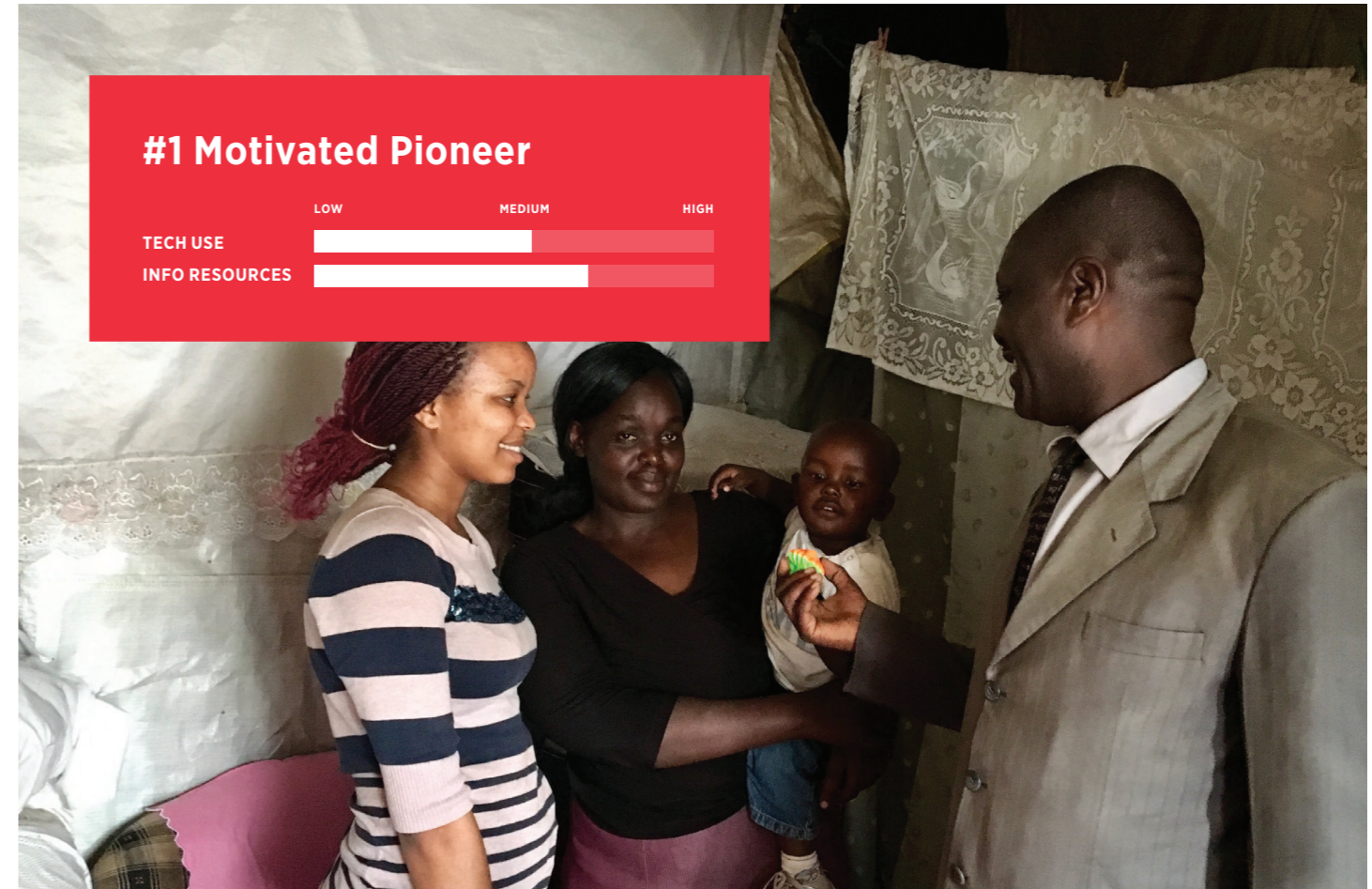
About

Actively seeking answers to specific questions around their child's health

Resources: family, friends and some internet

Mother and father share responsibilities and also get help from a hired maid during the day

Likes to share what she learns with her friends

Is happily surprised by how much they are learning, even though they already have an older child

Health & Nutrition

Has some understanding of healthcare and nutrition for her baby and likes that the messages validate some things she already knew

Does not believe in most of the myths their parents taught them

Tech Attitudes

Smart phone with some data when they decide to buy it

Google answers to specific questions about their child

Mother joined a Facebook group for new moms to get general information

Still learning how to decipher which information is the most correct and trustworthy

#2 Hopeful Gatherer

	LOW	MEDIUM	HIGH
TECH USE			
INFO RESOURCES			

About

Actively seeking information about parenting and health

Resources: Not connected to the family or internet and relies on neighbours or friends who have kids and asks them for advice

Seeks information from other sources too, including magazines and radio shows and takes notes from those to reference later

Enjoy s learning new things from mHealth service and relies on it as a primary source of information

Health & Nutrition

Most information about healthcare and nutrition for her baby comes from the community and is full of myths. She is not sure if they are correct, but follows them anyway

Tech Attitudes

Smart phone with no data

Bought some data once to use it for work, but does not use the internet as a source of information

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#3 Isolated Consumer

	LOW	MEDIUM	HIGH
TECH USE			
INFO RESOURCES			
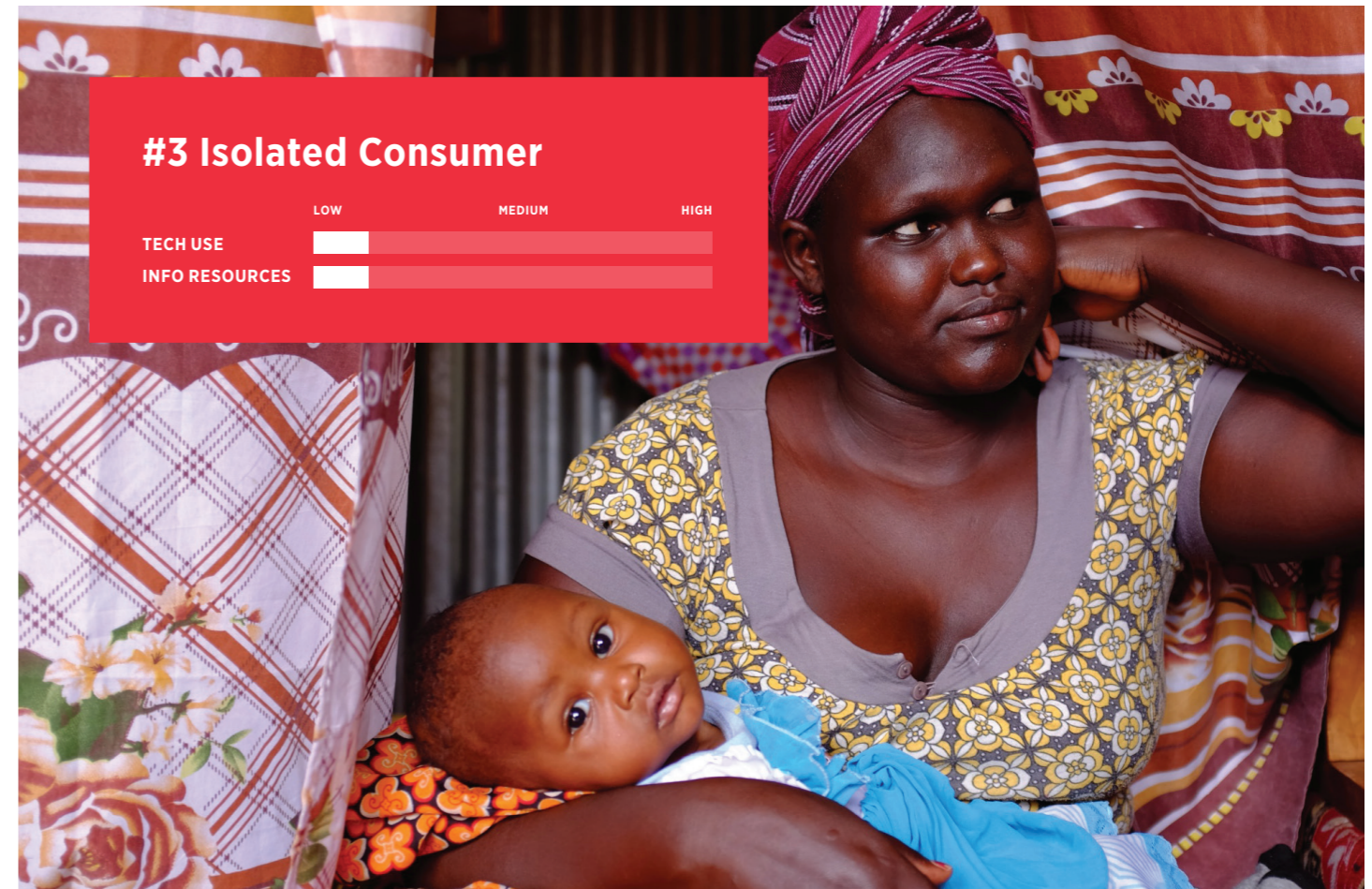
About

Has questions about parenting and health, but does not have the confidence or resources to find the answers

Resources: No family, No internet, some friends

Asks some friends for advice but fear of criticism drives silence and she keeps to herself

Learns by doing, but does not have a way to validate her solutions

Signed up by the clinic and was confused by the messages at first, but now really enjoys them

Appreciates mHealth service and relies on it as a significant source of information

Health & Nutrition

Some information about healthcare and nutrition for her baby comes from her neighbours, but she does not share a lot

Most of the mHealth service messages contain new information

Most of her education has come from mHealth service and although she didn't know she needed it, she likes it now and thinks it is good for her and her baby

Tech Attitudes

Smart phone with no data

Has used MPESA once to receive money, but does not use her phone for a source of information at all

#02
A SERVICE SHOULD BE CREATED WITH THE WHOLE COMMUNITY IN MIND, NOT JUST ONE SINGLE USER

When launching an mHealth service, it is only natural to want to focus on communicating to an individual user.

But often, the user is only one in a community of people who will be affected by the service – and the community is often the best vehicle for spreading ideas and having more impact.

People often rely on other people they know for information.

It is important to think of the entire community as a distribution platform: People often rely on other people they know for information. To most effectively reach the target audience, an mHealth service has to consider the people around them. Especially in rural settings, women often do not have access to mobile phones. They might not own a phone, be illiterate, or do not have the skills to use a phone. In these cases, they will rely on their husband, family or community to pass on information. When engaging only the intended target audience, and not all of the people who can contribute to behaviour change, it is unlikely that actionable change will occur.

For instance, in many parts of Africa where we conducted user research on nutrition, which is the content category where the GSMA supports mHealth services under the mNutrition programme, we found that nutrition is something that is very social. It not only touches the individual, but also the family. It is often rooted in tradition, while recommendations based on science can contradict these traditional beliefs.

In order to give a pregnant women information on what is best for her to eat, an mHealth service also needs to reach her mother, her sister, her husband, and other family members. The service has to engage all the people around the user who can help contribute to a change in behaviour. In tangible terms, this may involve letting them know what to buy at the market that will be best for the pregnant woman's nutritional needs.

In another example, a mother in Malawi may not have access to a phone or the ability to understand English. However, her husband, brother, or cousin can call to get the information. They may join her in the evening and pass along what they have learned, or they may both listen on speaker phone to share messages.

While conducting user research for the mHealth programme in Ghana, we spoke to Dzigudu. Since his phone had technical difficulties, he was recording every message on paper so that he would always have them for his pregnant sister, in case the phone eventually broke.

VOICES FROM THE FIELD / GHANA

"My sister cannot read English. I read the messages for her and translate the information in a way that she can understand."

Dzigudu, Ghana

Other family members need to be empowered to spread knowledge to the group. We found in particular that the role of the husband is very important. In Tanzania, women have little influence on household purchases. For behavioural change to occur, men need to be actively engaged in childcare and nutrition, since they are the primary decision-makers on food growing and purchasing. Empowering men encourages them to share knowledge with their wives and

other family members. In fact, we heard from many husbands that they would like to be more engaged; they not only want to know what the message is that they are passing along to their wife, but why this message is important. For instance, what is the rationale behind why their wives should eat fortified foods during pregnancy?

For instance, in Ghana, there is a deeply held belief that young babies need to be fed a lot of vitamins and medicine. To enact behaviour change, respected members of the user's community also need to understand why other modes of thinking may be recommended. Without influences like nurses and shopkeepers reinforcing messages, social and cultural beliefs will pose significant barriers to mHealth service impact and behaviour change.

It is not only the family that passes along information to the target user. Other people in the user's day-to-day life, such as community health workers and pharmacists, are also important.

Once target users for the mHealth service are identified, conducting in-context interviews can help to understand the people who are relevant in their day-to-day lives. The goal is to figure out the human connections that play a role in influencing the user's behaviour. By seeing the people who are close to the user, it is possible to determine:

1) **The people in the user's family or community that an mHealth service needs to engage with.** Whether the head of the village, the local doctor, the community health worker, or family members like the father, a service needs to consider communicating to these people to achieve change in the entire family, such as enabling mothers to provide better food to their children and themselves.
Word of mouth and peer recommendation, such as mother-to-mother communication about the best foods to feed their children, can be incredibly powerful tools for recommending and distributing the service.

2) **Additional community engagement touchpoints for the service, including the people who will give testimonials that can help to promote the service to reach the final user.**
It is important to understand the ecosystem of people that the user interacts with.
For example, a mother may visit a shopkeeper to buy food. The shopkeeper is the one who supports the mother in the moment of decision, so he needs to be informed on the best foods to buy for the mother's health needs. If he does not know what fortified foods are, he will not recommend them to the mother. Or perhaps the mother shops with friends who also need to be informed.

An mHealth service needs to consider all people in a target user's day-to-day life.

The overall concept is simple yet crucial: An mHealth service needs to consider all people in a target user's day-to-day life in order to understand how to best reach the target user.

KEY INFLUENCES SUCH AS FATHERS, CLOSE FRIENDS, NURSES AND RELIGION ALL PLAY A ROLE IN DETERMINING THE BEST HEALTHCARE FOR CHILDREN.

Questions to ask your users:

1 Uncover key community members who are important to the user:
When you have a question about your health or your baby's health, who are the top three people you most often ask for advice?

2 Find why top community members are important to the user:
How do you decide what type of advice to ask the three people you mentioned?

3 Find out about level of access to these community members:
How easy/hard is it for you to connect with these people? How do you usually connect with them? How often? How comfortable do you feel approaching them?

#03
THE ASPIRATIONS OF MHEALTH SERVICES OFTEN DO NOT RESONATE WITH USER ASPIRATIONS

A value proposition is a statement that describes why a service is better for the customer than all other alternatives. Another way to think about it is: What is the user need? How is a service uniquely solving this need?

It might be tempting to take on new initiatives, such as those below, without talking to the users, just because they seem like a good idea:

• **When launching a new service, it is a standard practice for MNOs and VAS providers to send bulk SMS to their subscribers to promote the new service.** It is a practice that they regularly adopt, which has worked in the past and that can be done cheaply. However, is bulk SMS still an efficient marketing channel? Do people actually read these messages?

• **When NGOs** (Non-Governmental Organisations) **have trouble with low performing agents or community health workers, it is usually assumed that the incentive structure needs adjusting.** However, while conducting user research for the mHealth programme, we have seen a myriad of issues that could also explain low performance, such as agents who request new t-shirts to feel more respectable and markets that are saturated with the product being sold by agents.

For any initiative to be successful, it comes back to the core question: What is the user need? How is the new initiative addressing this need? If the initiative is an mHealth service, the question becomes: How is the mHealth service

addressing this need? This is when UX research becomes fundamental. The key to developing a great value proposition is to deeply understand user needs. A service will succeed if it addresses these user needs better than its competitors.

To discover user needs and to fully understand them in all their complex facets, service providers, especially product teams, must spend time with their users. It is important for service providers to immerse themselves in the user world, live their lives, even if only for a few hours, and experience their struggles first hand.

Importantly, a value proposition is not a public statement. It is an internal document that should guide all public communication by the mHealth service, such as elevator pitch, tagline and brand story. This is especially important for mHealth start-ups, that do not yet have a recognisable brand name. Aligning communication with value proposition will help to establish brand recognition. It is what a service will become in the public eye. Value propositions are not set in stone forever. As products and companies evolve over time, so will their value propositions.

Aligning communication with value proposition will help to establish brand recognition.

Beyond communication, the value proposition should also inform future service development. Each new feature should align with the value proposition, and hence with the core user need. If it does not, the new feature might simply not be used and the business will potentially waste development resources. At worst, the new feature will confuse users and undermine the brand.

Finally, a powerful value proposition will give employees direction. It will help guide their work and make them proud. It is what makes their work special, what gives them purpose. If the service is developed within a larger organisation, such as an MNO or government organisation, it is important that the service has a dedicated team with its own value proposition, allowing the team to stay focused and clearly communicate value to leadership.

A company can have several value propositions, aimed at different stakeholders. For example, an mHealth start up's core value proposition could be to prevent the hassle of having to go to a clinic for non-serious health matters (using a telemedicine app). However, the same start-up may have a different value proposition for hospitals: In this case, the service key value proposition may be to reduce the number of patients who need in-person help from the clinic, freeing up resources for cases that need them. Yet another value proposition could be to offer data gained from the app to the Ministry of Health to improve visibility into hospital performance. Having multiple value propositions can be useful, especially when working with multiple sustainability streams. However, we highly recommend committing to one core value proposition and ensuring that all the other value propositions align with the core mission.

We highly recommend committing to one core value proposition and ensuring that all the other value propositions align with the core mission.

Asking the right questions: Totohealth in Kenya

While conducting user research with mHealth partner Totohealth in rural Baringo County, Kenya, GSMA mHealth and frog design found a long list of needs that an mHealth service could potentially address including:

• Lack of information that people trust

• Lack of information that people understand, since most medical information is too technical

• Lack of information that people can act upon, since many people have limited access to high nutrient foods and medicines.

In addition, other potential needs were quite pressing, such as:

• Food that is too expensive in the store

• The hospital is too far away

• The hospital is overcrowded

• The hospital is too expensive

• The hospital workers are often on strike.

Which of these needs is the most pressing? Which of these needs can you solve best? Asking these kinds of questions will set the right course towards developing a powerful value proposition.

Questions to ask:

1 Identify user needs:
What is the specific problem that the service is solving? Why is the service solving that particular problem?

2 Align the product with the user needs:
How is the service solving this problem? Why is it solving it this way?

3 Determine the unique value of the service.
What are all the other alternatives that the service is competing with, directly and indirectly? Why is the service better than those alternatives?

#04
NUTRITION IS NOT SCIENTIFIC, IT IS SUBJECTIVE AND HIGHLY CULTURAL

Modern concepts of medicine and health are solidly rooted in a western understanding of the world. As a result, when introducing these concepts in other parts of the world, especially in rural areas, there will often be a disconnect with local concepts of health.

In some circumstances, a new idea might seem strange at first, but will get adopted into local customs over time. Other times, a new idea is breaking local taboos and highly offensive. For example, while conducting research together with our mHealth partner Wazazi Nipendeni in Tanzania, we tested a message about expressing breast milk. While the message was perfectly clear in most parts of the country, it resulted in confused looks from research participants in Northern Tanzania. This was because the message violated a local taboo against expressing breast milk. Hence, messages that encourage expressing breast milk would not be well received in this community. If users do not understand a new idea, they may also ignore the entire service offering.

If users do not understand a new idea, they may also ignore the entire service offering.

An in-depth look at the seemingly straightforward idea of nutrition, which is the content category where the GSMA supports mHealth partners under the mNutrition programme, shows that the term nutrition simply does not exist in many African languages, nor does the concept. When advertising the benefits of good nutrition, or the benefits of an mHealth nutrition service, many people will not know this term and have no concept of what it could mean. Our partners at Human-Network-International (HNI) in Malawi and Zambia have addressed the language issue by using more descriptive terms, such as 'healthy eating', in their services.. While this is a good first step, it does not fully address the underlying issue that people do not understand the concept. As designers would say, the conceptual model of the service does not align with the mental model of the user. Below we present our key learnings on how to achieve this alignment, by ensuring that a service makes sense to its users.

NUTRITION BUNDLES TOGETHER SEVERAL TOPICS:

- **EATING HEALTHY FOOD**
- **COOKING TECHNIQUES**
- **GETTING APPROPRIATE VITAMINS AND NUTRIENTS ("IMMUNISATIONS")**
- **BEST PRACTICES DURING PREGNANCY**
- **BEST PRACTICES FOR CHILD REARING**
- **REGULAR MEDICAL CHECK-UPS**

From a design perspective, the key to solving this nutrition challenge is information architecture. Public health experts would naturally group all of these topics under the "nutrition" label. However, in what content category of an mHealth service would service users expect nutrition-related content to be? For example, in the case of parents wanting to learn about getting vitamins for their children, where would they look for this information? Since they do not know what nutrition means, they would not look for it in the nutrition section. During our UX research for the mHealth programme, we encountered this as a regular challenge: People look for a certain piece of information, but cannot find it. The information is available on the service, yet is not categorised in a way that resonates with the users. In the case of vitamins, we have found
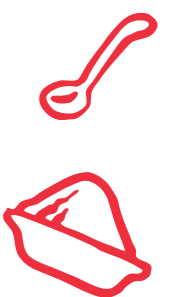
that many people across Africa think of 'vitamins' as 'immunisation'. The term vitamins is most often used to describe pills given at clinics, often together with vaccinations for TB and other serious diseases. As a result, everything given during routine visits to a clinic is considered to be an "immunisation", including vitamins. This also means the people do not necessarily make the connection between food and vitamins that seems so natural to most people in Europe or North America.

Armed with these insights, service providers are in a better position to think about where to include information about vitamins, what this information is, and how to talk about it. A service could add information about vitamins to immunisation trackers and reminders, or create a section called "raising a healthy child" that includes information about vitamins as well as healthy food for children.

Food in fact is highly cultural and not just a combination of nutrients. It is an integral part of people's identity.

Especially when it comes to nutrition and food, behavioural change is problematic. Food in fact is highly cultural and not just a combination of nutrients. It is an integral part of people's identity, often formed over generations and hundreds of years. Irrespective of how significant the health benefits, it is difficult to change habits that are ingrained in who we are.

MATAPA ON ILHA DE MOÇAMBIQUE, MOZAMBIQUE.

What does nutrition mean in Mozambique?

While conducting research with GSMA mHealth partner PSI in Northern Mozambique, we took an in-depth look into how local customs contribute to malnutrition. Over 50% of people in Northern Mozambique suffer from malnutrition. 74% of all children suffer from Vitamin A deficiency. While the reasons are manifold, an important factor is the lack of vegetables in the daily diet. Leafy greens are readily available at local markets, comparatively cheap and people enjoy eating them. However, people believe that there is one way, and one way only, to prepare greens: Cooking them for hours with coconut milk and other expensive ingredients. Matapa, a dish made from young cassava leaves, coconut milk and macadamia nuts, is one of the most beloved dishes of the region. Yet, due to its time-consuming preparation, it is a delicacy prepared only on weekends and for special occasions.

As the examples above demonstrate, a program focused on nutritional behaviour change could rightfully focus on convincing people (in this case Northern Mozambicans) to eat more leafy greens. However, to locals, the notion of stewing greens briefly without additional ingredients just seems wrong.

Simply advising people to eat more greens is unlikely to result in behavioural change. When attempting behaviour change for such deeply ingrained cultural practices, it is worth considering questions such as:

• Why do people do what they do?

• How can users incorporate small improved habits into existing cultural habits?

• What are the steps that can help users to eventually adopt a new practice?

• Is there a leafy green vegetable substitute that requires less cooking time but results in a similar taste?

• How about adding small amounts of vegetables to the omnipresent stewed beans?

• Or could a service encourage people to eat more fruit, which is plentiful and relatively cheap?

To find the best approach, it is important to always maintain an open channel of communication with users and understand how they feel about these ideas. After getting a first gauge through interviews, testing several ideas will determine what works best.

To find the best approach, it is important to always maintain an open channel of communication with users and understand how they feel about new ideas recommended by an mHealth service.

While this chapter has focused on the concept of nutrition the core questions can, and should, be applied to any topic that an mHealth service works on:

• How do users think about the topic that is being addressed?

• How does this topic fit into their larger worldview? Why do they do what they do?

• Are there any cultural beliefs or misconceptions?

When designing an mHealth service, it is important to remember that users might think about the world and compartmentalize the world in very different ways.

Answering these questions will allow product teams to design a service that users can understand and incorporate into their lives.
When designing an mHealth service, it is important to remember that users might think about and compartmentalize the world in very different ways. A successful service will structure itself after the mental model of its users. To do so, mHealth service teams, especially product teams, must spend time with their users and understand how users think about the concepts, ideas and terms that make up the mHealth service. Of course, an important part of a service can be educational, changing how people think about health. However, in order to foster change successfully, users still have to understand how this change fits into their world.

COOKING MATOKE (COOKED BANANA) IN JINJA, UGANDA.

Questions to ask:

1 Understand local language:
What are terms and expressions that people use locally to talk about the service (such as nutrition)?

2 Determine how the service fits into the life of users:
If there are no local terms to describe the service, how could it fit into the user's world? What role does it play in their day-to-day life? What could it be called to make sense?

3 Understand why people do what the do:
If there is a systematic problem in a community, what behaviours cause this problem? Why do people practice these behaviours?

4 Identify cultural beliefs or misconceptions:
Are there stories or rumours involving what the service wants to do? What would elders think about the service?

Mobile technology connects people at an unprecedented scale and in the most remote of places. With the push of a button, messages can reach millions of people instantly.

Services such as Facebook and WhatsApp groups can connect mothers in remote villages with doctors in faraway cities. Yet technology is not always a replacement for genuine face-to-face contact between users and real people representing an mHealth service. From building initial trust with new users to providing technical support, face-to-face can play a crucial role in mHealth services, especially when establishing the service.

When launching an mHealth service, gaining the trust of users is a major hurdle. For example, while conducting research for the mHealth programme in Kenya, we tested the registration flow of an mHealth service. Halfway through the registration process, a young mother asked us: "Who are you people? I never heard of you. Why should I give you money?" This is a challenging question for any new mHealth service to answer, especially when the service has no established brand recognition yet. In addition, it is not a mere matter of paying for the service. It takes trust for users to confidently rely on mHealth services to offer crucial advice on their own health and on the health of their loved ones. This is even truer in emerging markets, where people often do not trust the healthcare system nor have access to trustworthy health information. Our research, for example, has shown

**When launching an mHealth service, gaining the trust of users is a major hurdle.**

that people regularly complain about ineffective fake drugs from government clinics. While conducting research in Mozambique, people asked us whether it is true that condoms cause AIDS, because there was a persistent rumour in WhatsApp groups that condoms are laced with poison. In this environment, building trust with users is a challenging and crucial endeavour. Businesses often have to spend years in advertising and outreach to build a trusted brand. For mHealth services, using face-to-face engagements between users and trusted community members can be a highly effective short cut to gaining user trust initially.

The benefits of face-to-face interaction are evident when considering the more practical aspects of mHealth, such as registering users. In-person registration can overcome technical challenges and allow support for less technology savvy users. Especially when focusing on bottom-of-the-pyramid users, signing up to an mHealth service can be a difficult process. A seemingly simple registration flow for an SMS-based service might be an entirely new experience for the user. Even if a user is mobile savvy, there are still many things that can go wrong during the registration process, such as network outages or connection errors. These types of technical difficulties are particularly difficult to predict in emerging markets, where mobile users have a large variety of different devices with different features and functions. Addressing these possible technical challenges is not only a

In-person registration can overcome technical challenges and allow support for less technology savvy users.

#05
DO NOT REPLACE HUMAN NETWORKS WITH VIRTUAL NETWORKS

matter of user experience, it can fundamentally determine the success of a service.

In our experience, a user will attempt no more than three times to register. If the registration was unsuccessful after three attempts, most users will conclude that the service does not work and give up. Many of these technical challenges can be mitigated by having experienced staff registering people in-person during community events, in clinics, etc. Not only will in-person registration ensure that a large number of people register successfully to the service, but will also showcase different features of the service, teach people how to use the service and, most importantly, start building trust.
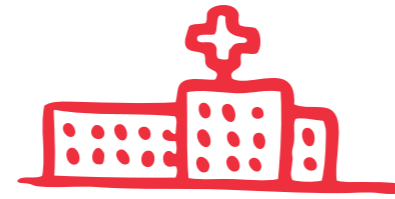
Clinic registrations show people that a mHealth service is supported by a trusted clinic, hence they can trust the service as well.

As we have discussed earlier, not knowing a brand and whether it is trustworthy is a big deterrent to people signing up. However, in most countries, people trust doctors and nurses. Clinic registrations show people that a service is supported by a trusted clinic, hence they can trust the service as well. Instead of relying on impersonal billboards that try to explain the value of a service, a trusted nurse can praise the service and explain in conversation the benefits of joining.

FACE-TO-FACE USER ENGAGEMENT, SUCH AS THROUGH LIVING GOODS COMMUNITY HEALTH PROMOTERS, CAN CREATE A HUMAN BOND TO OVERCOME TRUST ISSUES IN MARKETS THAT ARE RIFE WITH MISINFORMATION.

NEIGHBOURS AND FRIENDS RECOMMENDING AN MHEALTH SERVICE IS A HIGHLY EFFECTIVE WAY TO GAIN NEW USERS.

It is important to point out that scaling is very difficult when relying on in-person registrations alone. However, there is a substantial opportunity to benefit from a network effect by turning in-person registered users into champions and promoters of the service. When receiving mHealth messages, such as tips on how to raise a healthy child, users will regularly share this content with neighbours and friends. This not only greatly increases the impact of each message, it can also be an avenue to acquire new users.

Current users can be the enthusiastic champions of a service.

A user of our partner Totohealth in Kenya told us: "When I get a new message, I always show it to three ladies in the shambas (small farming plots) next to mine. Two of them wanted to sign up as well, but they did not know how to."

This is a missed opportunity. Current users can be enthusiastic champions of a service. They can showcase the service, share how the service has impacted their lives and help to overcome the trust challenge that we discussed earlier in this chapter. In order to take full advantage of the network effect, new users should always be encouraged to promote the service in their communities and learn how to sign up new users themselves.

In-person registration and face-to-face user engagement are important parts of an mHealth service, especially when first establishing the service brand. In the long run, relying on face-to-face engagement is not sustainable. However, turning users into promoters of the service offers significant reach. User advocates can promote a service in remote communities that are not served by traditional media and help overcome mistrust.

Questions to ask:

1 Understand if potential users have the technical skills to sign up for the service on their own. **What is the level of technology literacy? Have people ever used SMS, WhatsApp, apps, etc. on their own?**

2 Identify parts of the service that potential users might need help with: **Users might know how to receive SMS, but have they used an USSD menu? Users might know how to receive mobile money, but have they ever sent mobile money?**

3 Identify who is best suited for face-to-face engagement with potential users: **Where do people get information? Which of these sources do they trust? Why these sources?**

4 Understand what current users say to convince other people to register: **When talking with other people about the service, how do users describe it?**

#06

LOCALISING THE SERVICE DOES NOT JUST MEAN TRANSLATING WORDS INTO LOCAL LANGUAGES

Behaviour change messages often encourage users to take the perfect action to address a given health issue.

Ministries of Health and public health experts, in particular, are keen to recommend best practices. However, in reality, best practices are often not accessible to many people in the lower part of the pyramid. In this chapter, we will focus on actionability: Giving recommendations that people can act upon.

Users face a variety of challenges when trying to act upon recommendations in health messages.

Users face a variety of challenges when trying to act upon recommendations in health messages. For instance, hospitals do not stock the recommended medicines; recommended foods are not available where the user lives; users do not fully understand what the recommendation asks them to do; etc.

In general, recommendations face one of four actionability challenges:

1. Recommendation is not concrete enough.
For example, when recommending to "eat one piece of fruit per day", it is not clear whether one piece may mean "one slice of tangerine" or "one slice of watermelon".

2. Recommendation is not available.
For example, recommending to eat fortified foods, such as milk enriched with vitamins A and D, however, fortified foods are often not available in rural areas.

3. Recommendation is too expensive.
For example, recommending to eat meat on a regular basis, however, meat is often too expensive to be part of a regular diet.

4. Recommendation is not culturally acceptable, because it violates local practices or taboos.
For example, recommending to eat eggs on a regular basis, however, some communities believe that women and children should not eat eggs.

A first step towards writing actionable recommendations is to reframe the above challenges into questions:

• Is the recommendation concrete? (e.g. Is it clear what type of fruit is recommended? How big is "one piece of fruit"?)

• Is the recommendation available? (e.g. Is fortified milk available?)

• Is the recommendation affordable? (e.g. Is meat affordable enough to be part of a regular diet?)

• Is the recommendation culturally acceptable? (e.g. Do people in the target population eat eggs?)

Answering all of these questions with 'yes' is a good indicator that the recommendation is very likely to be actionable for the users. Answering some of these questions with 'no' suggests that it is necessary to consider alternatives. Through our work supporting mHealth partners in Sub-Saharan Africa, we have developed several approaches that mHealth start-ups have taken to make recommendations more actionable, from recommending simple food substitutes to building their own manufacturing and distribution network:

1. Recommend food substitutes that deliver similar benefits, but are cheaper and readily available locally.
For example, instead of meat, recommend cheaper sources of protein and iron, such as beans, lentils and nuts. To find the perfect substitute, we recommend seeing what is available at local markets,

YES?

considering factors such as seasonality. Offering a variety of recipes with these food substitutes further improves actionability.

2. **Encourage people to grow their own recommended foods.** While this approach requires more upfront training and convincing, this can be a highly sustainable approach in the long run. For example, during our UX research for the mHealth program in Zambia, we have met several households that have started growing their own leafy greens to save money.

3. **Consider partnerships with FMCGs (fast-moving consumer goods) companies working locally to offer discount vouchers or bundled products at reduced cost.** The Audrey Pack, one of our mHealth partners in Nigeria, offers free packs with essential FMCG products, many of which might have been too expensive for people to purchase otherwise. The packs, which come in three varieties as "Mum To Be Pack", "New Born Pack" or "Family Pack", are created in partnership with FMCG companies and are available when registering for mHealth messaging services with local MNOs MTN or Etisalat. By offering these goods, The Audrey Pack ensures that mothers can act upon recommendations made by the mHealth service.

As we discussed at the beginning of this chapter, key stakeholders in mHealth projects, such as Ministries of Health, tend to always have an understandable desire to recommend best practices. In fact, Ministries of Health will often insist on recommending best practices - no matter how difficult to action they may seem in practice. To address this issue, we suggest taking a dual approach: Recommend best practices, but also offer more realistic alternatives to users such as cheaper food substitutes or growing your own food. When doing so, it is important to ensure that the alternative does not sound like the clearly inferior option.

ORANGES ARE DIFFICULT TO COME BY IN CHOMA, ZAMBIA.

VEGETABLE GARDEN OUTSIDE A HOUSE IN CENTRAL LUSAKA, ZAMBIA.

How actionable is it to recommend eating more oranges in Zambia?

The GSMA mHealth programme and frog design recently tested a health message for a partner in Zambia that recommended to eat "more oranges", because they are high in vitamin C. While oranges are an excellent source of vitamin C, they are not widely available in rural Zambia and prohibitively expensive for many people. Reframing the four key challenges outlined above, it is possible to methodologically assess the actionability of this recommendation:

1. Is the recommendation concrete? Is "eat more oranges" concrete?
  • *No, this recommendation is not concrete.*
  • *"More" is a relative term. How much more is more?*

2. Is the recommendation available? Are oranges available?
  • *No, oranges are not available.*
  • *Oranges do not grow locally.*
  • *Oranges are not available at local markets.*
  • *The nearest place that sells oranges*
  • *is a Spar supermarket in Choma, which is 90 minutes away (assuming rain does not flood bridges) and costly by public transport.*

3. Is the recommendation affordable? Are oranges affordable?
  • *No, for most locals, oranges are prohibitively expensive.*

4. Is the recommendation culturally acceptable? Do people in Choma eat oranges?
  • *Yes, people in Choma eat oranges.*

The example above shows that eat "more oranges" is not an actionable recommendation for Choma, or rural Zambia in general. Several approaches outlined in this chapter and toolkit can help to make this message more actionable:

- **Make the recommendation more concrete.** Instead of saying "eat more oranges", say how many more oranges. For example, "eat one orange per day".

- **Instead of the ideal food, recommend available alternatives.** An alternative option to recommending eating more oranges is recommending eating more mangoes and pineapples. While oranges might have the best nutrition profile, mangoes and pineapple are also high in vitamin C and are more easily available.

- **Ensure that the alternative does not sound like the clearly inferior option.** For example, say "Oranges are high in vitamin C. If available, eat one orange per day. However, many other fruits are also high in vitamin C. If there are no oranges where you live, try to eat one mango or one quarter of a pineapple per day."

SMALL DRIED FISH CAN BE AN EXCELLENT SOURCE OF CHEAP PROTEIN, NAMPULA, MOZMABIQUE.

Questions to ask:

1 Determine availability of recommendation: **Can people find the recommendation at local markets? Is it available in clinics? Could they make it or grow it themselves?**

2 Determine affordability of recommendation: **Are there hidden costs in the recommendation, such as high transportation costs or long time commitments?**

3 Identify cultural taboos against the recommendation: **Have people in the community ever done something similar to the recommendation? If no, why not?**

...nd several kinds of FOOD are recommend...

#07
WORDING MATTERS, EVEN IF IT IS ONLY 20 CHARACTERS LONG

Very often mHealth services are in essence health messages sent to users of the service, often pregnant women and young mothers.

These messages are delivered via a variety of operator-controlled channels, such as SMS and Outbound Dialling (OBD), and in some cases via third party messaging platforms such as WhatsApp. They can range from behaviour change messages aiming to instil improved diet habits, to immunisation reminders, diagnostic questions and detection of potential diseases. It is evident that to generate the desired impact, users must be able to easily and clearly understand the content of the messages. While this might seem like a rather obvious statement, creating good content can be very challenging.

Most content is created by public health experts during workshops in office buildings far away from message recipients.

Most content is created by public health experts during workshops in office buildings far away from message recipients. They ensure that the messages are medically correct and, in many cases, follow Ministry of Health guidelines. Unfortunately, this often creates messages that are difficult to understand for the intended recipient. Messages tend to be too technical, abstract and difficult. Given this, it is fundamental for service providers to always keep in mind that while many terms and concepts may seem basic to public health experts, they will be completely foreign to the average user of an mHealth service.

While conducting UX research with our mHealth partner Totohealth in Kenya, we tested a message that recommended that "you need an extra 300-500 calories a day during the second trimester of pregnancy and gain 250-500 grams per week". We realized that most people had never heard of calories before. Even if they had heard of the term 'calories', they did not know what foods would give them 300-500 calories a day. As David, one of the users we interacted with, told us: "Calories, who knows that? Who do I ask? Where do I find them?" Calories might seem like a basic term to any health expert, but it may be an unknown technical term for your end-users.

As a result, it is quite difficult to know what terms and concepts are easily understood by users. It is best to never make assumptions about what might be understandable and what not. Instead, it is important to test all content with end users or, even better, involve end-users in the creation process of your messages. Whenever creating new content, a service provider should invite one or two end users to the content creation workshop and develop messages together with them.
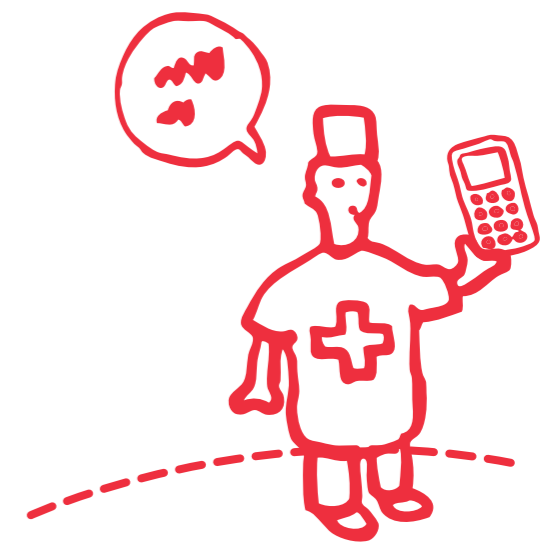
As discussed in chapter 4, what makes a good message is highly cultural, and it varies from place to place and language to language. To detect messages that touch cultural taboos, we always recommend developing and testing messages with the intended recipients.

It is important, however, to highlight that in our research we have found several principles to be universally true. While following these principles will not replace the need for actual message testing, they offer guidance for writing easy and clear messages.
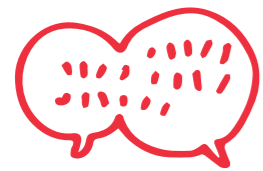
1

Use plain language.

"Simple English", was the response of a participant in a contest testing session in Kenya after reading a test message. Service providers should always remember that the goal of the mHealth service is not that of a medical textbook. Rather, it should use simple language with simple terms that people of all education levels can understand. It should also avoid flowery language and complicated sentence structure. Keeping it as simple as possible is a principle that holds true for any language which messages are crafted in.

2

Avoid technical terms, such as calories, trimester, ORT, sodium or complementary feeding.

Most users, especially in emerging markets, will not understand what these terms are. Instead of using technical terms, it is important to always try to explain the concepts in plain language, for example by describing ORT as "water with salt and sugar".

3

Be specific and avoid vague terms such as "more" or "small amounts".

People will be confused and wonder how much "more" is. Instead, one should use clear units that take into account local customs of measurement. For example, if people typically measure sugar in teaspoons, any advice should say "use two extra spoonfuls of sugar", and if they measure usage in cubes, it should say "use two extra cubes of sugar".

4

Recommend concrete actions instead of abstract numbers.

As mentioned earlier, even users who have heard of the term calories still did not know what type of food or quantity equates to 300-500 calories a day. Instead, the recommendation should focus on concrete actions that make sense locally. For example, to "eat two handfuls of ground nuts or one extra scoop of xima".

5

Focus on life benefits.

Many people find it difficult to fully grasp the value of medical or abstract benefits, such as "better eyesight" or "improved health". Instead, the recommendation should emphasize why better eyesight matters by, for example, explaining that it allows children to read better, in turn enabling them to perform better in school. Doing well in school is a concrete life benefit that parents value greatly.

An additional important consideration on content is that mHealth messages can have a profound emotional impact on the recipient, even more so if the service focuses on pregnant women and young mothers. When creating messages for the mHealth service, the focus of the service team will be most likely on meeting Ministry of Health requirements as well as the 140 character limits available on SMS. However, at the receiving end, there will always be a person. Maternal health nutrition messages are talking directly to women and their families during the most emotionally vulnerable time of their life.

Hearing what women have to say about the content is very important because messages can have a profound impact on them.

An example from a contest testing session conducted by GSMA with Totohealth in Kenya best illustrates the importance of acknowledging the emotional impact of mHealth services. One of the messages tested during the session reminded users that "vitamin D prevents miscarriage".
The sessions' participants, all in the final stages of pregnancy, were visibly shaken by this statement and asked questions such as "What is vitamin D? How do I know that I get enough of it? Will I cause a miscarriage"? While well intended, talking about 'miscarriage' just a few weeks before a mother gives birth was simply too emotionally laden.
It is therefore paramount that the service team is always aware of the emotional impact of providing health information.

USE UNITS AND MEASUREMENTS THAT ARE IN LINE WITH LOCAL CUSTOMS.

INSTEAD OF USING TECHNICAL TERMS, ALWAYS TRY TO EXPLAIN THE CONCEPTS IN PLAIN LANGUAGE.

ALWAYS CONSIDER THE EMOTIONAL IMPACT OF MESSAGES.

Questions to ask:

1 Determine if people understand concepts discussed in messages: **Do people know what a balanced diet consists of? Do they know what calories are?**

2 Understand concrete life benefits that truly matter to people: **What are people's aspirations, hopes and dreams? What would make them be a proud parent? What is the life benefit of medical benefit?**

3 Understand the emotional impact of messages: **What are terms and words that trigger emotional responses? Is there language that people interpret differently than expected?**

#08
IT IS NOT ONLY WHAT YOU SAY, BUT HOW YOU SAY IT

Even if messages use simple language and offer clear actionable recommendations, there are still many different ways of how to communicate with users.

The way a message is presented fundamentally determines if the message has the desired impact and induces behaviour change, or is being dismissed as irrelevant. Seemingly small stylistic details, such as the message hook, can make the difference between a mother paying attention or becoming agitated. How people perceive different stylistic elements is highly cultural, and changes from place to place.

There are virtually endless stylistic varieties to convey a piece of content.

There are virtually endless stylistic varieties to convey a piece of content. At the early stages of the mNutrition initiative, one of our partners asked for support in finding answers to a long simmering question: What makes an impactful mHealth message? As they put it: "We have been sitting around a table and discussing this for over two years now. I have opinions, but we still do not know what users actually want".

When looking at the most basic elements, each message is made up of four stylistic elements:

STYLISTIC ELEMENTS
1. PERSON
2. TONE OF VOICE
3. POSITIVE/NEGATIVE
4. HOOK

In the above-mentioned example, the service provider did not know which style people prefer, and there was no consistency in how messages were written. The tone of voice of the message varied wildly from one message to another, usually without much rationale. In some instances, a message would be delivered in second person and in some other instances in third person. To bring clarity, GSMA mHealth developed a simple framework to test stylistic variations of the same message with users.
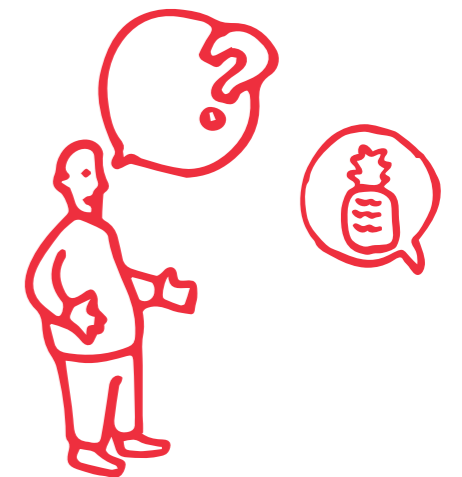
Table: GSMA mHealth content style framework

1   Person

Second Person

You/Yours

You should give *your* child Vitamin A for good eyesight and to help *your* child's body fight disease.

Third Person

Parents/Children, Farmers, etc.

Mothers should give Vitamin A to *their* children for good eyesight and to help *their* child's body fight disease.

2   Positive/Negative

Positive

If you do

Children need vitamin A for good eyesight and to help your child's body fight disease.

Negative

If you do not

If children do not get enough Vitamin A, it can lead to bad eyesight and your child can get sick more often.

3   Tone of Voice

Official

Serious like a Ministry of Health announcement

Giving Vitamin A to children will make them strong and healthy.

Neutral

Friendly, with an even voice

Giving Vitamin A to children will make them strong and healthy.

Casual

Fun, like chatting with a neighbour

Giving Vitamin A to children will make them strong and healthy.

4   Hook

Official announcement

The Ministry of Health suggests

The Ministry of Health suggests that you give Vitamin A to your children for good eyesight and health.

Aspirational

Do you want

Do you want your children to be healthy and have good eyesight? Vitamin A is good for eyesight and to fight disease.

Educational

Did you know

Did you know that you should give your children Vitamin A for good eyesight and health?

Emotional

The best moms

The best moms give Vitamin A to their children so they have good eyes and are healthy.

Attention

Listen carefully

Listen carefully! Vitamin A is good for the eyesight and health of your children.

We tested the stylistic variations in rural and urban areas, with women and men. We found that within a geographic region, people tended to consistently prefer the same style elements. In addition, people also consistently gave us similar rationales of why they prefer one style over another.
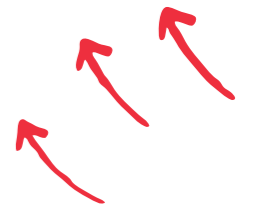
TESTING IVR MESSAGES IN LUSAKA, ZAMBIA.

Testing content styles in Kenya and Zambia

Since developing our content style testing framework with our partner, we have conducted the test in several countries across Africa. Our research findings from Zambia and Kenya show how different places prefer different stylistic variations, based on cultural considerations.

1. **Person**: In Zambia, people prefer "Mothers should give…" No one is ever really alone, there will always be other people around when listening to messages. Using "mothers" makes it clear who the message is intended for. In Kenya, people prefer "You should give…" It is not just the mother's job to raise a child. Father, grandparents, aunties and neighbours are all involved in raising a child, and they all should pay attention to important health messages.

2. **Positive/Negative**: In both Zambia and Kenya, people strongly prefer negative messages. Positive messages are seen as optional, something to consider, but ultimately ignore. Negative messages on the other hand make it clear that this is important: You must do this!

3. **Tone of Voice**: In both Zambia and Kenya, people prefer messages in a neutral but friendly tone. A serious tone feels intimidating, while a too casual tone feels not serious.

4. **Hooks**: In Zambia, people prefer "The best moms" because, in the words of a participant, "it makes you feel good". There's something emotional and uplifting about this hook that resonates with people. In Kenya, people prefer "The Ministry of Health" because its authoritative tone conveys importance and trust.

It is important to acknowledge the shortcomings of this research approach. First and foremost, the fact that users may choose one style over another during a test session does not guarantee that this style will ultimately lead to the greatest possible behaviour change. Addressing the behaviour change question with more certainty would require significant data analysis with live content, using methods such as A/B testing. A/B testing involves showing different users different versions of the same message and measures how each version performs. Such intensive research is not feasible for all mHealth services. While we understand the limits of our research approach, we are confident in the quality of our findings and believe that this is an important first step toward moving from opinions to understanding.

As mentioned at the beginning of the chapter, this research came out of a request from one of our partners to bring clarity to a nagging question. By default, many organisations attempt to answer questions by gathering opinions from their team members. However, when trying to answer questions about users, the best and quickest route is often to ask users themselves. Conducting this type of ad-hoc research might not always be the most rigorous, nonetheless it is a significant improvement from solely relying on assumptions about what users may think or do without having spoken to them.

TESTING SMS MESSAGES IN KIBERA, KENYA.

[1] More detailed information on A/B testing: http://www.uxbooth.com/articles/how-to-increase-site-performance-through-ab-split-testing/

Questions to ask:

1   Identify which message style people prefer:
Do people prefer second or third person for messages? What tone of voice? What hook? Do they prefer positive or negative messaging?

2   Understand if different groups of people prefer different message styles:
Do different cultural groups respond to these questions differently? Do men and women prefer different styles?

3   Understand underlying cultural reasons for their preferred style:
Why do they prefer negative messaging?

#9
CONTINUOUS ITERATION: YOU WILL NOT GET YOUR SERVICE RIGHT THE FIRST TIME

It can be tempting to want to polish all the small details of an mHealth service before it launches. However, it is crucial to do just the opposite – to set up a service that is open to change.

Small things can make or break a service. It is essential to test in the field to understand what these variables are, to engage the user and learn from the user in the process of design. This allows changes to be made to the service based on how people are using it, in real life.

The mHealth partner HNI in Malawi recommended protein as an important part of a pregnant woman's diet. The messaging specifically suggested that women eat meat and eggs to reach the optimal daily protein amount. However, the research team found that these women were not able to afford meat and eggs, but traditionally ate beans – another good source of protein – as part of their diet. Once we knew more about the local culture, we were able to adapt the content of the service so that it matched what worked best for the locals, without causing them to feel discouraged.

It is important to interpret failure as a moment of learning – to never consider the service perfectly done, but in an improvable state. Not being open to change the service will affect the number of people who use it and for how long. It is important for the service provider to see what the biggest issues are, or find the moments where people use the service once but never come back.

For HNI in Malawi, we wanted to make the messages more entertaining and interesting. However, the first version became so entertaining that users did not take it seriously. HNI had to tone down the next version of their messages so that people would understand that the information was important and not just for fun.

That result was not what we expected, which is why collecting feedback to improve the service is key. One way to do this is to embed a mechanism for evaluation into the platform. It is crucial to be able to measure whether something is working or not. This can be done by interviews to go deeper into the problems users have with the service, or with an analytics platform to measure how people are interacting with the service.

In Ghana, our mHealth partner MTN Cares 247, focused heavily on the marketing to encourage users to subscribe. However, it didn't consider that users might also want to unsubscribe. When we interviewed users, we learned that not being able to unsubscribe left them feeling cheated, and that ensuring unsubscribe works is critical to building trust and confidence.

Knowing they can stop at any time It encourages users to explore new services and features. Based on this feedback, MTN Cares 247 reprioritised the product roadmap to develop an unsubscribe functionality immediately.

Providing the user with feedback while he or she is using the service is also important. For instance, you might offer feedback when people press the numbers on their phone or text a code to start receiving messages, so they know they took the right action.

While conducting research In Malawi with HNI, we created a low-fi prototype where a phone was connected to a computer. We could create different structures for messages and information architecture, and then see the user's interaction with the content in real time. As a result, we could very quickly test possible solutions and get rapid feedback. It is always easiest for people to give feedback on challenges they can relate to in their day-to-day lives rather than abstract topics.

It is important to learn from the user and to co-create the information architecture with the participants. For instance, rearranging the service's first level of information architecture can have a huge impact on the user's journey toward getting the right information. In Malawi, we discovered that the wording in the menu tree was causing confusion, resulting in users navigating to the wrong places.

To create a successful service, mHealth service providers must be open to the service's direction changing over time, in response to what works best for the user. Besides the service itself, this will affect the distribution model, marketing and communication around the service, since everything is interconnected. Often, small changes can have a significant impact on how people use the service.

To create a successful service, mHealth service must be open to taking new directions, and changing over time in response to what works best for the user.

PROTOTYPING AN SMS SERVICE IN MALAWI USING A 3D PRINTED PHONE. THIS ALLOWS FOR QUICK USER FEEDBACK AND THE ABILITY TO MAKE DAILY CHANGES TO THE PRODUCT DURING USER TESTING.

Questions for the service providers to ask colleagues and partners include:

1. Flexibility to change:
For contracts with IT and content vendors, are there clauses to allow easy changes to the service throughout the service development?

2. Availability to join UX research:
Are IT/Marketing/Sales/Service/Content able to join sessions of user testing?

3. Service developement cycle:
Ask the PM: Are there opportunities to include user feedback throughout the service development cycle?

#10
SUSTAINABLE REVENUE WILL NOT COME ONLY FROM ONE SOURCE

So far in this toolkit, we have looked at important considerations when designing an mHealth service. For this last section, we look forward and will discuss how to maintain a financially sustainable mHealth service once it is up and running.

We are broadly defining sustainability as the ability of an mHealth service to generate sufficient revenue to cover all operating expenses and keep the service running. In this context, we do not consider donor funding a sustainable source of revenue. Donor grants usually fund projects for a finite amount of time only. Therefore, we recommend thinking of donor money as seed funding. Grants are an important way to get a service started and can help with scaling up. However, to become financially sustainable, a service should generate sufficient revenue from other sources to finance day-to-day operations.

Following the general principle that a business generates revenue by selling products or services to its customers, an mHealth service could charge end users for access to the service. While this approach is entirely reasonable, relying on a single source of revenue can be challenging for mHealth services. In our experience, any given revenue source will not be able to cover all operating expenses. In addition, the mHealth ecosystem is constantly evolving at different levels (technology, partners, business models), which implies that revenue sources can also change. For example, even though users might be quite happy to pay for mHealth services under normal conditions, they will struggle to do so during times of drought, reducing business-to-consumer (B2C) revenue. For a VAS provider offering an mHealth VAS paid for by the users, a partnership with an MNO can be a great source of revenue, but this source might disappear suddenly if the MNO's leadership no longer sees value in the service. Similarly, a lucrative FMCG partnership might be jeopardized by new legislation around advertising in health care.

To mitigate these uncertainties, ideally mHealth services should rely on a portfolio of two to three revenue streams. If one revenue stream declines or disappears, it will not threaten day-to-day operations since the other sources of revenue can fill the gap. Once a source of revenue has disappeared, it is important to explore new sources of revenue to replace it.

Ideally mHealth services should rely on a portfolio of two to three revenue streams.

$ $ $

We have identified five different commercial models and associated revenue streams that mHealth services are currently using:

1. Partnership with MNO

By partnering with mHealth services, MNOs can reap indirect benefits such as increasing network usage, reducing churn, improving customer retention and brand image. Partnerships can range from basic arrangements that offer the service provider access to MNO assets (SMS or data) to deep cooperation to cover most of the service operating expenses.

✚ **Opportunities:** MNO partnership have the potential to cover a large chunk of your operating expenses. It is also easy to combine partnerships with other revenue models.

✖ **Challenges:** mHealth service is not generating any direct revenue, which can make it difficult to demonstrate value, increasing the importance of managing good relationships with the MNO.

2. Business to Consumer (B2C)

End-users pay to access mHealth service.

✚ **Opportunities:** mHealth service generates its own money and can easily demonstrate business benefits.

✖ **Challenges:** mHealth service needs to address very specific needs where the users are likely to see enough value for which to pay. Hence, the service has to ensure that it offers some form of immediate gain for the user. If focusing on middle- or bottom-of-the-pyramid users, the service will have to be comparatively cheap. As a result, scale is essential to see substantial revenue.

3. Business to Government (B2G)

Government partners with and pays for mHealth service, turning the service effectively into a public health service. The service will often be cheap or free to the end user. To succeed with the B2G model, the service will have to demonstrate how the government will benefit from the mHealth service.

✚ **Opportunities:** B2G can allow services to scale up rapidly. It is not only an avenue to government funding, but can also open the door to other government resources, support and trust.

✖ **Challenges:** Working with government can be rather slow and complex, especially since proving benefits of the service before launching is challenging. It is always worth considering a regional proof of concept project before approaching the national government procurement office.

4. Fast Moving Consumer Goods (FMCG)

There are many possible variations of the FMCG model. Users are typically asked to register for a mobile service. After registering, they get access to FMCG products for free or at a reduced cost. The service becomes a marketing and demand generation channel for FMCG companies. FMCG companies pay to access that channel. In addition FMCG companies can also pay additional fees for understanding users' perception of their products to help inform future development.

✚ **Opportunities:** Discounted or free FMCG products are a powerful incentive for users to join the service.

✖ **Challenges:** The service owner often needs to develop a distribution system, which can be expensive and difficult to maintain. FMCG companies might insist on exclusive contracts, limiting the products that the service owners are able to offer.

5. Data Monetisation

mHealth services partner with organizations that find value in the mHealth service's non-sensitive data. Some mHealth services use their users' demographic data for advertising or marketing purposes, while others may partner with international organisations, research companies and governments for research purposes. Any approach to monetising data will require utmost respect to user privacy, and under no circumstance should sensitive user data be exposed to third parties.

✚ **Opportunities:** mHealth services are in a unique position to collect valuable demographic data about populations that organisations know little about. Data monetisation can be easily combined with other revenue models.

✖ **Challenges:** To be valuable, a rather large amount of data is needed to drive monetisation opportunities, as well as very specific information that helps define segments. As a recent model there is little experience and best practices to date on how to best maximise data monetization opportunities.

As we discussed earlier, mHealth service providers should not rely on one of these models alone. Instead, they should leverage several revenue sources to ensure sustained income. Which revenue portfolio works best depends on the service and its context. Conducting UX research helps mHealth to answer this question: Deeply understanding user needs, having a solid value proposition and knowing that a service resonates well with users are all important pieces of information when developing a revenue portfolio and approaching potential partners.

As a good first step, it is fundamental to map out all potential partners for each model in a country. Service providers should think of potential partners as another type of user. Asking the same user research questions can help mHealth services to understand the conditions and opportunities for each potential partner and determine if there is a partnership potential: What are the potential partner's needs? How can the mHealth service uniquely address these needs? The potential partners that could gain the most out of a possible partnership are worth pursuing first.

TOTOHEALTH IN KENYA OFFERS A VARIETY OF ESSENTIAL ITEMS FOR NEW PARENTS AT A REDUCED COST.
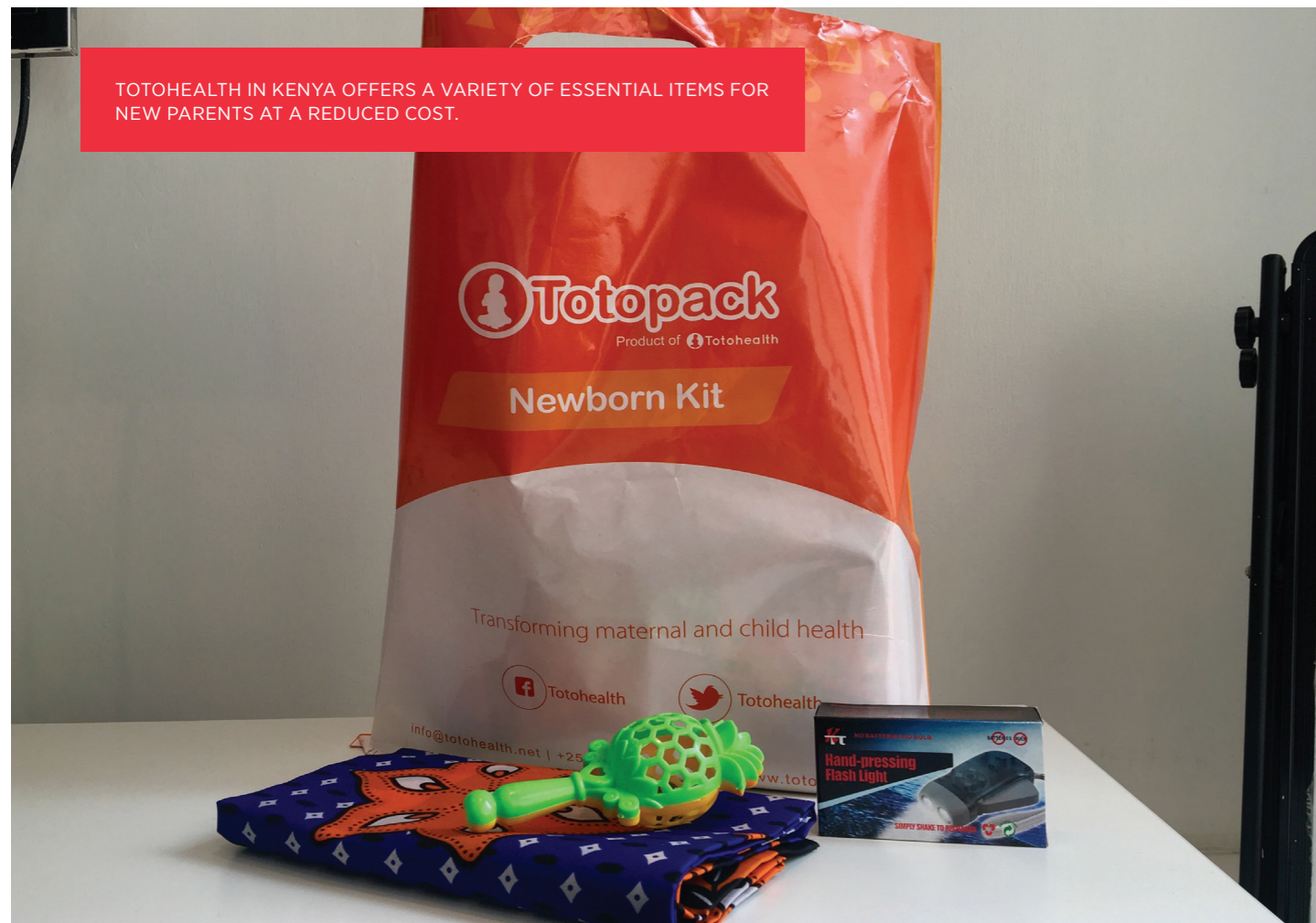
USERS IN LAGOS, NIGERIA, REGISTERING FOR A NEW ETISALAT SIM TO RECEIVE A FREE AUDREY PACK. IN ADDITION, THEY WILL ALSO COMPLETE A DEMOGRAPHIC QUESTIONNAIRE.

Questions to ask:

1 Identify organisations that are potential partners in the country: **Why these organisations?**

2 Determine opportunities and challenges for each potential partner: **How stable would that partnership be?**

3 Identify value propositions for different partners: **What are the potential partner's needs? How can the mHealth service uniquely address these needs?**

How emerging technologies could transform mHealth.

The key takeaway of this toolkit is rather simple: Instead of working on assumptions about users, we encourage mHealth service providers to regularly talk to users and involve them in the development of services. To do so does not always require complex and costly research projects. In many cases, research can be as simple as meeting community members where they are, in places such as markets, clinics or hair salons. Asking them a few questions, such as those discussed in this toolkit, will help to turn assumptions into understanding. This understanding will bring focus to the development process, and give greater certainty that the service will resonate with users and be a success.

A significant part of this toolkit is devoted to developing impactful content. This is primarily because many of today's mHealth services focus on delivering health messages via SMS or IVR to users. Thanks to the rise of messaging platforms such as WhatsApp, WeChat and Facebook Messenger, understanding content will become even more crucial in the future.
The current buzzword in the user experience and interaction design community is Conversational UI (User Interface). Instead of navigating through graphical interfaces, users interact with a computer system through text input, usually via a messaging app. In most cases, users are not aware whether they are chatting with another human or an AI (Artificial Intelligence) power chatbot. For these types of interfaces to work effectively, user experience and interaction designers will focus increasingly on language and how people communicate. As a result, many of the considerations in this toolkit will become more important.

In addition to Conversational UI, we are seeing two major future developments for mHealth services: AI telemedicine and interoperability of services.

AI TELEMEDICINE

In many ways, telemedicine is still considered the holy grail of mHealth. Several of the mHealth partners currently operate variations of telemedicine, such as Dial-A-Doc services, health consultation via SMS and remote diagnostics via apps. However, all of these approaches face considerable challenges. First and foremost, with today's technology, telemedicine is expensive and not financially sustainable. Scaling is a major challenge, since telemedicine services require large staff to ensure that response times are acceptable. In addition, ensuring quality of advice becomes difficult as call or SMS volumes increase.

Despite all of these challenges, users almost always name telemedicine as the most valuable feature of an mHealth service. Rural villages often rely on infrequent visits by mobile clinics for healthcare. For villages and communities far away from bigger cities, telemedicine is the best chance to get adequate healthcare in the near future.
Even in capital cities, telemedicine could hugely improve healthcare. In Nairobi, we were told by hospital staff that around 70% of all hospital visits do not actually require a visit. But without access to other reliable health information, people have nowhere else to turn. As a result, hospitals devote many resources to diagnosing heartburn and

headaches. Telemedicine can help people with non-serious conditions, free up hospital resources and allow clinics to focus on treating patients with serious needs.
Combining messaging apps with AI can allow an mHealth service to automate and streamline telemedicine significantly. While this is still a young field, most user flows follow a similar pattern: A user contacts the telemedicine service via a messaging app by describing the problem or asking a question. The AI triages the request, resulting in one of several responses:

• The AI asks for more details, including requests to upload photos that show the problem

• The AI recommends a course of action or treatment

• The AI transfers the user to a real doctor who can further assist

• The AI refers the user to a hospital

This system allows mHealth services to process a large amount of requests without the need for large call centres, significantly reducing the cost of a telemedicine service.

Several companies are currently developing and deploying versions of this approach, including Babylon Health[1], Your.MD[2] and Sense.ly[3]. However, while the technology is improving rapidly, it faces several challenges unique to the context for Mobile for Development:

• **Services require advanced smartphones and data connections, which are currently still out of reach for many users in emerging markets.** As smartphones and data are becoming cheaper and ownership increases, this will become less of an issue. However, we would still like to see services that can deliver this type of telemedicine via basic and feature phones.

• **Language and literacy barriers make it difficult to adopt these services rapidly**. This is especially true in Africa, with its 2000 different languages.
• **As is often the case, legislation tends to be slow to catch up with technology**. Ministries of Health tightly regulate who can give what type of health advice. AI telemedicine services will require new legal frameworks under which to operate.

When developing AI telemedicine, conducting user research in the target communities is crucial. There might be a temptation to create global AI algorithms that can be deployed in any context. However, cultural awareness and understanding is critical in the context of telemedicine. AI has to be able to interpret questions that might be at odds with a Western understanding of health. For example, what if users ask questions involving traditional medicine? What if users ask questions using local terms? What if the AI gives recommendations that are locally taboo? If interpreted incorrectly, this could lead to problematic outcomes.

To address these considerations, we recommend reading:
• Chapter 4: Nutrition is not scientific, it is subjective and highly cultural.
• Chapter 6: Localizing the product does not mean just translating the words.
• Chapter 7: Wording matters, even it is just 20 characters long.

[1] https://www.babylonhealth.com
[2] http://www.your.md
[3] http://sense.ly
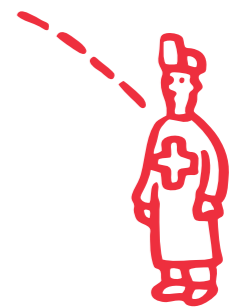
INTEROPERABILITY

Interoperability allows different services, devices, computer systems and databases to communicate and exchange data with each other. Instead of information being limited to one system or location, information becomes available to many different stakeholders in the health care ecosystem, such as mHealth services, clinics, labs, pharmacies, etc.

This gives stakeholders a more complete picture of patient history, hence enabling more effective care. It also allows for a more holistic understanding of system wide trends, empowering Ministries of Health and Public Health officials to plan and allocate resources more efficiently.

In particular, some of our partners are exploring:

• **Integration of birth registration via digital identity systems**: Once a child is registered, the registration can be linked to an mHealth service. This allows the service to send out timely immunisation reminders, track immunisations and hospital visits, and deliver highly relevant personalised content to the user. When combined with AI telemedicine, this also enables more precise remote diagnostics and recommendations, since the system has more information about the patient's history.

• **Integration of mHealth service databases with Ministry of Health (MoH) databases**: Currently, many MoHs still rely on paper ledgers provided by clinics for health data. This is highly inefficient and provides limited data points. Accessing mHealth service data allows MoHs to collect health data more efficiently and completely. Having more complete data enables them to better identify needs across the country and distribute resources more effectively. In addition, it can allow them to determine medical crises quicker and respond accordingly, potentially saving many lives.

As interoperability becomes more important for health care systems, mHealth service providers have to ensure that their service follows common standards to ensure compatibility with the larger system. User research is important for understanding the needs of various stakeholders, allowing for the design of interfaces that focus on these stakeholders' specific needs and making large amounts of data usable for them.

To address these considerations, we recommend reading:
• Chapter 3: The aspiration of mobile health products often does not resonate with user aspirations.
• Chapter 9: Continuous Iteration.

THANKS TO...