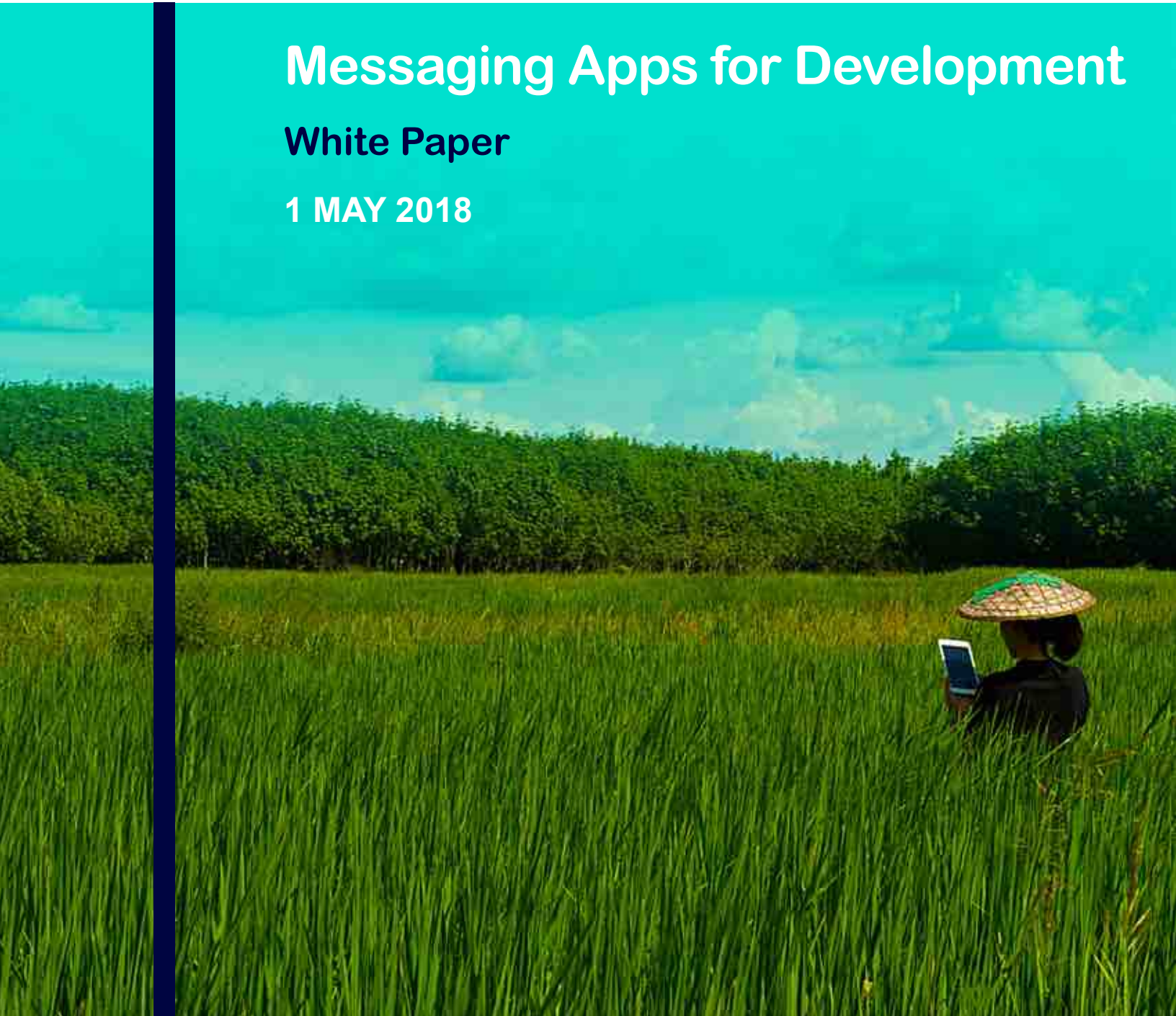


Messaging Apps for Development

White Paper

1 MAY 2018



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About the Authors and Editors

The Digital Impact Alliance (DIAL) aims to realize a more inclusive digital society in emerging markets, in which all women, men and children benefit from life-enhancing, mobile-based digital services. A partnership among USAID, the Bill & Melinda Gates Foundation, the Swedish government and the United Nations Foundation, DIAL's efforts help accelerate the collective efforts of government, industry and development organizations to realize this vision.

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Glossary

| Term | Definition |
|---|---|
| API | An application programming interface allows different software/applications to talk to each other and share data. |
| Artificial Intelligence (AI) | AI is a subfield of computer science in which human intelligence processes are simulated by computer systems. These processes include learning (acquiring information and creating rules for using it), reasoning (using the rules to reach conclusions), and self-correction. |
| Chatbot | A computer program designed to simulate conversation with human users most often via text-chat. |
| Chat Group | A virtual group of messaging app users in which members can send messages that are received by all other members, enabling group conversations and media sharing. |
| Direct Message | Private message sent between two users of a messaging app or social media platform. |
| Facebook Free Basics | A mobile application that provides access to limited Facebook services and a set of partner websites without incurring mobile data fees. |
| Facebook Messenger | Messaging application. |
| Facebook Messenger Lite | A version of Facebook Messenger designed for environments with a low-bandwidth connection. |
| Facebook Messenger Secret conversations | A Facebook Messenger Feature but not a default setting. Individual Facebook Messenger users can opt to turn the feature on for specific one-to-one conversations, which provides end-to-end encryption for that conversation. The encryption makes the messaging content inaccessible to Facebook and other third parties—anyone other than the sender and receiver. However, it does not necessarily protect their metadata. Secret conversations are not available for group chats or chatbots. |
| Facebook Page | An public profile on Facebook, typically for businesses, organizations, or public figures. |
| IVR | Interactive voice response is an automated telephone information system that speaks to the caller with a combination of fixed voice menus and data extracted from databases in real time. The caller responds by pressing digits on the telephone or speaking words or short phrases. |

| Term | Definition |
|-----------------------------|---|
| Machine Learning | A field of artificial intelligence in which the building of data analysis models is automated. Machine learning tools decipher and use large data sets to adjust their own parameters, without being reprogrammed by a human, effectively enabling computers to learn and adapt through experience. |
| Missed Calls | A telephone call that is deliberately terminated by the caller before being answered by its recipient. The caller does not incur any charges. The recipient receives a notification of the missed call and call or text back to the caller at the recipient's expense. |
| MNO | A mobile network operator is a telecommunications service provider. MNOs might sometimes be referred to as a "phone company", though they do not necessarily or primarily sell mobile phones. MNOs own telecom infrastructure for hosting and managing mobile communications— wireless voice, text, data communication— for its subscribers. between the subscribed mobile users in the same and other wireless and wired telecom networks. |
| Natural Language Processing | NLP is a field of artificial intelligence that enables computers to analyze human language and text inputs through software that generates and understands natural languages. This allows computers to interpret human language commands rather than just the formal syntax of computer language and respond in human language and syntax. |
| Reverse Billing | When charges for phone calls or text messages are paid by the person or organization receiving them instead of the person making or sending them. |
| Smartphone | A mobile phone that allows users to make voice calls, send texts, access the internet and run applications through a cellular network and Wi-Fi. |
| SMS | Short message service is used to send text messages to and between mobile phones using globally standardized protocols. Messages can typically be up to 160 characters in length. |
| Telegram | Messaging application. |
| Telegram Channel | A Telegram feature that allows users to send a message to multiple recipients at once. Unlike with WhatsApp broadcast lists, recipients cannot reply to the creator nor to other list members. Telegram channels also differ in that they can be made public and discoverable through Telegram's search feature, and individual subscribers can invite others to join. |

| Term | Definition |
|--------------------------|---|
| Telegram Secret chat | A Telegram feature, but not a default setting. Telegram users can opt to turn the feature on for specific one-to-one conversations, which provides end-to-end encryption for that conversation. The encryption makes the messaging content inaccessible to Telegram and other third parties—anyone other than the sender and receiver. However, it does not necessarily protect their metadata. Secret chat is not available for group chats, channels, or chatbots. |
| Telegram Supergroup | A type of Telegram chat group consisting of more than 200 and up to 100,000 people. New members instantly have access to the group's entire message history. Groups that exceed 200 people are automatically converted to supergroup status, though Telegram users can also create their own. Supergroups have a unified history, so deleted messages will always disappear for everyone in the group, not just the sender. For all supergroup members, message notifications on the phone app are automatically muted. |
| USSD | Unstructured supplementary service data is a mobile phone communication channel in which messages are sent between mobile phone users and an application in the mobile network. USSD works on all mobile phones, not just smartphones. To communicate via USSD, users enter USSD codes (also known in some places as “star-codes”) into a mobile phone as if making a phone call. Pressing ‘send’ generates a menu-based system that users interact with. Messages are not stored on the user’s phone, unlike SMS. USSD is most commonly used to top-up airtime credit balances or access menus of features such as mobile-money wallets and data-plan selection. |
| Viber | Messaging application. |
| WhatsApp | Messaging application. |
| WhatsApp Broadcast Lists | Broadcast Lists are a WhatsApp feature that allows users to create a list of several contacts and send a message to all at once. Lists can be saved, allowing the creator to repeatedly send broadcast messages to the contacts, without having to select them each time. The creator can send messages to all list members, and members can respond directly to the creator but cannot send messages to the other members. |
| Zero-Rating/Zero-Rated | When a MNO does not charge consumers a fee for calling or texting a certain phone number or accessing a particular internet service, that number or internet service is said to be ‘Zero-Rated’. |



1. Executive Summary

In 2017, the Digital Impact Alliance (DIAL) commissioned [Echo Mobile](#) to examine how and to what effect international development organizations have used messaging apps, capturing lessons for development and technology practitioners. Those lessons are synthesized in this paper and exemplified in the appended [project summaries](#) and [case studies](#). From in-depth research into these cases, Echo identified four common use cases where messaging apps have been effective for international development, across borders and within different sectors:

1. **One-to-One Matching of People With Resources**
2. **Group Peer-to-Peer Learning and Behavior Change**
3. **Information Broadcast**
4. **Crowdsourced Reporting and Feedback**

For all of these use cases, Echo found that the following considerations are essential for successful project design when deploying messaging apps for development:

1. **Go Where the People's Attention Is:** For organizations deploying messaging apps for development, the most critical factor that determined success was whether target audiences were familiar with the apps. If people are unfamiliar with an app, organizations should use something else or combine channels.
2. **Focus on User Needs Over Implementer Needs:** Organizations that deployed messaging apps successfully conducted extensive user research first. Each tested their assumptions about users and chose messaging apps based on user appeal, not ease of integration, and in consideration of the costs to users, not implementers. During and after testing, each maintained flexibility, adapting to emerging needs and scale.
3. **Engage More Users With Multiple Channels:** Messaging apps are cheaper for organizations than SMS but can be costly to users, so smartphone users without Wi-Fi still prefer free SMS. Complementary channels also enable organizations to extend their reach to those without smartphones or internet access. However, messaging apps can sometimes be deployed when SMS cannot.
4. **Prioritize Communications Content and Personnel:** Development organizations had the most success with messaging apps when they built and maintained teams dedicated to continuous content development, as well as sector experts and data analysts.
5. **Partner for Scale and Technical Expertise:** Many organizations achieved scale and impact by partnering with the messaging app developers, third-party technical service partners, or government or creative agencies.

The following considerations are essential when selecting specific messaging apps:

- 1. Privacy and Security:** To protect user information and personal security, especially vulnerable groups like refugees and pregnant women, development organizations should consider different information types and stakeholders when reviewing encryption protocols, data policies, and anonymity features and policies.
- 2. Operational Requirements:** Not all messaging apps have features tailored to institutional users like development organizations, which can have implications on operational efficiency. Development organizations should consider apps' integration and account-sharing options, which have implications on device requirements.
- 3. Scalability and Searchability:** Some messaging apps limit the size of group chats and lists, and some have limited sharing and search features, all of which can make it difficult for development organizations to scale messaging app initiatives.

2. Introduction and Conceptual Framework

By 2018, 3.6 billion people were using mobile messaging applications—nearly half of humanity.¹ This has been both a driver and a result of increased connectivity in Latin America, the Middle East and Africa, which in 2017 surpassed the United States and Europe’s combined global share of mobile connections and internet users and is now second only to Asia.² Africa alone reached 191 million social media and messaging app users, 90 percent of whom are mobile and the majority of whom use only WhatsApp and Facebook Messenger,³ the world’s most popular messaging apps.⁴

This rapid growth presents an unprecedented opportunity for the international development and humanitarian sectors to engage directly with the populations they serve. To better understand this opportunity and capture lessons from organizations already using messaging apps, DIAL commissioned this research by Echo Mobile with three objectives:

1. Understand how and to what effect messaging apps have been used for development
2. Understand the circumstances and use cases where messaging apps have been most effective for development across different sectors, regions and organizations
3. Provide feedback to app developers on making products more effective for development

The findings are intended to benefit the technologists who develop messaging apps as well as the development practitioners and entrepreneurs who use them. With these audiences in mind, DIAL and Echo Mobile explored diverse cases, including advocacy groups in Latin America and South Asia, social enterprises in Africa, private development firms in Central Asia, global multilaterals, and more. Echo conducted more than 50 interviews with development practitioners, digital development experts, technology providers and entrepreneurs. This report synthesizes the resulting insights, with cases summarized and analyzed in:

1. A [Project Catalog](#) containing brief summaries of 14 organizations that have used messaging apps, with results and lessons from each.
2. Six in-depth [Case Studies](#) examining how organizations chose and deployed messaging apps, their successes, challenges, and discoveries.
3. A website (www.messengers.digitalimpactalliance.org) that provides access to all research content and hosts an ongoing discussion.

1 “The Messaging Phenomenon Has Hardly Begun,” Medium , Nov 23, 2015

2 “This is the most popular messaging app in Africa,” WeForum, Feb 16, 2018; “Digital in 2017: Global Overview,” We Are Social, Jan 24, 2017; and “WhatsApp’s slow-paced innovation is leading it to dominance in the world’s biggest markets,” Quartz, Feb 5, 2018.

3 “This is the most popular messaging app in Africa,” WeForum, Feb 16, 2018

4 “Digital in 2017: Global Overview,” We Are Social, Jan 24, 2017

The cases referenced in this report and summarized and analyzed in the appended [case studies](#) and [project catalog](#) are as follows:

| Project | Org | Country | Active | App(s) | Use case |
|--|--------------------------|---------|----------------|--------------------------------|------------------------|
| Agricultural Value Chain (AVC) | USAID / DAI | UZ | 2016 - present | Telegram | Group Peer-to-Peer |
| Amigo Anônimo | Alcoholics Anonymous | BR | 2017 - present | Facebook Messenger | One-to-One Matching |
| #BangaloreIsBurning | Jhatkaa | IN | 2017 | WhatsApp | Reporting and Feedback |
| DZCareer | Souktel & World Learning | DZ | 2017 - present | WhatsApp Viber | One-to-One Matching |
| Ebola Broadcast Service | BBC Media Action | SL & LR | 2014 - 2015 | WhatsApp | Broadcast |
| Ebola Community Action Platform (ECAP) | Mercy Corps | LR | 2014 - 2015 | WhatsApp | Group Peer-to-Peer |
| Farm.ink | Farm.ink | KE | 2017 - present | Telegram Facebook Messenger | One-to-One Matching |
| Food Bot and AIDA | WFP & InSTEDD | Global | 2016 - present | Telegram Facebook Messenger | One-to-One Matching |
| MomConnect | Praekelt.org | ZA | 2016 - present | WhatsApp WeChat | One-to-One Matching |
| Save Bangalore's Trees | Jhatkaa | IN | 2017 - present | WhatsApp | Information Broadcast |
| Shujaaz | Well Told Story | KE | 2015 - present | Facebook Messenger WhatsApp | Group Peer-to-Peer |
| Tarjimly | Tarjimly | Global | 2017 - present | Facebook Messenger | One-to-One Matching |
| U-Report | UNICEF | Global | 2016 - present | Facebook Messenger Telegram | Reporting and Feedback |

The results of each case vary, but nevertheless make clear that messaging apps have the potential to help development organizations inform, influence, support and understand their audiences in powerful ways. However, realizing this potential depends on adaptive, user-centric project design and dedicated human, financial and technical resources. Organizations must first determine if messaging apps are indeed the right channel, considering their audience, goals and capacity. They will also need to choose the right messaging apps for their context. In short, the same rules apply. To be successful, organizations must select the communication channels and applications most appropriate for their users rather than what is easiest or cheapest to implement, and allocate the necessary resources to manage them.

3. Five Considerations for Successful Project Design

Lesson 1: Go Where People's Attention Is

Why This Matters

Development organizations that introduced messaging apps to groups of people who were not already familiar with them struggled to compete for users' attention against their prevailing preferences—whether that be other messaging apps, voice calls, SMS or social media. Users are unlikely to use their finite mobile data packages and time to download and learn a new app when they are already comfortable with a different one, especially if the new app serves only one new purpose.

Organizations that were most successful used messaging apps that were already popular in that community for communicating with family and friends, conducting business, and staying up to date on current events. By leveraging familiar communications channels, development organizations removed the need to promote and fund their adoption, train users, and troubleshoot technical issues. Instead, they built on existing behaviors and habits in order to drive and sustain engagement.

Tips for Implementers

The popularity of different communication channels varies across emerging markets, depending on technical and financial accessibility for users as well as regulatory, infrastructural, and educational challenges. In some contexts, one or more messaging apps are already widely used, and thus might be leveraged for development. In other places, SMS or voice calls (IVR or call centers) continue to dominate and may be preferable. What is critical for development organizations is that they research and understand these preferences.

- **Understand regional communication preferences:** While Echo Mobile did not conduct a global survey of messaging app popularity, in-depth interviews with development practitioners and entrepreneurs around the world indicated that Facebook Messenger and WhatsApp are the most familiar messaging apps within emerging markets and among development practitioners. However, they are not yet ubiquitous.

This conclusion is supported by SimilarWeb's December 2017 research, which found that WhatsApp or Facebook Messenger were the most popular messaging app in 89 percent of countries, with WhatsApp the most popular in more than half. Viber was a distant third as the most popular messaging app in 8 percent of countries, with usage concentrated in Western Europe and Ethiopia, the only country in either Africa or Latin America where WhatsApp and Facebook Messenger are not the most popular apps.

WhatsApp and Facebook Messenger were also most popular in nearly every Asian country outside of China, though their dominance was diluted by smaller regional apps led by Line, Imo, and WeChat, followed by Skype, Zalo, QQ, and BlackBerry Messenger. According to SimilarWeb,

Most Popular Messaging App in Every Country

(Android App Data: December 2017)



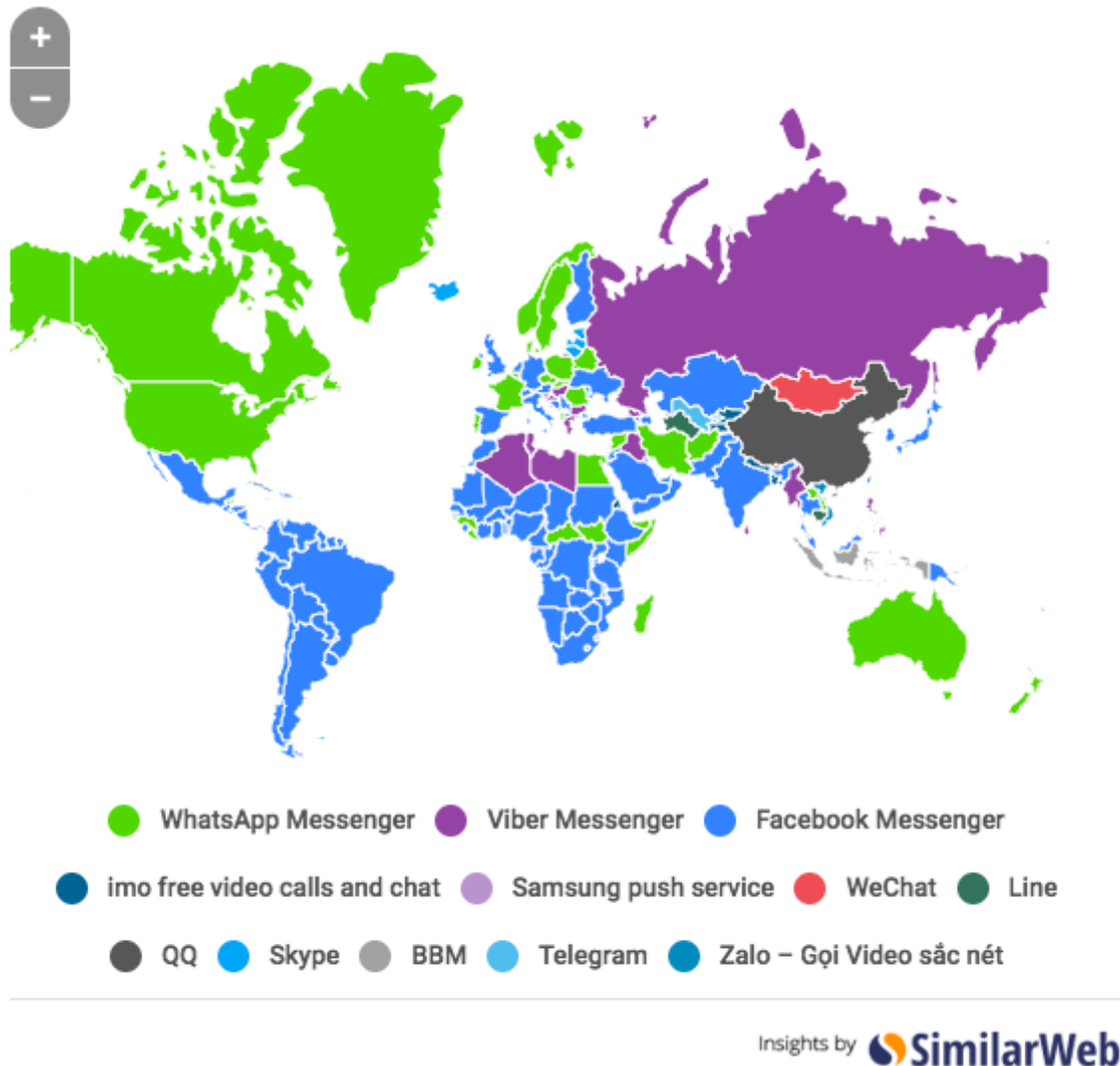
Insights by **SimilarWeb**

Telegram was the most popular app only in Iran and competing with Imo in Uzbekistan and Viber in Ethiopia.⁵ Several development organizations interviewed by Echo had tested Telegram due to its accessible API and powerful features. (See Section 4: [Considerations for Choosing a Messaging Tool](#).) Yet all ultimately switched to other channels that were more popular in their areas of operation. The one exception was USAID's Agricultural Value Chain Activity (AVC) project, which leveraged Telegram's popularity in Uzbekistan among commercial horticulturalists.

⁵ Other studies show Telegram as the most popular messaging app in both Ethiopia and Uzbekistan. See: "In a Continent Dominated by WhatsApp, Ethiopia Prefers Telegram," Quartz, January 8, 2018.,

2nd Most Popular Messaging App in Every Country

(Android App Data: December 2017)



- **Understand communication preferences and behavior among your target audience:** Exploring trends by country and region is only the first step. Implementers should also conduct project-specific context analysis to understand how their target audiences communicate, which may differ from the national or regional norm. For example, while Imo is the most popular messaging app in Uzbekistan, [AVC](#) found that Telegram was preferred by horticulturalists.

Similarly, while Facebook Messenger is the most popular messaging app in Algeria, Souktel and World Learning surveyed how Algerian youth use messaging apps for employment and found that Viber and WhatsApp were preferable. The finding led them to forgo Facebook Messenger integration for their [DZCareer](#) job matching platform. WhatsApp is Kenya's most popular messaging app, but [Farm.ink](#) found from focus group discussions and low-fidelity prototyping that farmers more actively use Facebook Messenger and groups to share and access farming information.

Demographics Matter



Location



Age



Gender

Throughout project design and implementation, target audience demographics are a critically important consideration for determining whether to use messaging apps and which ones to use. Echo's research found that the following demographics were particularly important:

- **Location:** Multiple organizations highlighted the challenges of using messaging apps to engage populations in rural areas, where access to the internet and smartphones is lower. This digital divide contributed to challenges for the Ebola Community Action Platform ([ECAP](#)) project in Liberia, where Mercy Corps struggled to increase WhatsApp use among its community mobilizers, the majority of whom were recruited from rural areas.

The same rural-urban divide persists in Kenya, where [Well Told Story](#) (WTS) found that 66 percent of Kenya's urban youth have access to the internet and 48 percent have social media accounts, compared to only 41 percent and 27 percent of rural youth, respectively.⁶ As a result, WTS continues to use SMS in combination with messaging apps and other channels to effectively engage both urban and rural populations.

Rural/urban divides also exist between different messaging apps, as the Praekelt Foundation discovered when experimenting with WeChat, Facebook Messenger, and WhatsApp integrations for its [MomConnect](#) platform in South Africa.

- **Age:** [ECAP](#) and [WTS](#) also suggest that messaging apps may be more effective with younger audiences. For ECAP, the overwhelming majority of WhatsApp engagement came from the 25 percent of community mobilizers who were in their 20s. Similarly, WTS data shows that mobile phone and internet use among Kenyans in their 20s is roughly 20 percent higher than the national average.⁷

UNICEF's [U-Report](#) team, as well as a joint team from the World Food Programme's (WFP) mobile Vulnerability and Mapping ([mVAM](#)) unit and [InSTEDD](#), both observed similar age trends among their beneficiary populations. These observations influenced both organizations' experimentation with chatbots as a way to reach their younger beneficiaries. The same age trends in Brazil influenced Alcoholics Anonymous (AA) to use Facebook and Facebook Messenger as its primary channel for engaging teenagers about alcohol abuse.

- **Gender:** Global data shows that men have greater access to the internet and smartphones than women. The digital gender divide is highest in the world's least developed countries and especially stark in African nations.⁸ By relying on messaging apps that require internet access and smartphones, development organizations risk leaving women out of their engagements.

6 [#Shujaaz360](#), May 2016

7 [#Shujaaz360](#), May 2016

8 International Telecommunications Union, "[ICT Facts and Figures 2016](#)"; Pew Research Center, "[Smartphone Ownership and Internet Usage Continues to Climb in Emerging Economies](#)," February 22, 2016.

Both [Farm.ink](#) and [WTS](#) observed this trend when deploying Facebook and Facebook Messenger in Kenya. For WTS, the findings reinforced a commitment to SMS as a more inclusive channel and ignited efforts to promote more gender-conscious content through its digital channels. Farm.ink took similar action to counter the growing gender imbalance among its users by putting women at the center of its Facebook ad imagery, messaging, and targeting, which increased its female user base from 30 percent to 49 percent.⁹

However, other organizations reported no evidence of a digital gender divide, and some found that messaging apps actually enabled and enhanced gender inclusion. [AA Brazil](#) promoted its Facebook Messenger chatbot exclusively through digital channels and with no intentional gender focus, but found that a significantly higher percentage of women used the chatbot in its first year. [AVC](#) also observed significantly more gender balance among the horticulture farmers who participated in its Telegram chat groups (21 percent female) than in the horticulture sector overall (5 percent female).

Lesson 2: Prioritize User Needs Over Implementer Needs

Why This Matters

The first [Principle of Digital Development](#) is “design with the user.”¹⁰ The experiences of development organizations reviewed in the appended [case studies](#) and [Project Catalog](#) underscore the importance of this principle when deploying messaging apps for development. Organizations that prioritized implementation concerns and failed to test assumptions about user needs struggled to scale and sustain their engagement or realized too late that they were solving the wrong problems. This forced some to eventually change how they used messaging apps or abandon them altogether. Conversely, those organizations that invested early in understanding user needs avoided these costly project design pivots.

Organizations and teams like [WFP](#) adapted early based on the results of field testing that revealed a better way to meet user needs, while [WTS](#) and [ECAP](#) adapted their approach later, when their scale exceeded their management capacity. In each of these cases, user behavior and feedback were monitored continuously for insights into user needs and behaviors, and the organizations remained flexible and adaptive in their use of messaging apps in order to meet those needs effectively. Organizations that sought to save time and money by skipping user-centered design research, relying instead on untested assumptions about their needs or making decisions based on ease and cost of integration, ultimately failed to scale and sustain their efforts. Many also bore significant unexpected downstream costs.

9 Georgia Barrie, “[How We Closed Our Gender Gap in 5 Days](#),” Medium, November 28, 2017.

10 “[Principles for Digital Development](#),” DIAL

Tips for Implementers

- **Conduct user research and testing:** Organizations that committed resources to intensive, iterative user design research were able to identify flaws in their assumptions and project design before committing to technical development or implementation. The joint [mVAM/InSTEDD](#) team spent one year conducting user-centered research and testing for WFP's Food Bot before abandoning the concept altogether. Based on user findings, the team pivoted to building AIDA, a more flexible platform to allow WFP's many country teams to quickly create and deploy their own locally relevant chatbots. Low-fidelity prototyping with users in four countries made clear that a single chatbot would not effectively meet the needs of WFP's beneficiaries and country teams.

[Farm.ink](#) made similar adjustments after preliminary user testing with farmers made clear that the company was solving the wrong problem first. For a chatbot to successfully match farmers with buyers during harvest season, it would first need to attract and sustain a critical volume of users in the preceding months. Before pursuing the market matching use case, Farm.ink adjusted its chatbot to connect farmers with each other and with technical information. The company plans to reintroduce its commercial use case once the service reaches scale.

- **Adapt for scale:** If unable to conduct sufficient user-centered design research at the outset, organizations should expect to adapt their use case when a project scales based on discoveries about user needs. This is especially true when using messaging apps that restrict large-scale communications, because user behavior may lead to scales that the organization is no longer able to manage under their original use case. (See Section 4: [Scalability](#).) WhatsApp's chat group limit eventually led [WTS](#) to create and manage more than 20 groups at once as more fans sought to engage its characters via the messaging app. This became unmanageable and led WTS to adjust its use case for WhatsApp, pivoting to an entirely hands-off approach in which fans administered the groups and led the conversations.
- **Pick apps based on user appeal, not ease of integration:** Some development organizations tried to introduce an unfamiliar messaging app because it had powerful or suitable features or integrations, only to later switch to a less powerful but more popular option. Organizations that selected apps based on their appeal to users had more success than those that selected apps based on features or integration options.

For example, [mVAM/InSTEDD](#), [Farm.ink](#), and [U-Report](#) all experimented with Telegram chatbots because the API was easy to integrate with, but achieved significantly higher engagement after switching to Facebook Messenger, which was far more familiar to users. In South Africa, Praekelt first integrated [MomConnect](#) with WeChat because the team was familiar with the WeChat API. However, the WeChat integration failed to increase engagement. Praekelt later succeeded with WhatsApp, a more popular app with a more complex integration.

- **If messaging apps are unfamiliar, plan for additional training, support, and risk, or choose a different channel such as SMS:** In some countries or within certain populations, messaging apps may not have proliferated significantly enough to justify their use by development organizations. This is most likely to occur among low-resource populations where the majority lack the financial

or technical capacity to access smartphones and mobile data packages, or where the mobile infrastructure does not yet sufficiently support their use. This remains the case for nearly 80 percent of Africans and roughly half the population in Latin America and the Asia Pacific region.¹¹ In these cases, using messaging apps requires significant resources for training, technical support, and content management, the costs of which may outweigh the benefits of messaging apps.

In 2014, Mercy Corps tried to use WhatsApp to facilitate peer-to-peer learning as part of [ECAP](#), but like most Liberians at the time, the community mobilizers were almost totally unfamiliar with the app. Despite costly group trainings, ECAP ended up allocating considerable time and personnel to providing unanticipated technical support and hands-on curation of group chats. Ultimately, less than half of mobilizers ever used WhatsApp in the field, and even fewer shared meaningful learning material. When ECAP was extended, WhatsApp was dropped in favor of SMS, and peer-to-peer learning efforts were discontinued.

- **Understand the costs your users will pay and their willingness to do so:** To successfully use messaging applications, development organizations must understand their users' financial behaviors and limitations, which should be a focus of user research, testing, and pilots. Messaging apps incur costs for users, primarily in the form of mobile data, for which users pay local mobile network operators. These costs are incurred by users when installing (downloading), using, or updating their messaging apps.

All user messaging app costs can be avoided if the users have access to reliable and free Wi-Fi internet. This is the case for most [DZCareer](#) users, according to Souktel and World Learning's initial user survey prior to developing the platform. The organizations assessed youth willingness to pay for both mobile data and SMS. The findings revealed that most youth had access to Wi-Fi and could use messaging apps for free, which influenced Souktel's decision to pursue Viber and then WhatsApp integration.

In other cases, development organizations found that their users could not access regular Wi-Fi and were limited in their ability to pay for mobile data to support messaging app installation, usage, and maintenance. The [mVAM/InSTEDD](#) team conducted hands-on design research focused in part on how potential users access the internet and found that most refugees and internally displaced people did not have access to Wi-Fi. The team then explored how often people purchased mobile data and in what quantities, finding that many rarely had sufficient data to engage with WFP through Facebook Messenger.

This led to more targeted user outreach focused on youth and community leaders, who tended to have and use mobile data. The research also unveiled unexpected lessons about how some users avoided installation and update costs and minimized usage costs by accessing Facebook Messenger through their web browser, which had critical design implications for the Food Bot and then for AIDA.

¹¹ "The Mobile Economy 2018", GSMA.

Lesson 3: When Possible, Engage More Users With Multiple Channels

Why This Matters

Messaging apps remain just one of a wide range of communication channels accessible to development organizations and their target audiences. Echo's research found that development organizations that were most successful at meeting the needs of the most users were those that combined messaging apps with other channels, most notably SMS. Using SMS ensures that those who lack access to a smartphone can still access development services and resources.

Even for those who do have smartphones, development organizations can deploy zero-rated or reverse-billed SMS in many countries, making all incoming and outgoing messages free for the user. Meanwhile, mobile data is relatively costly and Wi-Fi is not always available, making messaging apps more expensive and less preferable for many users.

However, messaging apps usually provide a cheaper and preferable option for implementers. Organizations incur higher messaging costs when conducting zero-rated or reverse-billed SMS messaging, which also requires third-party providers, technical integrations with MNOs, and/or the maintenance of multiple systems. Development organizations should weigh the costs and benefits of messaging apps against SMS and prioritize whichever is preferable and accessible to more users. Where possible, they should deploy both to increase scale and impact.

Tips for Implementers

- **Assess how many users can access messaging apps and who cannot:** While messaging apps are becoming increasingly popular in emerging markets, they remain far from ubiquitous. Africa is the fastest-growing region in the world for mobile subscriptions, but smartphone users remain a minority. In 2017 the percentage of feature phone users grew while the percentage of smartphone users shrank.¹² To extend reach, development organizations should still consider combining messaging apps with non-internet-enabled communication channels like SMS, IVR, and USSD, which are accessible to anybody who has a mobile phone, not just those with smartphones.

For its first three years of operation, [MomConnect](#) was built and scaled exclusively through these basic channels before Praekelt began experimenting with messaging apps. South Africa was the largest mobile market in southern Africa, but the majority of people did not have smartphones. Since piloting its integration with WhatsApp, Praekelt has found that just 60 percent of new users have WhatsApp accounts. Continuing to maintain multiple channels thus allows MomConnect to reach a larger audience.

[WTS](#) also maintains a variety of communications channels, including WhatsApp and Facebook Messenger, but their SMS shortcode is used more frequently by fans, especially those in rural and lower-income areas. Overall, nearly 600,000 fans send more than 90,000 monthly SMS in Tanzania

¹² "Strong Mobile Phone Growth in South Africa," BusinessTech, March 17, 2018;

"SA Experiencing 'Unique Mobile Penetration' – GSMA report" SA Promo Magazine, July 2017.

and Kenya, compared to an average of fewer than 9,000 monthly messages on WhatsApp and Facebook Messenger. As with MomConnect, the combination allows WTS to engage different audience segments and demographics for maximum reach and impact.

Conversely, [ECAP](#) attempted to conduct peer-to-peer learning exclusively through WhatsApp, even though the majority of users did not have smartphones and were more familiar with SMS. This commitment to a single messaging app channel required Mercy Corps to distribute smartphones and conduct training and support on how to use them, and ultimately lead to a shift back to SMS.

- **Assess the cost savings for users provided by multiple channels:** While messaging apps can be downloaded, maintained, and used for free only by those with access to Wi-Fi, development organizations can make basic phone channels like SMS, IVR and USSD free for all of their users all of the time. In many emerging markets, subscribers are charged by MNOs for some incoming and all outgoing SMS messages and calls, but organizations can apply for private SMS shortcodes, IVR numbers, and USSD codes that allow their target audiences to avoid any costs. In some cases, these numbers are reverse billed, such that the organization pays for all incoming and outgoing communication, while users pay for neither. They can also be zero-rated, such that communications sent from the organization to users are charged to the organization, and communications sent from users to the organizations are free for both parties.

In cases where these free alternatives are available, development organizations may find that messaging apps offer a superior user experience, but one that is only sufficiently valuable to a small minority of users, while the majority prefer the free options.

Praekelt's efforts to integrate [MomConnect](#) with WhatsApp provide a particularly strong example. Within three months of offering WhatsApp communications to new users, Praekelt observed that while 60 percent of new users had WhatsApp accounts, only a third of them had selected WhatsApp, comprising just 1 percent of total MomConnect users. These users produced 50 percent of all messaging traffic, suggesting a superior experience, but the majority still chose zero-rated SMS. MomConnect surveyed those who selected SMS over WhatsApp and found that 90 percent of them did so because of the relative costs of data.

Jhatkaa, an Indian advocacy organization, had a similar experience. Having previously used free SMS to communicate with supporters of its [Save Bangalore's Trees](#) campaign, Jhatkaa attempted to introduce WhatsApp. While 96 percent of Indian smartphone owners use WhatsApp, 99 percent of Jhatkaa's supporters opted to stick with SMS, which Jhatkaa ultimately attributed to the relative cost of data.¹³

- **Assess the costs that multiple channels can add to a project:** While free channels cost less for users, they often cost more for development organizations compared to messaging apps. [Jhatkaa](#) is a clear example, having initially tried to shift its 200,000 supporters over to WhatsApp because SMS costs had become unsustainable. For [MomConnect](#), WhatsApp is also much cheaper, but only because of Praekelt's special arrangement with WhatsApp to pilot its integration. If WhatsApp eventually begins to charge Praekelt, as Praekelt expects, the costs are not yet known.

¹³ "In India, WhatsApp a Chat Apps Chartbuster," The Hindu, September 7, 2016.

- **Assess other complications that multiple channels can add to a project:** Adding basic channels alongside a messaging app can create other complications outside of messaging costs. Using SMS, IVR, and USSD effectively requires either a third-party, value-added communications platform or direct integration with MNOs. Both options require the cooperation of the local MNOs, but in some countries this may not be possible because of the government, emergencies, or the MNOs themselves. In these cases, multiple channels may not be possible and messaging apps may be the only or best option.

Emergencies such as epidemics can have a major impact on the human resources of MNOs, as some staff succumb to the epidemic itself and others with means leave the area. This can hinder humanitarian teams seeking to integrate as part of their response. Organizations considering whether to use messaging apps or integrate with MNOs should conduct an MNO capacity assessment before pursuing a direct integration, and if capacity is limited, they should proceed with caution or consider whether using only messaging apps will be sufficient.

During the Ebola outbreak, Liberian MNOs suffered major personnel shortages, which hindered [ECAP](#)'s early efforts to deploy an SMS platform. The majority of ECAP's SMS were never delivered to recipients, and Mercy Corps was only able to use SMS effectively once the disease was brought under control in 2016. By contrast, ECAP's WhatsApp experiment was not reliant on an MNO integration, and the overwhelming majority of WhatsApp messages were successfully delivered.

Even outside of emergency contexts, not all MNOs are willing to enable technical integrations for development organizations, in which case messaging apps may prove more reliable as an exclusive channel. This was [U-Report](#)'s experience in Myanmar, where the country's major state-owned MNO did not agree to zero-rate U-Report's local number, preventing free messaging for its youth U-Reporters. Instead, U-Report used an early Facebook Messenger chatbot, which was able to engage 15,000 young people without any MNO cooperation.

- **Prepare to manage parallel systems:** Even if [ECAP](#) had been able to utilize both SMS and WhatsApp in Liberia, it would have had to manage both separately. WhatsApp did not have an integration option at the time, so could not be connected to the project's SMS platform. Jhatkaa had the same experience and was unable to combine its SMS and WhatsApp messaging. [WTS](#) maintains three separate systems, with a team dedicated to managing all SMS communication through a third-party SMS platform¹⁴ and another dedicated to managing Facebook and WhatsApp communications.

Only [MomConnect](#) has been able to integrate SMS and WhatsApp into a single platform, and only because of its unique access to WhatsApp's pilot integration. By comparison, Souktel and World Learning's [DZCareer](#) platform is fully integrated with a free SMS line, automatically pushing out messages about job listings to groups of relevant users. However, to provide the same service through WhatsApp, human administrators must receive web-based notifications from the platform and manually send them to relevant WhatsApp lists.

¹⁴ For its SMS communications, WTS uses the [Echo platform](#), Echo Mobile's proprietary communications and information management platform.

Lesson 4: Prioritize Communications Content and Personnel

Why This Matters

Messaging apps and chatbots cannot be effective without considerable human support and involvement, either in the form of well-staffed, in-house teams or outsourced partners. (See [Lesson 5](#).) Personnel are critical for producing content, conducting continuous communications, and monitoring and analyzing user behavior and data for project improvements and decision-making. Each of these roles requires sectoral expertise and familiarity with the target audience. Engineering capacity may also be essential for any technical integration or chatbot development, but even a fully integrated and automated messaging system still requires considerable human intervention to monitor user behavior and provide effective, well-designed content.

Tips for Implementers

- **Dedicate personnel to monitor users and create content:** Projects that have been most successful using messaging apps have teams dedicated to monitoring user behavior and producing relevant content. At [WTS](#), the Social Media team engages and monitors fan conversations, while the Research and Learning team reviews user analytics. Both inform behavior change programming and ensure sustained fan engagement. [AVC](#) does the same, dedicating a public outreach coordinator to monitor Telegram and provide assessments to the video production team, which collaborates with agricultural experts to produce video content that is responsive to user needs and interests.

By comparison, [ECAP](#) initially dedicated no personnel to developing learning content for mobilizers or to monitoring or engaging their WhatsApp chat groups, assuming that mobilizers would drive peer-to-peer conversations organically. Nor did they allocate resources to hire outside consultants to do so. When peer-to-peer engagement failed to materialize, ECAP's monitoring and evaluation staff were forced to spend evenings instigating and curating conversations within the chat group and cross-posting content.

Chatbots may require less continuous content creation, but more up-front content development and testing. [AA Brazil](#) relied on its pro bono creative agency, J. Walter Thompson (JWT), to conduct extensive research and interviews with recovering alcoholics in order to develop relevant automated conversational content.

- **Maintain sectoral expertise:** Demonstrating strong sectoral expertise is critical to building and retaining the trust and engagement of users with reliable content and remaining responsive to challenging questions that will come as a result. [MomConnect](#) relies on a full-time team of public health experts and clinicians who operate the platform's help desk and provide manual feedback to users. [AVC](#) also maintains an in-house team of agricultural technical experts who contribute to video content development and help the Public Outreach Coordinator address complex agricultural inquiries from users.

- **Plan to handle user feedback and inquiries, even if not solicited:** Organizations using messaging apps should plan for their users to contact them directly with expectations of a timely response. Organizations only using group chat or broadcast features will still receive direct outreach from users, and failure to respond can undermine trust in the messaging organization or service.

WTS started using Facebook Pages and WhatsApp exclusively to drive collective behavior changes through public conversations between fans and characters from its Shujaaz media programs. Yet fans soon began trying to contact the characters directly on Facebook Messenger and WhatsApp. Some messages put the organization in an ethical dilemma as young fans sought help with mental health issues or sent compromising photographs of themselves. When their overtures were ignored, fans became disenchanted with the Shujaaz characters, which undermined the Shujaaz mission and commitment to authenticity. To maintain fan trust, the WTS Social Media team now commits considerable resources to responding to these one-on-one conversations.

Similarly, BBC Media Action's WhatsApp Ebola broadcast service in Sierra Leone was conceived only as a one-way service, so personnel were dedicated to curating and broadcasting multimedia content only. No plans were made to respond to direct replies from subscribers. When they came, often about hyperlocal Ebola-related rumors or developments, the BBC team had neither the bandwidth nor the expertise to respond, and questions and requests went unanswered, potentially undermining trust in the service.

- **Crowdsourcing may require crowd sorting:** The use of messaging apps for crowdsourcing can help reduce the need for in-house technical expertise. For example, Farm.ink does not produce technical content. Instead, it maintains a space for thousands of farmers to share their own expertise, as well as a chatbot to filter, curate, and deliver it to users. Similarly, Tarjimly offers a Facebook Messenger chatbot that connects refugees with human translators around the world, but it does not hire nor coordinate those translators. Instead, the Tarjimly chatbot provides a channel and matching service to allow translators to provide their services independently and for users to access them and assess their performance. However, importantly, both Tarjimly and Farm.ink are dependent on a chatbot to supplement in-house, offline personnel.

Organizations crowdsourcing content through a messaging app without a chatbot or API integration will require dedicated personnel to sort that content and make it actionable. Souktel requires personnel to manually send job listings from the DZCareer platform to WhatsApp lists, because WhatsApp does not yet offer integrations. Jhatkaa similarly requires personnel to manually map individual GPS locations and images of trash fires, each of which are sent via WhatsApp by supporters of its #BangaloreIsBurning campaign. (See Section 5: [One-to-One Matching of People with Resources](#).)

Lesson 5: Partner for Scale and Technical Expertise

Why This Matters

Several of the development organizations interviewed by Echo were aided by strategic partners that supplemented critical gaps in human or technical resources. These included government ministries that enabled national scale, creative organization agencies that helped generate effective content, and messaging app providers that agreed to let development organizations pilot nonstandard features.

Tips for Implementers

- **Governments can help overcome challenges to scale:** A major challenge for organizations deploying any information and communications technology (ICT) for development is achieving and sustaining nationwide scale. For Praekelt, a government partnership for MomConnect helped overcome this challenge. By becoming an official program of the South African Department of Health, the [MomConnect](#) platform was integrated with the national network of primary public health clinics, creating a greater incentive for pregnant women and mothers to use the service.
- **Third-party developers can help overcome technical limitations:** While technology social enterprises like [Farm.ink](#) and foundations like Praekelt were able to conduct their own technical development, most development organizations lack this capacity. In these cases, organizations that decide to build chatbots or integrations with messaging apps should consider partnerships with third-party technical providers. Such partnerships should be developed extremely early, and organizations should expect them to endure from the design and prototyping stages through product development, management and maintenance.

Several of the development organizations Echo interviewed established successful technical partnerships to achieve impact. From the outset of its chatbot research and experimentation, [WFP's mVAM](#) team partnered with InSTEDD, which designs and develops open source technologies for the social sector. World Learning established a similar partnership with Souktel, a technical firm, to build [DZCareer](#). And [AA](#) in Brazil received critical pro bono development services through a partnership with ChatClub to build its first-ever chatbot.

- **Messaging app providers can help overcome limitations of features and policies:** Even organizations with reliable technical partners can be constrained by the messaging apps themselves. In these cases, where a specific messaging app feature inhibits important development impact, development organizations should pursue partnerships with the messaging app providers. This worked well for [AA Brazil](#) and its partners, which engaged Facebook's Brazil office and the [Facebook Creative Shop](#) to wave some privacy policies for users of the [Amigo Anônimo](#) chatbot. (See Section 4: [Privacy](#).)

Partnerships with providers can benefit both parties, allowing providers to beta test new features and policies and development organizations to achieve impact. BBC Media Action's [Ebola Broadcast Service](#) benefited from a special dispensation from WhatsApp that temporarily lifted the 100-person limit on WhatsApp broadcast lists. (See Section 4: [Scalability](#).) This enabled more than 14,000 Sierra Leoneans to receive lifesaving information from a single WhatsApp list during the Ebola outbreak. Praekelt has secured a similarly unique partnership with WhatsApp to allow [MomConnect](#) to pilot the app's first-ever integration.



However, messaging app providers may not always be willing to engage in partnerships with development organizations. Souktel and World Learning tried to integrate the DZCareer platform with Viber in Algeria, but after considerable negotiations, they were unable to agree with Viber on integration pricing. (See Section 4: [APIs and Integrations](#).)¹⁵

- **Partners can help provide technical content:** Communications personnel are essential to the success of any development initiative seeking to utilize messaging apps for development, and especially for the creation of content that meets user needs. (See [Lesson 4](#).) Many successful organizations and project teams maintain in-house communications teams as well as technical experts in their respective sector, but others have been successful in generating content through partners. In addition to its technical partnerships with Chat Fuel and Facebook, [AA Brazil](#) relied on a pro bono relationship with the J. Walter Thompson (JWT) creative agency, which led efforts to interview recovering alcoholics in order to create realistic and valuable chatbot conversation content for users.

4. Considerations for Choosing a Messaging Tool

While project design considerations transcend individual technologies, not all messaging apps are created equal. Organizations should carefully consider each app's features, policies, and operational requirements before attempting to deploy them for development. Organizations using messaging apps should also regularly review their features and policies, which continue to change over time.



Privacy and Security

When using messaging apps for development, organizations should “address privacy and security,” the ninth [Principle for Digital Development](#). They should seek to understand and consider the different types of information that they and their users might create and make vulnerable through messaging app communication, as well as the different parties with interest in accessing that data. Finally, organizations should consider how each party and their data are impacted by the app's respective privacy policies and features.

Information Types to Consider

Organizations should assess the privacy and security of messaging applications in terms of two distinct types of data or information:

1. **Message content:** Most security features and policies focus on protecting the content of messages sent on messaging apps. Message content includes anything sent from one messaging app user to another, such as photos, documents, videos, audio recordings, and typed text. The importance or value of this *content* is entirely relative and dependent on the sender and receiver of the content, ranging from benign selfies and discussions about sports scores to critical health and financial information, commercial secrets, or whatever else users decide to upload, photograph, record, type, and send to other users.

¹⁵ “Viber for Business,” Viber

- 2. Metadata:** Metadata is, in effect, “data about data,” or data that describes the message content or behavior of users in some way. This can include the sender or receiver’s personally identifiable information (PII), such as their name or phone number, or the identity of a particular chatbot. Metadata can also include non-PII, such as sender and receiver location, the type of content being sent (photo, video, text, etc.), the time at which it was sent, or the size of the content. Aggregate, non-PII metadata can demonstrate broad or segmented user trends, behaviors, preferences, and habits to third-party stakeholders, such as advertisers and messaging app owners.

Parties to Consider

Organizations assessing the privacy and security of different messaging apps should also do so in terms of three parties with interest in messaging content and metadata. Specifically, organizations should consider what kind of protections they might want from these different parties, including which types of data each should or should not be able to see:

- 1. Message senders and receivers:** Messaging content can be created, sent and received by organizational or individual users—from development organizations to their beneficiaries/users, from users to the development organizations, or between users. While there is no situation where a messaging app would block senders or receivers from seeing the content of their own conversation, there are potential scenarios in development where either may wish to keep their PII metadata (name and phone number) private from the other.

These include helpline services like [Amigo Anônimo](#), designed to match users with sensitive personal information. Individual users, some of whom are closeted alcoholics, might wish to remain anonymous to AA Brazil and its partners as they send or receive information. [Tarjimly](#) senders and receivers—refugees and translators— may similarly wish to hide their names and location from each other and from Tarjimly.

Other cases include [Jhatkaa](#) and [U-Report](#), whose users might sometimes exchange information damaging to their governments. The supporters/users act as senders while the organizations act as receivers in these cases, but in other scenarios the roles could be reversed. In either scenario, both the organizations and individual users may wish to have their PII metadata protected from the other to avoid being identified if either’s phone is taken or demanded by governments.

In other cases, organizations like BBC Media Action, [AVC](#) and [Jhatkaa](#) may wish to protect their own PII metadata from individual senders or receivers simply to avoid being overwhelmed by large volumes of incoming communications via other channels (SMS, calls, etc.).

- 2. Third parties between sender and receiver:** When message content is sent to a receiver, that content and the metadata move through infrastructure outside of both parties’ control, such as servers or mobile network infrastructure. During this transit and storage, if viewable by third-party service providers such as MNOs, information can become vulnerable to interception and surveillance by adversaries such as hackers—individuals working to harm the sender or receiver for personal gain or on behalf of an organization with broader political or other motives.

If messaging content is sensitive, organizations may want to consider even benign third parties like MNOs as adversaries from whom conversations should be protected. Ideally, no third parties have access to message content or metadata, so messaging apps primarily rely on encryption to protect both from third-party interception or manipulation. (See [Encryption](#).)

- 3. Messaging app owners:** The providers of messaging apps—the companies that develop and own them—are responsible for creating the features, protocols, and policies that determine which parties can access and use messaging content and metadata, including themselves. These messaging app owners have an inherent need to access some metadata in order to deliver messages and improve their products. Some also have access to user messaging content and use it for commercial purposes. If messaging content is sensitive, development organizations may want to consider even these messaging app owners as adversaries, just as much as hackers, from whom conversations should be protected.

Some messaging app owners have created policies and features that prevent themselves or other third parties from accessing any messaging content. Development organizations may in some cases prefer these apps that prevent the owners from accessing message content. This could be to prevent its use for advertising purposes, which creates an ethical dilemma for development organizations, or to ensure that governments cannot demand the content.

Messaging App Components to Consider

Data Policies

When users create an account with a messaging app, they must accept the app's terms and conditions of use. By doing so, users explicitly agree to the app's published data policies, which make clear which parties have rights to access the messaging content and metadata the user creates and what can be done with that information. These data use and sharing policies may present privacy concerns for development organizations. Development organizations concerned about privacy and security of messaging content and/or metadata should consider the following policies:

- 1. Internal data use and sharing policies:** WhatsApp, Viber, Telegram and Facebook Messenger all reserve the right to access and use metadata to enable certain features like message delivery confirmations and contact statuses, and to inform their business and improve their product. For Viber, this means sharing some metadata with parent company Rakuten Inc.¹⁶

WhatsApp users' metadata is also now shared with its parent company, Facebook, following acquisition in 2016. This includes user phone numbers, which Facebook uses to improve Facebook's targeted advertising. As of May 2018, WhatsApp does not share phone numbers with advertisers, and all messaging content is encrypted and inaccessible to WhatsApp. (See Encryption.)¹⁷ That said, at the time of this writing, WhatsApp's CEO announced his departure from the company, reportedly because he was under pressure from Facebook to weaken privacy policies. Development organizations should watch for further changes in WhatsApp privacy policies and encryption.¹⁸

Exactly how these data sharing policies might impact development organizations using WhatsApp depends on the nature of the organization and project, but Echo did not encounter organizations that expressed concern. In theory, metadata from users communicating with activist organizations like Jhatkaa or organizations dealing with sensitive social issues like WTS could find that these

¹⁶ "Viber Privacy Policy," Viber

¹⁷ "Looking Ahead for WhatsApp," WhatsApp Blog, Aug 25, 2016; "You Have 30 Days To Stop WhatsApp Sharing Your Data With Facebook," Forbes, Aug 15, 2016;

¹⁸ "Jan Koum quits Facebook," TechCrunch, April 30, 2018.

communications impact the ads presented to them on Facebook, but Echo encountered no reports of this being noticeable or relevant.

- 2. External data use and sharing policies:** WhatsApp's encryption prevents it from ever accessing messaging content, and its policies permit only internal sharing of metadata with Facebook. However, Viber and Facebook reserve the right to sell non-PII metadata to external advertisers. Viber generates revenue by enabling targeted advertising based on user metadata, in addition to charging for commercial features and integrations. Facebook's business model, on the other hand, relies exclusively on selling aggregate metadata to advertisers and other advertising services based on its internal collection of user messaging content.

Facebook's data policy states that "we use all of the information we have about you to show you relevant ads."¹⁹ The policy allows Facebook to target advertising to any user segment it identifies based on shared characteristics revealed through metadata and messaging content. This could conceivably allow organizations interested in communicating with vulnerable groups such as refugees or alcoholics, whether for good or ill, to factor in use of Facebook Messenger chatbots like [Tarjimly](#) or [Amigo Anônimo](#) and target them with Facebook ads. This behavior could, in theory, allow alcohol companies to target alcoholics and anti-refugee groups to target refugees and/or the translators who help them.²⁰

[AA Brazil](#) and its partners, as well as the [Tarjimly](#) founders, are keenly aware of these concerns and in both cases have sought to leverage Facebook features (See [Anonymity Features](#)) and conduct outreach to Facebook (See Lesson 5: [Partner for Scale and Impact](#)) to minimize user risk caused by the data policy. On the other hand, Facebook's policy contributed to Praekelt's decision not to pursue Facebook Messenger integration for [MomConnect](#). Praekelt felt that user communications could reveal their sensitive personal health conditions, such as HIV status, and these communications could be mined for advertising purposes.²¹

Encryption

While policies provide or remove legal protections, primarily in regards to metadata, encryption features provide technical protection of messaging content. Encryption systems automatically scramble messaging content, and in some cases metadata, so that it cannot be read by any third party, including the messaging app owner, if intercepted.

All messaging apps use some type of encryption protocol at some point in the transmission of content from sender to receiver, and some provide "end-to-end" encryption, meaning messaging content is scrambled and inaccessible before it leaves the sender's phone and until it arrives on the receiver's phone. Messaging apps with end-to-end encryption prevent the app owners from ever accessing messaging content, meaning it cannot be shared with or used to sell services to advertisers or any other third party. End-to-end encryption is also designed to prevent hackers of any kind from accessing messaging content, which is only vulnerable if the sender or receiver's actual phone is stolen or accessed.

¹⁹ "Data Use Policy", Facebook

²⁰ Facebook's "Community Standards" may ultimately prevent such communications, but only if and when they are reported or flagged by Facebook.

²¹ Had Praekelt pursued the integration, the MomConnect use case may not have been permitted by Facebook's "Platform Policy, Messenger Platform," which states: "Don't use Messenger to facilitate direct conversations

However, not all messaging apps provide end-to-end encryption all the time. There are three general models for encryption systems in messaging apps, which are subject to change and may be outdated by the time of reading. Encryption systems across major messaging apps at the time of this writing were as follows:

1. **End-to-end encryption by default:** End-to-end encryption means that message content is encrypted and decrypted by the senders and receivers only. No one in the middle, not even the platform owner, can view message content. WhatsApp is perceived as having set the bar for privacy and security among messaging apps since it fully encrypts all messaging content from end to end by default and across all features. WhatsApp’s encryption also protects user’s PII metadata, such as name and phone number, from third parties like MNOs and hackers.

Viber followed suit and now provides default end-to-end encryption of messaging content for all private communications, protecting all message content from everyone except for senders and receivers, and protecting PII metadata from all third parties except for Viber. However, communications with Viber Public Accounts—those set up by brands or institutions such as a development organization—are not encrypted. When communicating with public accounts, messaging content may be accessible to third parties, including Viber and other individual users.²²

Despite WhatsApp’s commitment to security and status as the most popular messaging app in the world, Echo Mobile found that most organizations with security concerns were not using it. This was due to a combination of factors relating to the scalability of WhatsApp’s features and the lack of options for integration. (See [Operational Requirements](#) and [Scalability](#).)²³

2. **Partial encryption:** While Facebook Messenger and WhatsApp are both owned by Facebook, the former does not provide end-to-end encryption by default. Instead, messages are encrypted from the sender to a Facebook server and again from the server to receiver, but they are decrypted on Facebook’s servers by default, meaning that Facebook, the messaging app owner, has access to all messaging content and metadata. Telegram’s messages are similarly encrypted by default but then held decrypted in the cloud. In both cases, unlike WhatsApp, the absence of end-to-end encryption allows senders and receivers to access messages sent to their Telegram or Facebook Messenger account from any device. (See [Operational Requirements](#).)
3. **Opt-in end-to-end encryption:** While not the default setting, Facebook Messenger and Telegram still both allow senders and receivers to have end-to-end encrypted direct communications. To enable this end-to-end encryption, users must opt in and turn on Facebook Messenger’s “secret conversation”²⁴ or Telegram’s “secret chat”²⁵ features when starting a conversation. These features make the messaging content inaccessible to the messaging app owners and other third parties—anyone other than the sender and receiver. However, it does not necessarily protect metadata (see [Privacy policies](#)), and many users may be totally unaware of these features or how to use them.²⁶

22 “Get started with a Public Account,” Viber; “Viber Security FAQ,” Viber

23 “Storing Data”, Telegram; “Why not just make all chats secret,” Telegram

24 “Secret Conversations,” Facebook Help Center.

25 “How are Secret Chats Different?” Telegram.

26 “Secret Conversations,” Facebook Help Center; “Storing Data”, Telegram “How to find and use Facebook’s Secret Messages,” Wired, Oct 6, 2016.

These opt-in end-to-end encryption features differ from WhatsApp's default encryption settings in ways that make them less useful to development organizations. Firstly, Telegram and Facebook Messenger do not enable end-to-end encryption for group chats or broadcasts, as WhatsApp does, meaning the "secret" features are of limited use to [WTS](#) and [AVC](#). Secondly, there is no encryption opt-in option when communicating with Facebook or Telegram chatbots, making sender and receiver content and metadata more vulnerable to third parties for users of development initiatives like [Farm.ink](#), [AIDA](#), [Tarjimly](#), [Amigo Anônimo](#), and [U-Report](#).

How to Know Which Encryption to Trust

Organizations should carefully review and consider each messaging app's encryption. Most apps publish some level of technical detail on their website.

WhatsApp encryption uses the Signal Protocol, designed by Open Whisper Systems, and has published [a full technical explanation](#) on the WhatsApp website.²⁷ Moreover, the [Signal Protocol](#) code is open source.²⁸ This same protocol is used by the Signal messaging app, which is operated independently by Open Whisper Systems and is generally considered the most secure messaging app available.²⁹

According to Viber, its security protocol was developed using the same "double ratchet" protocol found in Open Whisper Systems Signal application, but it was developed from scratch and thus does not use the Signal source code. Viber also provides a [technical overview](#) of its protocol online.³⁰

Facebook Messenger's secret conversations also rely on the Signal protocol, while Telegram has developed its own encryption protocol, MTProto,³¹ which some consider less secure.³² Telegram has made an [online description](#) and [technical FAQs](#) available regarding the MTProto protocol, but unlike Open Whisper Systems, this protocol is not fully public or audited, meaning all the code has not been released, requiring an additional element of user trust.

Anonymity Features and Policies

Encryption is an automated process that users can opt in or out of in some cases. It is primarily designed to protect messaging content from third parties such as hackers or messaging app owners. Most messaging apps also provide features and policies that help or hinder users from protecting their metadata, especially PII metadata, from each other, allowing senders to remain anonymous to receivers or preventing them from doing so, and vice versa. Development organizations concerned about protecting sender/receiver

27 "Security," WhatsApp

28 "Security," WhatsApp

29 "Just How Secure Are Those Encrypted Apps Leaking Trump's Secrets?" Forbes, Feb 8, 2017

30 "Viber Encryption Overview," Viber

31 "MTProto Mobile Protocol," Telegram

32 "Just How Secure Are Those Encrypted Apps Leaking Trump's Secrets?" Forbes, Feb 8, 2017

anonymity should consider relevant messaging app policies and features. All features and policies are subject to change, but as of this writing, are outlined broadly as follows:

1. **User anonymity policies:** Each messaging app has different requirements when it comes to registration information. WhatsApp, Viber, and Telegram use telephone numbers as the core unique identifier for users and thus do not require that users provide their full or legal names when registering for the apps. With WhatsApp, users do not need to input any written name, and the app does not enable users to search and find one another based on any information other than phone number. (See [Searchability](#).) Users are required to provide their phone numbers.

Facebook, and thus Facebook Messenger, take the exact opposite approach. Facebook users can but are not required to register their phone numbers. However, the company's naming policy requires that, "The name on your profile should be the name that your friends call you in everyday life. This name should also appear on an ID or document from our [ID list](#)."³³

For [Amigo Anônimo](#), Facebook's naming policy comes into direct conflict with AA's stated public relations policy of "attraction rather than promotion; we need always maintain personal anonymity," and which states that anonymity "extends to the Internet and digital technologies."³⁴ AA engaged Facebook about its privacy concerns, and while the company agreed not to share information about Amigo Anônimo users with their Facebook friends, anonymity from Facebook itself remains technically impossible.

2. **User anonymity features:** Messaging app naming policies directly inform their features and the extent to which they enable or prevent anonymity for senders and receivers. In keeping with its policy, Facebook provides no features that expressly allow anonymity between receivers and senders, whether human or chatbot, meaning [Amigo Anônimo](#) users are not anonymous to AA Brazil or its partners that operate the chatbot. [Tarjimly](#) is unable to hide its users' identities from Facebook but has used an innovative chatbot design to protect them from each other.

[Tarjimly](#)'s chatbot cannot simply connect refugees directly to a translator through Facebook Messenger and have them both remain anonymous. Instead, [Tarjimly](#)'s chatbot was designed to host translation sessions *within* the chatbot's user interface. Each user effectively sends and receives messages from the chatbot, rather than to and from each other. The chatbot relays the messages, showing each user's first name only and preventing both sides from identifying each other. However, this roundabout setup sacrifices other critical features. Users cannot utilize Facebook Messenger's video chat feature, which is not available when either the sender or receiver is a chatbot.

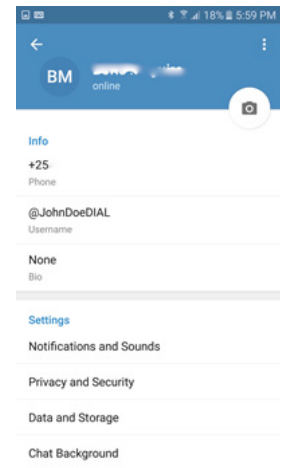
Unlike Facebook, WhatsApp has no naming policy, so users can use fake names or aliases, potentially protecting their real identity from those they send messages to or receive messages from. However, WhatsApp has no feature that allows users to hide their phone numbers from one another. This makes it difficult for development organizations to maintain anonymity and protect themselves. Because organizations like [Jhatkaa](#) and [WTS](#) cannot hide their phone number from users in their WhatsApp chat groups or broadcast lists, they are open to receiving direct messages,

33 "What names are allowed on Facebook?" Facebook help Center.

34 "A.A. Fact File," Alcoholics Anonymous World Services, Inc.

SMS, and calls from users. Moreover, if an oppressive government or bad actor takes possession of a user's phone, they can identify the phone number of the Jhatkaa and WTS administrators and all other users, which in some scenarios might put them in danger.

Telegram also has a no naming policy but provides a username feature that allows users both to create a nickname or alias and mask their phone number, providing anonymity from those they send messages to or receive messages from. Telegram usernames are searchable within the app, but other users are prevented from viewing the affiliated name or phone number, limiting all communication to Telegram. This has been a valuable feature for the AVC team, allowing a single team member to continuously scale the project's Telegram supergroup and broadcast channel without revealing personally identifiable information.



Telegram Username Feature

Operational Requirements

In addition to broader questions of personnel (see Lesson 4: [Prioritize Content and Personnel](#)), organizations deploying messaging apps for development should weigh the operational requirements of each app against their expected use case and programmatic goals. These considerations have both technical and logistical implications and depend largely on the apps' features and policies, all of which are subject to constant change and should be continually monitored. Features and policies discussed here may be outdated by the time of reading.

Account Access and Management

The different privacy policies and features outlined above, which are subject to continuous change, have direct impact on the way that different messaging apps allow organizations and individuals to create, access, and manage accounts, which for development organizations has further implication for what devices might be required:

- **Desktop and web versions:** In recent years, many messaging app developers released desktop and web versions of their apps to allow users to access their accounts and engage in messaging from a laptop or desktop computer. For development practitioners managing several ongoing conversations at once or large chat groups or lists, doing so through a larger computer screen provides a superior user experience and allows for faster communications.

In 2015, [WhatsApp](#) released the first version of [WhatsApp Web](#), and in 2016 followed with a desktop app for Mac and Windows. WhatsApp does not allow users to log in to the same account from different devices, so to access the web and desktop versions, users must physically have their mobile phone and use it to scan a QR code created by the web or desktop app. Doing so pairs the phone account to the desktop or web version, which then simply mirrors the mobile phone app. All messages still pass through the phone, which must be near the computer and online, creating performance issues such as message delivery delays. Moreover, only two people at most can operate a single WhatsApp account at the same time, one on a phone and the other on a computer, but both must be together.

Nevertheless, even for one person, WhatsApp desktop and web apps provide major efficiencies that were not available to organizations that used WhatsApp prior to 2015, such as [BBC Media Action](#) and Mercy Corps' [ECAP](#) teams. Both organizations were forced to manage communications with hundreds or thousands of contacts from a single phone. Were they to implement the same services in 2018, they would still require a single phone, but they would now be able to read and type the messages through a full-sized keyboard and screen.

WhatsApp's one-account-one-device requirement also creates risk and logistical headaches if the phone to which an account is tied is lost or stolen. In this case, development organizations would have to port their WhatsApp account phone number onto a new SIM and a new phone or contact WhatsApp directly to restore admin rights to chat groups, messaging, and broadcast lists.³⁵ Telegram's web and desktop versions allow users to avoid this risk. Because Telegram messaging is held in the cloud and not encrypted end to end, users only need their phone the first time they log in to their Telegram account via the [web](#) or [desktop](#) app and can do so on multiple devices. From each device, the user has access to the account's full messaging history and can manage its security settings. This includes the Telegram sessions feature, which allows a user to remotely remove other devices from an account.³⁶

Thus, if a Telegram account is logged in on multiple devices and one is lost or stolen, the others can be used to retain the account history and administrative rights to any chat groups and channels, and to remove the missing device to protect the account. The same feature can be used to update the account phone number if a new SIM is purchased.³⁷ Combined with the ability to access multiple Telegram accounts through a single mobile phone and app, this has proven extremely valuable to the [AVC](#) team. AVC staff frequently move between rural areas and the office for long periods of time, and thus maintain several devices and Telegram accounts to administer or access the project's chat groups or channel.

Facebook Messenger is also not limited by any specific device. While there is no official Messenger desktop app, users can login through [Messenger.com](#), [Facebook.com](#), and the mobile app on any number of mobile or desktop devices. Because Facebook Messenger does not offer default end-to-end encryption and does not require users' phone numbers, users can log into their accounts on any device and on as many devices as they like. This allows multiple people, such as members of the [WTS](#) Social Media team, to manage a single account across multiple phones and computers.

- **Account sharing:** Even with desktop and web versions, teams using WhatsApp cannot mask their own contact information from other users in groups and broadcast lists. Project teams for initiatives like [ECAP](#), [Jhatkaa](#), and [WTS](#) must either ask team members to forgo their privacy or procure a separate, dedicated mobile phone and SIM card just to use WhatsApp. Even then, the dedicated WhatsApp account is only accessible through the one dedicated phone and simultaneously on only one desktop device or web browser, as the end-to-end encryption protocol prevents users from accessing the same message history on multiple phones or computers.³⁸

These restrictions on account sharing can prevent development organizations from opening up

35 "Changing your phone number," WhatsApp; "How do I recover my WhatsApp account with old lost phone number," Quora.

36 "My phone was stolen. What do I do?" Telegram

37 "My phone was stolen. What do I do?" Telegram

38 "Using one WhatsApp account on multiple phones, or with multiple phone numbers," WhatsApp

access to a single account within a team and spreading the administrative requirements while maintaining a singular voice with beneficiaries. For projects that manage large volumes of users or traffic on WhatsApp, managing them can become unsustainable. [WTS](#) and [Jhatkaa](#) discovered this trying to manage dozens of groups from a single phone and desktop, as did the [ECAP](#) monitoring and evaluation team while attempting to communicate with just 800 community mobilizers before WhatsApp had released its desktop version.

By comparison, [AVC](#) has had no such issues with Telegram. Telegram's cloud-based design allows users to access multiple accounts on a single phone. Combined with the username feature, this prevents the need for development teams to have dedicated mobile phones to run Telegram. Telegram also allows for more efficient management, as individual accounts (and their entire message history) can be accessed from multiple devices. This would have provided major efficiencies to the [ECAP](#) team. Combined with Telegram's scalable chat groups (see [Scalability](#)), these account-sharing features enable [AVC](#) to collectively and continuously scale the project's Telegram presence.

APIs and Integrations

Organizations wishing to use messaging apps while already operating or developing their own platforms or systems will need to consider their ability to integrate the two. If they are not integrated with another platform by default (as with Facebook Messenger and Facebook), most, but not all, messaging apps have APIs that allow for some degree of integration with other systems or the development and integration of chatbots. Using these APIs requires technical capacity, but running the apps at scale without integration may increase the number of personnel required to manage their use or limit their scalability.

- **As of this writing, WhatsApp did not have any open APIs:** While WhatsApp remains the most popular messaging app in the world, it did not offer any public APIs as of this paper's writing in early May 2018. This means that messages cannot be sent from or to WhatsApp from other platforms nor automated through chatbots. All messaging on WhatsApp must be done manually, one person at a time. This has forced Souktel to keep [DZCareer](#)'s job matching functions partly manual, with a human intermediary required to group platform users into WhatsApp broadcast lists and then send them relevant job listings that are automatically flagged by the platform.

The absence of integration options also means that organizations cannot extract and analyze metadata or messaging content from WhatsApp, limiting its utility for informing operational decisions and improving programs. This has major drawbacks for organizations like [WTS](#), which relies on trends among fans to inform future campaigns as well as research products for commercial and development clients. Without an API to download and analyze WhatsApp messages, SMS and Facebook have enabled [WTS](#) to produce more insights more quickly, contributing to a decision in 2017 to reduce its use of WhatsApp until an API is available.

[Jhatkaa](#) also struggles to use its WhatsApp communications with supporters, whether for internal analysis of trends or the public sharing of information. While the app's multimedia features allowed supporters to submit locations and photographs of city trash fires during the [#BangaloreIsBurning](#) campaign, [Jhatkaa](#)'s technical team struggled to aggregate and analyze the reports and share

them on a public map. The concept was simple but proved extremely labor intensive without an API. The same issue prevented BBC Media Action from analyzing the content of incoming messages received during the Ebola outbreak in order to improve how it used WhatsApp broadcast services in future emergencies.

- **WhatsApp is piloting a public integration and has released a business app:** [MomConnect](#) is currently the only development organization piloting WhatsApp's unreleased integration, but Praekelt warns that it is more technically complicated than that of other messaging apps because of WhatsApp's requirement for end-to-end encryption. WhatsApp messaging content and data can only be unencrypted on hardware running WhatsApp provided software. Users of the integration thus have to orchestrate and manage WhatsApp infrastructure on in-house servers, which requires familiarity with underlying technologies that are costly and likely beyond the capacity of most organizations in the social sector.

In the meantime, WhatsApp has released the [WhatsApp Business app](#), a version of the messaging app tailored to small businesses. WhatsApp Business offers users a range of features, including messaging statistics, automated messaging and contact labeling, that cannot be accessed from the WhatsApp app. These features could provide significant improvements for development initiatives, such as BBC Media Action's [Ebola Broadcast Service](#) and ECAP's mobilizer coordination, but the WhatsApp Business app still does not offer any integrations or tools for developers such as chatbots. Echo did not identify any development organizations using WhatsApp Business.

- **Facebook Messenger is automatically integrated with the Facebook platform, and both provide a suite of user-friendly APIs:** Facebook Messenger provides a variety of options for integrations and chatbot development and a unique default integration with a leading social media platform that requires no technical capacity to utilize. For development organizations trying to attract users and increase engagement without building technical integrations, Facebook Messenger has the advantage of coming with access to Facebook's massive user base and features, such as groups and pages.³⁹

Projects like [AA Brazil](#) and [WTS](#) operate a Facebook page that serves as a public, informational website or space for public discourse linked to a Facebook Messenger account for one-to-one engagement. For organizations like WTS that manage this engagement manually, the integration of Facebook and Facebook Messenger allows complementary communication channels to be managed within a single user interface. This is an invaluable feature for the WTS Social Media team, which communicates with hundreds of thousands of fans on its Facebook page every day and hundreds more through direct Facebook Messenger conversations. For organizations like AA that manage this engagement through a chatbot, Facebook provides an unparalleled platform for advertising the chatbot's services and attracting users.

Facebook Messenger's integration with Facebook pages and groups has drawbacks. Notably, the integration only allows for direct one-to-one chats, because only Facebook Messenger accounts linked to personal Facebook profiles are able to create and participate in group chats. As a result, [WTS](#) is limited either to public conversations on its Facebook page, accessible to more than 500,000 followers, or to one-on-one conversations with individual fans via Facebook Messenger.

39 "Facebook Messenger," Facebook for Developers

There is no middle ground for the Social Media team to create and manage small, private Facebook Messenger conversations with select groups of Facebook followers. For this purpose, WTS adopted WhatsApp, redirecting fans to and managing an entirely new set of communications through a separate user interface on an app that prevents analysis of the communications.

- **Telegram also has underutilized APIs:** Telegram’s combines many of WhatsApp and Facebook’s features. Much like Facebook, Telegram has open APIs with a wealth of developer documentation that enable integrations with other platforms, data extraction, and chatbot development.⁴⁰

While Telegram is not integrated by default with a web-based social media platform like Facebook, it has similarly scalable and searchable group features (see [Scalability and Searchability](#)) and a built-in publishing feature called Telegraph, which has its own API and chatbot.⁴¹

AVC has used the Telegraph feature for publishing technical articles about horticulture to its chat groups and channel, but has not experimented with the chatbot or API. In late 2017, AVC did begin experimenting with Telegram’s [chatbot API](#) as a means to automate frequently asked question responses, streamlining content within the chat groups, and improving the speed and accuracy with which some questions are answered.

Other chatbot-based development initiatives, such as [mVAM](#) and [Farm.ink](#), also experimented with Telegram’s APIs, but ultimately switched to Facebook Messenger because Telegram was not popular in sub-Saharan Africa. Nevertheless, the app’s open APIs, combined with easy account access and device management features, make it a powerful tool for organizations like AVC operating in regions where it is more familiar.

- **Viber’s organizational APIs come at a cost:** Viber has a range of enterprise features tailored for businesses, and like Telegram’s features, they bridge the gap between social media and messaging, even without an integrated social media platform like Facebook. Like WhatsApp Business and Facebook’s commercial features, Viber’s features may provide value for development organizations. However, unlike WhatsApp Business and Facebook, Viber charges for these features.

Viber offers two account types that support organizational messaging: [Viber for Business](#) and [Viber Public Accounts](#). Viber charges organizations for both, though their rates are not published. Each account type offers different levels of public and private engagement between individuals and organizations, as well as features for conducting sales and marketing, promoting events, and offering service and support, among others. Viber also offers a suite of APIs to allow integration of these accounts with chatbots and third-party platforms, but a public account is required to use them.⁴²

These cost requirements ultimately deterred Souktel from integrating its [DZCareer](#) platform with Viber, despite the app’s popularity among youth in Algeria, as the two organizations were unable to agree on pricing. Viber does not publish integration pricing, but according to the Viber for Business website, the service is used by major corporate clients such as Coca Cola, L’Oreal, and Uber.⁴³

40 “Telegram APIs,” Telegram

41 “Meet the Telegraph API for Logins and Stats,” Telegram Blog

42 “Get Started,” Viber for Developers

43 “Viber for Business,” Viber

Souktel reports that there is no flexible integration pricing for social organizations, and believes that this commercial orientation will continue to make it difficult for development organizations to utilize the service.

Scalability and Searchability

Some development organizations struggled when their initiatives attracted high volumes of users and/or traffic that exceeded the capacity of their messaging app and created operational burdens on personnel. These organizations underestimated the virality with which messaging app chat groups would spread, the volumes of messages that they would inspire relative to channels like SMS, the limitations of the app they were using, and the implications for their project's operational infrastructure. In some cases, this led to the abandonment of messaging app efforts, in spite of their impact on project outcomes.

While the familiarity of particular messaging apps among specific target audiences should be development organizations' first consideration, each app should also be assessed for scalability, and the operational implications of exceeding the limits of its features should be considered.

- **WhatsApp limits the size of chat groups and lists:** All of the development organizations interviewed by Echo that had deployed WhatsApp expressed frustration with its limitations on chat group and broadcast list sizes. While these limits have increased from 100 to 256 users, they still create inefficiencies by requiring organizations to create and manage multiple redundant groups and share the same content across each. [MomConnect](#) and [BBC Media Action](#) overcame these limitations through partnerships with WhatsApp. MomConnect received access to a pilot integration, and BBC Media Action got a special dispensation that temporarily lifted the group limit. (See Section 3: Partner for Impact and Scale.) However, these are unique arrangements not readily available to most organizations.

For other projects like [ECAP](#), WhatsApp's size limits exacerbated personnel shortages by forcing the team to manage five chat groups instead of one. This had a secondary effect of limiting peer-to-peer learning opportunities in each group by preventing their access to discussions in other groups. [WTS](#) faced the same problems, managing more than a dozen small chat groups and struggling to drive behavior change in each. Combined with the inability to extract messaging data, these scalability issues led WTS to move away from WhatsApp in favor of Facebook, Facebook Messenger, and SMS.

[Jhatkaa](#) has come to a similar conclusion after creating dozens of duplicate chat groups and lists during its [Save Bangalore's Trees](#) campaign, even though only 1 percent (2,000) of its supporters requested access to join them while the rest stuck to free SMS. Unless WhatsApp drastically increases these limits, Jhatkaa is hesitant to use the app again because of the resulting operational inefficiencies.

- **Lack of opt in limits WhatsApp's viral growth:** In addition to capping the total number of users who can join a chat group or broadcast list, WhatsApp prevents users from finding and joining them independently within the app. WhatsApp's search feature only allows users to locate contacts already stored on their phone, or groups and lists they are already a part of. There is no option to search for new groups, organizations, or people.

So if Shujaaz fans are not already aware of the phone number that [WTS](#) uses to administer their chat groups, fans will not be able to find them. Even if they have the number, fans cannot independently opt in to a group list. They must first send a direct message to the admin, who must then save the contact manually to the dedicated mobile phone and manually add the individual fan to the group.

These two restrictions on searching for and opting in to groups and lists, combined with the group and list size limits, are major barriers to viral growth, which is essential for lifesaving services like BBC Media Action's [Ebola broadcast service](#). No option was available to allow WhatsApp users in Sierra Leone to simply search the app for Ebola information services, and BBC Media Action was not able to advertise or market the service to users. Instead, it had to turn to other channels like local radio, where it advertised a mobile phone number that listeners had to remember and save in their phones.

Further preventing viral growth and burdening project operations, WhatsApp users cannot forward or share access to groups or lists. Users can forward content such as images and videos from a group or list to another individual user, but the recipient is then unable to see or connect back to that group or list without being told, saving, and then messaging the admin's phone number. This meant that BBC Media Action's Ebola content could be passed by recipients to their friends and families, but those recipients were not immediately able to access the service themselves without taking several steps within and outside the app and then waiting for BBC Media Action's overstretched team to add them one at a time.

- **Facebook Messenger also limits scale but offers Facebook integration as backup:** While Facebook Messenger allows group chats, it also limits their size to 150 users at a time⁴⁴ and, more importantly for development organizations, makes them accessible only to individual users. Institutional users, which cannot hold individual Facebook profiles, can only create Facebook Messenger accounts affiliated with a Facebook page or group, which are prevented from creating or joining group Facebook Messenger chats. As a result, organizations like [WTS](#) use the app only for one-on-one conversations with project staff, while others, like AA, [Tarjimly](#), and [Farm.ink](#), use it to enable one-to-one conversations with chatbots.

However, unlike with WhatsApp, Facebook Messenger's connection to a Facebook page or group provides a scalable alternative to messaging app chat groups. The Facebook social media platform allows an unlimited number of users to join pages or groups, meaning that organizations like [WTS](#), which has nearly 600,000 followers on its Facebook page, can achieve unlimited scale.

Moreover, these pages and groups have a range of searchability and access settings. Group or page admins can make them totally public, allowing all Facebook users to search on Facebook or public search engines for them by name or keyword and opt in independently, or they can make them searchable but require admin approval of opt-in requests. In either case, the Facebook page or group admin does not need to be contacted directly or take any additional steps to add individual users, allowing for efficient and unlimited growth.

⁴⁴ "How many people can I message at once on Facebook?" Facebook Help Center

- **Telegram provides searchability and scalability through publicity and opt-in features, but at the expense of end-to-end encryption:** Telegram more closely resembles the Facebook platform than other messaging apps in that it offers significantly more flexibility and scalability for chat groups and channels. Within the Telegram app, both can be made public and searchable for all users, who can choose to opt in without admin approval or communication. Similarly, Telegram users can share the URLs to access public chat groups and channels that they subscribe to, enabling others to discover and join them in one step. Telegram users can also forward content from one group or list to other groups or individual users, just as on WhatsApp, but the forwarded content will include a link so that the recipient can also choose to opt in.

The searchability and shareability of Telegram groups and channels means that they are able to grow quickly, which Telegram accommodates by allowing an unlimited number of channel subscribers and up to 100,000 members per chat group. Any Telegram chat group with more than 200 users is known as a supergroup. This level of scalability and searchability have been essential for the growth of [AVC](#)'s chat groups and channel, which are run by just two team members. Telegram would have provided similar operational efficiencies to [ECAP](#), [Jhatkaa](#), [BBC Media Action](#), and [WTS](#), but none of these organizations considered using the app because of its low popularity within sub-Saharan Africa and India.

However, for organizations and users committed to end-to-end encryption via Telegram secret chats, Telegram's scalability and searchability are limited even more than WhatsApp's. Secret chats are only available for one-to-one messaging, meaning groups and channels cannot be encrypted as on WhatsApp, and content cannot be forwarded from secret chats.

5. Development Use Cases for Messaging Apps

While Echo Mobile's research spanned a range of emerging markets, sectors and messaging app technologies, some clear patterns emerged in how the apps were used. Based on analysis of these patterns across the 14 cases summarized in the attached [Project Catalog](#), Echo and DIAL identified four generic messaging app use cases that have been applied to meet programmatic needs or goals across different sectors and locations.

These use cases are not mutually exclusive, and many of the projects used messaging apps in a variety of ways to meet different needs. However, they do provide a useful framework for other organizations and for messaging app providers considering how to optimize the impact of messaging apps for development.

One-to-One Matching of People With Resources

One of the most common messaging app use cases encountered is the use of messaging apps to efficiently connect individuals to services and information that might otherwise have been unknown or out of reach. In some cases, these resources were already available locally, but were unknown or difficult to find. In other cases, messaging apps allowed individuals in developing markets to access resources far beyond their border.

In all cases, the messaging app helped people identify opportunities and make decisions related to their livelihoods and well-being. For example, the [Amigo Anônimo](#) Facebook Messenger chatbot establishes matches between individual users and nearby offline resources provided by AA, as well as relevant online information. [Farm.ink](#)'s chatbot performs a similar matching service, mining large volumes of farming information shared on its Facebook group and consolidating it into daily Facebook Messenger digests, which it then matches and delivers to individual users based on their expressed crop preference and location.

[mVAM](#)'s SMS, USSD, IVR, and eventually its messaging app chatbot channels establish and facilitate matches between WFP beneficiaries and locally relevant services and food security information. [MomConnect](#) operates similarly, using messaging apps and other channels to collect information from pregnant women and mothers and then match them with health information based on their health records, clinics based on their locations and online clinicians based on their expressed needs. Finally, [DZCareer](#) matches unemployed youth with relevant job listings based on their expressed interests and qualifications and delivers that information over WhatsApp.

Tips for Implementers

This was accomplished with varying degrees of automation, precision, and success, but development organizations should note that all matching cases required that the messaging app be connected or integrated with an existing technology platform. The platforms were required to either host a chatbot or directly perform or facilitate the matching. Messaging apps themselves cannot host a database of information or a network of service providers, but they can integrate with platforms that do. They can enable chatbots that match the user with the relevant information or people, and they can host the connection between the two.

With these needs in mind, development organizations attempting to use messaging apps as part of a one-to-one matching use case should consider the following lessons:

- **Prepare to build, partner, or integrate:** Because matching requires an integrated platform or chatbot, development organizations seeking to match beneficiaries to information, services, or other people will need to identify or build a platform or chatbot to host information and conduct automated matching through predetermined menu options or questions. This required in-house programming capacity from Praekelt, [Tarjimly](#), and [Farm.ink](#), or a technology partner, such as [mVAM](#) had with InSTEDD, [AA Brazil](#) with ChatClub, and World Learning with Souktel.

Souktel initially pursued further partnership and integration with Viber, but that proved cost prohibitive, and no WhatsApp integration was available, as it was to [MomConnect](#). Rather than integrate with Facebook Messenger, as the other projects did, Souktel chose to use WhatsApp to match users with job listings, which required both a custom-developed platform and human intervention. The platform automatically flags listings and matches them to groups of users, to whom human administrators then push the listing manually via WhatsApp.

- **Matching people with other people requires sufficient offline staffing and logistics:** The matching use case was most commonly applied to connect individual people with existing online information. Information is static but can be updated quickly, and when digitized, it can serve an

unlimited number of people at once. This is exemplified by [Amigo Anônimo](#), which hosts and matches users to portions of a large database of information and resources on alcoholism.

Matching users to other people is much more difficult and requires a large and reliable human network and a dynamic matching system, because human service providers can only service one user at a time. According to AA Brazil's creative agency, the ideal evolution for [Amigo Anônimo](#) is to match individual users with human volunteers through Facebook Messenger or in person, but AA's limited network in Brazil has prevented this next step. [Tarjimly](#), on the other hand, has focused exclusively on human-to-human matching. But the more refugee users it attracts, the harder this use case is to scale, as reliable and available translators become harder to find. If the growth in refugee users outpaces that of translators, wait times for refugees may increase, and the app's utility may suffer.

Ironically, [Tarjimly](#)'s user growth has also brought language complications. Facebook Messenger itself does not automatically recognize and translate all languages (hence the need for matching to human translators). [Tarjimly](#)'s chatbot can only accept inquiries in 11 languages for which the chatbot's initial menu and conversation tree have been programmed. If refugees prompt the chatbot with text in other languages, it will not understand them. If the chatbot's initial messages are not in a refugee's native language, [Tarjimly](#) may not be usable for that refugee.

- **If matching people to offline services, make sure the service providers can handle the load:** Development organizations often work to match users with offline development services. Messaging apps can be a powerful tool for increasing usage of services like agricultural extension or vaccinations by the people who need them but don't know about them. However, this power can only be wielded effectively if the offline service providers can handle the new demand.

[MomConnect](#) seeks to connect women to primary care providers and was able to do so by partnering with the South African Department of Health (DoH), which provided a robust network of public health clinics. AA Brazil did not have the same offline network, and thus was unable to match [Amigo Anônimo](#) users to all of its offline services, which were never designed to handle the viral growth that the chatbot generated on Facebook.

Group Peer-to-Peer Learning and Behavior Change

Messaging applications can be effective for facilitating group engagements with the goal of changing knowledge, attitudes, and behaviors among the group or building technical skills. Among the cases reviewed, some, like [ECAP](#), focused these goals on internal program staff. Others, like [WTS](#) and [AVC](#), focused on external program beneficiaries. Both scenarios combined direct training—pushing technical content to the group—with facilitated peer-to-peer dialog and information sharing as techniques for driving learning and behavior change.

These methodologies are useful when critical information is distributed among beneficiaries or staff rather than held centrally by the development organization. In these cases, development organizations can deploy messaging apps to bring people together to share their knowledge and learn from one another. This is in contrast to matching use cases, where organizations are able to identify and compile information and resources that users need, such as [AA](#) meeting locations or translators, *before* deploying a messaging app service to connect them.



The peer-to-peer learning use case is especially valuable when information is constantly evolving, as it was during the [ECAP](#) project, when the Ebola outbreak scenario was unprecedented and the decentralized community mobilizer approach was untested.

Tips for Implementers

- **Hire communicators, not programmers:** Development organizations applying messaging apps to facilitate group learning will require different skills than those facilitating matching. In the latter scenario, messaging apps enable organizations to deliver information and resources to individual users. This requires proactively gathering and storing information, then developing custom chatbots or platforms to match it with those who need it. By contrast, for peer-to-peer learning, messaging apps enable organizations to bring people together for unstructured interactions and reactions to shared content. Organizations using messaging apps in this way should prioritize building a team with sectoral expertise and communications skills instead of technicians.

To facilitate learning among horticulturalists, [AVC](#)'s Public Outreach Coordinator created, administered, and monitored its Telegram chat groups while also leading video production with support from a post-production specialist and in-house horticulture experts. [WTS](#) applied a similar model, with a Social Media team to engage users, a Research and Learning team to monitor and analyze them, and a Production team to generate content. By contrast, [ECAP](#) had no content or communications staff dedicated to mobilizer chat groups. This contributed to weak user engagement and pulled Mercy Corps' monitoring and evaluation team away from its core duties.

The downside of building a team focused on generating communications content and deploying messaging apps without any technical development or integration is that monitoring and evaluation becomes more challenging. Organizations or projects using messaging apps for group peer-to-peer learning and behavior change thus tend to focus more on producing outputs than on tracking the outcomes of their work. This is because the ability to effectively track and generate insights from user behavior analytics on a messaging app requires the ability to use the app's API, if one exists. For [ECAP](#) and [WTS](#), which used WhatsApp, no such API existed, while [WTS](#) lacked the technical capacity to extract its Facebook Messenger data. The [AVC](#) team tracked basic Facebook analytics made accessible after its group exceeded 10,000 followers, but did not deploy the Telegram API to track messaging app analytics.

- **Use Facebook but not Facebook Messenger:** The integration between Facebook and Facebook Messenger requires organizations to consider carefully how they use each tool. (See Section 3: Facebook Messenger.) For organizations focused on behavior change and peer-to-peer learning, the Facebook platform provides powerful features such as groups and pages. Yet, by using these features, organizations become unable to create chat groups on Facebook Messenger. This is because Facebook prevents organizations from creating individual user profiles, but only permits individual user profiles to join or create Facebook Messenger chat groups. (See Section 3: Facebook.)

[WTS](#) facilitated all of its group behavior change discussions on its characters' Facebook pages, only using Facebook Messenger for one-on-one interactions and later experimenting with WhatsApp to facilitate smaller chat groups. [ECAP](#) also chose WhatsApp because of its group chat features, which Mercy Corps had used for internal coordination among staff. [AVC](#) used Telegram, which was more popular in Uzbekistan than WhatsApp, and which combines a variety of the Facebook platform and WhatsApp's respective group features. (See Section 3: Telegram.)

- **Start with people, add messaging apps:** What [ECAP](#), [WTS](#), and [AVC](#) all have in common is that none of the three projects used messaging apps as a tool for creating group relationships. On their own, messaging apps are insufficient to build trust and recognition among groups of people. Instead, each built on their pre-existing human or social media networks, followers, and group structures. ECAP had its local partners hire community mobilizers and then trained them in person before creating WhatsApp chat groups. WTS populated its WhatsApp chat groups with fans who had already attended in-person events or engaged on Facebook as a result of Shujaaz radio programming and comic books. Similarly, AVC introduced Telegram only after building a substantial Facebook following, relationships and credibility with horticulturalists through many years of in-person trainings and support, all of which continue in parallel with its Telegram initiatives.
- **Balance what is familiar with what will scale:** For organizations using messaging apps for peer-to-peer learning and behavior change, the app that is most familiar to users may also prevent scale. This was seen most often with WhatsApp and Facebook Messenger. Facebook Messenger prevents organizations from creating and administering chat groups, while WhatsApp limits chat groups to only 256 members. (See [Section 3](#).) Viber similarly limits group chats to 250 users.⁴⁵ Development organizations using these messaging apps for group peer-to-peer learning and behavior must thus weigh the benefits of their familiarity against the costs to scalability and efficiency.

While there is no generalizable recommendation, the cases suggest that personnel can, to some degree, overcome scalability issues but not familiarity issues. [WTS](#) and [Jhatkaa](#) committed to using the most popular apps in Kenya and India, respectively, and quickly attracted thousands of users to their WhatsApp chat groups. WTS managed dozens of chat groups for three years before determining that doing so was too costly. Jhatkaa has not yet abandoned WhatsApp, but remains concerned about costs and sustainability in light of the app's limited scalability and hopeful that it will utilize a future WhatsApp integration.

[AVC](#) also chose to use the most popular local messaging app, Telegram, which is distinct from WhatsApp, Viber, and Facebook Messenger in that it has almost no size limitations. (See [Section 3: Scalability and Searchability](#).) As a result, AVC has scaled quickly and sustainably, with multiple large group chats and a Telegram channel managed by a single staff member. Had WhatsApp been more popular in Uzbekistan than Telegram, AVC would have required significantly more personnel and may have had less success at attracting users and generating active peer-to-peer learning.

Information Broadcast

While matching and group learning both rely on two-way information exchange, organizations have also used messaging apps for the one-way broadcast of information to beneficiaries or staff. This fulfills many organizations' basic need to efficiently provide critical, actionable information to large groups on an ad hoc basis. This use case thus differs from the scheduled, automated and personalized matching of information facilitated by platforms like [MomConnect](#) and [DZCareer](#), and by chatbots like [Farm.ink](#). Broadcasting also differs from group learning, in that one-way broadcasts are applied when information is considered essential and actionable enough to prevent group replies that might cause others to miss it.



⁴⁵ "Group Chats," Viber

Tips for Implementers

- **Pick a messaging app with broadcast features:** In order to facilitate one-way information broadcasts, organizations should identify an app that allows for the creation of broadcast recipient lists while preventing their group responses. Broadcast information is usually critical and meant to be immediately actionable by all recipients, but broadcasting information to chat groups runs the risk of some recipients not seeing it if the information is buried for some under responses from others.

Among the projects reviewed by Echo and DIAL, both WhatsApp and Telegram were used for information broadcast because both have broadcast features. Telegram allows users to create channels, which were used by [AVC](#), while WhatsApp allows users to create private broadcast lists, which were used by [BBC Media Action](#), [ECAP](#), and [Jhatkaa's Save Bangalore's Trees campaign](#). Facebook Messenger, on the other hand, does not have any features to allow organizations to send messages to groups of recipients, let alone prevent their response.

- **Identify features or allocate resources to handle opt-ins:** Having selected a messaging app that allows information broadcasts, organizations should consider how large and open they want their list of recipients to be and the resources required to build and manage it. For organizations creating small, private recipient lists of under 256 recipients who are not meant to be publically discovered or accessed, WhatsApp's broadcast lists will be effective.

For organizations seeking to broadcast information to larger groups, these WhatsApp size limits create challenges. [ECAP](#) and [Jhatkaa](#) both had to send the same information multiple times to multiple broadcast lists of 256 recipients, while for [BBC Media Action](#), WhatsApp lifted the limit and allowed up to 20,000 people to receive Ebola broadcasts. However, without this exception, BBC Media Action would have had to create more than 30 broadcast lists and send each message as many times, which is inefficient in an emergency setting. WhatsApp also prevents recipients from adding themselves to broadcast lists, meaning they cannot opt in to receive information broadcasts. The phone number of each recipient must instead be added manually by the broadcast list administrator, who must have each number saved as a contact.

This restriction on opt-ins means that organizations cannot make WhatsApp broadcast lists publicly searchable or discoverable within the app. For [ECAP](#), this was a benefit, as Mercy Corps only wanted affiliated community mobilizers to receive its broadcasts. For [Jhatkaa](#) and [BBC Media Action](#), both sought to maximize the number of people receiving their information and make it easy for those people to do so, but WhatsApp's features restricted scalability and forced them to manage the process manually. [AVC](#) achieved much more efficiency and scale using Telegram, which allows broadcast channels to have unlimited subscribers. Telegram enables administrators to allow users to search for and add themselves to channels and allows channel subscribers to invite others, without approval or intervention from an administrator. (See Section 3.)

- **Make content relevant with multimedia:** Telegram and WhatsApp both allow organizations to broadcast information as text, audio, images and video. Both [BBC Media Action](#) and [AVC](#) regularly combined text and other media as part of their information broadcasts, and both scaled quickly.
- **Provide complementary options for two-way engagement:** While both [ECAP](#) and [AVC](#) used information broadcasts, each also offered recipients the option to join two-way chat groups in which they could engage the organizations and each other. [BBC Media Action](#) had limited resources to manage two-way engagement, but recipients often replied with direct messages anyway, either to report relevant local information or ask questions. The majority of these messages went

unanswered or unacknowledged, which may have undermined trust in the service and left an opportunity for BBC to further its goals unrealized.

Crowdsourced Reporting and Feedback

While information broadcasts and matching via messaging apps are intended to provide information to individual users, and groups are used to facilitate information exchange between users, organizations have also used messaging apps to collect information from users. Development organizations have a critical need to gather data and information from their beneficiaries as a means to understand them and assess their needs. Doing so empowers organizations to achieve their goals by optimizing operations and service delivery internally and compelling action externally, whether through political action, collective action, or fundraising.

A Messaging App Without the Messages



Messaging apps have become so universally familiar that when UNICEF developed a new app for field workers, it chose to mimic a messaging interface to improve usability, even though the app has no actual messaging functionality. The [RapidPro Surveyor App](#) is not a messaging app in that it does not let people communicate with each other over the internet. Instead, the app allows data collectors to record information on the app by interacting with simple custom chatbots in a conversational interface rather than by filling out electronic forms.

RapidPro Surveyor remains experimental but was designed on the assumption that the messaging experience would be more familiar to field staff in emerging markets, who were increasingly using smartphones and messaging apps. This familiarity would reduce the training time required for data collection apps like Open Data Kit (ODK) Collect, while allowing a similar backend survey development structure for UNICEF staff. Data collectors can download surveys to their app and answer questions offline, with responses stored on the app and eventually uploaded back to RapidPro when the device regains connection to the internet.

Despite functioning offline, RapidPro Surveyor also acts like a messaging app in that it responds in real time to information being input by users as they work through a survey, requesting clarifications and highlighting nonsensical answers. This real-time validation lets users correct mistakes and improves data quality.

Information gathering by development organizations takes many forms, from SMS surveys to in-person data collection using paper or electronic forms, focus group discussions, and telephone hotlines. As messaging apps become increasingly ubiquitous in emerging markets, development organizations have seen an opportunity to improve on these methods by making mobile data collection more efficient and reliable. Messaging apps allow the submission of large amounts of text as well as photos, videos, and audio recordings, all of which represent an improvement over SMS for mobile data collection. At the same time, messaging apps, like SMS, do not require the personnel necessary for conducting field-based data collection or managing call centers.

Tips for Implementers

- **Data collection by chatbot may be more efficient than by chat group:** Messengers can be used either to crowdsource data and information through chat groups or to facilitate one-to-one reporting through direct messages. The former can combine data collection with peer-to-peer learning or be used to aggregate reported information for easier interpretation. The latter is usually applied when a messaging app API is available to automate reporting through a chatbot and to aggregate reports for analysis. The costs and benefits of each approach depend on organizational data needs and human resources, as well as on the apps that are available and familiar to those collecting and reporting information.



Development organizations using messaging app chat groups for data collection must design and manage an opt-in process, much like with information broadcasts. And again, WhatsApp's chat group size limit and lack of opt-in options make it more effective for organizations working with small, select groups than those seeking maximum scale for their data collection. These restrictions benefited the research and learning team at WTS when they began experimenting with digital focus group discussions, for which participants were carefully selected based on research criteria. However, for Jhatkaa's #BangaloreIsBurning campaign, WhatsApp limited efforts to crowdsource images and locations from citizens of Bangalore.

By comparison, U-Report and the mVAM team have built platforms or chatbots on Facebook Messenger using the Messenger API. This has enabled citizens to report information via direct and automated interactions, and enabled the organizations to aggregate and extract their input without limits to scale or manual intervention.

- **Provide an incentive to report:** U-Report and the mVAM/InSTEDD team learned from their SMS data collection experience that people report information more often when they receive additional information in return. mVAM collects information from beneficiaries that is important for WFP, but it also *provides* opportunities for beneficiaries to solicit information that is valuable to them, such as local food prices and service delivery updates. U-Report analyzes information from individual U-Reporters and shares the aggregate findings back with them. This mutual exchange is even more critical when collecting information via messaging apps, which, unlike free SMS services, require users to incur data costs.
- **SMS is still more effective for data collection, though more costly than messaging apps:** All of the organizations using messaging apps for data collection and reporting continued to also use SMS, since it remains a more effective and scalable option. Existing value-added SMS software-as-a-service platforms provide packaged integrations and analysis tools while enabling respondents to avoid costs through zero-rated or reverse-billed SMS lines.

Jhatkaa gets significantly more engagement from supporters via SMS, and mVAM remains primarily an SMS- and IVR-based program, even as it continues to build AIDA with InSTEDD. WTS has tried to collect information via WhatsApp groups, but the group limits and lack of API prevent the extraction of message content for analysis. And while Facebook Messenger provides APIs for data analytics, WTS does not have in-house developers. Instead, WTS uses an off-the-shelf SMS platform to enable hundreds of thousands of fans to engage for free.⁴⁶ U-Report also remains primarily an SMS platform, though UNICEF is eager to generate the same volumes of data via Facebook Messenger, which is much cheaper to the organization, if not to its beneficiaries.

⁴⁶ WTS uses Echo Mobile's platform for all SMS communications.

6. Future Outlook

Enduring Challenges

Penetration

Despite their rapid growth across the world, from rural villages to urban centers and refugee camps, messaging apps remain far from ubiquitous and have not yet become a go-to communications channel for development organizations. In sub-Saharan Africa, just 21 percent of the population has internet access, and just 50 percent have it in Latin America and Asia.⁴⁷ According to the cases summarized and analyzed in Appendices I and II, these rates are substantially lower in rural areas, meaning any organization deploying messaging apps in developing contexts is likely to exclude the majority of the population.⁴⁸ Internet-based messaging channels are especially likely to exclude women, who are 26 percent less likely on average to use mobile internet than men, and 18 percent less likely even among those with mobile phones.⁴⁹

Standardization and Value-Added Services

Unlike SMS, there is not a single global standard for internet-based messaging. In emerging markets, dozens of messaging apps have reached millions of users, and their popularity varies widely by country and region. While SMS initiatives like [U-Report](#) have scaled internationally, similar messaging app initiatives will have to account for the use of multiple different messaging apps, none of which talk to each other and each of which have different features and API requirements.

Alternatively, development organizations currently have access to a range of SMS platforms that are deployable globally and off the shelf with little in-house technical expertise. There are not yet comparable messaging app services for the social sector. This means that development organizations must manage messaging apps manually, which can limit scale, or integrate with their APIs and build data analysis tools, both of which require significant technical expertise. In some cases, access to APIs come at a financial cost that may be prohibitive, as Souktel found when it tried to use Viber. As of May 2018, WhatsApp had no publicly available API, and future integration options seemed likely to require significant technical and financial investment.

Emerging Opportunities

While SMS and other non-internet-based channels remain more common and inclusive, experimentation with messaging apps for development has begun, and opportunities are emerging that may increase their value and accessibility for development organizations.

47 “The Mobile Economy 2018”, GSMA.

48 International Telecommunications Union, “ICT facts and Figures 2016”; Pew Research, “Smartphone Ownership and Internet Usage Continues to Climb in Emerging Economies”

49 “The Mobile Gender Gap Report 2018,” GSMA.

WhatsApp Integration

Examples like [MomConnect](#) demonstrate that when accessible, messaging apps are more powerful and user friendly than predecessors like SMS. MomConnect also suggests that the pending release of a WhatsApp integration has the potential to unlock this power and present new opportunities for engagement and scale for organizations that can technically and financially afford to use it.

The integration seems likely to remain complex and expensive if WhatsApp maintains its commitment to end-to-end encryption and privacy, but doing so could set a new privacy standard for large-scale, international development communications. At the time of this writing, changes in WhatsApp leadership were occurring, reportedly in response to pressure from Facebook to reduce privacy standards, which might make integration easier and communications less secure. (See Section 4: APIs and Integrations.)

Artificial Intelligence

An area not covered in this report is the potential impact of artificial intelligence (AI), specifically natural language processing (NLP) and machine learning, on the power of messaging app chatbots. Organizations like U-Report, Souktel, WFP, and InSTEDD have all experimented with AI, but all ultimately reverted to using software built on simple rules-based decision trees and not the processing of or learning from human inputs.⁵⁰ Each organization remains skeptical about the short-term prospects of AI to support messaging app chatbots for development.

According to engineers, entrepreneurs, and development practitioners who have experimented with NLP and machine learning technologies in emerging markets, none are advanced enough to fully and reliably automate messaging app conversations in ways that substantially improve impact beyond what can be achieved with more basic rules-based conversations. The development and integration of current NLP technology and the “training” of machine learning algorithms require skilled technologists and data scientists, who can be hard for development organizations to access.

Another commonly cited problem was that of language. Few NLP and machine learning technologies are able to effectively operate across the vast range of smaller, localized languages for which there is little written or orally recorded information. [Farm.ink](#) stands out as having effectively applied NLP across a range of languages in Kenya, but only to extract the names of crops from static Facebook posts and label them to make them searchable for chatbot users. Efforts to use NLP to understand unstructured Facebook Messenger messages from farmers were discontinued, as the technology struggled to interpret longer-form text in a mix of languages.

For organizations like [MomConnect](#), which provides critical primary health care information via messaging apps in response to inquiries received in a range of local languages, the risks of AI malfunctioning continue to outweigh the potential benefits. That said, MomConnect already applies limited NLP to preliminarily label incoming messages from users and suggest to human administrators an automated response. However, the human administrators must still review and approve the response before it can be sent.

⁵⁰ Definitions for AI, NLP, and machine learning are provided in the Glossary and explained in simple terms [here](#) and [here](#).

Despite these limitations and concerns about the current state of AI technology, [Farm.ink](#) and [MomConnect's](#) founders, along with many of those interviewed for this report, expressed cautious optimism. Most expect that AI will eventually enable development organizations to automate and humanize messaging app conversations in multiple languages and efficiently and automatically process the resulting data. However, the timescale for those developments remains unclear.

Commercial Applications

While this report focused primarily on development organizations, a range of commercial entities are also experimenting with messaging apps as a means to open new markets and offer value-added services to other organizations. These enterprises have the potential to drive sustainable private-sector development and economic growth, and may also provide applicable insights for development organizations operating in the same regions.

[Farm.ink](#) serves as an example, ultimately intending to expand and commercialize its current chatbot service by adding features to connect farmers with traders. It has also begun testing a new commercial chatbot to be licensed to agribusinesses for use as a “digital field agent.” The chatbot can answer questions, explain products, accept mobile payments, and process and deliver information like soil testing results through an API, emulating human field agents in a more cost-effective and scalable way.

A number of other startups have emerged in East Africa, offering value-added messaging app services that enable small and medium-sized businesses to conduct mobile customer service and e-commerce:

- [Pesabot](#) offers a platform in Kenya for banks, insurance companies, asset managers, telecoms, and utilities to build chatbots on Telegram, Facebook Messenger, and Skype for customer service and sales.
- [Biasharabot](#) offers a similar platform in Kenya to help businesses automate processes through chatbots that manage social media posts, mobile payments, and logistics, among others.
- [Sellio](#) helps businesses in Kenya and Uganda place Facebook ads that link directly to a Facebook Messenger chatbot running in the inbox of their Facebook page, which then accepts purchase requests and payments, enabling businesses to engage in e-commerce.
- [Ongair](#) enables businesses in Kenya, India, South Africa, and Nigeria to use Facebook Messenger, Telegram, and WeChat for customer service. Half of Ongair’s messaging app interactions are through human customer service agents, and half are chatbots that use machine learning to mine their previous responses. Ongair also conducted a pilot with the BBC, distributing small pieces of news media to youth in emerging markets via Facebook Messenger and WhatsApp. However, the pilot encountered familiar challenges: users requested content but rarely downloaded it due to the data costs, and Ongair struggled to reverse engineer an unofficial WhatsApp integration.

Additional Considerations

Regulatory Changes

This report has not focused on the regulatory environment of emerging markets, but governments around the world are increasingly becoming concerned about the rapid growth of messaging apps. In Europe, this concern has focused on the privacy rights of users, especially following WhatsApp's decision to share user metadata with Facebook. (See Section 4: [Privacy and Security](#).) These concerns contributed to the European Union creating its [General Data Protection Regulation](#) (GDPR), set to take effect in May 2018 as this report goes to publication.

The GDPR aims to reinforce individual protections and require information and communication technology companies to upgrade their policies, terms and conditions. Many apps, like Facebook and WhatsApp, have already done so for individual and institutional users communicating or doing business within the EU.⁵¹ If other governments follow suit, especially in emerging markets, more updates could be coming that development organizations will need to stay abreast of and comply with.

Conversely, there is enduring risk that messaging apps will be banned or blocked within developing countries precisely *because* of their privacy policies and encryption protocols. Freedom House's "Freedom of the Net" initiative noted in 2016 that internet censorship around the world had increased for three consecutive years and was increasingly focused on voice and text communications through messaging apps. That year, WhatsApp was blocked in more countries than any other app (12), while 27 countries had arrested people for using Facebook.

Governments in countries like Ethiopia, Bangladesh, Bahrain, Morocco, and Uganda have all blocked WhatsApp, Facebook Messenger, Telegram, Skype, and Viber at different points of conflict and political unrest. In Brazil in 2015 and 2016, courts blocked WhatsApp three times for not turning over encrypted communications to criminal investigations.⁵² WhatsApp has been blocked in China, where a 2017 cybersecurity law requires all internet companies to store internet logs and data for a minimum of six months in order to assist law enforcement.⁵³ This includes the Chinese messaging giant WeChat, which has nearly 1 billion users and notes in its policies the need to "retain, disclose and use" user information to comply with a variety of government requests.⁵⁴

Just as development organizations should continuously monitor and adjust to emerging technologies and changes in messaging app features and policies, they should also stay attuned to the politics and regulations that govern them across different emerging markets.

51 "WTF Is GDPR?" TechCrunch, January 20, 2018; "WhatsApp Raises Minimum Age to 16 in Europe Ahead of GDPR," TechCrunch, April 2018.

52 "Silencing the Messenger: Communications Apps Under Pressure," Freedom House.

53 "WhatsApp Blocked in China as the Communist Party Congress Begins," CNBC, October 18, 2017; "What Tencent Left Out When It Denied Spying on You Over WeChat," Quartz, January 3, 2018.


54 "Privacy Policy," WeChat.

Appendix I: Project Catalog

1. Amigo Anônimo, Alcoholics Anonymous Brazil
2. DZCareer, Souktel and World Learning
3. Ebola Broadcast Service, BBC Media Action
4. Ebola Community Action Platform (ECAP), Mercy Corps
5. Farm.ink
6. Food Bot and the AIDA Chatbot Builder, WFP and InSTEDD
7. MomConnect, Praekelt.org
8. RapidPro Surveyor, UNICEF
9. Save Bangalore's Trees & #BangaloreIsBurning Campaigns, Jhatkaa
10. Shujaaz, Well Told Story
11. Tarjimly
12. U-Report, UNICEF

Agricultural Value Chain (AVC) Uzbekistan, USAID

| | |
|----------------------|--|
| Project Stage | Late |
| Sector | Agriculture |
| Countries | Uzbekistan |
| Apps | Telegram |
| Functionality | Broadcast channels and group chats |
| Goals | Enable sharing of technical and commercial information between producers, processors, transporters, and marketers. |



Telegram's group promotion features help increase participation

Telegram's use of phone numbers allows AVC to verify subscriber location

Background

USAID's Agricultural Value Chain (AVC) project in Uzbekistan, implemented by DAI, began in 2008 in partnership with commercial horticulture producers, processors, traders and exporters to increase technical expertise within the sector. AVC first published manuals for partners, but they were costly and cumbersome. Seeing that 78 percent of Uzbeks are expected to be online via mobile by 2020, the team developed the MEVA ("fruit" in Uzbek) mobile app in 2012. MEVA improved information distribution but still could not facilitate two-way engagement and primarily benefited producers. To facilitate two-way information exchange along the full value chain, AVC began creating multimedia social content in 2015, then turned to Telegram in 2017.

Why messaging apps?

AVC does not host its own Facebook group, but works with a local horticulturalist who manages a longstanding horticulture Facebook group. AVC monitors the group for frequent questions, then creates and shares YouTube and Mover¹ video responses and other technical content. The group has grown from 3,000 to 14,000 members and receives 7,000 monthly comments. However, with such high traffic, 25 percent of which is from outside Uzbekistan, AVC struggles to ensure its content reaches relevant audiences. Therefore, in 2017, AVC decided to shift to Telegram, the most popular messaging app in Uzbekistan. AVC believed that smaller, private, special interest groups would enable more efficient peer-to-peer information exchange, while a one-way broadcast channel would enable better distribution of technical content to farmers. Telegram's use of user phone numbers would also allow AVC to monitor users by country.

How it works AVC created its first Telegram group with 30 production partners to provide technical information and enable discussion of regional issues. The group was later expanded to more than 600 partners, some of whom now use it as a marketplace. To reduce noise and maintain information, AVC decided to co-create and administer separate groups by function, beginning with a group on cold storage. The project also began helping production partners create, administer and populate crop-specific groups. In July 2017, AVC created its first Telegram channel to share content with the full spectrum of farmers while restricting comments and replies and to preserve content over time. Across groups and channel, AVC uploads and posts its videos for users to forward and/or download to their devices for offline sharing.

¹ Mover is an Uzbek video sharing platform that hosts content on Tas-Ix, a free national network that enables mobile users in Uzbekistan to visit locally hosted sites and upload, download and stream videos for free, without incurring mobile data charges.

Results and reflections More than 1,600 subscribers joined the AVC Telegram channel in three months, and more than 50 subscribe weekly. Only 21 percent are female, but this rate is higher than in the Uzbek horticulture market generally (3 percent female). AVC attributes the channel's growth to Telegram's forwarding feature, which provides a link to forwarded media through which the recipient can discover the channel or group from which it was forwarded. This has allowed viral growth and for farmers to discover the channel. For AVC's partners, DAI reports that Telegram groups create a feeling of connectivity with the program and help form professional bonds across the country. However, Telegram currently provides few analytics. AVC gained access to a panel of Facebook user analytics when its Facebook group surpassed 10,000 members in 2017 but has not used the Telegram API to mine user data. The team is using the API to internally test a chatbot to provide automated responses to frequent questions.

Amigo Anônimo, Alcoholics Anonymous Brazil

| | |
|----------------------|--|
| Project Stage | Mid |
| Sector | Health |
| Countries | Brazil |
| Apps | Facebook Messenger |
| Functionality | Chatbot text dialog |
| Goals | Improved engagement between AA and youth online and through meeting system |



Facebook helped protect user privacy by ensuring its promotional feature did not share individually identifiable information about chatbot users when promoting it

Background

[Amigo Anônimo](#) (Anonymous Friend) is a Facebook Messenger chatbot operated by Alcoholics Anonymous (AA) Brazil. It was designed with Facebook in 2017 by the [J. Walter Thompson \(JWT\)](#) agency and developed by Chat Club. JWT conceived the chatbot as part of a campaign to address underage drinking by increasing AA brand awareness and meeting attendance among teens.

Why messaging apps?

AA decided to develop a chatbot to broaden its services and create an accessible entry point for young people to learn about and seek help for alcohol abuse. Rather than replace in-person meetings, AA envisioned a more personal and private first step facilitated through a familiar online platform, and a single resource for alcoholics and their family, friends and partners. JWT chose Facebook Messenger for its high penetration among Brazilian youth and because Facebook provided an integrated channel to drive adoption through viral marketing. [Facebook Creative Shop](#) also provided \$10,000 of ads and support analyzing user behavior.

How it works

When users first open a conversation with the bot, they are asked to identify themselves as someone who (1) is in treatment and had a relapse (2) thinks they may be an alcoholic, or (3) has a family member or friend who may be an alcoholic. The chatbot then leads users through a structured conversation based on in-person interviews with real alcoholics. After each message or response, the chatbot provides guidance and a multiple choice question to continue the conversation. All users are ultimately led to a list of tips, some of which are clickable and link to AA resources and email contacts. Others encourage users to attend a meeting and provide the location and email contact for the user's nearest AA meeting location.

In order to protect privacy, Facebook agreed not to share with friends when someone liked or used the AA chatbot. This means that when Facebook promotes the AA Facebook page, it will not tell users which of their friends have visited or liked the page. To avoid the impression that Facebook data was being used for targeting or that certain users were being "accused" of alcoholism, all Facebook ads for the service asked "do you know someone who needs help?" rather than "do you need help?".

Results and reflections

Despite steps to prevent users of the chatbot's individually identifiable data from being publicized to their friends as part of the page's promotion, Facebook's data policy still applies to how users might be targeted with Facebook advertisements from other organizations. The policy states that no user data will ever be made individually identifiable to advertisers, so advertisers will not be able to identify individual users of the AA chatbot. But the policy also states that it uses "all of the information we have about you to show you relevant ads." This may mean that aggregate information about those who use or like the AA chatbot,

or even the content of their interactions, could be factored into future advertisements shown to them, potentially creating an ethical conflict for AA if the products or services advertised are interpreted as promoting alcohol use.

Despite these concerns about data use, in Amigo Anônimo's first week, more than 100,000 people engaged the bot, 60 percent of whom were teens. AA Brazil's email traffic increased 1,300 percent (though the baseline is not known), and meeting attendance increased by an estimated 20 percent.² While the majority of users were women, JWT has not analyzed the gender split among those seeking help for themselves and inquiries from loved ones.

Despite the bot's early success, AA's limited capacity in Brazil has prevented further development. With no national phone helpline, calls to action are limited to web links, email contacts and meeting locations. While Facebook Messenger provided most of the features JWT envisioned, it could not support voice recording, transcription or audio response without a third-party service. JWT still hopes to facilitate peer-to-peer text and video chat through the bot, but AA Brazil lacks the resources to recruit and manage volunteers. JWT is instead exploring implementation of this next iteration with AA USA.

² As a policy, AA does not track attendance. This was reported as an estimate.

DZCareer, Souktel and World Learning

| | |
|----------------------|--|
| Project Stage | Early |
| Sector | Youth Employment |
| Countries | Algeria |
| Apps | WhatsApp |
| Functionality | Automated broadcast lists and groups chats |
| Goals | To connect unemployed |



Viber does not have flexible pricing or free services for social-sector project integration, so Souktel used WhatsApp, which required some manual administration

Background

DZCareer is a three-year project funded by the U.S. Department of State to address youth unemployment in Algeria. World Learning began the project in 2015, developing training curriculums for career counselors and youth, which are now implemented through a network of career centers. World Learning also contracted Souktel to develop a free digital job matching platform to complement and network the career centers by automatically and remotely connecting trainees to employers and job listings. Based on market research, Souktel integrated the platform with SMS and WhatsApp to send listings to youth on their mobile phones.

Why messaging apps?

DZCareer's State Department funders conceived the digital platform to overcome distance and access issues for youth. To design for the specific context, World Learning and Souktel conducted surveys and focus groups with youth in the areas where the career centers were being built. In addition to validating the free job matching platform concept, the research showed that Viber was the most popular tool among youth for information exchange, WhatsApp and SMS penetration were high, and these tools would be desirable for job matching. Facebook penetration was also high, but youth indicated that Facebook Messenger would be less preferable for job matching. Souktel therefore sought to integrate with SMS and Viber, but after considerable negotiations with Viber was unable to agree on integration pricing. The project team instead created a technical integration with WhatsApp, carried out through another application that relays content to and from the platform. Souktel's multichannel approach—combining messenger, SMS and web—is designed to test uptake and retention across each and adjust the service accordingly over time.

How it works

When initially registering on the web platform, job seekers select their region, create a professional profile, and select to receive alerts either via SMS notifications or as a subscriber to a relevant WhatsApp broadcast list. Platform algorithms then group users by location, skills and experience. For those who select WhatsApp, their phone number is relayed to the central DZCareer admin interface, where site admins add them to the broadcast list relevant to their grouping on the platform. The platform then automates the alert process, matching and sending job listings to relevant WhatsApp lists and groupings of SMS users. SMS users receive listings via direct one-way SMS, while WhatsApp users receive them as posts to their list. DZCareer's SMS integration is one-way because there is no toll-free or zero-rated option for job seekers to respond to. Souktel found that most youth have access to Wi-Fi, enabling them to use WhatsApp for free. Building on this high level of WhatsApp connectivity, Souktel has also developed two-way features for WhatsApp, such as polls, and now supports open-ended inquiries from job seekers that are relayed to the central DZCareer interface for admins to reply.

Results and reflections

The DZCareer project was rolled out in September, 2017, and DZCareer has since provided training and career support for more than 2,000 youth. The platform was released in November, and is now being promoted on career center Facebook pages while the project team provides free trainings for youth and employers. The team plans to monitor the WhatsApp integration for a six-month period and evaluate its use. If successful, the team may consider enabling DZCareer to directly connect job seekers with human employers on WhatsApp.

3 BBC Media Action routinely conducts research to map development problems and understand local audiences in the countries where it works, focusing on media habits such as preferred content, channels and technologies, as well as media and technology spending and consumption.

Ebola Broadcast Service, BBC Media Action

| | |
|----------------------|--|
| Project Stage | Complete |
| Sector | Emergency Health |
| Countries | Sierra Leone and Liberia |
| Apps | WhatsApp |
| Functionality | One-way broadcast list and two-way, one-to-one chat |
| Goals | To disseminate lifesaving information and interact with affected communities about Ebola |



WhatsApp improved on the radio call-in model, enabling audiences to submit information that subsequently informed local content targeting misinformation and health behaviour

Background

Amidst the Ebola outbreak in West Africa in 2014, BBC's international development charity, BBC Media Action, created Ebola WhatsApp broadcast lists in Sierra Leone and Liberia. The lists were used primarily as a broadcast platform to distribute locally produced multimedia public health content.

Why messaging apps?

Prior to Ebola, BBC Media Action had been working with Krio language radio stations in Sierra Leone to cover local development issues. When coverage shifted to Ebola, the organization considered different tools to complement its radio programming and ensure that content was relevant, accurate and effective at helping communities protect themselves. WhatsApp was selected based on the success of the BBC World Service's regional WhatsApp Ebola News Service. In late 2014, the World Service had created a French- and English-language Ebola list to share repurposed BBC reporting and information from health organizations. More than 20,000 people subscribed after WhatsApp gave a special dispensation to the BBC, lifting its cap of 256 subscribers for broadcast lists.

BBC Media Action saw the popularity of this service and decided to create localized versions of the Ebola WhatsApp service. WhatsApp was selected over SMS because it enabled BBC Media Action to develop multimedia content for Sierra Leone and Liberia's illiterate populations and because SMS would be more costly for users. Managing SMS also required an aggregator, whereas WhatsApp could be set up for free and accessed by anyone with the app, regardless of their mobile network.

How it worked

While the Sierra Leone list was created on a local number and managed from a local office, BBC Media Action did not have an office in Liberia, so the list was initially managed from London. For both Sierra Leone and Liberia, BBC Media Action added new contacts manually and used the lists to broadcast information to communities to help prevent and treat Ebola. At times, subscribers wrote back to BBC Media Action either in response to requests for information or with questions of their own about routes of transmission and government and agency response plans. This information helped identify areas of concern that could be addressed via WhatsApp and radio, such as dispelling rumors, encouraging behavior change and directing people to services.

Results and reflections

BBC Media Action considers the WhatsApp list a success in Sierra Leone, owing largely to the app's multimedia features and familiarity. BBC Media Action's prior research indicated that WhatsApp was commonly used by Sierra Leoneans with smartphones to share content with their communities.³ The Sierra Leone WhatsApp service received more than 14,000 subscribers, while the list in Liberia, where WhatsApp is not popular, received total engagement in the hundreds. However, the smaller group in Liberia enabled more two-way engagement with subscribers, who responded to questions posed on the list and submitted substantive feedback on the utility and clarity of content. In Sierra Leone, it became difficult for the BBC team, which had only been set up to send information to the full broadcast list, to act in individual direct messages.

In both countries the manual addition of contacts was labor intensive, especially as there was no WhatsApp Desktop at the time. Having all WhatsApp communications confined to a single phone made it difficult for the team to work collaboratively and created an existential risk to the WhatsApp program if the phone was lost or stolen. The BBC Media Action team felt that the broadcast list had great potential to collect actionable feedback from subscribers, but without a desktop app or open API, they could not easily manage the high volume of incoming content. Moreover, much of this incoming content was not substantively useful. In hindsight, the team felt that an automatic filter mechanism for incoming messages or a way to automate responses or conduct surveys via WhatsApp would have allowed them to engage more purposefully in the two-way communication messages.

Ebola Community Action Platform (ECAP), Mercy Corps

| | |
|----------------------|---|
| Project Stage | Complete |
| Sector | Emergency Health |
| Countries | Liberia |
| Apps | WhatsApp |
| Functionality | Group Chat |
| Goals | Coordinate community mobilizers in the field and enable them to share experiences and learnings |



WhatsApp enabled field staff to share key learnings and informal content

Group size limits increased management requirements for central coordinators.

Upgrades and unfamiliarity with the App limited adoption to a young minority of field staff

Background

In response to the Ebola outbreak in Liberia, in 2014 Mercy Corps developed the Ebola Community Action Platform (ECAP), a program to help communities learn how to protect themselves from Ebola and to access care. Eight hundred community mobilizers from 79 partner organizations were given phones, content and training to disseminate and collect community-level information about Ebola knowledge, attitudes and practices (KAP).

Why messaging apps?

The primary use of the smartphones was for mobilizers to report on their activities in communities via a separate data collection app. Mercy Corps staff believed the phones could also be a useful tool for the mobilizers to support one another by sharing learnings, experiences and tips, which could improve their effectiveness. Mercy Corps had good experiences using WhatsApp, even in areas of poor connectivity, so they installed WhatsApp on all the mobilizers' phones. While there was no published API, B-WhatsApp was identified as a service for bulk messaging so that the app could also back up ECAP's SMS system for coordination and alerts.

How it worked

KAP data collection via Open Data Kit (ODK) was a critical project deliverable, while the use of WhatsApp was viewed as an experiment. The mobilizer training reflected this, allotting just one hour of training for WhatsApp. Training focused on basic app functionality and adding mobilizers to chat groups. Mobilizers were simply instructed to discuss and share experiences in the field. Mercy Corps staff also participated in the chat groups, but only as silent observers. This passive and unstructured approach generated low participation. To increase engagement, Mercy Corps began curating evening discussions, proposing topics, and encouraging mobilizers to share stories and suggestions based on experiences in their communities.

Results and reflections

ECAP personnel differ in their assessments of WhatsApp. All agree that trainers and mobilizers had little familiarity with the app and low technical literacy, and that the emergency context resulted in insufficient training. These issues were exacerbated by technical problems during the short training period. WhatsApp was not available on Google in Liberia at the time, forcing users to download APK files from a web link to install and upgrade the app. In the end, WhatsApp was installed on only 85 percent of the phones, many suffered long periods of failure, and usage was concentrated among the youngest 25 percent of mobilizers. Content shared was often informal, including selfies and photos from journeys to remote communities. The ECAP Monitoring and Evaluation (M&E) Lead saw this as distracting, while the Digital Lead saw it as

motivating and providing valuable storytelling material. Both agreed that when WhatsApp discussions were stimulated by a Mercy Corps admin, they produced critical learnings. However, these benefits required significant M&E staff time in the evenings and distracted from primary responsibilities. WhatsApp's 100-member group limit made the task more difficult, requiring five parallel group conversations at a time.

As Ebola came under control, Mercy Corps' use of WhatsApp in Liberia ended in 2015, and the Digital Lead left the project. A second phase, ECAP 2, launched in 2016 to mobilize community preparedness but turned to SMS and voice calls to communicate with communities. For staff learning and coordination, ECAP 2 started a Facebook page and began using Facebook Messenger. Reflecting on ECAP 1, the M&E Lead believes Facebook Messenger would have been superior due to relatively greater penetration and familiarity in Liberia and the impact of Free Basics. The Digital Lead believes it would have encountered the same issues and achieved the same results as WhatsApp.

Farm.ink

| | |
|----------------------|---|
| Project Stage | Early |
| Sector | Agriculture |
| Countries | Kenya |
| Apps | Facebook Messenger |
| Functionality | Chatbot text dialogue and news digests |
| Goals | Connect farmers to information and each other |



Facebook Messenger has allowed Farm.ink to build on existing farmer behaviour, adding value and efficiency to the facebook group through a chatbot that filters people and content

Background

Farm.ink was founded in 2016 to build chatbots to help Kenyan farmers improve their businesses. While initial user research led to a chatbot to link farmers with buyers, testing revealed that the infrequency of crop cycles limited adoption of a marketing-only tool. Farmers first wanted a better means of filtering through large farmer Facebook groups to find relevant cultivation information about their particular location and crop. The company has since begun developing a suite of Facebook Messenger chatbots to meet this demand.

Why messaging apps?

Farm.ink's founders saw that farmers were already using large Facebook groups to exchange information. However, within groups of thousands, users could not keep pace with or search through the information to extract what was relevant to them. The team believed chatbots could provide efficiency by filtering group information, so they tested 20 prototypes on Facebook Messenger and Telegram. Farm.ink felt the Telegram API enabled bots to have more meaningful functionality within groups, but no farmers had heard of the app, and downloading and training created costs for farmers and Farm.ink. Farmers' awareness and existing use of Facebook groups and Messenger enabled more efficient user acquisition.

How it works


Farm.ink continuously tests new business models and chatbots, recently deciding to offer a suite of Facebook Messenger chatbots built on a single unified database. The first is the Africa Farmers Club (AFC) bot, which is integrated with the AFC Facebook group. Farm.ink created the group in August 2017 to generate agronomic content, then saw an opportunity to capitalize on its growth to more than 37,000 members in three months. The AFC chatbot allows group members to input their crop and location via Facebook Messenger, which generates daily messages from the chatbot with links to relevant group content and nearby farmers, as well as games that allow farmers to earn "tokens" and compete with other group members.

Users can also use the chatbot to search for farmers and information by crop or location, prompting the chatbot to return links to content and member profiles. Farm.ink uses natural language processing (NLP) to extract terms from the text of Facebook group posts, label them by crop, and enable the bot-based search. Tagging by more complex criteria, such as the post's intent (e.g., ask a question, share a story, etc.) is done manually, but Farm.ink expects to increasingly automate these tasks as it expands its dataset. Farm.ink no longer applies NLP to parse unstructured user input to the chatbots, because in testing users preferred a button-based interface, and NLP technology struggled with text written in a mix of languages.

Results and reflections As of November 2017, the AFC group averaged 28,000 active users, 2,000 posts, 19,000 comments and 70,000 reactions monthly. Fam.ink does not share chatbot user data, but reports retention is high. Farm.ink has begun testing the next chatbot in its suite, which will be licensed to agribusinesses for use as a “digital field agent.” The chatbot can answer questions, explain products, accept mobile payments, and process and deliver information like soil testing results through an API, emulating human field agents in a more cost-effective and scalable way. In addition to AFC Farm.ink is now prototyping a full suite of chatbots all built on the same database to include other services such as connecting buyers.


Food Bot and the AIDA Chatbot Builder, WFP and InSTEDD

| | |
|----------------------|---|
| Project Stage | Mid |
| Sector | Humanitarian response/food security |
| Countries | Worldwide |
| Apps | Facebook Messenger and Telegram |
| Functionality | Chatbot text dialogue |
| Goals | Provide refugees with an additional channel to communicate with WFP staff |



Facebook Messenger is the preferred chat platform of refugees in sub-Saharan Africa

mVAM is designing for existing Messenger users and is not attempting to drive options



Some refugees use Messenger lite or access Messenger through Facebook on their browser, preventing mVAM from leveraging UI features optimized for the app

Background

Since 2013, the mobile Vulnerability Analysis and Mapping (mVAM) project has monitored food security trends through short surveys of World Food Programme (WFP) beneficiaries (i.e., food insecure people around the world) using SMS, live phone interviews, online surveys and an interactive voice response (IVR) system. mVAM then anonymizes, cleans and analyzes the data, sharing the results as a public good and using them internally for humanitarian decision making. mVAM also shares information with beneficiaries through IVR and Free Basics (free websites), which beneficiaries can call and browse for free to access information about food prices and WFP assistance (e.g., food distribution dates) or provide feedback using the same channels. Since its inception, mVAM has worked in 34 countries, primarily in sub-Saharan Africa.

Why messaging apps?

In 2016, mVAM decided to experiment with chatbots as a new channel for beneficiaries to report and access WFP information, recognizing the growing popularity of messaging app in beneficiary countries, particularly among young people. mVAM engaged InSTEDD to prototype “The Food Bot” on Telegram and showcase the idea to donors and partners. However, early user testing in Haiti, Nigeria, and Kenya found that beneficiaries were unfamiliar with Telegram. Facebook Messenger and WhatsApp were the most commonly used messaging apps. In 2017, the team subsequently received funding to develop The Food Bot on Facebook Messenger. They conducted two rounds of user testing in the Kakuma Refugee Camp in Kenya and in Maiduguri, Nigeria, with refugees, internally displaced people, and with WF Country Offices. Field testing found that while not all refugees use Facebook Messenger, it was popular amongst 20- to 40-year-olds and community leaders, and there was significant demand for a chatbot service amongst country teams.

How it works

Initial testing with beneficiaries suggested that The Food Bot would be useful for refugees in Kenya to provide feedback and submit complaints about WFP services, while In Nigeria it could be used to collect price information from traders. However, after testing with WFP Country Offices, mVAM and InSTEDD concluded that a single generic Food Bot would be insufficient to meet their diverse needs. Instead, mVAM concluded that WFP Country Offices and other humanitarian teams needed a web platform to quickly build and deploy their own custom chatbots with little in-house programming skills. mVAM and InSTEDD pivoted and began developing a chatbot builder platform for the humanitarian sector called AIDA. mVAM will become AIDA’s first major user in late 2018, as InSTEDD refines it for release as an open-source tool at the end of the year.




Results and reflections

WFP and InSTEDD's experience demonstrate the importance of conducting extensive user research and iterative testing before deploying messaging apps for development. In addition to their broader pivot from a single chatbot to a chatbot builder platform, testing also revealed insights about how different beneficiary groups access and use Facebook Messenger, and thus which user interface features they experience. While some download and use the Facebook Messenger app, others use Messenger Lite, which eliminates some advanced features to save space and use less data.

To avoid data charges, others log into the Facebook social media platform through their mobile browser and then use Facebook Messenger through the website. For these users, key UI features enabled through the Facebook Messenger API, such as multiple choice bubbles, are not supported. For AIDA, WFP and InSTEDD are designing chatbot interfaces that cater to all user groups, and eventually to multiple messaging apps.

MomConnect, Praekelt.org

| | |
|----------------------|--|
| Project Stage | Late |
| Sector | Health |
| Countries | South Africa |
| Apps | WhatsApp, Facebook Messenger an WeChat |
| Functionality | One-way messaging and one-to-one, human, text-based help desk |
| Goals | Provide refugees with and additional channel to communicate with WFP staff |

| | |
|--|--|
|  | WhatsApp integration is most promising, but concerns remain about billing. |
|  | Facebook Messenger integration could not be automated because Facebook profiles rarely include mobile phone numbers. |
|  | WeChat integration provided little benefit due to low adoption in South Africa |

Background

Praekelt Foundation developed MomConnect in South Africa in 2013 as part of the Mobile Alliance for Maternal Action, a global partnership to reduce maternal and infant deaths by delivering information to women on their mobile phones. MomConnect provides pregnant women and new mothers with a text-based help desk to which they can send questions and receive guidance from trained nurses, as well as automated reminders and tips delivered throughout their pregnancy. Both aim to improve health services, outcomes and systems by driving utilization of public clinics and generating real-time performance data for health officials and providers. While registration is still conducted exclusively via USSD, and services are still available via SMS and IVR, in 2016 Praekelt decided to also test MomConnect services via messaging applications.

Why messaging apps?

Praekelt pursued messaging app integration to enable faster and cheaper messaging for MomConnect and its users and to expand MomConnect's help desk experience. WeChat was tested first due to availability of the API, but the app's penetration in South Africa was low and its user base was outside the low-income demographic. Praekelt also tested Facebook Messenger integration but struggled to reliably link users to their Facebook accounts due to users not always having registered their mobile phone numbers. Despite these challenges, in 2017 Praekelt decided to test WhatsApp when offered an exclusive opportunity to pilot an unreleased API.

How it works

After a new MomConnect user registers via USSD, the platform now uses the phone number to automatically search WhatsApp and allow subscribers to engage MomConnect via the app. If the subscriber is a WhatsApp user, all further tips and helpdesk communications happen across WhatsApp. If not, the subscriber still has access to the MomConnect services via SMS or IVR. On the backend, help desk nurses monitor the system and push responses to incoming queries through a single, channel-agnostic interface, which then delivers them according to each user's preferred channel.


Results and reflections

Praekelt reports that its WhatsApp integration has quickly improved MomConnect's efficiency and effectiveness, but viability depends on the final commercial pricing. Plans and new funding are nevertheless in place to test multimedia and other behavior change content and techniques via WhatsApp, and early prototyping with bots and groups is proceeding with caution.

4 supporters to WhatsApp by sending an SMS with a new WhatsApp number and encouraging recipients to contact the new number via WhatsApp to join a group or broadcast list.

RapidPro Surveyor, UNICEF

| | |
|----------------------|---|
| Project Stage | Late |
| Sector | Health |
| Countries | South Africa |
| Apps | WhatsApp, Facebook Messenger and WeChat |
| Functionality | One-way messaging and one-to-one, human, text-based help desk |
| Goals | Provide refugees with an additional channel to communicate with WFP staff |



UNICEF's data collection app has a Messenger-like user interface (UI), designed to require less training than form-based data collection apps

Background

UNICEF, in collaboration with Nyaruka Ltd., released RapidPro in 2014 as an open-source platform to allow international development practitioners to develop country-specific mobile services for engagement and data collection. The platform lets users create SMS and IVR applications. UNICEF has used RapidPro to deploy many SMS-based data collection systems and has found a back-and-forth messenger-bot-like dialog to be useful in guiding data collectors. The RapidPro Surveyor application was created in 2015 to provide a chat-like interface on smartphones without network connectivity. RapidPro Surveyor's messenger-like UI reduces user training requirements and improves data quality.

Why messaging apps?

RapidPro Surveyor is not a messaging application in the traditional sense, in that it does not let people chat with others on the internet. Instead, it provides a messenger UI through which data collectors interact with simple bots to record information in a conversation rather than by filling out complex electronic forms. UNICEF believed a conversational UI would be more familiar to field staff, who were increasingly using smartphones and messaging apps, and that it would be easier to learn than data collection apps like Open Data Kit (ODK) Collect. UNICEF already had custom chatbots to test the viability of conversational messaging UI but needed an app that could work without an internet connection.

How it works

Users create surveys using RapidPro's web-based survey composer. These surveys are in the form of a "flow" of questions that can include branching logic to ask different questions based on a user's responses. The finished surveys are downloaded to the RapidPro Surveyor Android app. Using the Android app, users answer the survey questions, and the answers are stored on the phone or tablet to be uploaded back to RapidPro when the device is again connected to the internet.

Results and reflections

Beyond the reduced training requirements, UNICEF also observed that RapidPro Surveyor similarly allows for validation and normalization of data "on the way in," as users work through a survey. This in-the-moment validation lets users correct mistakes and improves data quality. Despite these benefits, RapidPro Surveyor remains experimental and UNICEF does not have plans to promote its adoption.

Save Bangalore's Trees & #BangaloreIsBurning Campaigns, Jhatkaa

| | |
|----------------------|--|
| Project Stage | Late |
| Sector | Environment |
| Countries | India |
| Apps | WhatsApp |
| Functionality | Group reporting and dialogue; broadcast lists |
| Goals | Motivate, coordinate and facilitate citizen environmental advocacy |

Jhatkaa supporters are more responsive via WhatsApp than on SMS, IVR or email



WhatsApp media sharing features enabled crowdsourcing of evidence for activism

WhatsApp group and list limits create major inefficiencies for large-scale communication

Background

Jhatkaa is an Indian advocacy organization founded in 2013 to initiate grassroots citizen campaigns for action on environmental and human rights issues. Most of Jhatkaa's work has revolved around online petitions, followed by advocacy and outreach with supporters via SMS, IVR, missed calls, email and social media. In 2016, Jhatkaa used WhatsApp as an additional channel to engage supporters of two separate campaigns in Bangalore.

Why messaging apps?

Jhatkaa first used WhatsApp as part of the #BangaloreIsBurning campaign to stop trash burning. Because local officials had minimized the issue, Jhatkaa saw an opportunity to crowdsource photographic and locational evidence via WhatsApp, used by 96 percent of Indian smartphone owners.⁴ In September, Jhatkaa initiated a new campaign, Save Bangalore's Trees, to halt the destruction of trees for road widening. Unlike #BangaloreIsBurning, the campaign did not require crowdsourcing photos, locations, or other multimedia from supporters. Therefore instead of using WhatsApp, Jhatkaa had new campaign supporters register by making missed calls to a dedicated phone number. Supporters were then sent an SMS encouraging them to refer friends. The marketing was successful, generating more than 200,000 missed call registrations, but this scale made the cost of continued SMS outreach and engagement unsustainable. Moreover, few registered supporters responded to SMS outreach. Hoping to increase engagement and reduce costs, Jhatkaa attempted to transition supporters to WhatsApp for continued dialogue and updates.

How it works

Both campaigns were marketed through email, Facebook, print, radio and events, calling on supporters to sign an online petition and contact a mobile phone number. For #BangaloreIsBurning, supporters were asked to send a WhatsApp message to a number to be added to a group through which they could then share photos and locations of trash fires, which Jhatkaa then added to a public map. Supporters of Save Bangalore's Trees were asked to make a missed call to a number to register their contact. Upon registration, Jhatkaa would send supporters an SMS with a call to action to forward it to others so they could also register. After registration and referral, Jhatkaa continued trying to engage supporters via SMS dialogue and updates. As SMS costs increased and engagement waned, Jhatkaa attempted to move supporters to WhatsApp by sending an SMS with a new WhatsApp number and encouraging recipients to contact the new number via WhatsApp to join a group or broadcast list.

Results and reflections

Both campaigns successfully met their goals, as Bangalore issued penalties for burning garbage, and the road-widening project was canceled. More than 500 fires were submitted to the #BangaloreIsBurning groups for mapping, and the Save Bangalore's Trees groups had up to 10 percent engagement from members, up from 1 percent on SMS. Yet only 2,000 of the total 200,000 supporters transitioned to WhatsApp. And even at small scale, WhatsApp's limits on group and list size forced Jhatkaa to break the contacts into multiple groups and lists, at one point managing more than 20 groups at a time. Jhatkaa fears that at greater scale, these limits will become unmanageable. Conversely, the organization has capitalized on these groups by conducting A/B testing of different messaging approaches, sharing identical links with different messages to different groups, then using the source code to compare click rates for each.

Shujaaz, Well Told Story

| | |
|----------------------|---|
| Project Stage | Early |
| Sector | Youth/education |
| Countries | Kenya and Tanzania |
| Apps | Facebook Messenger and WhatsApp |
| Functionality | Peer-to-peer and group chat |
| Goals | Drive behaviour change through character-driven entertainment and education |



WhatsApp engagement exceeded the Shujaaz team's capacity, leading to a new "Player First" strategy in which fans self-organize and administer their own chat groups

Shujaaz Facebook page admins receive private fan messages via Facebook Messenger in order to counsel sensitive issues and recruit research and event participants

Background

Founded in 2010, Well Told Story (WTS) is a Nairobi research and production company that produces [Shujaaz](#), a youth media initiative that combines a comic book with radio and YouTube programs. Shujaaz revolves around young, authentic fictional characters who surface sensitive issues to help youth improve their lives. These issues are usually part of broader campaigns or research initiatives conducted on behalf of WTS' commercial and development partners and clients. Fans then engage with the characters and issues through toll-free SMS, WhatsApp and social media, including character Facebook pages and Facebook Messenger accounts, which are used to generate research insights and drive behavior change.

Why messaging apps?

The WTS hypothesis is that collective discussions lead to collective behavior change, so Shujaaz values two-way and group communication with fans. For the many fans without internet access, toll-free SMS has been an essential channel for engagement. For those with internet access, social media has been equally critical. Shujaaz Facebook pages, created for each of its characters, enable fans to gather in a public digital space and engage with the characters and each other to discuss issues prompted through Shujaaz programming. Because of Facebook Messenger's direct integration with these pages, the Facebook Messenger app quickly emerged as another key tool to engage fans one on one. While Facebook Messenger allows for group chats, they cannot be created by a Facebook page account, such as those for the various Shujaaz characters. Therefore as WhatsApp penetration began to grow in Kenya in 2015, the Shujaaz team adopted WhatsApp as a means to create and monitor smaller group discussions with fans.

How it works

All Shujaaz media calls for fans to engage characters via SMS and the Facebook pages of its different characters. The Facebook page for Shujaaz's main character, DJ B, has the largest number of fans, who engage through comments on his posts. WTS has a dedicated social media team that manages the page, prompting conversations through posts and comments. Followers can also engage DJ B through Facebook Messenger to seek support with personally sensitive issues. The Shujaaz social media team then either asks the follower to share their story anonymously for group discussion or refers them to professional services. Since 2015, the team has also created more than 20 WhatsApp chat groups on behalf of DJ B. Some are created after in-person events for attendees to stay connected, while others focus on specific themes. Some are created as targeted focus group discussions for research purposes. Fans are also encouraged to form and manage their own groups and add DJ B's number.

Results and reflections

WTS regularly tracks the volume and content of SMS and Facebook interactions. Entering 2018, DJ B's Facebook page had 567,000 followers, and in 2017 inspired 106,089 comments from 37,835 unique users. Nearly 500,000 fans sent more than 90,000 monthly SMS texts to Shujaaz's toll-free SMS shortcode. In the same year, Shujaaz found that fans exposed to these digital channels were associated with better family planning practices and higher income than their peers. Toll-free SMS remains Shujaaz's most frequently used channel. The company does not yet separately track Facebook Messenger and WhatsApp engagement but receives hundreds of daily messages on each. WhatsApp is especially difficult to analyze without an API or analytics feature, and the group chat size limit has stretched capacity, leading WTS to deprioritize it as an area of focus for fan engagement while encouraging fans to create their own chat groups.

Tarjimly

| | |
|----------------------|---|
| Project Stage | Early |
| Sector | Refugee services |
| Countries | Global |
| Apps | Facebook Messenger |
| Functionality | Chatbot and Peer-to-peer text dialogue |
| Goals | Provide refugees and aid workers instant access to live translators |



Facebook Messenger enabled rapid adoption by refugees, aid workers and translators

Facebook cannot yet facilitate peer-to-peer video connections through a Facebook page

Background

Founded in early 2017, Tarjimly is a chatbot that connects aid workers and refugees with human translators around the world. The founders, all Muslim-American technology professionals, were moved to help refugees after watching news of the Syrian civil war and resulting refugee crisis unfold. When they volunteered in refugee camps, they spent most of their time helping translate for refugees and the aid workers who served them. Afterwards, they determined to apply their technical and linguistic skills to create a chatbot to supplement the shortage of translators available to refugees and aid workers.

Why messaging apps?

Despite a shortage of translators available to refugees and aid workers in person, the Tarjimly founders discovered a substantial supply of multilingual speakers willing to help remotely. What was required was a low-cost intermediary to connect translator supply with demand. The team believed that a chatbot linked to a popular messaging app would be the most practical solution in terms of development costs, overhead and onboarding. The team chose Facebook Messenger, calling the app the “the best and most robust” option to develop their chatbot and facilitate peer-to-peer conversations, and noting that aid workers, refugees and translators were already using Facebook to call on their global networks for assistance.

How it works

When first opening Tarjimly, users select whether they are a refugee, aid worker or translator. Translators then input which languages they speak and their available time slots. Thereafter, during the selected slots, Tarjimly asks the translators if they are available. Translators who confirm availability can then be matched with refugees or aid workers. When refugees and aid workers register, they select the languages they need to translate and wait as the chatbot searches for a translator according to language, availability and quality ratings. When the match is made, both parties receive an introductory message within the chatbot and a note that they are entering a live session. To protect the privacy of both parties, the chatbot does not connect users directly through their Facebook profiles but instead hosts a conversation within the chatbot dialog box. Both sides are able to exchange text, photos and audio notes to request or provide translations. Throughout, the refugee or aid worker can push a button to “end session,” prompting a translator rating that feeds back into the algorithm for future matching.

Results and reflections

While Tarjimly originally expected that refugees would be using the app most frequently, in practice, most users are the aid workers who are helping refugees. Across all three user groups, onboarding has been smooth due to Facebook’s popularity. In its first week, Tarjimly registered more than 1,000 translators and now hosts hundreds of sessions monthly. User reviews are mostly positive, and a common request from translators has been for sustained relationships with refugees. Tarjimly is now experimenting with a scheduling feature.

While Tarjimly continues to believe Facebook Messenger is the best option to support its services, some limitations have frustrated expansion. Users cannot connect via live video chat because conversations are hosted by the Tarjimly chatbot, which is connected to Tarjimly's Facebook page, not a user profile. Facebook only facilitates video chat on Messenger between two user profiles connected directly, not for conversations mediated by a chatbot. Tarjimly is also not language agnostic. It supports 11 languages and continues to add more. In the very long term, the Tarjimly team envisions expanding its product to serve as a generic translation mediator between multiple different messaging platforms.

U-Report, UNICEF

| | |
|----------------------|--|
| Project Stage | Late |
| Sector | Civic engagement |
| Countries | Worldwide |
| Apps | Facebook Messenger and Telegram |
| Functionality | Chatbot and Peer-to-peer text dialogue |
| Goals | Allow young people from around the world to join and participate in a social movement that amplifies their voice to help create positive political and social change |



For a legacy SMS program, does it make sense to switch to messaging applications?



Telegram was ineffective due to lack of familiarity among active U-Reporters

Background

U-Report is a program intended to amplify the voices of young people in countries where UNICEF works. It was originally implemented using SMS to allow youth to register as “U-Reporters” and then receive and respond to questions about their lives. Responses are aggregated and shared back to U-Reporters, government and NGOs, and are published publicly. In emergencies, such as the 2014-2016 West Africa Ebola outbreak, U-Report was also used to deliver lifesaving information. In 2016, UNICEF started experimenting with allowing youth to interact with U-Report using internet messaging applications.

Why messaging apps?

Responding to trends showing the increased use of messaging applications among youth around the world, U-Report decided to expand its channels. Telegram was chosen first in early 2016 because it was one of the first messaging applications to provide an open API that allowed organizations to develop and integrate chatbots with other platforms. Telegram, however, had low penetration in the countries where U-Report operates, so it was never used at scale. Later in 2016, U-Report tested the Facebook Messenger API for delivering U-Report surveys. By late 2017, the integration was still at an early stage, but the U-Report team viewed its partnership with Facebook as a critical investment that would result in cost savings to U-Report and U-Reporters because, unlike SMS, there is no per-message cost to use Facebook Messenger.

How it works

U-Report’s use of messaging applications relies on structured decision trees. U-Reporters send messages and are asked specific questions based on the content. U-Report sometimes supplements this with appointment-based activities, where incoming questions are answered live by UNICEF staff and answers are streamed live on Facebook. These sessions allow U-Reporters to receive a more in-depth human response that is then amplified for a broader audience. UNICEF is experimenting with machine learning and artificial intelligence for future U-Report chatbot conversations, but human involvement is still considered essential to provide critical learning that will later optimize the machine learning structure.

Results and reflections

While U-Report has since developed about 20 different conversation streams using Facebook Messenger, their deployment remains in the early stage and their effectiveness relative to toll-free SMS is yet to be thoroughly assessed. As of late 2017, U-Report had only deployed a chatbot at scale in Myanmar, where 15,000 U-Reporters have been engaged through Facebook Messenger following difficulties integrating with the mobile network operators for SMS communications. U-Report representatives have resisted drawing early conclusions about the Facebook Messenger integration, noting that the U-Report platform’s architecture, originally built only for SMS, is still being adjusted to optimize the integration. One clear benefit is that Facebook Messenger is more cost effective than SMS for, has great UNICEF and, therefore scaling potential.

Appendix II: Case Studies

1. Agricultural Value Chain Activity (AVC), USAID, Uzbekistan
2. Amigo Anônimo (Anonymous Friend), Alcoholics Anonymous, Brazil
3. Ebola Community Action Platform (ECAP), Mercy Corps, Liberia
4. Food Bot and the AIDA Chatbot Builder, World Food Programme and InSTEDD
5. MomConnect, Praekelt Foundation, South Africa
6. Shujaaz, Well Told Story, Kenya

Agricultural Value Chain (AVC) Uzbekistan, DAI

Case Study

1 MARCH 2018



SUMMARY

Since 2008, the Agricultural Value Chain (AVC) project in Uzbekistan has supported commercial horticulture development by working with producers, processors, traders and exporters to create market linkages and increase technical expertise through information exchange. The project's information services began with printed manuals before evolving to a custom mobile app. The project then began producing videos and publishing them on video sharing platforms such as YouTube, as well as social media forums. In 2017, the project team added a series of targeted forums on Telegram, which in 2016 was Uzbekistan's most popular messaging application.



 **Telegram,**
Uzbekistan's
most popular
messaging
application.

Key Feature Definitions



Chat Group: A virtual group of people that allows exchange of text messages and multimedia content. In Telegram, chat group members can invite others to join the group.

Telegram Broadcast Channel: A Telegram feature that allows the channel's creator to send a message to a list of multiple recipients at once. Unlike with WhatsApp lists, recipients cannot reply to the creator nor other list members. Telegram channels also differ in that they can be made public and discoverable through the Telegram application's search feature, and individual subscribers can invite others to join.

Telegram Supergroup: A specific type of chat group on Telegram consisting of more than 200 and up to 100,000 people. Unlike with a normal Telegram chat group consisting of fewer than 200 people, new members in supergroups instantly have access to the group's entire message history. Groups that exceed 200 people are automatically converted from a normal chat group, though Telegram users can also create their own supergroup manually. Supergroups have a unified history, so deleted messages will always disappear for everyone in the group, not just the sender/deleter. Supergroup admins can make the group's link public so that new members can join without receiving an invitation and pin important messages to the top of the chat dialogue screen, allowing all new and existing members to see them. For all supergroup members, message notifications on the phone app are automatically muted.

Telegram Username: Telegram's username feature allows users to create a name that will mask their phone number, enabling the user to retain their anonymity and protect their phone number from being viewed by other users in a group or channel. This prevents others from contacting the masked user through calls, SMS or other messaging apps. If one user knows the username of another, the username can be searched for and contacted directly.

In mid-2017, AVC created its first Telegram chat group for a small, select set of commercial producers, which was then opened and steadily grew to more than 800 subscribers by 2018, becoming a Telegram supergroup. The group is used to curate dialogue and engagement among major commercial horticulture producers, share the project's video content and other external resources, and publish written technical articles. For many users, the group also evolved into a self-directed marketplace to buy and sell crops and value-added services.

Later in 2017, AVC expanded its Telegram presence and created a public Telegram broadcast channel, through which the project pushed video and other content to a much larger spectrum of horticulture farmers and service providers. The channel attracted nearly 3,000 subscribers in five months. The project also began working with commercial partners to co-create and administer smaller Telegram chat groups

focused on specific crops or services (e.g., export, processing, storage and transport). AVC has inspired and helped some of its channel subscribers and supergroup members to create and administer their own crop-specific groups. All of AVC's administered and affiliated Telegram groups were then monitored for common questions and needs, which were used to inform the project's video productions.

The AVC team credits Telegram with increasing overall project productivity by enabling more efficient, effective, targeted and less costly exchange of information with beneficiaries. Just two staff members are now able to use Telegram's mobile, desktop and web browser applications to manage multiple two-way chat groups and a one-way channel, all of which have grown virally through promotion on AVC's social media forums and Telegram's sharing and search features.

Key Lessons

1. Use an app that beneficiaries already have on their phones and are familiar with.
2. Expand gradually, start with a small group of select beneficiaries, test different messaging approaches and then slowly grew the group and expand to new chat groups and channels.
3. Use existing professional and digital networks to grow the number of participants and engagement levels



BACKGROUND

Goals and Origins

DAI began implementing USAID's Agricultural Value Chain project in Uzbekistan in 2008 to improve commercial horticulture production processing and trade through enhanced market linkages and technical expertise. Horticulture in Uzbekistan had waned after the



collapse of the Soviet Union, but market privatization in the early 2000s had reinvigorated demand for technical knowledge and resources within the sector. The AVC project was designed to meet this demand through targeted investment and collaboration with commercial producers, processors, traders, exporters and universities within different fruit, nut and vegetable value chains. The project also sought to invest in educational opportunities for young people, especially university students, looking to enter the horticulture sector.

From the project outset, the production and provision of technical information and guidance was seen as a priority initiative and was initially conducted through the production and distribution of hard copy books and manuals on topics such as crop selection, equipment purchasing, pest management, cultivation and investment planning. However, these proved costly to print and distribute, cumbersome to use, and slow to update, so AVC transitioned to digital channels¹.

Going Digital

By 2012, mobile penetration in Uzbekistan had reached 91 percent,² and 78 percent of Uzbeks were expected to be on the internet by 2020, with 93 percent accessing it via smartphones.³ Therefore, AVC developed an Android mobile app, Meva App, to allow Uzbek horticulture farmers to access information on crops, cultivation, equipment and investment that had previously been published in books and manuals. In 2015, Meva was voted one of the top five apps in Uzbekistan for design and ease of use.⁴ But while it improved information distribution, Meva primarily benefited producers and could not facilitate two-way information exchange and marketing, which the project's larger commercial partners repeatedly requested. It also required significant funding to continually create content for the app, which the project had difficulty sustaining.

1 Hard copy manuals remain available for printing at the request of partner institutions, such as universities and research institutes, but the project itself no longer prints physical manuals for regular distribution.

2 "Uzbekistan Internet Users." Internet Live Stats, <http://www.internetlivestats.com/internet-users/uzbekistan/>.

3 "The future of the telecom industry in Uzbekistan." Azat Irmanov, Kommersant.uz, <http://kommersant.uz/kejs/budushhee-telekom-industrii>.

4 "Made in Uzbekistan Applications." Akmal Raimov, Afisha, 30 May 2016 <https://www.afisha.uz/techno/2016/05/30/sdelano-v-uzbekistane-prilozheniya/>.

Entering a new stage of the project in 2015, AVC began to use social media to enable two-way engagement between different value chain actors. Rather than start a new service, AVC partnered with a local horticulturalist who managed the Bogdorchilik Ilmi (science of horticulture) Facebook group. Working with the group admin, AVC began monitoring the group and providing responses to questions, then creating and sharing instructional videos on **YouTube** and **Mover**,⁵ usually relating to horticulture cultivation, which were responsive to particularly common questions. By 2018, the Facebook group had quadrupled to 14,000 members and was receiving more than 7,000 monthly reactions and comments. The group had become increasingly self-sustaining, with members sharing information and media in response to questions before AVC does.

However, the high volume of traffic eventually made it difficult for members to find old content, because Facebook presents the most recent and popular content up front and deletes group content after two years. The AVC team realized that this was especially true for the larger and more commercially oriented producers, commercial traders, storage operators and processors. As the Facebook group grew, the audience became extremely broad. By 2018, 25 percent of the Facebook group's members were from outside Uzbekistan, and the group was generating the most engagement from younger, smaller-scale farmers, newcomers to the sector and students.

“For those working in the busy, fast-paced business context, Facebook just wasn't fast enough for them,” said the AVC chief of party. While the group contained a wealth of information and constant engagement, for commercial actors it took too much time to get information through the Facebook app or website. The AVC team also observed that users struggled with the Facebook search feature when looking for older or specific content, and scrolling through the group and sifting through the traffic to find relevant information was difficult and confusing. This appeared to be in part because Facebook did not always present the information in chronological order but rather used an algorithm that also factored in the number of likes and comments a post had received. While Facebook Messenger could allow direct engagement with members, AVC and the group admin do not have the capacity to respond to private queries.



Expanding to Messaging Apps

In 2017, AVC decided to add Telegram as a new medium for multimedia information exchange. AVC believed Telegram's one-way broadcast channel and two-way group chat features would allow for more targeted communications and easier creation and management of smaller chat groups for more efficient peer-to-peer information. The app's use of phone numbers as unique user identifiers would also help AVC identify Uzbek users to help target its content in accordance with the project mandate, while the one-way nature of Telegram channels would ensure that all information was in the Uzbek language. Other apps offered similar features, but as the most popular messaging application in Uzbekistan in 2016, Telegram provided an easier path to adoption.⁶

⁵ Mover is an Uzbek video sharing platform that hosts content on Tas-Ix, a free national network that enables mobile users in Uzbekistan to visit locally hosted sites and upload, download and stream videos for free, without incurring mobile data charges.

⁶ “Telegram became the most popular messengers in Uzbekistan.” Telegraf.uz, <https://telegraf.uz/en/science-and-technology/telegram-became-the-most-popular-messengers-in-uzbekistan>.

IMPLEMENTATION

AVC's Telegram efforts started small, beginning in mid-2017 with a single chat group focused on general content and a select membership of existing professional partners and contacts. Throughout the year, the project expanded the group's membership by continuing to build on its existing network and encouraging a viral approach among members. Then, one at a time, AVC began adding more focused Telegram chat groups and eventually a Telegram channel, while encouraging its members to create their own narrowly focused chat groups.

Using Telegram for engagement with commercial beneficiaries required no new hardware or software, since all of AVC's staff already had mobile phones, computers and Telegram accounts. AVC staff were already using their own Telegram accounts through the Telegram desktop app, Telegram web browser app and the mobile app to communicate internally with one another and as the primary communication channel in their personal lives.

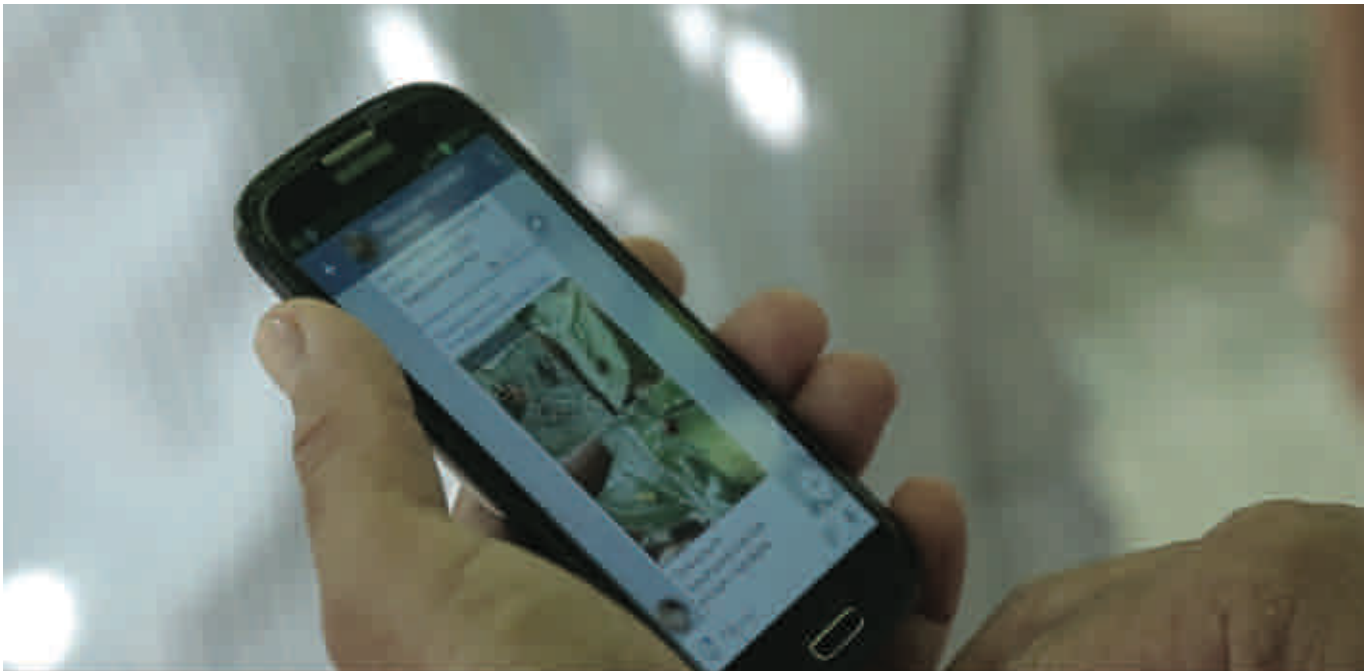
If they had needed to set up a Telegram account for the first time, the app could be downloaded for free to any smartphone and used to create an account, which could then be accessed, along with the account's entire message and media history, via an unlimited number of other phone or desktop devices and through any web browser app. If using Telegram for professional purposes, the app's username feature allows users to mask their phone number, retaining their anonymity and protecting their phone number from being viewed by other users in a group or channel and contacted through calls, SMS or other messaging apps. Alternatively, Telegram supports multiple accounts on a single app, meaning that within the app on a single phone, a user can toggle back and forth between multiple accounts.

The First Chat Group

AVC first used Telegram to start a small chat group for a select group of horticulture producers that was called Bogbon, which means horticulturalists. The AVC team saw the group as an opportunity to test a more targeted messaging approach and manage more focused engagement among commercially oriented beneficiaries on a more accessible and preferred forum to Facebook. For the group members, AVC hoped that the group would serve as:

1. A forum for producers in different regions of Uzbekistan who might not otherwise interact, share and learn about their respective horticulture issues and ideas
2. A source of information for AVC about trends and common needs among horticulturalists, which would inform video production efforts
3. A means for AVC to efficiently distribute its videos and other technical information to its most important beneficiaries.

The project's Production Component Leader used his own existing Telegram account, for which he had created a username, to create this single Telegram chat group. As the creator, he automatically became the group admin and then added three colleagues as co-admins. The AVC admins then selected and invited a small group of 30 major commercial horticulture producers with whom the project had worked closely as partners over the years. Nearly all of the producers already had Telegram accounts, and the AVC admins had their phone numbers on record, which enabled them to find the producers in Telegram and add them to the group. If not found, the AVC team used Telegram's Invite via Link feature, copying an invite URL link generated by the app and sending it out via other channels such as SMS and email.



All of the original invitees joined the group, and as traffic grew over time, AVC decided to invite other select commercial horticulturalists from its network. The team also made the small group public by enabling members to access and forward or share a link with select other industry colleagues to encourage them to join the group. With invites going out both from the AVC admins and the group members, the group soon grew to 200 members, at which point Telegram automatically converted the group to a Telegram supergroup.

Growth to a Supergroup

Telegram supergroups can have up to 100,000 members, and unlike with a normal Telegram chat group, new members instantly have access to the group's entire message history. While AVC's Telegram supergroup was automatically converted from a normal chat group, Telegram users can also create their own supergroup manually. Supergroups have a unified history, so deleted messages will always disappear for everyone in the group, not just the sender/deleter. Supergroup admins can make the group's link public so that new members can join without receiving an invitation and pin important messages to the top of the chat dialogue screen so that all new and existing members can see them. For all supergroup members, message notifications on the phone app are automatically muted.

As a supergroup, AVC's Bogbon Telegram chat group came to include an increasingly large and diverse array of members. And while the content generally remained focused on large-scale commercial production, conversation subjects and AVC's content spanned an array of different crops and horticulture services. Members represented commercial enterprises working in all areas of the horticulture value chain, including cold storage, processing and export, as well as those operating fully vertically integrated horticulture businesses. As the group expanded beyond those with whom the AVC admins had pre-existing professional relationships or partnerships, the AVC admins retained their anonymity, despite often using their personal Telegram accounts, by using the Telegram username feature.

Addition of a Telegram Channel

In July 2017, the AVC team created its first public Telegram channel, naming it Bogdorchilik Ilmi like its Facebook group. Telegram channels are similar to WhatsApp broadcast lists in that they allow the channel's creator to send messages to a group of subscribers at once. Unlike with WhatsApp lists, recipients cannot reply to the channel admin, nor to other members. Telegram channels also differ in that they can be made public and discoverable through the Telegram app's search feature, and individual subscribers can invite others to join the channel.

AVC conceived its Telegram channel as a way to enable the full spectrum of Uzbek horticulture farmers—large commercial operators and smaller farmers—to receive valuable, reliable technical information from the AVC team. For this purpose, the one-way nature of Telegram's channel feature was preferred because it allowed AVC's channel admin to completely control content. Through the channel, AVC could share only carefully curated, relevant media while preventing comments and replies from subscribers that might drown out content for others. The one-way feature also allows AVC to produce only Uzbek language content and thus ensure that it targets beneficiaries. Unlike Facebook groups, Telegram channels preserve content for subscribers to access and search over time.

The AVC Telegram channel was created and administered by the project's Public Outreach coordinator, who took advantage of Telegram's dual account feature to separately create and manage both his personal and professional Telegram communications. Using his Samsung mobile phone with dual SIMs, the Public Outreach Coordinator was able to have both a personal phone number and another used only for professional purposes, both on a single phone. This allowed him to create and manage both a personal and a professional Telegram account on the same phone, accessible through the same Telegram application. Once both accounts were created, the Public Outreach Coordinator could toggle between both, creating and joining new AVC Telegram forums on his professional account from his phone or desktop app without being overloaded with notifications from his professional chat groups or revealing his personal contact information to unknown professional contacts.

Addition of Focused Subgroups

To offer more targeted content and focused dialogue, AVC eventually decided to create more smaller Telegram chat groups, which the team internally refers to as subgroups. To narrow the subgroups' focus, AVC planned for each to be based on either a specific crop or a specific value-added service, such as processing, and to create one at a time. The first subgroup created was the cold storage group in the fall of 2017. To create and lead the subgroup, AVC looked outside of its own project team, choosing to help one of its most engaged commercial cold storage partners to create the group himself from his Telegram account. He then added two AVC staff as co-admins, as well as one other commercial cold storage colleague. The group was designed specifically for their colleagues working in cold storage to share market and technical information, such as preferred temperatures and humidity levels for specific crops, storage spacing, and crop durability in cold storage.



Shortly after the cold storage subgroup was created, a member of AVC's original Telegram supergroup approached the project team to assist him with creating and populating another subgroup focused on grape production and marketing. Another group member then sought AVC's assistance with creating a Telegram channel focused on lemons, and another created a walnut chat group. In each case, the subgroup's creator had been a member of AVC's original supergroup and a subscriber to its channel, the combination of which inspired them to create and independently administer a crop-specific offshoot.

Management

By 2018, the AVC team was administering its original Bogbon supergroup and Bogdorchilik Ilmi channel, co-administering the cold storage subgroup, and providing guidance to commercial horticulturalists who were continually creating their own chat groups and channels with colleagues. Within AVC, the primary admin for the supergroup and channel was the Public Outreach Coordinator, who used his Telegram professional account both from his mobile phone app and his desktop app to administer AVC's forums and monitor and share information across the other independent subgroups and channels. The lemon channel and the grape and walnut subgroups, while inspired and aided by AVC's efforts, are administered independently by horticulturalists. The AVC project team has no administrative access and no control over their content, though AVC videos are often shared within the groups when relevant to the focus crops.

To determine what video content to produce and share within AVC's various Telegram forums, the Public Outreach Coordinator provides qualitative updates and assessments of the Telegram traffic he observes at weekly staff meetings. These updates are used as the basis for discussion and deliberation about what topics to prioritize for video production, with input from the agricultural technical staff. Each meeting results in production decisions, with the production team then going into the field to film with horticulturalists. This process then results in the creation of video content uploaded to Mover and YouTube, the links to which are shared on AVC's various Telegram forums and Facebook page, along with actual video files for members to download for viewing and sharing offline. This video production and planning process relies largely on qualitative analysis of Telegram and Facebook traffic, as AVC has not undertaken any technical integration or custom development with Telegram to monitor traffic or generate quantitative user behavior analytics.

In addition to producing videos, in late 2017 AVC began using Telegram's Telegraph publishing tool, which allows users to compose and share richly formatted posts resembling blog or newspaper articles with photos and other embedded media. Telegraph publications can be shared across Telegram forums via a short link through which recipients can open and view the publication. The links open the publications within Telegram's Instant View feature, which presents content from Telegraph and external publications on a native page within the app so that users avoid linking to other apps or browsers, saving them time and data. The Telegraph and Instant View features then allow the publishers to track and analyze click rates, which the AVC team uses as a qualitative metric to assess interest in their content among their group and channel members.

WHAT WORKED, WHAT DIDN'T AND WHY

Successes

During the AVC project's first year deploying Telegram to facilitate information sharing and learning among commercial horticulture actors in Uzbekistan, the project was extremely successful at growing and sustaining engagement. Between July 2017 and February 2018, nearly 3,200 people subscribed to the Bogdorchilik Ilmi Telegram channel, with roughly 50 joining daily. During the same period, the original generalist chat group grew to a supergroup, from 30 select members to more than 800 commercial producers. Then, in just three months, AVC's first focused subgroup, the cold storage chat group, reached more than 80 members. The lemon channel and the grape and walnut farmer chat groups, which were inspired but not administered by AVC, reached 213, 200 and 500 members, respectively. This success can be attributed to three factors:

- 1. Gradual expansion:** Rather than creating multiple, focused chat groups and channels, AVC took a gradual, stepwise and collaborative approach, adding one new Telegram forum at a time. By beginning with a single, closed chat group with a generalist focus and a small group of interested members, then opening it to a wider audience, the project was able to steadily grow a broad following, avoid technical challenges and develop credibility on Telegram with different user groups.
- 2. Building on existing networks and communication channels:** At each stage of AVC's Telegram expansion, the project team built its following from existing professional and digital networks. To begin, the original chat group was seeded with a select group of commercial producers with whom the project had worked and was kept closed to others. As the group was opened and additional forums were created, AVC leveraged its Facebook, YouTube and Mover following. The project posted links to its Telegram groups and channel on its Bogdorchilik Facebook group and embedded graphics about the forums in its videos. When a new Telegram subgroup or channel was created, the team posted a link in the original chat group, which had then become a larger supergroup. Offline, AVC's Telegram forums were promoted at farmer trainings. This networked approach reduced the resources allocated to driving adoption and maintained high levels of engagement.
- 3. Picking the right app:** The AVC team attributes much of its successful growth to simply choosing the right messaging application for its context. As Telegram is an extremely popular and familiar messaging application in Uzbekistan, the project did not have to encourage beneficiaries to download it. Almost all of its followers were already active users. Moreover, in addition to building on existing networks, AVC was able to rely on Telegram's effective sharing and search features to drive viral growth. AVC's chat groups and channel are open and public, so subscribers are able to share content and invite others to join. The AVC and admins are not required to invite or approve new subscribers to the chat groups or channel.

Each message, media or file shared on a Telegram group or channel has a “forward” button next to it. When pressed by a recipient, the button brings up a full list of that recipient’s Telegram contacts and groups to which the content can be shared. When the message, media or file is forwarded to another contact or group, it appears with a link to the source channel or group, which the recipient can follow. If the group or channel is open or a supergroup, then the recipient of the forwarded content can press “join” to join the source group or channel. Telegram users who hear of the different forums through word of mouth can also use Telegram’s search feature or channel list to find and join them.

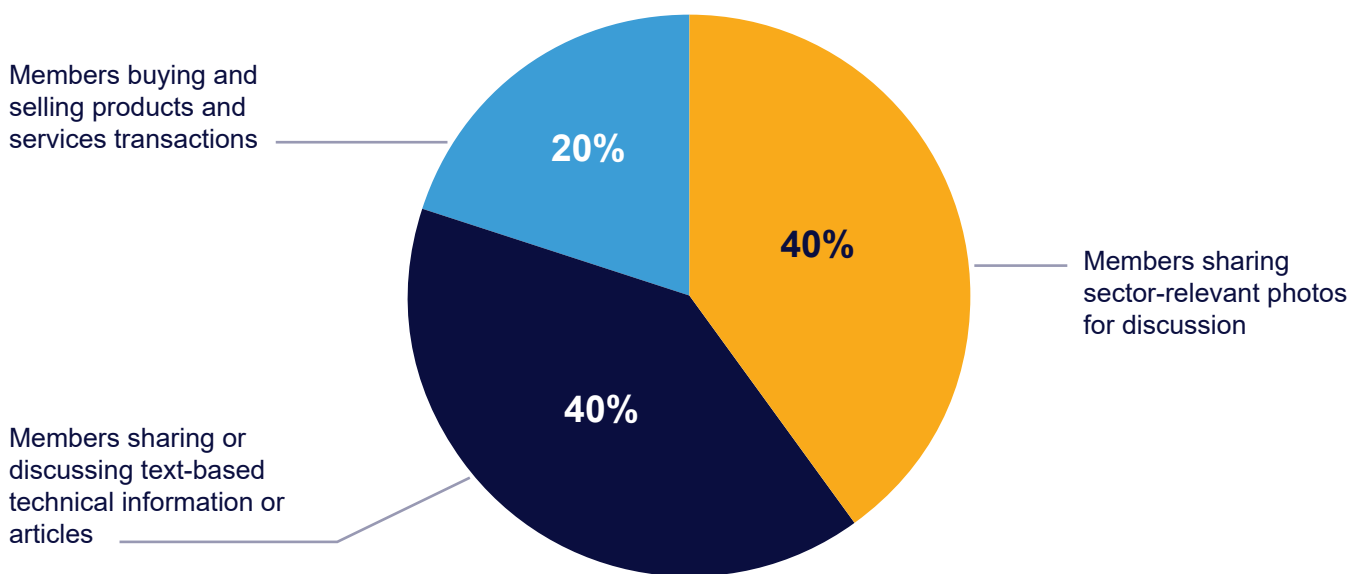
These features made it easy for horticulturalists to circulate content from AVC’s groups and channel and for others to discover them. As new members discovered the chat group, the app’s unique supergroup features enabled the project to continue managing all of its two-way chat dialogue in one place. This contrasts with WhatsApp, which caps group sizes at 256 people, does not allow new group members to access the entire group history, and does not allow members to engage through a desktop or web app without having a dedicated phone present.



Unforeseen Opportunities

AVC's Telegram forums were intended to enable the exchange of technical information to help commercial actors at all stages of the horticulture value chain improve their business. In reality, by the end of 2017, AVC estimated that exchanges focused on sharing or discussing text-based technical information or articles represented just 40 percent of traffic in its Telegram chat groups. Another 40 percent consisted of members sharing sector-relevant photos for discussion, and the remaining 20 percent involved members buying and selling products and services.

For the latter 20 percent, the groups have become what AVC calls a "self-directed marketplace"—a digital forum where supply meets demand for different crops and value-added services such as processing, storage, transport and marketing. These transactions resulted largely from initial face-to-face meetings between sellers and buyers at AVC's in-person events, who when followed up via Telegram. While unforeseen, this outcome nevertheless contributes to AVC's overall goal, so the project has encouraged a range of marketing behavior in the groups. While the AVC team had anticipated that its Telegram chat groups might eventually be used for commercial purposes, it wanted it to happen organically without any push from the project.



The AVC team did not foresee the requests from other international aid donors and programs to announce outside trainings and services on the AVC Telegram chat groups. The AVC team has always complied with these requests, announcing a variety of training opportunities to the community, whether or not they are related to the AVC project. Equally unforeseen was AVC project beneficiaries independently creating new crop-specific Telegram chat groups and channels, which is seen as a positive outcome and an opportunity to ensure the sustainability of AVC's efforts. AVC has ensured that all of its groups are co-administered by reliable local partner beneficiaries.

Lastly, the success of AVC's use of Telegram for programmatic interventions has led the AVC project team to create an internal Telegram chat group for communication and coordination between its 18-person staff. AVC staff use the closed Telegram chat group to report their location and status in the field to aid with security and personnel management, and they regularly share files, videos and informal content. This has enabled the Country Director to have nearly full awareness of where staff are at all times, increasing accountability and resulting in valuable media from the field to share with partners and funders.

Challenges and Limitations

As of the beginning of 2018, AVC had encountered no major technical challenges or frustrations with the Telegram tool. In fact, the project's only cited challenge was internal—convincing its agricultural technical specialists that Telegram would be an effective tool through which to provide and facilitate the exchange of technical information. However, after some brief internal testing with the team's horticulture production and post-production specialists, the full project team was convinced and supportive of creating the first AVC chat group.

In considering the telegram app's limitations and potential new features and upgrades, as of early 2018 the AVC team was hopeful that Telegram would enable users to have individual video calls and group conference calls. At this time, Telegram facilitated only one-on-one voice calls through the app. The AVC team's primary need for group calls was for operational coordination, so that different AVC teams in the field and their colleagues in the main office might periodically connect for conference calls. However, the team also envisioned the possibility of its members conducting group calls, both to discuss shared issues and negotiate the exchange of crops and services.

Impact

In assessing Telegram's impact on AVC's project goals, the project team points to its chat groups as critical for sustaining connectivity among industry actors and its channel as vital for disseminating valuable technical content to broader audiences. Based on user feedback, the project believes that this connectivity facilitates professional bonds between horticulturalists who might not otherwise connect and enables rapid information exchange that can enhance productivity and market efficiency within the horticulture market. AVC also emphasizes the benefits of Telegram to its own internal productivity and effectiveness. According to AVC's Communications and Outreach Specialist, his team is "more efficient, effective and less costly in our provision of services due to the more direct feedback from our intended beneficiaries."

NEXT STEPS

Entering 2018, the future of the project was unclear. While the third stage of funding was set to expire at the end of the year, there was a possibility of it being extended further. Regardless, the AVC team remained focused primarily on gradually creating and growing new targeted Telegram subgroups for different value chain functions, building on the success of the cold storage group to add groups for traders, processors and exporters. To potentially benefit all of AVC's Telegram forums, in late 2017 the team began experimenting with chatbots. Creating a Telegram chatbot was seen as an opportunity to automate frequently asked question responses, streamlining content within the chat groups, and improve the speed and accuracy with which some questions are answered.

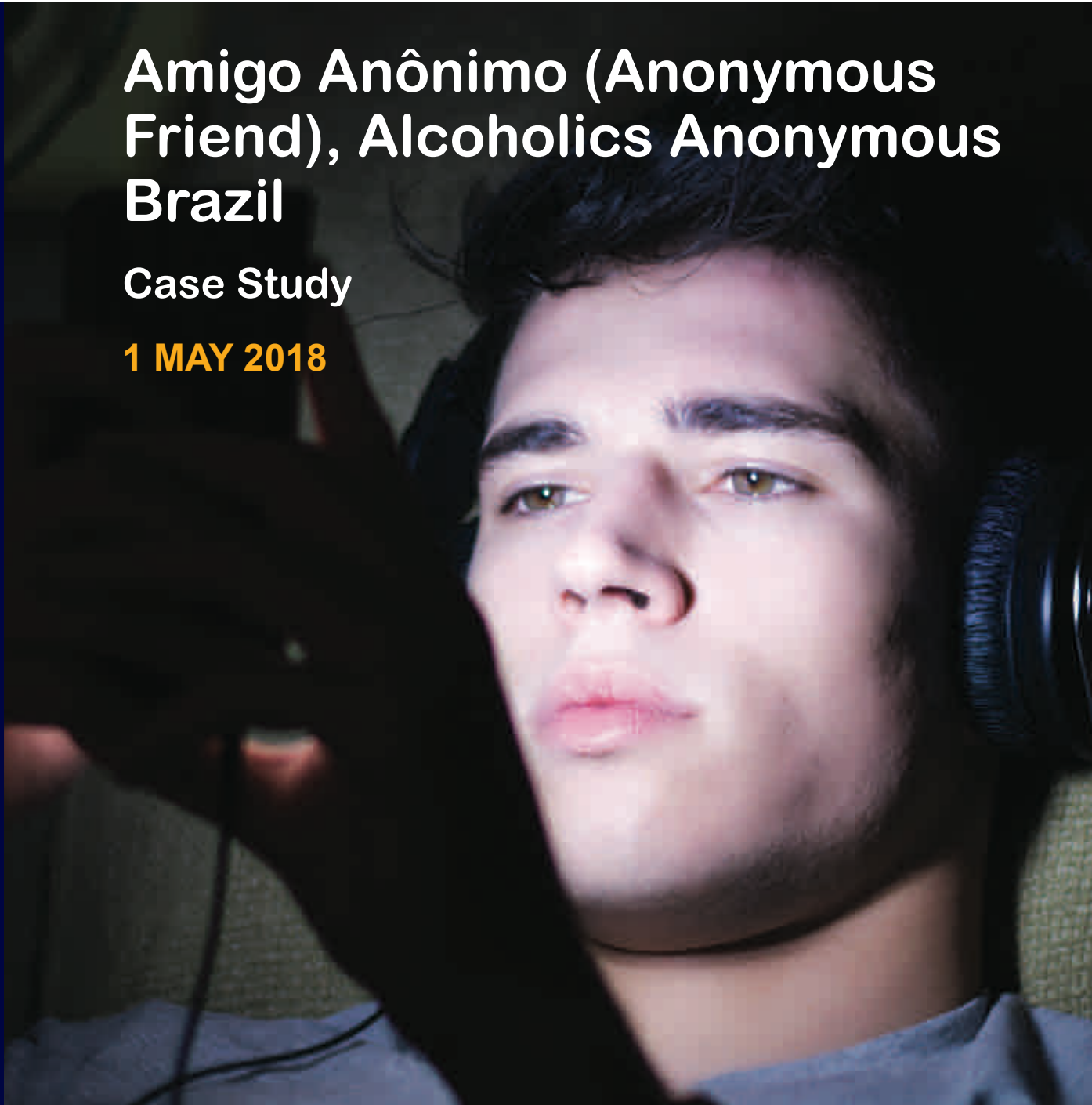
Telegram's API allows developers to build custom chatbots, either as part of an existing chat group or as a separate resource with a dedicated user interface for one-on-one chats with users, as with Facebook chatbots. AVC sought to test both approaches and began building its first test chatbots at the end of 2017. According to the team, while the API enabled quick and easy development, as of February 2018 it was not yet clear what the optimal content structure and user interface would be.



Amigo Anônimo (Anonymous Friend), Alcoholics Anonymous Brazil

Case Study

1 MAY 2018



SUMMARY

Amigo Anônimo is a Facebook Messenger chatbot operated by Alcoholics Anonymous (AA) Brazil. It was launched in 2017 as part of a new AA campaign to address the rising rate of teen drinking and mark the organization's 70th anniversary in Brazil. The campaign was designed to increase AA's brand awareness and directly address issues of alcoholism among teens in order to increase their attendance at AA meetings. The AA chatbot achieved this by providing teens with the opportunity to take the first step toward seeking help through a familiar, nonpublic and impersonal one-on-one medium, without having to attend an AA meeting.

The chatbot quickly generated engagement from more than 100,000 users across Brazil, 60 percent of whom were teens. This engagement appeared to directly increase outreach to AA across other channels, including email and in-person meetings. Amigo Anônimo also generated new engagement from nonalcoholics seeking help for their loved ones, a demographic the organization had not previously served.

AA and its partners chose to use Facebook Messenger largely due to the popularity of Facebook among young Brazilians, Facebook Messenger's integration with the Facebook platform and its open API. While the chatbot was seen as a quick and unprecedented success for an otherwise low-profile organization like AA, its scalability and impact were constrained by the organization's limited offline support services, all of which were confined to a single city and not nationally oriented. The new digital format also raised considerable ethical questions about privacy and the ability to protect user anonymity in keeping with AA's founding traditions. While Facebook took helpful steps to prevent the disclosure of users' individually identifiable information, there remains an open question about the effect of Facebook's data policy on how advertising might be targeted to AA users based on their engagement with the chatbot.



Key Lessons

1. YouTube and Vimeo videos are an effective way to drive teenagers to find chatbots and start conversations. Allowing teens to start the conversation gives them the sense that they are in control and are not being told what to do.
2. Facebook Messenger is a powerful and effective tool to bring more members to an organization, but it is constrained by an organization's offline capacity to support members beyond Messenger conversations.
3. Facebook policies limit the ability to make chatting with an organization totally anonymous for the end user.

BACKGROUND

Goals and Origins

Alcoholics Anonymous is an international nonprofit organization founded in Ohio in 1935. It describes itself as “a fellowship of men and women who share their experience, strength and hope with each other that they may solve their common problem and help others to recover from alcoholism.”¹ Calling itself “an informal society,” the organization comprises more than 2 million recovered alcoholics who meet in more than 150 countries in local groups ranging from fewer than 10 people to many hundreds. AA Brazil was founded in 1947 in São Paulo.

AA Brazil has been represented on a pro bono basis by the Brazil office of J. Walter Thompson (JWT), an international advertising agency, for several decades. In 2017, JWT helped AA Brazil come up with innovative ways to mark its 70th anniversary, including the development of a new campaign to increase AA’s brand awareness among teens to encourage teen attendance at AA meetings in response to rising rates of teen drinking in Brazil.

Digital Transition

Leveraging its digital transformation services, JWT sought to mark the 70th anniversary and conduct the teen drinking campaign online with a drastically new approach for AA, which has historically maintained a low profile and conducted its activities in person and spread its message through printed literature. JWT turned to Facebook, primarily due to its high penetration in the target teen demographic. Facebook and Facebook Messenger are two of the four most downloaded apps in Brazil, and the majority of the platform’s users are between 13 and 34 years old.²

In addition, the Facebook Messenger API provided an opportunity to experiment with chatbots, which both AA and JWT felt was a technology that aligned well with the organization’s commitment to shared experiences and support as tools for recovery. JWT ultimately contracted Chat Club to help develop an AA chatbot for teens struggling with alcohol abuse, and engaged the Facebook Brazil office and the Facebook Creative Shop for support. Facebook agreed to support the campaign with US \$10,000 of free advertising credit and significant free demographic and targeting insights based on analysis of user behavior.

While a chatbot on social media represented an entirely new medium and tool for AA, the organization did not want to replace its in-person meeting format. Instead, the chatbot was seen as a means to leverage a far-reaching and familiar channel to create a personalized yet private and unthreatening first step for young people to learn about alcohol abuse and seek help. The bot was also designed to broaden AA’s services, providing a one-stop resource not only for those abusing alcohol, but for their family, friends and partners as well.



1 https://www.aa.org/assets/en_US/m-24_aafactfile.pdf

2 “In Brazil Social Media Is for the Young.” *eMarketer*, 20 February 2015, <https://www.emarketer.com/Article/Brazil-Social-Media-Young/1012089>.

IMPLEMENTATION

Promotion

To drive adoption of the chatbot, JWT relied exclusively on social media, spreading short YouTube and Vimeo videos across different Facebook channels. The videos dramatically highlight the problem of teen drinking with stories of real alcoholics who found help through AA, then ask viewers if they know someone with a problem. At the end, each video issues a call to action for viewers to share the video and chatbot link and provides a button to push the link directly to a Messenger contact. According to a member of the JWT team, the idea was "to reach teenagers who don't take advice and can't be told what to do. We needed them to find the chatbot."

User Experience



When users do find the chatbot, they are asked to select one of three choices: (1) I'm in treatment and had a relapse (2) I think I'm an alcoholic, or (3) My family member or friend is an alcoholic. Based on this initial response, the bot leads users through a structured conversation flow, which was designed based on 35 hours of in-person interviews with real alcoholics. No natural language processing is used. The interview questions and responses are based on each subsequent text dialog sent by the chatbot, and include multiple choice questions to guide the conversation and targeted guidance based on responses.

All users are ultimately led to a list of tips. Some are clickable and take the user to other AA resources. Tips encourage users to attend a meeting by enabling them to share their location directly within the bot, which then identifies the AA meeting location nearest to them. Users can then click further for details on the meeting location and hours. In the case of family members or friends seeking help for others, they can share the link directly to the person they are concerned about through Messenger.

WHAT WORKED, WHAT DIDN'T AND WHY

Successes

In Amigo Anônimo's first week of live chats, more than 100,000 people initiated conversations. By the end of 2017, the chatbot had hosted conversations between 546,000 people, 67 percent of whom were teenagers. In the same time period, incoming traffic to AA's email helpline increased from an average of three daily emails to 39, and AA groups reported an average increase in meeting attendance of 25 percent.³ JWT also found that the chatbot had drastically expanded AA's reach across the country, with 30 percent of users coming from cities that did not have AA groups at the time. As a result, 97 new AA groups were created, which represented the first expansion for AA Brazil in a decade. JWT cites these results as evidence of a high return on investment for AA, but notes that its creative work was done pro bono, as were Chat Club's design and development services and Facebook Creative Shop's support services.

According to JWT, the majority of AA chatbot users are women, which was surprising, as past studies have found that alcohol abuse in Brazil is significantly more prevalent among men.⁴ At the end of 2017, JWT had not yet compared this data against the breakdown of users who reported personal struggles with alcohol versus those who were seeking help for others. However, the team hypothesized that the large percentage of female users meant that the majority of users may not actually be alcoholics themselves, but friends or family members seeking guidance on how to help someone else. If this proves to be the case, it indicates that the chatbot format has been most successful at achieving AA's goal of broadening its services beyond those immediately struggling with or recovering from alcoholism.

Challenges and Limitations

Privacy

Early in its creative process, JWT identified user privacy as a critical challenge to the development of an AA chatbot. AA's traditions state: "Our public relations policy is based on attraction rather than promotion; we need always maintain personal anonymity..." AA elaborates: "Traditionally, A.A. members have always taken care to preserve their anonymity at the 'public' level: press, radio, television, and films; today this extends to the Internet and digital technologies."

³ As a policy, AA does not track attendance. This was reported as an estimate.

⁴ "Alcohol, Gender and Drinking Problems." *World Health Organization*, http://www.who.int/substance_abuse/publications/alcohol_gender_drinking_problems.pdf.



The first chat bot made of 70 years of real alcoholics stories.

Brazil is the fifth country in the world on deaths caused by alcohol diseases. (World Health Organization)
And people are still ashamed to talk about their problem and look for help.

So we decided to take AA to a place where everyone has privacy: the smartphone.

We teamed up with Facebook to transform 70 years of stories of AA members into data to interact with people on a Chat bot.

To do it, over 20 hours of interviews and countless pages of content were gathered in order to respond to any alcoholic doubt or crises, conducting them to a real meeting.

...the **bot** leads users through a structured conversation flow...

While the Facebook chatbot concept aligned well with the goal of attraction rather than promotion, it did not totally align with AA's need for anonymity. When a Facebook Messenger user chats with another user or with a Facebook page or chatbot, the administrator of that Facebook page or chatbot can see the name of the user, and there is no way to mask the user's identity. The fact that the conversation took place is also known and cannot be hidden from people at Facebook. Unlike with Telegram and WhatsApp, which allow users to create aliases, nicknames or usernames instead of their legal name, Facebook policy states: "The name on your profile should be the name that your friends call you in everyday life. This name should also appear on an ID or document from our ID list."⁵ This means that no one using Facebook, and thus Facebook Messenger, can truly be anonymous.

Nevertheless, according to JWT, Facebook was sympathetic to the importance of individual privacy for those visiting the AA Facebook page and using the AA chatbot via Facebook Messenger. While the AA Facebook page and chatbot would remain public for Facebook users to find and visit, Facebook agreed to adjust part of its advertising feature that might make individually identifiable information about visitors public to their Facebook network. According to Facebook's policies, the platform decides which advertisements to show users based on a range of criteria, which includes "Pages you and your friends like."⁶ For AA's chatbot, this could mean that when a user visits and likes the AA Facebook page, that user's Facebook friends might later receive advertisements that indicate that the user "likes" AA. This would undermine the user's anonymity.

Chat Club and JWT also used features of Facebook Messenger API to help put users at ease with a perceived sense of anonymity, though not actual anonymity. The API enables developers to choose whether or not to personalize automated chatbot messages to users by pulling information, such as the user's name, from their profile.⁷ AA and JWT elected not to personalize messages in order to maintain a feeling of anonymity and make users feel at ease. To avoid the impression that Facebook data was being used for targeting or that certain users were being "accused" of being an alcoholic, all Facebook ads for the service were framed to ask "Do you know someone who needs help?" rather than "Do you need help?"

However, despite both Facebook and AA's efforts to maintain the sense of anonymity and to avoid sharing individually identifiable data about AA chatbot users with their friends, those users are still subject to Facebook's general data policy. This policy states: "We collect information about the people and groups you are connected to and how you interact with them, such as the people you communicate with the most or the groups you like to share with." Most notably, it says: "We use all of the information we have about you to show you relevant ads." This data is only used and shared in aggregate form and not as personally identifiable information. Nevertheless, Facebook reserves the right to allow advertisers to target as a group users who visit, like or otherwise interact with the AA page or Facebook Messenger chatbot.⁸

⁵ "What names are allowed on Facebook?" *Facebook*, <https://www.facebook.com/help/112146705538576>.

⁶ "About Facebook Ads." *Facebook*, <https://www.facebook.com/ads/about>.

⁷ "User Profile API." *Facebook*, <https://developers.facebook.com/docs/messenger-platform/identity/user-profile>.

⁸ "Data Policy." *Facebook*, <https://www.facebook.com/policy.php>.

Integration with Offline Support Services

While the AA chatbot greatly increased AA Brazil's digital presence and reach, its impact and functionality were limited by AA's offline scale and capacity in Brazil. One of the chatbot's core objectives was to refer and efficiently connect users to further offline support services, yet unlike a chatbot, these services do not have nationwide coverage. For all of Brazil, AA has just one phone helpline and organizational infrastructure, which serve only the São Paulo area. AA considered having the chatbot share this number with users, but ultimately decided not to, fearing that by sharing it with the broader national chatbot audience, the line could be overwhelmed by users outside of São Paulo. This limited JWT's call-to-action options for the chatbot, which only offered web links, email contacts and meeting locations.

Ultimately, JWT's vision is to have a chatbot that can connect users to a team of volunteers for text or video chats on Facebook Messenger or for offline meetings. However, in light of the organization's current capacity and setup, it is not in the position to recruit, train and manage a team of human volunteers. Therefore, as of March 2018, the chatbot is limited to directing users to a generic email address or to local meetings, if they exist.

AA chatbot greatly increased AA Brazil's digital presence and reach, its impact and functionality were limited by AA's offline scale and capacity in Brazil.



NEXT STEPS

Entering 2018, Amigo Anônimo was managed by AA's Facebook page administrator, with the broader campaign content still developed and managed by JWT. Together, the two organizations were exploring ways to make the chatbot user experience more personal, both through more natural conversation flows and by enabling direct peer-to-peer dialog.

In the long term, AA and JWT still hoped to enable the chatbot to facilitate connection between new users and real, current AA members, such as recovering alcoholics volunteering to provide online support to those in need or their loved ones. Because of AA Brazil's limited capacity, however, JWT did not expect to implement this concept in Brazil, and was actively seeking opportunities to extend the chatbot concept to AA USA, where more experimentation would be possible. JWT was also hopeful that Facebook might enable features that would allow users to submit voice recordings rather than text and receive automated audio responses within the Facebook Messenger dialog.

Ebola Community Action Platform (ECAP)

Case Study

1 MAY 2018



SUMMARY

In response to the Ebola outbreak in 2014, Mercy Corps developed the Ebola Community Action Platform (ECAP), an emergency program to help Liberian communities protect themselves and access care. To ensure that information disseminated by ECAP reflected and responded to a real-time understanding of developments on the ground, the program partnered with more than 79 community organizations, which assembled more than 800 community mobilizers for the program. Mercy Corps provided mobilizers with smartphones and technical training so they could disseminate lifesaving information and collect real-time data at the community level.



Only **50%**
of Mobilizers
used
WhatsApp

Engagement
concentration
among
25%
of young
mobilizers

Just prior to the initial training, Mercy Corps decided that the mobilizers should also have WhatsApp on their smartphones, primarily as a means to communicate among themselves about important experiences and effective practices. Mobilizers were expected to travel to remote areas, so WhatsApp chat groups were seen as a powerful way to overcome isolation and separation by facilitating peer-to-peer support, motivation and learning. However, WhatsApp was not available in the Google Play Store in Liberia at the time, and thus was unfamiliar to most Liberians. Combined with a rushed training reflecting the emergency nature of the program, mobilizers had little time to learn how to use the application. This contributed to early and frequent technical difficulties in the field and low overall adoption.

Ultimately, less than half of the mobilizers ever used the app, and engagement was concentrated among the 25 percent of younger mobilizers. Within this segment, WhatsApp was used primarily to share photos rather than effective practices or questions. Some Mercy Corps staff found this content useful for storytelling and peer motivation, but others felt it distracted from the program’s original goal. To refocus the WhatsApp traffic on learning, Mercy Corps staff began instigating and curating group WhatsApp conversations with mobilizers at night. This intervention was effective and resulted in valuable exchanges, but it required considerable time from the monitoring and evaluation (M&E) staff outside of normal hours. The task was made harder by WhatsApp’s chat group size limits, requiring the staff to manage conversations across multiple smaller groups at once.

The community mobilization component of ECAP ceased in 2015, when Ebola was brought under control in Liberia, but Mercy Corps secured funding for a second phase to focus on direct communication with communities through 2017. The shift in focus, combined with the departure of the Digital Outreach Advisor, who had spearheaded the WhatsApp component in Phase 1, led to the discontinuation of WhatsApp during Phase 2 in favor of SMS and Facebook.



Key Lessons

1. WhatsApp was most successfully adopted and utilized by younger field staff with greater tech literacy and curiosity and by the few who were already familiar with the app.
2. Limited training (less than two hours) with field staff who had not used WhatsApp before likely prevented the majority of field staff from adopting the tool in the field.
3. WhatsApp proved useful for sharing informal communications and media, which ultimately benefited Mercy Corps storytelling efforts.
4. WhatsApp was effective but less efficient as a means for encouraging shared learnings among staff. While little productive knowledge sharing occurred organically, Mercy Corps staff administrators were able to intentionally prompt and manage conversations that produced valuable insights among field staff.
5. The use of an internet-based messaging application was an effective way to avoid any direct integrations with local MNOs, a requirement that limited the effectiveness of SMS.
6. Problems with installing and updating the WhatsApp application, and with using the application on dual SIM phones, limited adoption and hindered use in the field, especially for the less technically literate field staff.
7. WhatsApp's chat group size limits (previously 100, currently 256) created an operational burden when communicating with nearly 800 field staff.
8. WhatsApp did not have a published API or documented method for sending bulk outbound messages with multimedia attachments.

BACKGROUND

Goals and Origins

In March 2014, Liberia detected its first case of Ebola, which began to spread across the country along with fear, myth and misinformation. In response, Mercy Corps launched ECAP in October 2014 in partnership with Populations Services International (PSI), with support from the Liberian government, and using funding from USAID's Office of Foreign Disaster Assistance (OFDA).¹ The program aimed to reach 2 million people in nine months with the primary objective of helping communities access accurate, up-to-date information about Ebola in order to protect themselves and access medical treatment.



¹ OFDA is a department within the U.S. Agency for International Development (USAID).

The program took a grassroots approach, sub-granting funds to trusted local community organizations and allowing them to define their own strategies for mobilization and advocacy. ECAP’s implementers and funders believed that these local organizations were well placed to reach communities nationwide with effective Ebola prevention messaging. Nevertheless, to implement their local strategies, the organizations required targeted educational tools and content informed by reliable real-time information from across the country. More specifically, Mercy Corps and its local partners required a deep, broad and evolving understanding of community-level knowledge, attitudes and practices (KAP) surrounding Ebola in Liberia. In order to develop and maintain this understanding, the ECAP team sought to establish a nationwide, technology-focused monitoring and learning program.

Going Digital



**800 Mobilizers
Recruited,
Trained and
provided
with Android
Smartphones**

To facilitate ECAP’s ambitious monitoring and learning initiative, Mercy Corps sought to assemble a nationwide team of community mobilizers tasked with using mobile technology to collect and disseminate real-time information on the ground. Mercy Corps turned to 79 community organizations from across the country to recruit the mobilizers, many of whom had been working as community health workers and nurses before the outbreak put them out of work. More than 800 mobilizers were ultimately recruited and assembled for a central training at which Mercy Corps provided them with Android smartphones.

Once the smartphones were distributed, Mercy Corps’ Liberia team trained the mobilizers on navigating the phone’s menus and downloading key tools, notably the Open Data Kit (ODK) application. ODK is a free, open-source application capable of deploying robust survey forms for offline data collection and syncing data back to a central server for aggregation and analysis. For ECAP, Mercy Corps built an internal dashboard to aggregate and visualize KAP data collected by the mobilizers via ODK. This included indicators such as the prevalence of stigmas around issues like accepting Ebola survivors into one’s home² and the uptake of preventative behaviors like handwashing, all of which could then help the partner organizations shift their approaches to changing harmful local behaviors and beliefs.³

2 “Digitizing Social Mobilization: the Liberian Experience.”, Reliefweb, 12 May 2015, <https://reliefweb.int/report/liberia/digitizing-social-mobilization-liberian-experience>.

3 “Promoting Partner Autonomy and Learning to Fight Ebola in Liberia.” MercyCorps, April 2016, https://www.mercycorps.org/sites/default/files/ADAPT%20Liberia%20case%20study_0.pdf.

Expanding to Messaging Apps

While ODK collection of KAP was a critical project deliverable stipulated by ECAP's USAID funders, USAID also suggested the use of mobile communications for efficient field coordination. Through an agreement with UNICEF, Mercy Corps used UNICEF's RapidPro automated SMS platform and a Liberian toll-free shortcode phone number to conduct short surveys with youth and mobilizers. Early tests of the SMS system had proven unreliable and ineffective, with the majority of messages failing to go through to recipients or arriving with illegible symbols and characters instead of text. ECAP was unable to resolve this issue and, therefore, during this time of emergency stopped focusing on SMS and instead directed attention to other means of communication.

Mercy Corps' Senior Director of Program Technology encouraged the project's Digital Outreach Advisor to consider how the mobilizers' donated smartphones could be used for more effective central coordination as well as communication among mobilizers. Both immediately saw an opportunity to experiment with using messenger applications.

**...use of mobile
communications
for
efficient field
coordination**



Working on a short timeline and in an emergency situation, the Digital Outreach Advisor did not conduct a formal comparative analysis of different messenger applications. But after quickly considering different options, he settled on WhatsApp because Mercy Corps staff in the Liberia office were already actively using WhatsApp as an effective internal organizing tool. The ECAP program team was already familiar and comfortable with WhatsApp and felt that it had proven effective in low-connectivity Liberian settings. Additionally, the Digital Outreach Advisor liked that WhatsApp queues messages when there is no available mobile data network and then automatically delivers them as soon as a network becomes available.

The WhatsApp user interface would provide the ECAP team and the mobilizers with clear and immediate confirmation when messages they sent were delivered and when they were read, so that unlike with SMS there would be no question as to which messages successfully reached recipients. Even though Mercy Corps did not have access to a formal API, the Digital Outreach Advisor identified a third-party service, BeWhatsApp, to enable bulk messaging to the mobilizers via WhatsApp to back up or replace ECAP's unreliable SMS system.

IMPLEMENTATION

Having decided to give mobilizers access to WhatsApp on their donated smartphones, the Digital Outreach Advisor engaged the M&E team to help ensure that the mobilizers were properly trained to maintain and use the app and encouraged to see its utility. The ECAP team saw the most immediate value to mobilizers in WhatsApp's chat group feature, which was viewed as a means for the mobilizers, who worked mostly on their own and often in far-flung disparate locations, to discuss and share experiences, challenges and accomplishments with one another from the field. The team also hoped that if mobilizers became proficient with WhatsApp, the program would be able to send them useful educational audio and infographic image files that could be shown to people in the communities where they worked.



User Setup and Training

The final decision to use WhatsApp was made shortly before the mobilizers were assembled for technical training, part of a broader public health communication and behavior change training program organized by the M&E team. The technical component was originally intended to focus extensively on data collection via ODK, a core project deliverable. WhatsApp training was allocated less than one hour. Prior to the training, ECAP staff downloaded and installed WhatsApp onto all 800 phones. Whereas the data collection training included a tutorial on how to download and upgrade the ODK app through the Google Play Store, WhatsApp was not available in the Google Play Store in Liberia at the time. Instead, WhatsApp had to be installed by the ECAP team prior to the training via an APK file downloaded from a web link. The process produced frequent unidentified bugs, and WhatsApp could not be installed on more than 15 percent of the phones. Installation problems came up again later in the program, when users tried to upgrade to newer versions of WhatsApp.

After installing WhatsApp on as many phones as possible, ECAP worked to set up each phone's WhatsApp account and then dedicated one of Mercy Corps' ECAP phones, which were preprovisioned with a WhatsApp account, to create and serve as group admin for several WhatsApp chat groups for mobilizers. At the time, WhatsApp only allowed a maximum of 100 users in any chat group, so Mercy Corps had to create and administer five different groups. The team did not create eight groups on the assumption that not all mobilizers would join, and because 15 percent of phones had failed to install the app.

WhatsApp only allowed a maximum of 100 users in any chat group.

Five different admin groups were created

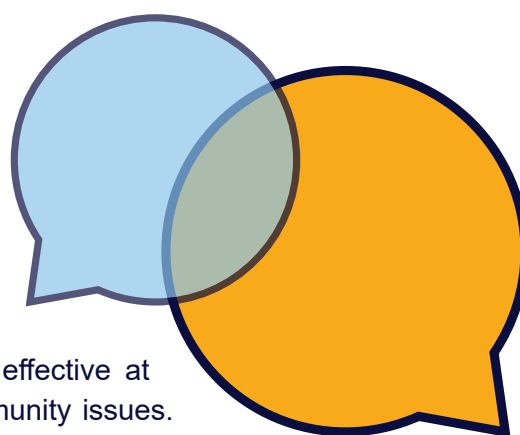


Once mobilizers were assembled, the trainers used the short timeframe to lead them through WhatsApp's different features, focusing on interacting within a chat group and one-on-one interactions with Mercy Corps. More specifically, the trainers emphasized WhatsApp's multimedia features, noting the value of sharing voice notes and images with one another and with Mercy Corps to demonstrate and discuss approaches and techniques that they had found successful.

Even though there was minimal time spent learning how to use WhatsApp, most mobilizers were able to create their personal WhatsApp account on the phone issued by ECAP. While many had never used a smartphone prior to the training and struggled to send messages, the small number of more technically capable mobilizers provided critical supplementary support during and after training, which ECAP staff considered essential to their later usage of the application. Later in the day, outside formal training hours, ECAP program staff organized the mobilizers into the WhatsApp chat groups and sent a personalized welcome message to each group.

Curating the Conversation

In the hopes that the mobilizers would see value in WhatsApp and take advantage of the opportunity to engage with one another from the field via the WhatsApp groups, the Mercy Corps staff planned initially to act only as passive observers in the WhatsApp chat groups. ECAP expected, for instance, that mobilizers would regularly share information about what local drama initiatives or other approaches had been most effective at conveying particular messages in response to common community issues. Yet engagement was significantly lower than expected.



In an effort to demonstrate WhatsApp's utility and spark a greater commitment to shared learnings, ECAP's Communications Manager began intervening in the chat groups in the evenings, outside of her core M&E responsibilities and when mobilizers were not engaged with community members. To instigate and inspire conversation, the Communications Manager would pose questions about what mobilizers had observed and experienced in regards to specific issues such as the transmission of Ebola through bushmeat. As some mobilizers began to respond, the Communications Manager would inject follow-up questions and ask others to share their experiences.

WHAT WORKED, WHAT DIDN'T AND WHY

When reflecting on the successes and challenges experienced by the ECAP program, key personnel differ in their assessments of WhatsApp's effectiveness and impact. The M&E Lead, who was tasked principally with ensuring the regular and large-scale collection of reliable KAP data via ODK, viewed the WhatsApp component as an interesting but low-impact experiment at best and a distracting drain on resources at worst. On the other hand, the Digital Outreach Advisor emphasized that even in a fast-paced emergency setting with little time for training and significant technical issues, WhatsApp proved extremely valuable for a subset of the mobilizers, and the chat groups were a source of valuable content from the field used for storytelling and provided critical lessons for future projects.

Challenges and Limitations

ECAP's two overarching challenges were a lack of resources to dedicate to the WhatsApp component of the project and the lack of familiarity and training on the app among mobilizers. This resulted in significant staff time being spent, with fewer than 50 percent of the mobilizers ever using WhatsApp to engage in an ECAP chat group.

Curated Conversations

While the staff-curated conversations produced results, they were also costly in terms of staff time. Generating productive discussions and learnings required the dedication of significant time outside of normal working hours from Mercy Corps M&E staff who had not initially been expected to engage regularly with the WhatsApp component at all. In an effort to replicate their impact and sustain engagement on WhatsApp, the team attempted to select super mobilizers, those most actively engaged on WhatsApp, to lead conversations. This was tried a few times, with one super mobilizer in each chat group tasked with leading discussion around a particularly timely topic, such as the return of students to school. Yet the super mobilizers proved less reliable and effective at sustaining productive discussion, often allowing conversations to stray into less formal photo sharing and boasting about each mobilizer's respective circumstances.



Technical Issues

Mobilizers and Mercy Corps staff experienced frequent technical issues with WhatsApp, initially related to the APK files used to install the app. To start, the install procedure seemed to lead to frequent bugs, preventing 15 percent of mobilizers from ever having the app and requiring others to have it regularly re-installed or upgraded. Because WhatsApp was not available for download in the Google Play Store at the time, MercyCorps utilized a “sideload method” of installation, sending mobilizers a link to a new APK file that was only accessible when the mobilizers were connected to the Internet. Not having been trained on these processes during the short training window, few mobilizers were able to complete these updates independently. This led to long periods of WhatsApp downtime for many of the mobilizers.

A smaller subset of mobilizers, mostly those who had not used WhatsApp prior to the ECAP project, were often confused by the app’s frequent notifications about software updates. Following the prompts, these mobilizers would attempt and fail to download the updates due to low connectivity, which would prompt them to contact their partner office, which would then reach out to Mercy Corps for support. In some cases, this would result in thumb drives or SD cards with updated versions of WhatsApp being sent out to partners and into the field to help mobilizers upgrade their app software. This was not technically necessary for the continued use of the app and could have been prevented by having the mobilizers turn off the auto-update setting on their phones. Still, in some cases the partners and Mercy Corps deemed it necessary in light of the low technical literacy of the mobilizers.

A similar problem emerged intermittently for mobilizers using a dual SIM phone. This was common practice, as some mobile network operators had better coverage in certain areas. However, at the time, when switching from one SIM to another on a single phone, the WhatsApp application would require users to reauthenticate their WhatsApp account through an automated SMS code. While on their second SIM, until they entered the code sent to the first SIM, the mobilizers would be blocked from using their WhatsApp account. For the less technically literate mobilizers, this could cause them to stop using the app or to again reach out to their partner organization or Mercy Corps.

On the Mercy Corps end of the WhatsApp conversations, WhatsApp’s group chat limit of 100 people created inefficiency when attempting to curate conversations with the nearly 800 mobilizers.⁴ This required the Communications Manager to track and manage five parallel groups and conversations at the same time with similar content. This challenge could not be alleviated through the use of a WhatsApp desktop application, as one had not yet been developed. That meant that staff had to facilitate conversations by typing on the specific phone that was designated for administering the different chat groups.

Familiarity and Training

Because KAP data collection was an essential deliverable stipulated by ECAP’s funder, mobilizer training with ODK was well planned out and given ample time. Conversely, the WhatsApp training was a last-minute addition for which trainers were far less prepared, many of them never having used WhatsApp themselves. The same was the case with most mobilizers, as WhatsApp had extremely low penetration in Liberia prior to the Ebola outbreak, especially in more remote and rural areas. The lack of familiarity and training was reflected later in the frequency with which mobilizers reported having accidentally deleted or lost WhatsApp from their phones, requiring partner staff to travel to meet and help them reinstall it.

⁴ WhatsApp has since increased the limit to 256 users per chat group.

Content

While the Digital Outreach Advisor saw value in mobilizers sharing informal communications as a means to build support networks and maintain morale, the M&E Lead viewed selfies and other informal content as distracting and a negative impact on efforts to generate productive dialogue in the groups. And whatever benefits this content might have had were not enough to outweigh the staff time required for training mobilizers, curating conversations and troubleshooting technical issues.

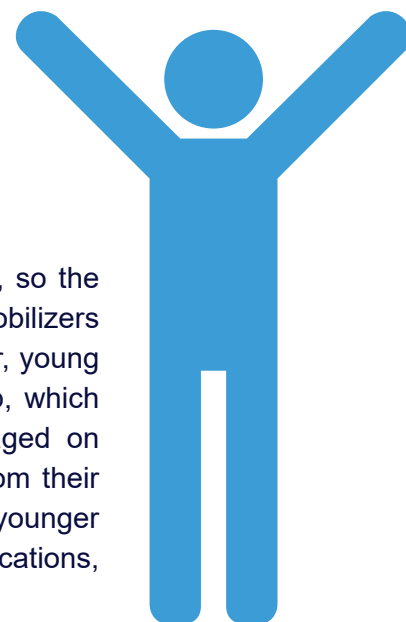


Successes

Despite the project staff's different assessments of WhatsApp's cost to the project, there was a general consensus about areas where the app provided clear benefits:

Youth Engagement

Each of the 79 partner organizations hired their own community mobilizers, so the profiles differed greatly by organization and region. In many regions, the mobilizers were older, active community members. In others, the mobilizers were eager, young volunteers, able to handle long distance travel in difficult areas. This group, which represented roughly 20 percent of the overall mobilizer population, engaged on WhatsApp frequently, primarily to share stories, photos and even videos from their travels. Both the M&E Lead and the Digital Outreach Advisor credited the younger mobilizers' familiarity with and interest in smartphones and mobile communications, and potentially with WhatsApp, as the key to their successful engagement.



Based on his interactions with the younger mobilizers, the Digital Outreach Advisor believes that the idea of sharing multimedia communications for some had already been part of their daily life before the outbreak. Among all of the mobilizers who engaged via WhatsApp, he concluded that the conversational nature of the chat group forum felt less like work. Instead it allowed those engaged to build camaraderie and connections, distract themselves from their challenging work, and motivate and challenge one another.

Curated Conversations

According to the M&E Lead's assessment of the overall WhatsApp experiment during ECAP, "when it worked well, it worked really well," and it worked primarily during the evenings when the Communications Manager would actively curate conversations. During these sessions, the probing questions from the group were effective at stimulating large, active and productive discussions, and the facilitator asked questions to stimulate meaningful conversation that resulted in useful insights and information for all involved. Over the course of the program, as much as 30 percent of all mobilizers participated actively in these discussions at one point or another.

Increased Independence From Mobile Network Operators (MNOs)

ECAP's early tests with SMS had proved unreliable and ineffective, with the majority of messages failing to go through to recipients or arriving with illegible symbols and characters instead of text. ECAP was unable to resolve this issue with the MNOs and their integration into the RapidPro SMS system. Therefore, ECAP dropped SMS from their communication strategy. By using WhatsApp instead, they no longer had to create direct connections to the MNOs for SMS and instead could just rely on generic data coverage to transmit the WhatsApp messages. This proved to be more effective than troubleshooting with MNO direct connections and system integrations.

Unforeseen Opportunities

Storytelling

Despite the M&E Lead's frustrations with the informal content shared on WhatsApp, the Digital Outreach Advisor found that the mobilizers' images provided valuable storytelling material that could be used for project reporting, fundraising and demonstrations when designing future digital emergency monitoring and learning tools.

NEXT STEPS

The first phase of ECAP ended in July 2015, after Ebola was brought under control in Liberia, but funding was secured to adjust and extend some of the work into a second phase through July 2016 as a means to build resiliency and prepare for future outbreaks. While ECAP 2 would continue to try and use different mobile tools for engagement and communication, the Digital Outreach Advisor who had spearheaded the WhatsApp component during ECAP left the project. The M&E Lead stayed on, but quickly phased out WhatsApp as one of the project's tools in favor of channels to communicate directly with communities as a means to hold the program and its local partners accountable.

Instead of WhatsApp, ECAP secured a toll-free phone line for community members in areas where ECAP and its partners were providing services to call or text questions and complaints. Calls were seen as much more popular than texts given the low rates of literacy among target populations. In addition, the M&E Lead felt that responding to and speaking directly with community members was a core function of the M&E team, unlike their role in curating mobilizer conversations. The M&E team also created a Facebook page and began using Facebook Messenger to try and engage people in affected communities. Having done so, the M&E Lead believes that Facebook Messenger would have been a superior messaging tool for ECAP 1 due to relatively greater penetration and familiarity in Liberia and the impact of Free Basics.





Food Bot and the AIDA Chatbot Builder

Case Study

1 MAY 2018



SUMMARY

The mobile Vulnerability Analysis and Mapping (mVAM) project was designed to both collect data from World Food Programme (WFP) beneficiaries and share critical information with them. Since its inception in 2013, mVAM has developed SMS, interactive voice response (IVR), and computer assisted telephone interviewing (CATI) techniques to allow WFP country teams to provide beneficiaries with access to free information, collect feedback, and monitor food security and nutrition trends. In 2016, mVAM engaged nonprofit technical partner InSTEDD to begin experimenting with chatbots as an additional channel for exchanging information with beneficiaries. The mVAM chatbot concept would undergo multiple iterations but eventually become known as the Food Bot, the underlying structure of which InSTEDD planned to create as an open-source tool that would benefit the entire humanitarian community.

While early experimentation in 2016 began with a prototype built on Telegram, mVAM and InSTEDD quickly shifted to working with Facebook Messenger after a site visit in Kenya found few beneficiaries were familiar with Telegram. In March 2017, mVAM and InSTEDD both sought and received funding from the Cisco Foundation to continue developing the mVAM Food Bot concept in three countries as the basis for a more generic open-source humanitarian chatbot tool. Yet by mid-2017, the two partner organizations had concluded that a single generic Food Bot would be insufficient to meet WFP's diverse needs and decentralized structures. Users in different countries—both beneficiaries and country teams—accessed messaging applications in unique ways and had different information and communication needs.

What mVAM really needed, and what InSTEDD viewed as even more valuable across the humanitarian field, was a web platform on which humanitarian teams could quickly and easily build and deploy their own custom chatbots with little in-house programming or IT skills. Together, mVAM and InSTEDD committed to developing, deploying and ultimately opening a chatbot builder platform designed specifically for the humanitarian sector called AIDA. As the co-designer of AIDA, mVAM would become its first major user, enabling each of its country offices to develop their own chatbot tools in local languages and to align with their local food security needs and initiatives. In late 2017, InSTEDD began developing AIDA, with plans to refine it after mVAM had deployed across multiple countries in 2018, then release the platform as an open-source tool at the end of the year.

Key Lessons

During mVAM and InSTEDD's preliminary user testing in Kenya, Nigeria and Haiti, a number of key lessons emerged regarding the deployment of chatbots for development:

1. Simplify questions and replace jargon with slang and colloquial language to make users feel they are talking to an actual person and not a robot.
2. Make the user experience more intuitive for people with low digital literacy.
3. Ensure that the chatbot understands user misspellings.
4. Develop a chatbot that consumes as little data as possible and works on Facebook Messenger Lite and on all internet-enabled phones.
5. Consider that chatbots may be most useful for the transmission of non-sensitive data.
6. Follow the "security by design" principle to ensure data security and privacy (e.g., through encryption and account permission settings).
7. If a project works across various countries, ensure that each country is able to collect data through a chatbot that is useful in their own local context.



BACKGROUND

Goals and Origins

WFP's Food Security Analysis unit, commonly referred to as the Vulnerability Analysis and Mapping (VAM) team, is responsible for conducting food security assessments and analyses in more than 80 food insecure countries where WFP operates. These include Comprehensive Food Security and Vulnerability Analysis (CFSVA) and baseline food security and household vulnerability surveys. In rapid and slow-onset emergencies such as hurricanes, floods, droughts and conflict situations, VAM also conducts Emergency Food Security Assessments (EFSA).

Going Digital

In 2013, the VAM unit created the mVAM team, designed to provide VAM with alternative tools to collect data remotely. Using short SMS surveys, live phone interviews, online surveys and IVR systems, mVAM tracks food security and vulnerability among beneficiaries. The resulting data is then cleaned, anonymized and analyzed in order to make food security trend data and analysis available for WFP's programmatic decision making as well as to the public. mVAM also seeks to make critical information available to its beneficiaries free of charge. Using IVR and free websites (Facebook Free Basics platform where available), beneficiaries can access information about food prices and WFP services such as food distribution dates and location, as well as provide feedback to WFP, all for free.

Expanding to Messaging Apps

In 2016, the mVAM team decided to experiment with incorporating messaging applications and chatbots as yet another channel for beneficiary engagement and information exchange. mVAM conceived of the Food Bot as an addition to the team's toolbox of mobile communication tools for food security analysis. Across WFP's beneficiary countries, mVAM had observed the growing popularity and accessibility of messaging applications, particularly among young people. Engagement with them via a chatbot would be cheaper for WFP than SMS or phone calls, and while mVAM had historically developed one SMS or voice system for collecting information and another for beneficiaries to access information, chatbots would enable both through a single channel and user interface.

Moreover, a messaging chatbot would allow WFP and its beneficiaries to exchange far richer and more dynamic information than other channels, and mVAM expected that a chatbot would greatly increase WFP's speed and responsiveness. Beneficiaries would be able to send long complex sentences, photos, voice notes and geolocation tags, all of which were impossible with phone calls, SMS and IVR. mVAM also saw an opportunity to better integrate real-time data, so that users could query WFP's food price databases and immediately receive the most updated information. This would be a significant improvement on the IVR and SMS systems, which previously responded with static pricing data updated weekly at most. Lastly, mVAM expected that messaging applications could eventually overtake SMS and voice as the most commonly used mobile communication channels among WFP beneficiaries. Experimentation with chatbots and messaging applications was, therefore, seen as a timely investment in the future.

To pursue its vision for a Food Bot, in early 2016 mVAM engaged InSTEDD, a technology nonprofit and founding partner of mVAM, which had repeatedly deployed mVAM’s IVR and SMS platforms across multiple countries. InSTEDD’s mission is to design and develop new, unique, open-source technology to meet social-sector needs. Having already begun internally experimenting with chatbot technology, InSTEDD saw the mVAM partnership as an opportunity to develop the initial architecture for a more broadly applicable tool—a chatbot for humanitarian response.



IMPLEMENTATION

Prototyping with Telegram

When mVAM approached InSTEDD about building a Food Bot, InSTEDD suggested that the first prototype be built on the Telegram application, which had an easy-to-use, open API. Prototype development for the Food Bot began in June 2016 by trying to replicate the same services mVAM offered through SMS and IVR. This meant that beneficiaries with Telegram would receive periodic one-to-one messages from the Food Bot, consisting of an invitation to take a survey. If they responded affirmatively, they would receive a survey with several questions about their food security and livelihoods. Users would also be able to use the Food Bot to query a database and automatically find local food price data at any time. Initial testing of these two use cases was conducted with WFP staff in Rome and InSTEDD staff in the United States.

In August 2016, mVAM gathered feedback from users more closely resembling actual WFP beneficiaries, turning locally to Rome's refugee population, which had expanded significantly following conflicts in Africa and the Middle East. The mVAM team held a focus group discussion at a migrant center in Rome to collect user experience feedback on the Food Bot prototype and how it might be useful in the refugees' home countries. Participants were first asked about smartphone ownership and use in their home countries. They reported that smartphone ownership and usage is very common in their communities. The participants were then asked to test the Telegram Food Bot prototype on their phones, first answering a survey and then trying the food price database. They provided a range of feedback, with recommendations to:

1. Simplify questions and replace WFP jargon with slang and colloquial language to make users feel they are talking to an actual person rather than a robot.
2. Make the user experience more intuitive for people with low digital literacy.
3. Ensure that the chatbot understood user misspellings, which were very common.
4. Make the food price information specific to the user's local context so that users could use it to locate the lowest prices.
5. Use a different messaging application, because few people in their countries use Telegram.

Hackathon

In January 2017, to generate new insights and develop some of the necessary upgrades identified by the focus group participants, mVAM turned to Nielsen, a global information and measurement company that has long provided WFP with skilled volunteers and in-kind technology and development input. To help upgrade the mVAM Telegram chatbot, Nielsen organized a 24-hour public hackathon in New York, which attracted developers, students, volunteer hackers and Nielsen staff. The hackathon participants first brainstormed a series of critical upgrades in direct response to the feedback from refugees, then divided into teams to build out the new components in real time.

While the Food Bot still had a number of technical bugs after the hackathon, it was more sophisticated, leading InSTEDD to incorporate several new components using Chatfuel, a commercial chatbot platform.

The new components included multiple gateways to different messaging applications, including Facebook Messenger; natural language processing capabilities to manage misspellings; and reporting and data visualization features so that mVAM analysts could view survey results. As part of the event, the mVAM team and participants also engaged with Alex Lazarescu of Chatbots Magazine, who recommended focusing on content, such as onboarding messages to clarify what the Food Bot was for and options for users to chat with a human if they became stuck.

Testing with Beneficiaries

In early 2017, the mVAM team visited Haiti, Kenya and Nigeria to test the new Food Bot in the field. mVAM assembled focus groups and conducted in-depth interviews with community leaders, women and youth, finding quickly that even in hard-to-reach communities, community leaders and young people owned smartphones and were connected to the internet. Across all three countries, it was clear that Facebook Messenger and WhatsApp were the most popular messaging tools, especially for young people and community leaders. With this in mind, mVAM had participants test the new Facebook Messenger version of the Food Bot (facilitated through Chatfuel).

While the majority of users described the Facebook version as a convenient, quick and easy way to get in touch with WFP directly, it did not function well on Facebook Messenger Lite or on the web browser version of Facebook Messenger. This was because Chatfuel relied on Facebook Messenger features that were specific to the Facebook Messenger mobile application and, therefore, not available to those accessing the service through other means. This was problematic for the many beneficiary users who relied on Facebook Messenger Lite and logins via their mobile web browser in order save money on data.



Testing with Country Offices



In March 2017, mVAM and InSTEDD received funding from the Cisco Foundation to continue developing the mVAM Food Bot concept in the three test countries. The intent remained for the Food Bot to form the basis for a more generic open-source humanitarian chatbot tool. After making upgrades during the summer, the mVAM team returned to Kenya in September to conduct further research and testing. These second visits were used to engage with WFP's country teams about how a Food Bot could best provide value and help meet local needs.

The team also focused on content development, working with small groups of refugees to better understand how they would interact with the tool, and what type of information they might seek or provide. To do so, mVAM and InSTEDD used a rapid prototyping technique to effectively simulate the experience of interacting with a chatbot. Group participants were asked to visit a Facebook page and start a conversation with the Food Bot, but what appeared to be a bot was actually WFP and InSTEDD staff members manually responding to the messages with predetermined responses. These conversation transcripts were then used to help optimize the Food Bot's content, response handling, conversation flows and tone.

WHAT WORKED, WHAT DIDN'T AND WHY

mVAM's continuous and iterative user engagement, testing and research in the field during its initial Food Bot development revealed a wide range of complex challenges related to the diversity of contexts in which WFP works. These challenges ultimately highlighted that a single, globally available mVAM chatbot was not the correct solution and instead a flexible chatbot builder would be best.

Challenges and Limitations



Phone access: In the 25-year-old Kakuma Refugee Camp in Kenya, where many residents were born and raised, 90 percent of households had access to either a basic mobile phone or smartphone, and internet was available in some locations. Phones were considered by most residents as critical for communicating with friends and family in their home country. Conversely, in the newer nearby refugee settlement of Kalobeyei, which houses new arrivals, less than 20 percent of households had a phone. Charging was difficult and expensive in Kalobeyei, and while many young people claimed to have Facebook accounts, few could access them as they had not yet obtained a Kenyan SIM card and struggled to do so without the proper identification.

Connectivity and affordability: In all contexts, the Food Bot was found to be responsive on 3G networks and even on some slower 2G connections. However, in Kenya and Nigeria, most refugees and internally displaced persons (IDPs)

struggled to pay for mobile internet data due to their limited earning capacity, which made it more difficult to engage in lengthy or consistent conversations via Facebook Messenger. In Haiti, where there is a lot of competition between mobile operators, the cost of mobile data bundles was relatively lower, making it possible for most of the community leaders to consistently access internet on their smartphones.

Messenger access: As a result of the high cost of mobile data, mVAM found that Nigerian IDPs and Kenyan refugees accessed Facebook Messenger in different ways. While some used the regular Facebook application, others used the Facebook Messenger Lite mobile application or the Facebook website on their mobile web browser in order to use less data. This created problems for mVAM's initial Food Bot design, as different access points for Facebook Messenger support different sets of features. For example, for those using their mobile web browser and Facebook Messenger Lite, multiple choice buttons did not appear within the chat dialog box. For a single, generic WFP chatbot to be viable, mVAM would have to use the bare minimum of user interface features.

Language: In Haiti, the Food Bot was made available in French and Creole. In Maiduguri, Nigeria, it was first demoed in English, but the young Nigerian users overwhelmingly requested it be translated to Hausa, the most common local language. In Kakuma, the mVAM team anticipated that most people would require translations in Somali and Dinka, the most common languages among Somali and South Sudanese refugees. However, interviews with young refugees revealed that most of them had been born in the camp and preferred English or Swahili. These language preferences highlighted the need for the Food Bot to communicate in different languages.

Utility for users: The focus groups revealed that young displaced people in Nigeria were most interested in having the chatbot be a new, more efficient way to access information about WFP programs and services as opposed to posters, hotlines, help desks and loudspeakers. In Kenya, on the other hand, young refugees were most interested in a chatbot as a direct line to WFP for providing feedback and complaints. Outside the refugee and IDP context, users in Haiti struggled to get value from the Food Bot, interacting as if it were a human and getting stuck quickly when the chatbot could not understand their conversational inputs. This highlighted to mVAM the importance of clearly conveying from the beginning what a chatbot can and cannot do, possibly through offline sensitization campaigns. In all of the focus groups, the Food Bot's utility was seen as limited to nonsensitive topics, as users and WFP staff agreed it could not be trusted as the right communication channel to ask sensitive questions.

In addition to this diverse array of needs and challenges among beneficiary users, mVAM discovered that each WFP country office also had vastly different needs and expectations for a chatbot, which reflected their different programmatic goals and contexts. In Kenya, the country office wanted a new way for beneficiaries to submit feedback and complaints to WFP about its services. In Nigeria, the team felt a chatbot would be most useful for collecting price information from traders.

Unforeseen Opportunities

In September 2017, following its user research sessions, mVAM and InSTEDD discussed their findings to determine the way forward. The teams mapped all possible functions and applications for a Food Bot, attempting to identify priorities for each country office. They ultimately decided to switch directions. Rather than develop a single chatbot on a commercial platform designed to serve both internal users (country offices) and external users (beneficiaries), they decided to build AIDA, a web platform to allow WFP's different country teams to develop their own chatbots, customized to their local context. Just as with the original Food Bot concept, mVAM would serve as AIDA's co-designer and first core user. The team would help WFP deploy the platform across multiple countries in 2018. InSTEDD would then refine and ultimately release AIDA as an open source tool at the end of the year, in keeping with the funding mandate from Cisco Foundation and InSTEDD's mission.

Based on user testing, mVAM and InSTEDD were convinced that to be effective, AIDA should not require any in-house programming by WFP's country teams, which like most humanitarian country teams rarely had such capacity. This immediately eliminated most commercial chatbot platforms such as Chatfuel, which would have required too much coding for WFP country offices to be able to customize their own chatbots. mVAM also concluded that a commercial platform could not provide the data security required to protect vulnerable beneficiaries, nor were they optimized to provide consistent user experiences across Facebook Messenger Lite, the Facebook Messenger application and the Facebook platform accessed via a web browser.

Thus, with the original Cisco Foundation funding and additional support from the Korea International Cooperation Agency (KOICA), mVAM and InSTEDD set to work in October 2017 to design AIDA, with a first round of development ending in February 2018. As with the original Food Bot concept, AIDA is still intended to enable data collection as well as provide information about WFP programs, food prices, weather, nutrition and disease prevention. AIDA's first iteration will integrate with Facebook Messenger, with the idea of later integrating gateways to other messaging applications.

Each country office team, and eventually any humanitarian team from any organization, will be able to use AIDA to create a local Facebook page on which they directly activate their Facebook Messenger chatbot. On AIDA, teams will then be able to create custom conversation flows, keyword, surveys and scheduled messaging, all in whatever local languages they choose.

| Why user testing led mVAM to develop a chatbot builder platform | |
|--|---|
| Beneficiary Users <ul style="list-style-type: none">● Beneficiary users have different information needs and language preferences in different locations. Creating multiple chatbots would allow WFP to better target beneficiaries' needs.● Commercial chatbot platforms could not facilitate consistent UX for those accessing Facebook Messenger through different portals (Messenger App, Messenger Lite and the Facebook platform) in order to save data costs. | WFP Users <ul style="list-style-type: none">● Different programmatic priorities● Different beneficiary user needs● Little to no programming capacity |
| Pivot: Build a new web platform where country teams can quickly deploy their own custom chatbots. | |

NEXT STEPS



As of March 2018, InSTEDD and WFP had developed a working AIDA prototype for testing in Kenya and Nigeria. Following this preliminary testing, additional features will be added and testing expanded to new countries and contexts. During this second stage of testing, mVAM will test the platform's flexibility to allow country teams in more drastically different contexts to rapidly create and deploy a chatbot.

By late 2018, InSTEDD expects that AIDA will be flexible enough to support the needs of different WFP offices, but mVAM still anticipates an extended period of hands-on support. With this in mind, in 2018 every WFP country office that wishes to use the early version of the platform will be asked to identify one focal point to receive training and sustained support from the mVAM team in Rome. mVAM will produce public user manuals, instructional YouTube videos and live webinars on the use of AIDA, all of which will be made public and open-source alongside the AIDA code base by the end of the year.

During 2018, mVAM planned to evaluate the Facebook Messenger chatbots built on AIDA by measuring engagement, retention and churn rates across different country teams, as well as the number of contacts and the level of satisfaction among users in different countries. In the longer term, InSTEDD planned to expand AIDA to integrate with a variety of messaging applications. Both mVAM and InSTEDD are hopeful that this will include WhatsApp. As of March 2018, WhatsApp did not have a publicly available API to enable integration with other platforms like AIDA, but was actively piloting an enterprise solution with select organizations, including MomConnect, a public health platform in South Africa.

In addition to multiple gateways, mVAM and InSTEDD hope eventually to enable AIDA to deliver more than just automated, structured conversations and incorporate technology using natural language processing. While in 2017 InSTEDD had begun testing wit.ai, a natural language processing product that can support Swahili, many of the other local languages spoken by WFP beneficiaries were not supported by existing artificial intelligence products.

MomConnect, Praekelt Foundation

Case Study

1 MAY 2018



SUMMARY

Developed in South Africa by the Praekelt Foundation in 2013, MomConnect was designed to provide pregnant women and new mothers with access to critical health information via their mobile phones. Now an official South African Department of Health (DoH) program, MomConnect seeks to improve public health outcomes, services and systems by driving utilization of clinics and generating performance data for public health officials and providers. User registration for MomConnect is conducted exclusively via USSD, and information is provided through USSD, SMS and IVR (interactive voice response). Since 2016, MomConnect services have also been available via messaging applications.



After limited success experimenting with WeChat and Facebook Messenger, Praekelt partnered with WhatsApp in 2017 to pilot API-level integration of their services with WhatsApp servers, enabling MomConnect to communicate at scale with WhatsApp users. At the end of 2017, new MomConnect registrants were given the option of using WhatsApp as their preferred channel for exchanging messages and receiving health information. Entering 2018, only 1 percent of MomConnect users were using WhatsApp for messaging and engagement, but that small user segment represented 50 percent of the program's total messaging traffic across all channels. As of March 2018, the WhatsApp integration that Praekelt used for MomConnect was not yet publicly available.

According to Praekelt, the WhatsApp integration quickly improved the efficiency and effectiveness of communication between MomConnect nurses and users. Compared with SMS, WhatsApp provides a rich conversational experience, including the ability to send informative images and short audio clips that can be replayed and revisited by recipients. WhatsApp has announced plans to eventually charge organizations for integrating with WhatsApp, but as of March 2018, the company had not announced pricing details. While pricing may impact the longer-term viability of WhatsApp for MomConnect, plans and new funding are in place to expand its use and test new content and chatbot applications.

Key Lessons

1. End-to-end encryption of WhatsApp conversations makes it a viable messaging app solution for organizations transacting sensitive information, but also requires substantial in-house hardware and significant technical capacity.
2. WhatsApp provides a rich conversational experience due to the ability to send informative images and short audio clips that can be replayed and revisited by recipients.
3. In the future, if WhatsApp charges organizations for service integration, the cost of conversations via WhatsApp may become prohibitively expensive.

BACKGROUND

Goals and Origins

MomConnect was originally part of the Mobile Alliance for Maternal Action (MAMA), a partnership between USAID, Johnson & Johnson, the UN Foundation and BabyCenter. From 2011 to 2015, MAMA supported programs in Bangladesh, India and Nigeria, all designed to reduce maternal and child deaths by delivering health information to women's mobile phones during pregnancy and one year after giving birth. MAMA engaged Praekelt and the Vodafone Foundation to build the MAMA South Africa program based on the two organizations' successful co-creation of an SMS-based HIV/AIDS awareness and behavior change program.

Praekelt and Vodafone first piloted their MAMA South Africa platform in 2013. Initially, women could register via USSD to receive free, automated SMS tips and reminders to guide them through their pregnancies and the first year of their child's life. They could also access a help desk, where they could ask questions via SMS and receive guidance from trained nurses. In the first pilot year, more than 400,000 women registered for the two services. In 2014, when the DoH sought to launch its own national mobile maternal health service, it engaged MAMA and negotiated to transition the Praekelt-built platform to public funding and rebrand it as MomConnect.

Public Transition and Digital Expansion

Under DoH, MomConnect was integrated within the broader public health system and aligned with efforts to increase utilization of public clinics and improve the quality of their services. By 2018, MomConnect was connected to 95 percent of health clinics across South Africa. Patients coming into the clinics who are not already registered with the service are now encouraged and helped to sign up. Users also receive scheduled notifications promoting specific clinical services based on the stage of their pregnancy and after receiving those services are prompted to provide feedback and rate the quality of care received. Info Guides have also been added and made available via USSD and IVR as a means to help users research the answers to common questions. Unlike the SMS notifications, the Info Guides are not based on the stage of the user's pregnancy or motherhood. Instead, users browse various topic menus and choose to have certain content sent to them via SMS.



Expanding to Messaging Apps

In 2016, after two years of sustained growth to more than 1 million users, Praekelt began to experiment with providing MomConnect services via messaging applications in addition to its popular SMS, USSD and IVR channels. Messaging apps presented an opportunity to expand impact by reducing MomConnect's messaging costs and improving help desk efficiency with faster responses and richer, more powerful multimedia content. Praekelt experimented with integrating WeChat first, based on their experience using the WeChat API for other projects and its flexibility in allowing users to build custom UIs that function as mini-apps. However, WeChat was not widely used in South Africa at the time, and marketing for the app was being conducted exclusively through a premium television provider that had a minority stake in Tencent, WeChat's parent company. As a result, most of those using the app fell outside MomConnect's low-income target demographic.

Integrating with Facebook Messenger presented additional challenges. MomConnect users register with a phone number via USSD, but most Facebook Messenger accounts don't have associated phone numbers. This makes it difficult for MomConnect to automatically look up and connect Facebook Messenger accounts to its users' MomConnect accounts. Usage of Facebook outside of urban areas in South Africa was also still low in 2016.

Moreover, Praekelt felt that Facebook's data privacy policies were insufficient to protect the type of sensitive data that was being exchanged via MomConnect. Specifically, the developers feared that the policies made it possible for Facebook to mine its messaging content for advertising purposes. As an extreme example, they felt that this would theoretically enable Facebook to push advertising to users based on whether or not they had asked about the implications of breastfeeding while HIV positive. Finally, South African law requires all unencrypted, personally identifiable data to be hosted in the country by the organization that collected it, which would be impossible in the case of MomConnect data exchanged through Facebook Messenger.

Having faced these limitations with Facebook Messenger and WeChat, in 2017 Praekelt turned to WhatsApp, which offered the widespread use and privacy protections that MomConnect required. WhatsApp accounts are identified by phone numbers, making it easy to link them to MomConnect accounts. And while WhatsApp lacked a public API for integration, Praekelt was invited to participate in a private program to pilot WhatsApp's unreleased server-to-server integration.¹ As of September 2017, all new MomConnect registrations were given the option of using WhatsApp as their preferred medium for receiving information and engaging the help desk.

¹ "Building for People and Now Businesses", WhatsApp Blog, 5 September 2015, <https://blog.whatsapp.com/10000633/Building-for-People-and-Now-Businesses>.

IMPLEMENTATION

User Outreach and Registration

MomConnect's adoption strategy reflects the DoH's desire to draw expectant and new mothers into local clinics. The program is advertised publicly across a variety of traditional and digital media, with calls to action for women to pre-register by dialing a USSD code from their phone. Women can also be pre-registered by a community health worker (CHW) who dials a different USSD code that is not publicly advertised and enters the phone number of the new user into the USSD menu. In both cases, Praekelt elected to limit registration through USSD only, because it remains nearly universal across the country. WhatsApp, while widespread, is less commonly used in rural areas and by CHWs. These initial USSD pre-registration processes sign women up for a small set of messages about the MomConnect service, as well as information about pregnancy and motherhood. Messages about the service encourage pre-registered users to go to their local clinic for care and get registered for the full MomConnect service.

Women cannot self-register for the full service without visiting a clinic. When a pregnant woman enters a clinic for the first time, whether pre-registered or not, nurses and other clinic representatives complete the full registration process by dialing another non-publicized USSD code. Much like the pre-registration process through CHWs, the USSD menu prompts the nurse or clinic representative to enter the new user's phone number, but it also requests a unique code to identify the registering clinic. This links the user's account to a specific clinic or health care provider.

The link between users and their clinics allows the DoH to solicit and receive feedback and complaints from users and aggregate performance data by clinic, district and province. One day after a woman is fully registered by a clinic, she receives an SMS or WhatsApp message requesting feedback about the service she received. This recurs at various points in each user's journey with the MomConnect system. Over time, user ratings contribute to a Net Promoter Score and offer real-time insight on clinical performance for decision-makers, which are made accessible via integrated control interfaces and dashboards on the backend of the MomConnect system.

The full registration process asks nurses and clinic representatives to enter the new user's national ID number, her gestation period and personal health risks, all for electronic medical record-keeping. This information is also used by the MomConnect system to personalize and automate messaging schedules and content sent to each user via SMS, and now WhatsApp, based on the specific stage of their pregnancy. Stage-based messages include guidance on nutrition, hygiene, childcare and immunizations and are offered in all of South Africa's 11 official languages.



Help Desk

While MomConnect's stage-based messages (delivered via WhatsApp or SMS, depending on user preference) are automated and based on user information, and Info Guides host general static information, the MomConnect help desk is operated by trained nurses who respond in real time to individual user questions and feedback. Registered users can submit messages to the help desk at any time via SMS, voice calls and WhatsApp. Incoming text-based messages are received by MomConnect's central system, which is built on UNICEF's CasePro communications platform.



Whether via SMS or WhatsApp, incoming messages are presented in the same web interface, where the nurses monitoring the system tag each message and most often select a pre-prepared response. This tagging and response selection process then feeds into real-time national and clinic-level analytics on the type, timing, location and frequency of different queries, which then feed into the DoH interface. This process is in some cases

assisted, though never fully automated, by natural language understanding (NLU). In some cases, the system will use NLU to tag incoming queries, but this tag “screen pops” to a human operator, who ensures the tagging is accurate and selects the best response. Praekelt calls this the “chat-NLU assist,” as the algorithm aids human response and the human response choice further strengthens the algorithm.

WhatsApp Integration

While the WhatsApp API was not yet public as of March 2018, and Praekelt was under a nondisclosure agreement in regards to many of its specifics, the organization notes that the integration is substantially more technically complicated than that of Facebook Messenger and Telegram. Based on discussions with Praekelt, this may be because WhatsApp requires that all data be protected by end-to-end encryption, which means it can only be unencrypted on hardware running WhatsApp-provided software hosted in house.

Managing the infrastructure required to integrate with WhatsApp servers and maintain its requirements for end-to-end encryption is more complex than connecting to an API and requires significant technical capacity (specifically, the skills to set up and orchestrate a number of containerized services provided by WhatsApp). Praekelt was in a unique position to meet these requirements and complete the integration. Because of the highly sensitive and public-sector nature of the data exchanged on MomConnect, Praekelt was already running its own data center for MomConnect on site and in South Africa, which has Africa's strongest hosting infrastructure and where legislation requires that all personally identifiable data sits with the host. Moreover, MomConnect was also already a national scale system that had been designed to withstand unreliable infrastructure.



WHAT WORKED, WHAT DIDN'T AND WHY

Successes

Entering 2018, MomConnect was serving 1.8 million active users across all of its channels and services. The WhatsApp integration had been operational for just four months and had only been made available to new registrants, not users who had registered prior to September. Even with these restrictions, as of October 2017, roughly 180,000 MomConnect users had selected WhatsApp as their preferred communication channel. This group, amounting to 1.12 percent of total users, was driving 50 percent of messaging traffic across all channels.

Discussing preliminary results of the WhatsApp integration in October 2017, Praekelt's founder, Gustav Praekelt, said: "WhatsApp has killed all others in terms of efficacy." He also noted that the DoH and WhatsApp integration had provided the possibility of eventually communicating with all antenatal and maternal health patients across South Africa.

Challenges and Limitations

Technical Requirements

Praekelt warns that orchestrating and running the infrastructure necessary for integrating with WhatsApp requires familiarity with underlying technologies that are costly and likely beyond the capacity of most organizations in the social sector. Even for organizations that maintain in-house engineering capacity for application or website development, integration with WhatsApp would be extremely challenging. Regardless of personnel, integration also requires expensive and complex hardware on site and capable hosting infrastructure within the country where the organization is building its WhatsApp integration.

Cost of WhatsApp Integration

As of March 2018, WhatsApp had not announced specific plans for publicly releasing an enterprise solution to allow other organizations to integrate with WhatsApp. The company had also not yet released details on how such a solution would be monetized, but made clear that businesses would be charged in the future.² Without firm pricing, Praekelt was unsure of its longer-term viability as a MomConnect communications channel. While Praekelt was confident that WhatsApp will not charge individual users to send messages, WhatsApp may charge the receiving organization for integration and possibly per message fees. Furthermore users will still often need to purchase a mobile data package to connect to the internet, which can be prohibitively expensive for low-income users.

² "WhatsApp announces free Business app, will charge big enterprises," Tech Crunch, 5 September 2017, <https://techcrunch.com/2017/09/05/whatsapp-business-app/>

Since activating its WhatsApp integration, MomConnect has observed that as of March 2018, 60 percent of its new users have WhatsApp accounts, but only 20 percent of them had selected WhatsApp as their preferred channel for help desk communication and staged messaging. The majority had chosen SMS. To determine why so many users had chosen what seems like an inferior technology for communication, MomConnect followed up with all new users who chose SMS over Whatsapp and found that 90 percent had done so because of the data costs required for using WhatsApp. Many noted that they did not always have mobile data on their phones because they could not always afford it, while SMS exchanges with MomConnect are free and thus always available.

SMS exchanges with MomConnect are free for users because they are “zero-rated” by the mobile networks in South Africa, something that cannot be done with WhatsApp because of the application’s end-to-end encryption. Zero-rating allows certain organizations like Praekelt and DoH to pay for incoming messages so that the senders don’t have to, allowing others to send SMS messages to them for free. For unencrypted messaging applications, the same is theoretically possible, as networks can allow the organizational sender or recipient of a message to be billed for the data costs of the other party. However, this flagging of messages for a different billing attribute requires the networks to know exactly who the sender and recipient of the messages are. With WhatsApp, end-to-end encryption prevents networks from having this level of insight, and thus from providing zero-rating. Mobile networks can either make WhatsApp data zero-rated (free) for all users or for no users, but it cannot do so only for some users, as with SMS.

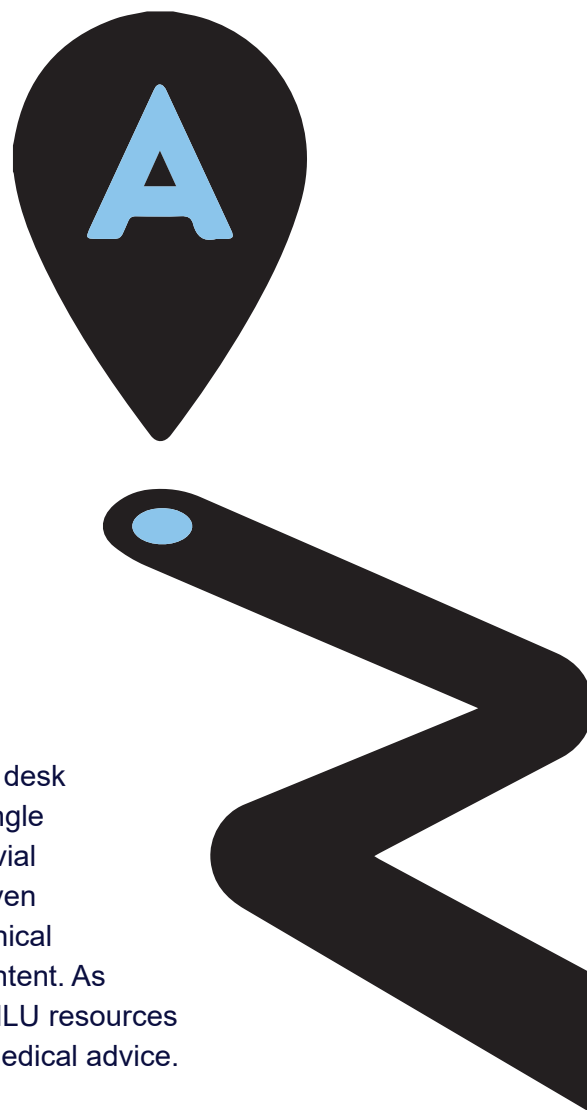
NEXT STEPS

While the initial WhatsApp integration pilot quickly improved MomConnect's efficiency and effectiveness, entering 2018 Praekelt notes that longer-term viability will depend on WhatsApp's final commercial pricing structure, which has not yet been released. Nevertheless, Praekelt has plans and new funding in place to test multimedia and other behavior change content and techniques via WhatsApp. Praekelt believes that in the long term, MomConnect will form the basis of a national electronic medical records (EMR) system, providing continuous feedback for both patients and health providers. As a first step, the Bill & Melinda Gates Foundation and others provided funding in late 2017 to test the MomConnect model with other health issues using extensive A/B testing of content, techniques, channels and incentives. This will include enabling audio and imagery submissions to the help desk via WhatsApp and comparative analysis of help desk traffic and user behaviors based on whether the messages are managed by a human or a bot.

Praekelt has approached any transition to a fully automated help desk with extreme caution. Users often submit multiple queries in a single message to the help desk, especially through WhatsApp, mixing trivial issues with complex clinical ones and in multiple vernaculars. Even chatbots designed to respond to simple queries and escalate clinical questions to human nurses would have to reliably parse this user content. As of 2018, Praekelt believed that the existing public and commercial NLU resources were a long way off from alleviating the risks of providing incorrect medical advice.

As of early 2018, the prospect of leveraging MomConnect's WhatsApp integration to enable group chats is more promising. Praekelt sees the likely first step as attempting to connect groups of women who are at the same stage of their pregnancies and using the same clinic, building on observations and anecdotes that this was already happening organically outside of MomConnect. However, as with chatbots, this shift brings considerable ethical concerns. Specifically, Praekelt has had to consider the impact of users disclosing sensitive health information (such as HIV status) about themselves or others that could lead to personal harm and/or legal consequences for MomConnect.

In the immediate term, Praekelt is working to expand the MomConnect model to service caregivers with Nurse Connect, which as of early 2018 was already supporting 20,000 nurses across South Africa. Rather than medical advice, Nurse Connect provides training messages and psychosocial support via a help desk. Praekelt believes Facebook Messenger may hold more promise for this use case, as nurses are already effectively registered with the DoH and may be easier to first engage with Facebook Messenger and then convert to other channels





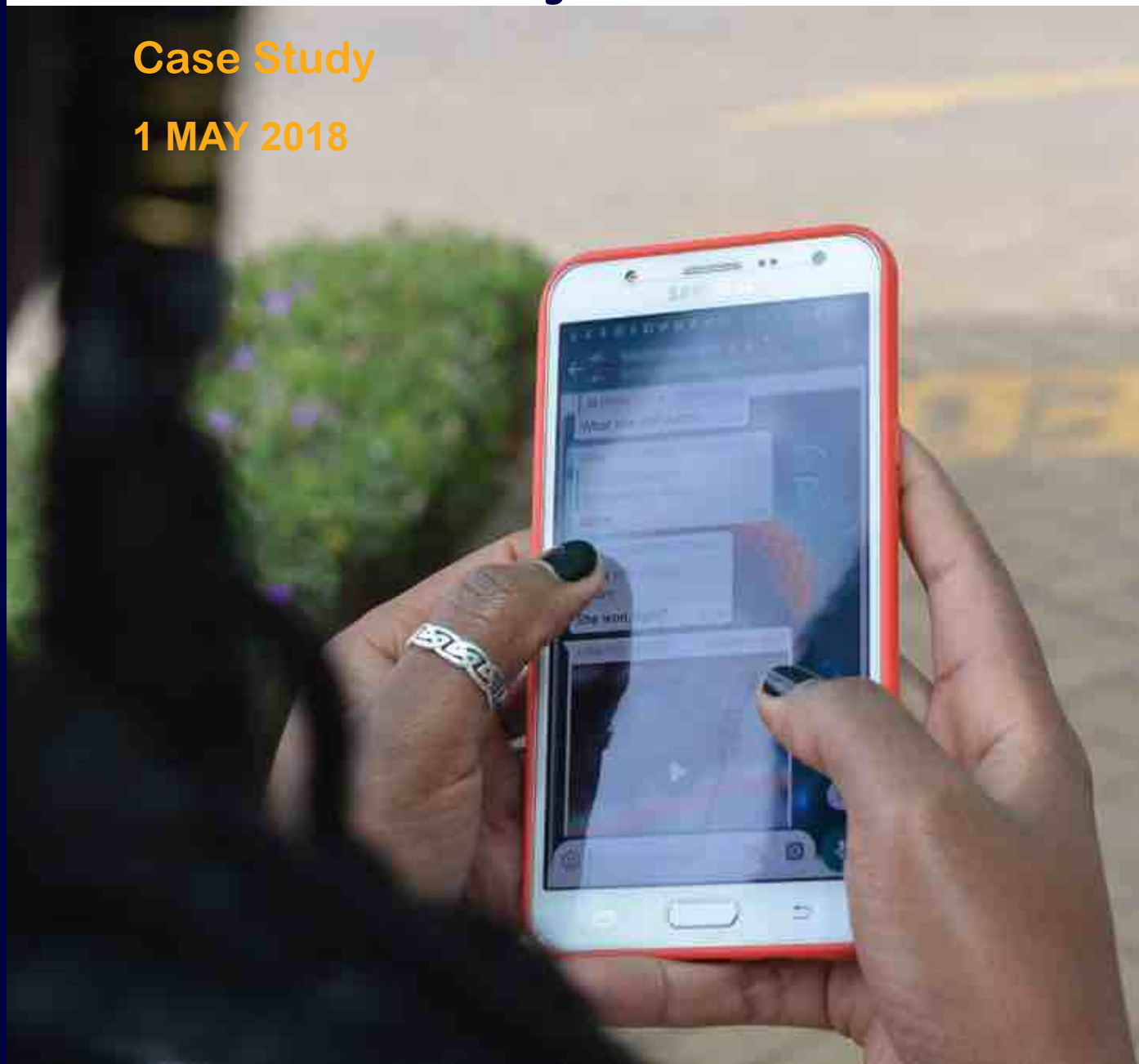
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Well Told Story

Case Study

1 MAY 2018



SUMMARY

Well Told Story (WTS) is a Nairobi based research and media company that produces Shujaaz, a youth media initiative that combines a comic book with radio and YouTube programs and on-the-ground events. Shujaaz revolves around young, authentic fictional characters and real-life role models who surface sensitive issues to help youth improve their lives. Fans then engage with the characters and issues through toll-free SMS, WhatsApp and social media, including character Facebook pages and Facebook Messenger accounts, all of which are used to generate research insights and drive collective behavior change through discussions. Since 2010, Shujaaz has generated hundreds of thousands of monthly engagements, which can be attributed to the following key successes:

1. **Relevant content:** To stay appealing and relevant to young people, Shujaaz constantly produces new targeted content in local languages and slang that is based on rigorous research. By first focusing on understanding and producing content, WTS is able to generate and sustain engagement on messaging apps and social media.
2. **Dedicated team:** WTS maintains a Shujaaz Social Media Team dedicated to starting, promoting and moderating online conversations among Shujaaz fans in conjunction with programming and campaigns, while also actively responding to fans' questions and referring them to online and offline resources. The WTS Knowledge and Learning Team then monitors and analyzes fan behavior and conversations to generate insights for future programming and on behalf of development and commercial partners.
3. **Diversity of communication channels:** By connecting fans with fictional characters and each other in person and through messaging apps, social media and SMS, Shujaaz enables nearly all of its fans to engage, regardless of access to the internet.
4. **Complementary applications:** Shujaaz uses multiple apps and platforms in complementary ways that reflect their particular design and how they are used by Kenyan youth:
 - Facebook pages can have unlimited followers and are used to recruit fans for smaller events and group chats.
 - Pages integration with Facebook Messenger allows interested fans to respond to those opportunities and to engage Shujaaz characters about their private experiences with sensitive issues raised on the page, which WTS can then share anonymously on its pages for collective discussion and resolution.
 - Kenyan youth tend not to use Facebook Messenger for group chats, preferring WhatsApp, which Shujaaz has used to gather like-minded fans for focused discussions. Shujaaz fans also create their own WhatsApp chat groups and add Shujaaz characters. Facebook Messenger prevents this, because the characters' accounts are linked to Facebook pages, not personal profiles.

WTS has also encountered challenges and opportunities, especially with WhatsApp:

1. When WTS first used WhatsApp, some fans began using it to send nude photos and other inappropriate content to the fictional Shujaaz characters. This created ethical challenges for WTS, but was ultimately resolved by other fans, who began applying social pressure and effectively policing content within Shujaaz chat groups.
2. WTS cannot access WhatsApp messaging content or data, making it difficult to analyze, which has resulted in a preference for SMS and Facebook. The team hopes WhatsApp for Business will provide access to new APIs or analytics features.
3. Over time, the number of WhatsApp chat groups began to exceed WTS' capacity to manage them. Yet fans began to create and lead their own WhatsApp chat groups. WTS refocused on using Facebook and Facebook Messenger.

BACKGROUND

Goals and Origins

Well Told Story's mission is to leverage the power of storytelling to create shared social and economic value for young Africans and the commercial and philanthropic organizations that serve them. The concept emerged from Kenya's 2007-2008 post-election violence, which significantly impacted many dispossessed young people. Since its founding, WTS' largest and most successful initiative has been Shujaaz, a two-time Emmy Award-winning youth communications initiative. Shujaaz was created in Kenya and began with a free monthly comic book distributed nationally. As the comic's distribution grew, the platform expanded rapidly to nationally syndicated radio programs, movies, social media, YouTube shows and live events, all intended to provide young people with access to ideas, information, opportunities and inspiration to improve their lives.

Across its many channels, Shujaaz relies on fictional characters and real-life role models to surface sensitive issues among fans as part of focused research, education and communication campaigns, supported by organizations like the Bill & Melinda Gates Foundation, Google, Coca-Cola, and Marie Stopes. Campaign topics include promoting sexual and reproductive health, enhancing perceptions of agriculture, stopping tobacco use, and understanding youth engagement with governance. To build trust among youth audiences and generate conversations around these issues, Shujaaz characters are extremely authentic. This was achieved in part by producing all content in Sheng, a uniquely Kenyan, constantly evolving, contemporary youth slang that combines English, Swahili, and tribal languages. Shujaaz was the first youth media platform to exclusively produce in Sheng.

As Shujaaz's popularity with Kenyan youth expanded rapidly, in 2013 WTS integrated a research function into its business, blending a variety of quantitative and qualitative research methodologies to generate nuanced insights from its large following. Those insights have contributed to the creation of subsequent Shujaaz partner campaigns. Drawing on this extensive media production and research experience, WTS now offers strategic communications consulting services to commercial, philanthropic and development organizations across 13 African countries. In 2015, the company expanded its production business to Tanzania with a new set of Tanzanian characters and content in Tanzanian Swahili. By the end of the year, more than 2.3 million Shujaaz comics were in circulation in Tanzania, and Shujaaz had a growing national radio audience.



Going Digital

Since its conception, WTS has sought to buck traditional one-way media and ensure that fans can engage in conversation, both with Shujaaz characters and each other. WTS's founder and CEO came up with this idea during his travels across Kenya in 2010, when he was testing an early version of the comic book. He would repeatedly observe youth in one part of the country struggling with a specific social or professional problem and then encounter another group across the country that had found an innovative solution to the same challenge. In response, WTS sought to complement its comic book, radio and television channels with a public space to curate conversations among fans from across Kenya.



Social media was identified as the ideal medium to create this space, so Shujaaz developed substantial Twitter, Instagram and Facebook followings. Facebook was the first and remains the core social media platform for Shujazz. According to WTS' Head of Knowledge and Learning, there was “no other tool that could be used for [the] same purpose with the same effectiveness” as Facebook. This was in part due to Facebook's established popularity among Kenyan youth, which was unmatched by the other online platforms. Facebook also made it easy for WTS to freely create public Facebook pages on behalf of its branded Shujaaz, which allowed an unlimited number of followers to find and engage each other continuously and publically.

Shujaaz's first Facebook page in 2010 was created for the platform's lead character, DJ Boyie (DJ B), a 19-year-old Sheng-speaking pirate radio DJ. DJ B headlines Shujaaz's comics and radio programs, where he narrates his adventures with other characters and real-life role models and their experiences with different issues, and then encourages fans to engage and share their own stories with him on Facebook. The WTS Social Media Team eventually added more Facebook pages for other Shujaaz characters, and by 2018 managed seven Facebook pages, each targeting different youth demographics. A female character named Malkia, for example, receives most of her engagement from young girls ages 15-19. The four-person team manages and monitors the pages, posting and commenting in character in order to stimulate and guide conversations in keeping with different campaigns and research objectives.

Shujaaz's Facebook following grew every year after 2010, with DJ B's Facebook page reaching more than 567,000 followers in 2017. Yet even as the 2015 release of Facebook Lite has enabled more Kenyans to access Facebook at lower costs, and Kenyan smartphone prices have continued to fall, internet access has remained limited for the majority of Shujaaz fans. Not wanting to leave fans in rural areas and urban slums out of the conversation, in 2012 WTS began using Echo Mobile to engage with fans via a toll-free SMS shortcode. WTS puts the shortcode prominently at the end of each comic book story, encouraging fans to send SMS messages to the code in order to engage DJ B, who also promotes the code regularly on his radio programs and posts the code to his Facebook and other social media platforms.

Fans who find the code through Shujaaz media can then send free open-ended messages to the shortcode to engage DJ B in conversation with questions or concerns about core issues. When anyone sends an SMS to the WTS shortcode, their number and all subsequent messages are captured and stored on the Echo platform to create an increasingly robust and intelligent profile for them. The Shujaaz team monitors incoming, open-ended messages through the Echo platform's live inbox feed, and at predetermined times each day uses the platform to manually send responses, as one might on Twitter.

At other times, Shujaaz uses its different media channels to promote a keyword related to an ongoing campaign topic. Fans who send an SMS message with the keyword to a shortcode get a structured conversational survey, and their responses are stored in their profiles and in downloadable data sets. The data collected for each fan later enables WTS to send more surveys and notifications to fans within select demographic or interest groups, based on their prior survey responses. Both the shortcode and Facebook are now promoted across all of Shujaaz media. Entering 2018, toll-free SMS remained Shujaaz's most frequently used channel, with nearly 600,000 fans sending more than 90,000 monthly SMS messages in Tanzania and Kenya.

This continuous, large-scale fan engagement is seen as essential to the WTS mission. According to WTS' Head of Knowledge and Learning, "collective discussions lead to collective beliefs, which lead to collective behavior changes." It has also enabled WTS to constantly generate new data by monitoring fan behavior and proactively reaching out to its SMS contact and Facebook friend databases to conduct online or SMS-based polls, arrange in-person focus groups, and apply other qualitative and quantitative research methods. From this continuous data stream, the WTS Knowledge and Learning Team generates insights that inform future behavior change strategies and programming while providing direct value for partners.

Expanding to Messaging Apps

Facebook Messenger

The Shujaaz social media strategy has always been to encourage group discussion, but from the outset, the team encountered Facebook followers who did not wish to share their personal experiences about sensitive topics in a public space where their name was visible. WTS began using Facebook Messenger as a means to communicate with these fans one-on-one, much like the SMS shortcode. Followers of DJ B's Facebook page would sometimes contact the character privately through Facebook Messenger and describe their personal challenges.



As Shujaaz's Facebook following grew, Facebook Messenger was also adopted as a means to privately reach out to particularly active fans, either to request their participation in an online public discussion or their attendance at a Shujaaz in-person event. As research initiatives expanded with Shujaaz's growing Facebook following, the Facebook pages also became valuable for issuing public calls for fans from particular communities or demographics to participate in focus groups and surveys. Fans who were qualified for and interested in a particular study were asked to contact WTS via Facebook Messenger for further details.

WTS did not and has never attempted to manage smaller group chats within Facebook, preferring to designate Facebook as a platform for large, public group dialog and Facebook Messenger as an outlet for private outreach. This was not a formal decision, but was based on how young Kenyans, including the Shujaaz staff, were accustomed to using Facebook. According to the Shujaaz team, most fans and staff used the Facebook application, which did not enable access to Facebook Messenger. They did not use the Facebook messaging applications, making it a far-less appealing space for group discussions and one that was much less familiar to most young Kenyans. None of the Shujaaz staff ever considered facilitating group chats via Facebook Messenger, and many did not know that the application even enabled group chats.

WhatsApp

After several years, as both the Facebook Messenger and WhatsApp applications skyrocketed in popularity, WTS began to explore the possibility of engaging fans in smaller group discussions. WhatsApp quickly emerged as Kenya's most popular application and thus the most efficient way to connect with certain segments of the youth population. Additionally, WTS found that it was the app most commonly used for group chats. In 2015, WTS created its first WhatsApp chat group, ostensibly administered by DJ B, as a way to observe if and how Shujaaz fans engaged with DJ B and each other differently in a smaller group chat setting and to test different research techniques within these smaller groups.



While the first chat group was generic in its focus, it was extremely successful at attracting fans, sustaining engagement and testing small group research approaches. Later in the year, Shujaaz began creating thematic WhatsApp chat groups for specific segments of Shujaaz fans. These small groups also proved valuable for research, which led WTS in 2016 to create separate WhatsApp chat groups to conduct structured focus group discussions. At the same time, the Shujaaz team began a new initiative to convene its audience at small, in-person events focusing on different inspirational themes. Over time, as the number and size of events increased, so did the number of WhatsApp chat groups, with many more started and managed by fans themselves, with DJ B added as a member.

IMPLEMENTATION

All Shujaaz communications on Facebook Messenger and WhatsApp are managed by the Shujaaz Social Media Team. The Social Media Team Leader develops strategy in collaboration with the Knowledge and Learning Team and manages three additional social media staff who create, monitor and engage in the different forums. The Social Media Team carefully manages and controls access to all the Shujaaz social media and messaging accounts in order to ensure the consistency of DJ B and other characters' voices. One staff member has the sole responsibility for the DJ B WhatsApp account and all the chat groups that DJ B administers or is a member of, while other team members have responsibility for different characters' Facebook pages and related Facebook Messenger conversations.

Broadly, the Social Media Team's mandate is to innovate and experiment with different approaches to stimulating and sustaining high levels of fan engagement, which contributes to research and campaign goals. The team meets weekly to strategize and plan for engaging target fan segments on active campaign issues across different social media and messenger forums. This includes planning specific Facebook page posts and WhatsApp chat group topics, designing new WhatsApp focus groups, and using Facebook pages and Messenger to generate interest in upcoming events.

The Social Media Team's coordinates closely with the Knowledge and Learning Team, which provides input on content design and helps define quantitative targets for Facebook page likes, comments and posts, as well as for SMS campaign engagement. These large-scale, one-to-many communication initiatives are the first priority for Shujaaz monitoring, evaluation and learning efforts because of WTS' focus on broad, normative change. This is partly the reason that neither team systematically tracks engagement on WhatsApp chat groups or one-to-one fan chats on Facebook Messenger, but they do collaborate to define qualitative goals and success targets for their messenger efforts.

One-on-One Fan Support and Recruitment

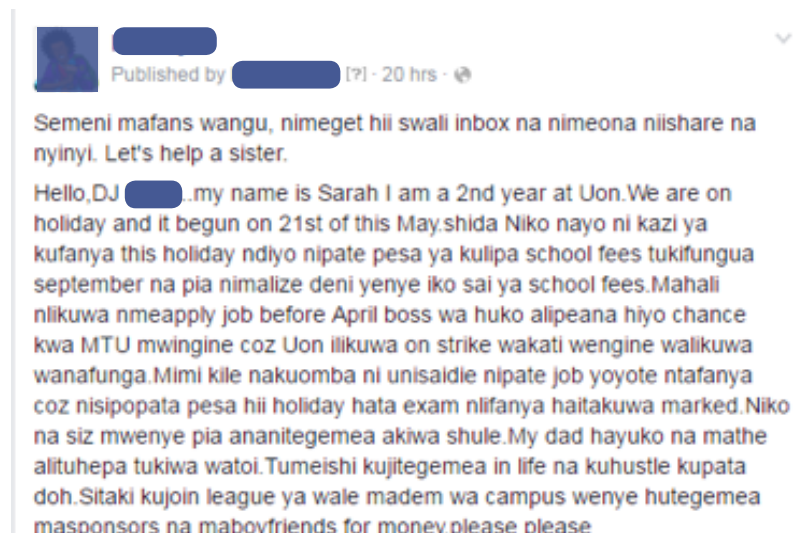
The Social Media Team's most frequent fan engagements via Facebook Messenger are reactive to incoming direct messages from followers of one of the Shujaaz character's Facebook pages. These messages arrive in the pages' inbox, where the Social Media Team, as administrators of the page, can respond from DJ B. The nature of incoming messages vary, but most often contain a request for assistance with a particular challenge facing the fan and which the fan is too shy or embarrassed to post publicly. A team member will respond directly to the fan via Facebook Messenger in the voice of the page's character. Responses are designed to provide direct support. When fans disclose an immediate crisis or sensitive problem, such as a mental health issue, the team is trained to link them directly to preferred counseling and support partners.

Sometimes, the team member managing the Facebook Messenger conversation will ask the fan permission to post an anonymized description of the situation on the character's Facebook page in order to generate public discussion and support. The fan can then observe and benefit from group dialogue about the case without disclosing their identity. Other fans can provide assistance, while also becoming aware of the challenges facing their fellow fans, challenges that they themselves might also be struggling with. WTS believes that the public discussion of a familiar story may spark others to seek help, either publicly or privately, while building awareness and providing a human side to the issue.

Facebook Messenger Support Case

In 2017, the Shujaaz Social Media Team was monitoring the DJ B Facebook page when a fan sent a direct message to DJ B via Facebook Messenger. The message came from a young woman who had lost her job and had been desperately looking for work with little success. She had been accepted at a university, but the school had been severely damaged by student riots and her admission had been put on hold. The young woman was a single mother and growing desperate for work, confessing to DJ B that she was considering prostitution as a means to support herself and her child. She had come to him as a last hope, she explained, begging for help so she could remain a respectful and proud mother and good role model.

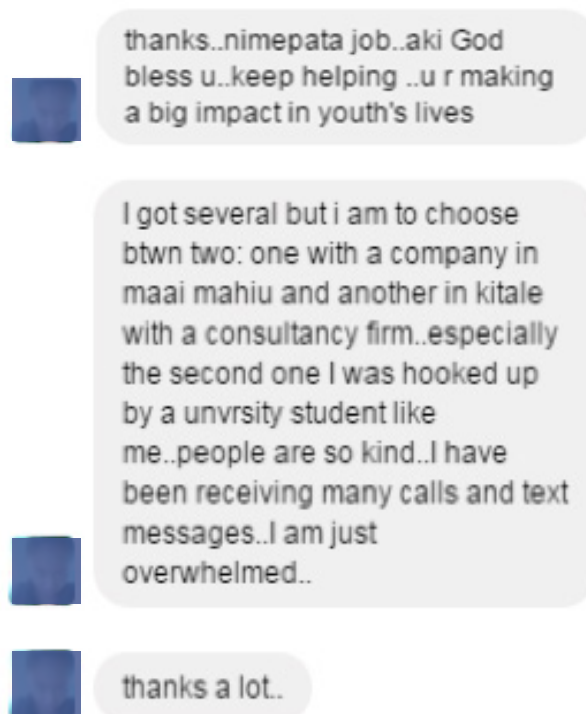
Responding as DJ B, the Shujaaz team member told the woman that he wanted to help and thought that the other fans would too. He asked if he could post her story to his Facebook page, without mentioning her name. The fan consented, and the post was made, detailing the woman's story and asking fellow fans to provide support and suggestions.



Within hours, other fans were commenting with messages of sympathy, support, advice and job opportunities that they were aware of or offering. Eventually, the young woman responded to the public Facebook thread and acknowledged her identity before following up with other fans directly via Facebook Messenger.



Through follow-up with other fans on Facebook, she was eventually offered multiple job opportunities, which she wrote about to DJ B via Facebook Messenger thanking him.



In addition to responding to fan inquiries, in 2016 the WTS Social Media Team began using Facebook Messenger to proactively reach out to fans who engage actively on the Facebook page. This individual outreach was intended to drive behavior change organically by inspiring fans to take a leadership role and initiate Facebook page conversations, without the public intervention of fictional characters. The team would engage only when requested. The team refers to this approach as “putting fans front and center,” with the characters stepping back and merely supporting the dialogue rather than leading it.

DJ B’s WhatsApp Chat Group

In 2015, a member of the Shujaaz Social Media Team proposed starting a WhatsApp chat group on behalf of DJ B, open to all Shujaaz fans and addressing all topics. To do so, the team procured a dedicated mobile phone and SIM card, which effectively became DJ B’s phone. Since that time, this one phone, phone number and WhatsApp account have been solely managed by a single team member, who administers the DJ B WhatsApp chat group and all subsequent Shujaaz chat groups via the WhatsApp desktop app. If other Shujaaz staff are interested in using the WhatsApp chat groups for any purpose or creating new groups, the dedicated team member must be consulted and implement the engagement directly.

Because of the team’s existing use of Facebook Messenger as a one-to-one tool and because of its integration with Shujaaz’s broader Facebook following, the decision was made early on to use WhatsApp almost exclusively for group chats. The manager of the DJ B WhatsApp account thus put a block on all incoming calls and SMS messages to the DJ B phone and has ignored all incoming WhatsApp calls and most direct messages from fans, focusing all engagement on chat groups. This reflected how young Kenyans were using the two messaging apps in 2015. Most Shujaaz fans and staff did not use Facebook Messenger for group chats and many were not even aware that it was possible.

Even if they had wanted to create Facebook Messenger chat groups on behalf of DJ B, it would not have been possible. Administrators of Facebook pages such as DJ B’s can only initiate Facebook Messenger chats by responding directly to a follower’s comment on the Facebook page or to a direct message sent to the page’s dedicated inbox. In both cases, additional followers cannot be added to the chat, preventing group chats. While individual Facebook users can create Facebook Messenger chat groups, only other individual profiles can be added to the group, and not pages such as DJ B’s.

The team did use Facebook pages and Facebook Messenger to funnel fans to DJ B’s WhatsApp chat groups. They posted DJ B’s WhatsApp account number on his Facebook page and noted that he had started a WhatsApp chat group. Some fans quickly began sending WhatsApp messages to the DJ B WhatsApp account, requesting to be added to the group, while others reached out on Facebook Messenger to share their phone numbers and request joining the group. At the time, WhatsApp chat groups were restricted to a maximum of 100 users, a limit that the DJ B chat group quickly hit just before the limit was increased to 256 in 2016. The group’s membership eventually grew to hit that limit as well, where it has remained as fans come and go from the group. While DJ B’s WhatsApp chat group maintained a general focus, with fans able to raise new topics for discussion and pose questions, the team regularly initiated discussions and shared targeted media related to a specific campaign or research topic.

Realizing it had a captive and engaged group of fans in a smaller group setting, the team also saw an opportunity to experiment with new research techniques. The first was related to an ongoing anti-tobacco campaign funded by the Bill & Melinda Gates Foundation, intended to understand youth perceptions of

smoking and then stop them before they started. The challenge was that research indicated that warning young people about the dangers of smoking had the opposite effect, instead influencing them to rebel and try it. To measure perceptions, WTS took an indirect approach, posing casual questions within the WhatsApp group, such as, “What’s the worst thing an ex has ever done?” and listing a range of offenses, such as cheating and smoking. Or DJ B would ask fans their opinions about different celebrities and role models, some of whom were known smokers, and observed to see if fans referenced smoking in relation to their admiration.

While these techniques could also have been tested on DJ B’s Facebook page, the scale of his Facebook following, in the hundreds of thousands by 2015, would have made it more challenging to track fan engagement. This challenge would have been exacerbated by the Facebook page user interface, which allows for multiple posts at once, each of which generate their own thread of comments underneath the post. WhatsApp chat groups, on the other hand, have a simple conversational format in which all messages appear chronologically, enabling more manageable and focused discussions.

Thematic WhatsApp Chat Groups

With DJ B’s original general chat group reaching the size limit and following the success of the WhatsApp research experiments, the Social Media Team decided in late 2015 to have DJ B create more WhatsApp chat groups with focused themes for specific audiences. Early thematic chat groups included a group for fans in agriculture and a group about “hustling,” where fans tested and marketed their businesses and entrepreneurial ideas.

To generate engagement in the WhatsApp chat groups, the team used the same outreach approach as with the first chat group—promoting them on Shujaaz Facebook pages and then adding fans based on direct messages received via WhatsApp and Facebook Messenger. If a fan requested being added to a group via Facebook Messenger, the WTS team member managing the conversation would then ask for the fan’s phone number, add the fan as a contact in the DJ B WhatsApp account and add the fan to the relevant chat group. The thematic WhatsApp chat groups filled up quickly and have sustained engagement ever since, setting the format for WTS’ expanded use of WhatsApp chat groups as a medium to connect fans with similar interests and experiences.

Event Planning and Follow-Up

In 2016, WTS expanded its use of WhatsApp chat groups by creating Shujaaz Konnect, a series of in-person events held around Kenya. The event series was intended to directly and personally engage Shujaaz fans and provide networking opportunities outside of the digital space through music, games, live speakers and discussions. Shujaaz Konnect emerged from a trial event called Hike for Love, held on Valentine’s Day 2016 and advertised via Shujaaz Facebook pages. About 80 fans gathered at Karura Forest in Nairobi for a hike and discussions about love and relationships. During the event, WTS staff promoted DJ B’s WhatsApp number and asked attendees for their phone numbers to ensure that the group could continue its discussions via WhatsApp. The Social Media Team then created a WhatsApp chat group, ostensibly administered by DJ B, and added event participants. Fans without smartphones were encouraged to chat with DJ B via the toll-free SMS shortcode.

The event and the subsequent WhatsApp engagement were successful enough to inspire further in-person connections, both between the Hike for Love participants and new groups of Shujaaz fans. Coordinating through the new event-based WhatsApp group, participants independently organized a volunteer trip to a children's home outside of Nairobi without any participation from WTS. When pictures from the Hike for Love event were posted to Shujaaz Facebook pages, large numbers of other fans from outside of Nairobi expressed their interest, and Shujaaz Konnect was born. Since mid-2016, WTS has held events across Kenya almost monthly, with up to 300 fans attending. Each event provides fan touchpoints with different Shujaaz campaigns. One of the most important was the governance campaign in the lead up to the 2017 Kenyan elections.

During and after each Shujaaz Konnect event, the Social Media Team created an event-specific WhatsApp chat group. The team found that fans then regularly started their own WhatsApp chat groups and added DJ B's number as a member. These WhatsApp chat groups are similar to WTS' own thematic groups, focusing on specific issues and goals. Rather than seek to control this fan initiative, the team decided to encourage what it calls "audience co-ownership" of its events and the resulting WhatsApp chat groups.

Digital Focus Groups

By 2017, the Shujaaz Social Media Team had established WhatsApp as a reliable tool for small fan chat groups focused on shared themes and experiences. Building on this success and that of early WhatsApp research experiments, the Knowledge and Learning Team began experimenting with focus group discussions conducted through WhatsApp. Since 2010, the Knowledge and Learning Team had used Shujaaz Facebook pages to recruit fans for in-person focus group discussions conducted around the country as part of different research campaigns on behalf of partners and clients. Having observed fan behavior in WhatsApp groups, the team saw an opportunity to reduce its costs and for the first time conduct virtual focus group discussions with mixed groups of fans from different regions.

Not wanting to disrupt the conversation flow of the thematic WhatsApp chat groups by intervening with research protocol and questions, the Knowledge and Learning Team sought instead to create its own WhatsApp chat groups designed specifically for focus group discussions. The team used the same approach for recruiting participants: posting calls for participants on DJ B's Facebook page and asking interested fans to contact him via Facebook Messenger or WhatsApp. Those deemed eligible to participate would then be added to a dedicated WhatsApp chat group administered by the DJ B WhatsApp account.

In order to adhere to research criteria, WTS follows a strict protocol for running focus group discussions on WhatsApp, ensuring that two members of the Knowledge and Learning Team are always added as co-administrators of each WhatsApp focus group. The researchers then ask a series of predetermined questions, while DJ B intervenes to encourage the participants to respond. At the end of a WhatsApp focus group discussion, the team takes screenshots of the entire conversation in order to record and analyze the content. The team has also sought out ways to download the conversation text, but without a WhatsApp API, they have not had success.

WHAT WORKED, WHAT DIDN'T AND WHY

Successes

By 2018, the Shujaaz platform had gained a major international following across its various digital and analog media channels. WTS reported that the platform had reached 2.3 million young people in Tanzania and 4.9 million in Kenya, roughly a half of all Kenyans ages 15-24.¹ On social media, the platform had more than 800,000 followers across its different Facebook pages, and in 2017 had inspired more than 106,000 comments and 653,400 reactions on DJ B's page alone. While WTS does not measure fan conversations on Facebook Messenger, the Social Media Team reports that engagement averages around 300 individual Facebook Messenger chats daily and spikes after major events or during campaigns being pushed on the Facebook pages.

WhatsApp engagement has remained similarly continuous, though also difficult to measure and dependent on WTS campaigns and research initiatives. Some event-based WhatsApp chat groups have died down as fans undertake their own groups with DJ B participating passively in about 12 of them. In 2018, the Social Media Team was actively administering roughly 20 of its own WhatsApp chat groups, including the original DJ B chat group and a range of thematic, events-based, and focus group chat groups. Within each of these 32 groups, membership ranges from 100 to 250 fans, and from 10 to 500 messages daily.

Shujaaz's success using messaging applications to engage its fans and achieve its campaign and research goals can be attributed both to specific features of the apps themselves and to Shujaaz's unique approach.

Dedicated Content and Personnel

Shujaaz is first and foremost a media initiative, dedicated to the production of timely, relevant and trusted content. This content, whether the Shujaaz comic book or DJ B's radio, television and YouTube programs, provides entertainment as well as educational, social and psychological value to Shujaaz's young fan base, which continues to grow as a result. The high quality of Shujaaz's content is due to the considerable resources that the company dedicates to research and production, which ensures it is responsive to real-time events and social issues and is presented in a way that is accessible and relatable. This continuous stream of high-quality, popular content is critical to generating fan engagement. Once fans do connect with Shujaaz, WTS has been extremely successful at sustaining their engagement, in large part because of its dedicated Social Media Team.

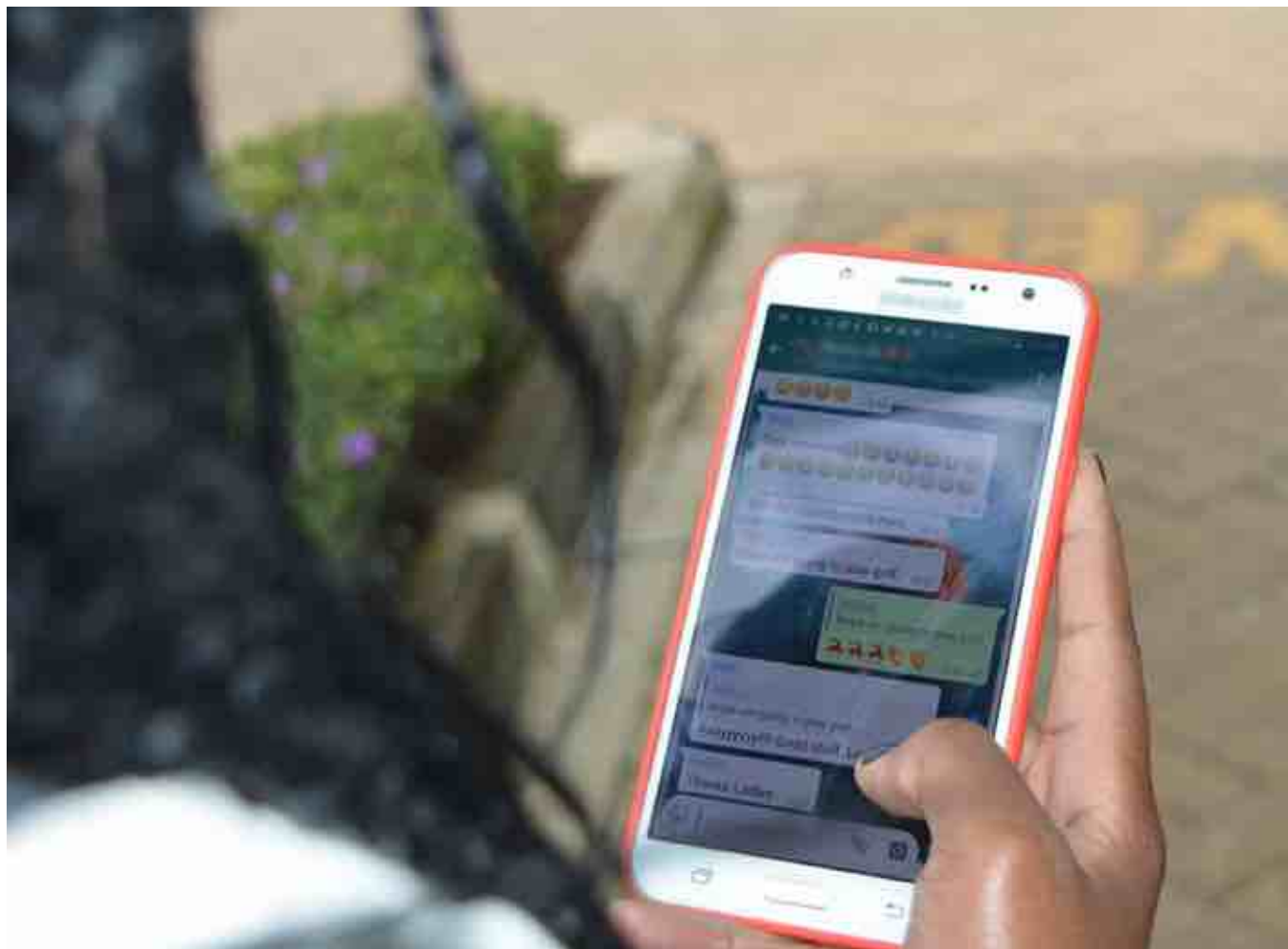
The Social Media Team's mandate is to sustain one-on-one and group conversations among fans in conjunction with ongoing programming and campaigns. In addition to strategically posting textual conversation prompts and sharing media for discussion on Facebook pages and WhatsApp chat groups, the team looks for its most actively engaged fans and privately contacts them to promote fan-driven dialog. Moreover, the team is committed to quickly responding to direct fan outreach. The team's responses are carefully considered in light of the context of the fan's outreach and the issue raised, and can lead to referrals to outside services. This commitment to responsiveness ensures that Shujaaz characters remain relatable and trusted so that fans feel connected to them.

¹ "A Creative Story That Turned Into Thriving Business." *East Africa Top 100*, 27 Sept. 2016, <http://eastafricatop100.com/a-creative-story-that-turned-into-thriving-business/>.

Facebook-Facebook Messenger Integration



The Shujaaz team sees two-way engagement as essential for driving, monitoring, evaluating and improving behavior change goals. Social media, notably Facebook pages, has been an essential component of this approach, allowing Shujaaz to build, engage and influence its fan base all in one place. Shujaaz Facebook pages also provide a means for direct fan engagement via Facebook Messenger, which comes as an integrated feature on all Facebook pages that can be enabled or disabled by page administrators. By enabling Facebook Messenger on its Facebook pages, the Shujaaz Social Media Team opened an additional channel for fans to message Shujaaz characters directly. In addition to engaging with large groups of other fans by commenting on and “liking” content on these pages, fans accessing the pages via Facebook’s web and mobile user interfaces need only click on the “Message” button to engage in a one-on-one conversation with the character.

Fans using the Facebook Messenger mobile app can also search for Shujaaz characters by name and engage with them one-on-one, even without visiting the characters’ Facebook page. This integration between Facebook Messenger and Facebook’s social media platform has thus provided Shujaaz with unique flexibility in determining how to engage large segments of its fan base, without separately creating and managing accounts on different messenger and social media platforms and then working to drive adoption of both.



Multi-App Approach

WTS has used Facebook Messenger and WhatsApp to engage Shujaaz fans in distinctly different, yet complementary ways in order to meet different but related needs. This multi-messenger approach has capitalized on the distinctly different features and limitations of each messaging application:

| Facebook  | WhatsApp  |
|--|--|
| <ul style="list-style-type: none">• Facebook pages and conversations can reach enormous scale, allowing more than 800,000 Shujaaz fans to follow the Shujaaz character Facebook pages. WTS uses these pages to drive large-scale, public conversations and push large-scale, normative change.• Facebook and Facebook Messenger are more broadly accessible to Shujaaz fans, as they do not technically require the fan to have a smartphone and SIM card. Fans can log into their own accounts through friends' phones or via desktop computers at internet cafes.• Facebook Messenger's integration with pages allows WTS to engage individual followers in private, one-on-one conversations without changing platforms. These can be initiated by WTS in response to comments on DJ B's page or to direct messages sent to his inbox. Direct messaging on Facebook Messenger is used to complement WTS' larger behavior change efforts with personal guidance and anonymity. The one-on-one format also allows WTS to learn more about individual fans' backgrounds and funnel them to WhatsApp for smaller group conversations. | <ul style="list-style-type: none">• WhatsApp is most valuable to WTS as a middle ground between one-on-one and large-scale public conversations. WhatsApp chat groups have a size limit of 256 members, forcing the WTS group admins to carefully define each chat group and its participants. This smaller group format aligns with the desire for narrowly focused conversations and targeted messaging, both for behavior change and research goals. Facebook Messenger does not allow Facebook pages such as DJ B's, to create group chats.• WhatsApp allows fans to easily create their own chat groups and for the WTS team to merely observe. While Facebook Messenger allows individual users to create group chats, accounts connected with a Facebook page cannot be added to them. This prevents Shujaaz fans from creating their own Facebook Messenger chat groups and adding DJ B, as they have been able to do on WhatsApp using DJ B's phone number from other groups.• Unlike Facebook pages and Messenger accounts, WhatsApp chat groups cannot be searched for by WhatsApp users nor accessed without being intentionally added by the WhatsApp chat group administrator. This enables WTS to keep its groups separate and distinct in order to hold focused conversations with carefully vetted and select groups.• For WhatsApp focus groups, the WTS team is able to add co-administrators from the Knowledge and Learning Team. Facebook Messenger chat groups are only allowed one admin. |

This multi-app approach also benefits Shujaaz fans, who sometimes feel more comfortable in one-on-one conversations. Others enjoy group conversations, but find Facebook pages overwhelming and may prefer to engage only with fans who share similar issues, interests or experiences. For these fans, WhatsApp group chats meet their needs and enable them to remain engaged in the Shujaaz platform without forcing them to post a discussion topic on a Facebook page, only to have it become buried by a flurry of other more popular topics.

2 <https://faq.whatsapp.com/en/android/23776567/?category=5245251>

Unforeseen Opportunities

WTS' use of messaging applications has expanded and evolved alongside the growth of Shujaaz's fan base and the technology. WhatsApp was not initially considered as a communication channel, and the Knowledge and Learning Team did not originally consider conducting focus groups through WhatsApp. The Social Media Team did not initially view Facebook Messenger as a means to recruit different groups of fans for engagement in chat groups on other apps. The most recent unforeseen opportunity emerged from WTS' Shujaaz Konnect initiative, when fans began creating their own WhatsApp chat groups. Not only did this encourage "audience co-ownership," it helped address capacity constraints, since the Social Media Team was beginning to struggle to effectively administer dozens of different chat groups.

Challenges and Limitations

WTS has combined multiple messaging applications to leverage their respective strengths and overcome the limitations of each to achieve Shujaaz goals. Nevertheless, WTS teams continue to encounter challenges.

Inappropriate Content on WhatsApp

When the Social Media Team created the first WhatsApp chat group, some fan engagement created challenging ethical considerations for WTS. Both via direct messages and within the chat group, some fans sent romantic overtures to DJ B that included nude or sexual photos. Some used the group to try and hook up with other fans, while others engaged in heated arguments rarely seen on the DJ B Facebook page. This content, especially the nude photos, created a conundrum for WTS, which was striving to "be amongst the youth, rather than apart from them," according to the company's Managing Director.

The company's success was based largely on the authenticity of its characters, which had presumably been developed so effectively that some fans had become romantically infatuated with them. At the same time, this need for authenticity made it unrealistic for DJ B to "wag his finger" at his peers in response to content that, were he a real person, he might be happy to receive. To break character and police this content would be to undermine his authenticity and impact, which made it highly risky for WTS to intervene and scold or stop fans.

Ultimately, the problem created by some fans was resolved by others. At some point, one of the fans reached out directly to DJ B, expressing her love of Shujaaz and dismay with the content and tone of the WhatsApp group. Seizing on the opportunity to rally like-minded fans, the Social media Team asked her if they could share her message with the WhatsApp chat group, without mentioning her by name. The fan consented, and when her concerns were aired to the group, a sizeable majority of other fans in the WhatsApp chat group came out in vocal support, scolding their peers for the inappropriate content to the point that it eventually stopped. The Shujaaz team was able to regain control of DJ B's WhatsApp chat group and focus the conversation back on issues related to its campaigns and programs.

Fan Motivation and Engagement with WhatsApp Focus Groups

The Knowledge and Learning Team's shift to digital focus groups has saved valuable time and resources. However, using WhatsApp chat groups as focus groups has presented some challenges. The Knowledge and Learning Team has struggled to sustain engagement with the more structured and research-oriented format, and despite carefully vetting participants, the team often discovers that the primary motivation for fans to join the focus groups is the opportunity to connect with DJ B. When recruiting for WhatsApp focus group participation via Facebook, fans regularly ask about DJ B's involvement and more easily agree to participate if the character is involved.

WhatsApp focus groups are carefully designed and must be led by the Knowledge and Learning Team. This differs dramatically from the other relatively open and unstructured Shujaaz chat groups, where characters are free to engage in whatever way makes sense to the Social Media Team. Without this freedom to engage with DJ B, focus group participation often fades when DJ B stops engaging. Therefore, the Social Media Team acting as DJ B is regularly required to encourage participants to answer questions accurately and thoughtfully.

When participants do engage, the Knowledge and Learning Team faces the challenge of having to keep the conversations on topic. In-person focus group discussions have a dedicated and clear moderator who is established as the group leader and thus prompts and manages conversations. Maintaining this authority and leadership in the digital format has proven more challenging, as there are fewer social barriers preventing participants from interjecting, interrupting and proposing new topics to steer the conversation away from the research topic. The WhatsApp focus groups also take significantly more time than if they were in person, as many fans come in and out of the conversation over several days, and usually only participate at night. Lastly, the Knowledge and Learning Team does not have the benefit of being able to read facial expressions, body language and other nonverbal cues.

WhatsApp Analytics

Because WhatsApp did not have an open API or analytics features as of early 2018, the Shujaaz teams struggled to track and analyze fan behavior within its WhatsApp chat groups. As a result, other than with the WhatsApp focus groups, which are specifically designed for research, the Shujaaz teams do not attempt to systematically track and analyze engagement or impact on WhatsApp. The WhatsApp chat groups are seen instead as a means for qualitative analysis and sharing of individual fan stories.

The Knowledge and Learning Team still endeavours to draw quantitative insights and conclusions from WhatsApp chat groups created for focus group discussions. However, this process is extremely inefficient without an analytics feature or a means to download the conversation text to other software where it can be sorted and analyzed by date. Unlike with in-person focus group discussions, the WhatsApp focus group conversations can span multiple days, with intermittent periods of silence and engagement. For effective quantitative analysis, they would require cleaning by the date and time the text was sent.

Were analysis possible in WhatsApp as it is in Facebook, or if downloading WhatsApp messages and metadata were possible as it is with the Echo Mobile SMS platform, the Knowledge and Learning Team would certainly scale its use of WhatsApp for research purposes. Instead, since 2014 the majority of

quantitative analysis has been conducted on Shujaaz SMS and Facebook data. Working with Cambridge University-affiliated Africa's Voices Foundation, WTS has combined machine learning and human analysis to generate critical insights and conclusions out of hundreds of thousands of SMS and Facebook interactions, which have provided direct value to WTS commercial and development partners and clients. The ability to generate these sorts of insights and value from SMS and Facebook engagements, and the challenges of doing so with WhatsApp, have led WTS to continue channeling more resources away from the latter.

Internet Access

Every year since WTS was founded, smartphone prices in Kenya and Tanzania have dropped while Facebook Lite and Free Basics have reduced the cost of data required to access the platform and Facebook Messenger. Nevertheless, in 2018 access to social media platforms and messaging applications remained limited in rural areas and urban slums. Thus, despite the scale and power of Shujaaz's Facebook pages, Facebook Messenger accounts and WhatsApp chat groups, most Shujaaz fans in these areas still lacked access to these media. As a result, toll-free SMS remained Shujaaz's most frequently used channel, with nearly 500,000 fans sending more than 90,000 monthly SMS messages in Kenya alone, and another 60,000 monthly SMS messages in Tanzania. Until the Shujaaz audience has 100 percent internet access, internet messaging applications will have to remain as complementary tools so as not to exclude these large audience segments without internet access.

Moreover, there is a considerable gender imbalance among Shujaaz's digital followers, which may result from broader inequities in internet access. Based on internal analysis by the Knowledge and Learning Team, WTS found in 2017 that 38 percent of Kenyan fans interacting via SMS and just 22 percent of fans on DJ B's Facebook page were female. WhatsApp gender statistics are not known due to the team's inability to deploy and analyze structured surveys on WhatsApp. The team believes the imbalance likely reflects Kenyan cultural tendencies for parents to supervise young girls more closely than boys and the fact that DJ B is male.

Impact

The WTS Knowledge and Learning Team regularly seeks to evaluate the impact of different campaigns across different Shujaaz media, both as a means to compare and optimize its different approaches and in response to client and partner requests. While some impact evaluations and results remain internal, the company also works with Africa's Voices to produce broader learnings about youth trends and findings about effective approaches to behavior change.

Regression modeling from WTS' 2017 annual panel survey, done in collaboration with Tulane University, found that fans who had been exposed to Shujaaz digital content were associated with an 11.2 percentage point increase in condom use; a 17.7 percentage point increase in condom use and a Ksh 2,392 (US\$22.71) increase in monthly income when compared to fans who only accessed Shujaaz analog content such as radio, comic books and events. WTS believes that this is due in part to the conversation, engagement, idea-sharing and peer-support facilitated across digital channels, which reinforce the exchange of ideas and increase their impact.

NEXT STEPS

Entering 2018, despite its success with WhatsApp, the Shujaaz Social Media Team was increasingly focusing its efforts on larger-scale, one-to-many communications to drive broad, normative change, namely the Shujaaz SMS shortcode, Facebook pages and Shujaaz Konnect events. This shift reflects a determination that the scale that these formats provide and the research value provided by Facebook's analytics outweigh the costs of any fans who lose interest in Shujaaz because of its lessened WhatsApp presence.



Yet while DJ B may become a less central figure in Shujaaz WhatsApp chat groups, the ease with which fans can add him to their own self-moderated groups means that WhatsApp will remain an important channel for fans to organize and increasingly lead dialog around campaign issues and for the Shujaaz team to maintain visibility within those conversations. The Knowledge and Learning Team also planned to continue experimenting with WhatsApp for research purposes. Both teams were hopeful to soon have access to the WhatsApp enterprise solution API or the WhatsApp Business App, and perhaps find new ways to efficiently scale and innovate with the messaging application in ways that would benefit both Shujaaz's engagement and research goals.

Enabling more balanced gender access to Shujaaz remained a priority for WTS in 2018, as the company continued working to target female fans with new female characters and focused events. To advance this effort, the Knowledge and Learning Team was focused on generating data on gender dynamics and demographics among fans across different Shujaaz media.

In the immediate term, Praekelt is working to expand the MomConnect model to service caregivers with Nurse Connect, which as of early 2018 was already supporting 20,000 nurses across South Africa. Rather than medical advice, Nurse Connect provides training messages and psychosocial support via a help desk. Praekelt believes Facebook Messenger may hold more promise for this use case, as nurses are already effectively registered with the DoH and may be easier to first engage with Facebook Messenger and then convert to other channels



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