Knowing Just in Time: Use cases for mobile surveys in the humanitarian world

Nathan Morrow[a], Nancy Mock[a], Jean-Martin Bauer[b],*, Jennifer Browning[b]

[a]Tulane University, Payson Graduate Program in Global Development, 6823 St. Charles Avenue, NewOrleans, LA 70118, United States
[b]World Food Programme, Via Cesare Giulio Viola 68/70, 00148 Rome, Italy

Abstract

Mobile surveys have the potential to enhance food security information systems that have struggled to provide effective decision support. The mobile Vulnerability Analysis and Mapping (mVAM) project at the World Food Programme uses mobile technologies to collect food security information remotely. This paper documents use cases for mVAM (in camps, conflict, and vulnerable geographies) and assesses the tool's contribution to decision-making. Managers have used mVAM to support advocacy and prioritize resources, but important obstacles remain before mobile surveys can transform information systems. mVAM and related initiatives should continue to build a rigorous evidence base and embrace open models of innovation.

Keywords: food security; information systems; mobile technologies; food assistance; monitoring

1. Introduction

Much has been written about the failure of food security and nutrition information systems for pre-empting and managing food and nutrition security related emergencies [1-4]. The reasons that food security and nutrition information systems have failed to deliver decision-support for triggering and managing interventions are numerous; they include: the timeliness, validity and usability of the information as well as high data collection costs and feasibility constraints. Delayed response to events such as the 2008 food price crisis may also be attributed to on-going difficulties and broad disagreement about the most appropriate measures as well as the behavior of common indicators used to characterize the somewhat elusive concept of food and nutrition security [5]. Other authors have pointed to structural constraints for relief agencies to incorporate new information such as real time monitoring or higher frequency assessments into their programming and even more difficulty in making use of that data to influence decision making in the often laborious political negotiations on the type and scope of relief among donors, affected countries, and relief organizations [6-8]. Furthermore, physical constraints, i.e. the fact that the most vulnerable populations often live in remote places poorly connected by infrastructure or in conflict zones, make data collection extremely costly, time-consuming, and in some cases, dangerous.

The dramatic expansion globally of cell phone coverage and other new information streams ushered in an era of new opportunities to reach out to crisis affected populations, capturing close to real time information about their food security status and its determinants as well as providing a channel of communications between affected communities, (potential) beneficiaries and humanitarian actors. WFP's mobile Vulnerability Analysis and Mapping (mVAM) project is one such initiative. Since 2013, mVAM has been collecting data, leveraging cell phone technologies and the emerging information ecosystem around them by SMS, live telephone calls and an Interactive Voice Response (IVR) system. WFP implemented high frequency monitoring (multiple observations across time) of food insecurity in crisis affected countries. Short surveys aimed at monitoring food

* Corresponding author. Tel.: +39-06-6513-3821; fax: +39-6513-2817.
E-mail address: jean-martin.bauer@wfp.org

insecurity and its immediate causes were conducted in 12 crisis affected countries, representing more than 100,000 surveys [9]. While other organizations are using similar approaches in low income stable contexts, WFP is both in the vanguard of the operational use of high frequency information to improve the humanitarian response and has an unequaled scale and diversity of applications in many of the most demanding contexts. It is worth noting that mVAM has involved a variety of technological tools, from free and open source software to commercial vendors, and has not relied on a single platform. It is not in this paper's scope to address the comparative advantage of one or the other tool, but rather to reflect on the technology's effects on humanitarian information systems.

The mVAM experience - which has covered various geographies, types of crisis (Ebola, conflict, drought), and survey modes (SMS, IVR, voice calls) - offers the opportunity to assess whether new, technology-enabled data streams live up to the hype. This paper investigates the nature of data collected by mobile surveys and improvements over existing food security information systems. The authors make use of selected case studies and survey results from WFP humanitarian relief managers in Country Offices that have implemented mVAM data collection to examine whether new capabilities for data collection have actually influenced or improved decision making. Finally, the authors discuss barriers to uptake of high frequency mobile data collection and the potential next steps in development of this capability.

This paper focuses specifically on how the mVAM approach has the potential to address some of the recurring challenges to Food and Nutrition Security monitoring namely:

Monitoring is expensive and therefore unsustainable.

Monitoring focuses on areas where information is available. This is akin to looking for keys under the street light and thus leaves the most marginalized and vulnerable communities in the shadows where information is typically least available.

Indicators are collected too infrequently to capture changes.

Sampling techniques in monitoring systems are unable to adequately represent dynamic and unstable populations.

2. Background -- a variety of mVAM deployments in Africa and the Middle East

In 2013 with support of the Humanitarian Innovation Fund, mVAM launched a series of localized pilots involving voice calls that targeted IDP communities in the Democratic Republic of Congo and Somalia [ ]. These pilots were designed as proof of concept exercises with face-to-face surveys as a baseline comparison for data that would be collected by mobile phones. These pilots soon attracted the attention of private sector partners to lend technical and financial support to mVAM activities as well as created demand for mVAM products by local relief operation managers [ ]. This early success with capturing useful information from difficult to reach populations was recognized by senior management at WFP and was called into service as the Ebola crisis spread in West Africa. With restricted access to affected populations and limited information about the humanitarian situation, mVAM used SMS to track food security conditions in Guinea, Sierra Leone and Liberia during and after the Ebola epidemic. As a unique source of situational awareness in a virtual information vacuum, a growing number of partners including the Joint Research Center, FEWS NET, and the International Growth Center began to use mVAM data in their situation reports [12].

mVAM has since expanded in sub-Saharan Africa (Kenya, Somalia, Niger, Chad, Malawi) and to the Middle East (Iraq and Yemen), amounting to 12 individual deployments of mVAM survey approaches. Thus far, mVAM has been deployed in the following contexts: 1) refugee or IDP camps where food security conditions are dependent on factors largely out of the control of displaced people and where populations are or may become mobile, 2) conflict or emergency situations where mobile data collection is the only available option for insecure or inaccessible areas, and 3) chronically vulnerable geographies such as drought prone areas that require on-going monitoring where populations are constantly near a tipping point for large scale food insecurity. Regular assessment with traditional surveys is often too expensive to implement until after a crisis is well underway. The potential, and a projected focus area for future mVAM deployments, is to use lower cost, higher frequency monitoring to promote early action in these vulnerable geographies.

An mVAM deployment consists of mobile survey equipment, software, and training to conduct short surveys by SMS, IVR and/or voice calls. mVAM surveys generally take place on a monthly basis and include the WFP corporately mandated indicators of Food Consumption Scores (FCS) and the reduced Coping Strategy Index (rCSI) [13,14]. Price data, open-ended questions, and key informant interviews have also been included based on management requests.

2.1. Context 1: Refugee and IDP Camps

In camps, insecurity and remoteness can restrict access by humanitarian organizations. Arrivals of newly displaced people and the return of formerly displaced populations create a population dynamic that can be a challenge for traditional survey methodologies to capture. Changes in security, economic conditions, and assistance levels can interact to affect household food security in unpredictable ways, and statistics can rapidly become out of date. The deployment of mVAM allowed WFP to track food security with respect to changes in assistance levels (DRC, Niger, Chad, Sudan) and closely monitor food markets as cash transfers were initiated (Dadaab and Kakuma in Kenya). In most cases, WFP implemented the activity in-house, as camps are a 'confined' area where it is possible to conduct face-to-face baselines that enable validation of data collected by phone. In Sudan, by analyzing face-to-face and mobile data, WFP learned that some better-off respondent households attempted to 'game' the calls by underreporting their consumption of high quality foods. WFP learned that engagement through community-based NGOs