Using mobile voice technology to improve the collection of food security data: WFP's mobile Vulnerability Analysis and Mapping

Alice Robinson with Alice Obrecht

CASE STUDY

HIF humanitarian innovation fund

ALNAP

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Front and back cover: WFP-provided cell phone (through HIF funding) held by a respondent in Mugunga 3, Democratic Republic of Congo (DRC); Credit: WFP/Lucia Casarin

Contents

HIF-ALNAP case studies on successful innovation

This study is one in a series of 15 case studies, undertaken by ALNAP in partnership with ELRHA's Humanitarian Innovation Fund (HIF), exploring the dynamics of successful innovation processes in humanitarian action. They examine what good practice in humanitarian innovation looks like, what approaches and tools organisations have used to innovate in the humanitarian system, what the barriers to innovation are for individual organisations, and how they can be overcome.

About the case studies

Case study subjects are selected from a pool of recipients of grants from the HIF. The HIF awards grants of between £20,000 and £150,000 to support the recognition, invention, development, implementation and diffusion stages of the innovation process. The HIF selects grantees on the basis of a variety of criteria designed to achieve a robust representation of the range of activity in humanitarian innovation.

The case study subjects are chosen to reflect innovation practice in the humanitarian system. They cover information communication technology (ICT) innovations and non-ICT innovations, and they offer a balance between innovations that have reached a diffusion stage and those that have not. They also reflect the wide geographic range of the areas where innovations are being trialled and implemented. (For more information on the methodology and criteria used to select case study subjects, see the forthcoming 'Synthesis report' for the case study series).

About HIF-ALNAP research on successful innovation in humanitarian action

These case studies are part of a broader research partnership between ALNAP and Enhancing Learning and Research for Humanitarian Assistance (ELRHA) that seeks to define and understand what successful innovation looks like in the humanitarian sector. The ultimate aim of this research is to improve humanitarian actors' understanding of how to undertake and support innovative programming in practice. This research partnership builds on ALNAP's long-running work on innovation in the humanitarian system, beginning with its 2009 study, Innovations in International Humanitarian Action, and draws on the experience of the HIF grantees, which offer a realistic picture of how innovation actually happens in humanitarian settings.

Innovation is a relatively new area of work in humanitarian action, yet it is one that has seen exponential growth in terms of research, funding and activity at both policy and programming levels. While the knowledge base around innovation in the humanitarian sector is increasing, there remain a number of key questions for humanitarian organisations that may be seeking to initiate or expand their innovation capacity. The HIF-ALNAP research has focused on three of these:

Primary research questions

What does successful humanitarian innovation look like?

What are the practices organisations can adopt to innovate successfully for humanitarian purposes?

Secondary research question

What are the barriers to innovation in the sector and how can they be mitigated?

The case studies will be used to produce a synthesis document that addresses these three questions. The outputs of this research are aimed at humanitarian organisations interested in using innovative practices to improve their performance, as well as organisations outside the humanitarian sector, such as academic institutions or private companies, seeking to engage in innovation in humanitarian action.

1. About this case study

Organisation	World Food Programme (WFP)
Partners	InSTEDD; GeoPoll; Nielsen; Cisco; Google
Project	Mobile Vulnerability Analysis Mapping (mVAM) – Piloting Mobile Voice Technology for Household Food Security Data Collection

Grant	Start date	Grant period	Total HIF budget	Location
Implementation	June 2013	June 2013 - April 2015 (inclusive of a four-month extension)	£144,497	DRC, Somalia

This case study explores the innovation process undertaken by the World Food Programme (WFP) to apply mobile voice technologies to food security data collection. Mobile Vulnerability Analysis and Mapping (mVAM) is a rapidly expanding programme integrating mobile technologies, including SMS, Interactive Voice Response (IVR) and live calls, into WFP's established food security monitoring systems.

The Humanitarian Innovation Fund (HIF) provided mVAM funding to pilot mobile voice technology in the Democratic Republic of Congo (DRC) and Somalia through contacting a panel of regular respondents with live calls and IVR. Each month, respondents answered questions on their household food consumption and coping strategies, generating high-frequency data that show trends in food security.

With considerable experimentation, adaptation and collaboration, the mVAM team was able to demonstrate that it could gather credible data using mobile technologies, and that it could do so with improvements in cost, time and enumerators' security. Although the mVAM tools are best used alongside face-to-face data collection in 'mixed-mode' systems, they also enable the collection of data in situations where violence or disease prevent face-to-face surveys from taking place.

The mVAM team has documented its learning and achieved proof-of concept for the application of mobile technologies to food security monitoring.[1] mVAM is now operative in 11 countries, with a plan in place for expansion to 30. WFP is collecting information from beneficiaries it could

not previously interact with, including those affected by conflict in Iraq and Yemen. As a result of a new, two-way, communication system, it is increasingly able to share information with the local population and answer questions.[2]

This case study is based on a review of project literature and 13 interviews with project staff, partner staff, advisors and wider stakeholders across the humanitarian sector over a period of two months in 2015.

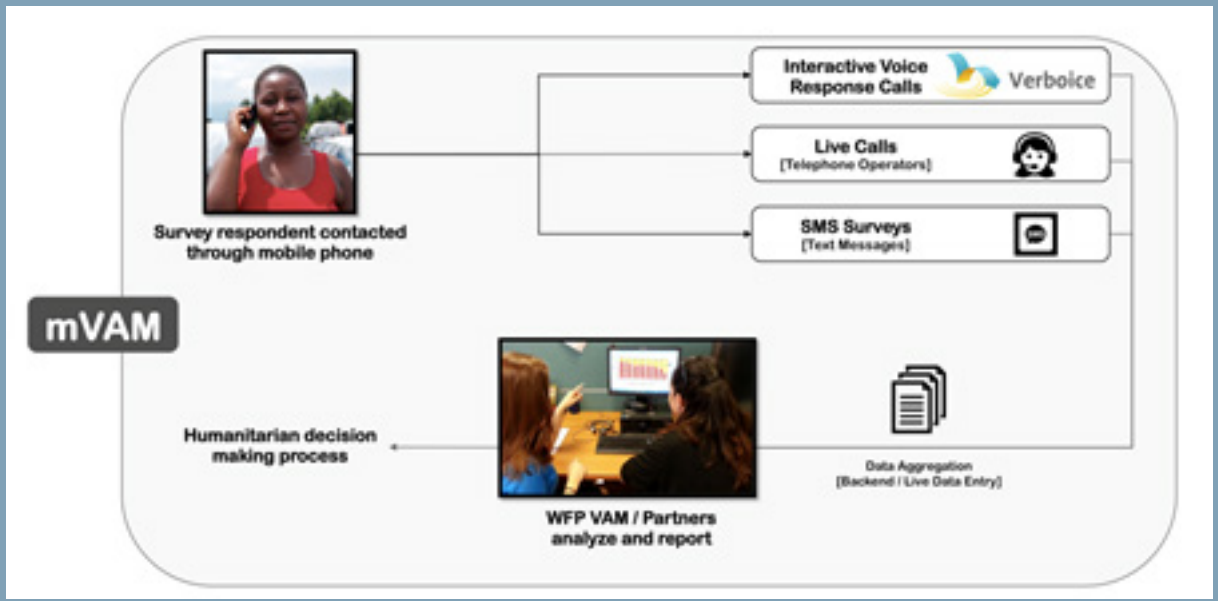


Figure 1: mVAM data collection and analysis process. Respondents are contacted by IVR, live call or SMS. Data is then aggregated, analysed and fed into the humanitarian decision-making process

2. The Problem

Reliable information is critical to understanding food security trends, assessing crises and informing decision-making. However, this information – in particular food security data at household level – is rarely available in a timely manner, which limits its effective use for decision-making.[3] A lack of available data means that, in practice, analysts often use proxy measures for different types of food security rather than household measures; this prevents an accurate understanding of food insecurity at the household level, which may be higher than aggregate proxy indicators suggest.[4]

WFP's traditional approach to food security monitoring has relied primarily on face-to-face interviews. Although this method typically delivers robust data, it is also slow, expensive and cumbersome. Data collection can cost between $20 and $40 per household.[5] It takes six to eight weeks for reports to be published, meaning information is often already dated by the time it comes out and decision-makers do not have the information they need to shape programming effectively.[6]

Furthermore, the context in which humanitarian organisations operate is changing. A more fragile, unstable world, with protracted conflicts and frequent crises, is becoming the 'new normal'. The number of people requiring humanitarian assistance is growing, yet at the same time aid workers face increasing threats to their access to those in need and to their personal safety.[7] Of the extreme poor, 24% are living in fragile states, a number that has risen from 14% in 1990.[8] Faced with the challenge of reaching affected populations in highly insecure locations, humanitarian organisations are increasingly turning to remote management and monitoring.[9]

In this context, reliance on traditional, face-to-face food security data collection is arguably becoming untenable. Collecting data in unstable, conflict-affected regions poses a danger to staff. Where communities are cut off, whether by distance, disease or insecurity, data cannot be collected and the needs of the most vulnerable may remain unmapped. Face-to-face data collection tools are time-consuming, while increasing in cost and reaching fewer affected people.

While mobile technology offers an opportunity for remote monitoring, it also involves trade-offs. Face-to-face data collection offers rich, robust and reliable (albeit quickly out-dated) data. A key question for those seeking to apply new technologies to food security data collection is how to manage new tools and modalities in a way that maintains the quality and credibility of data gathered while reducing costs and the time required to produce analysis for decision-making.

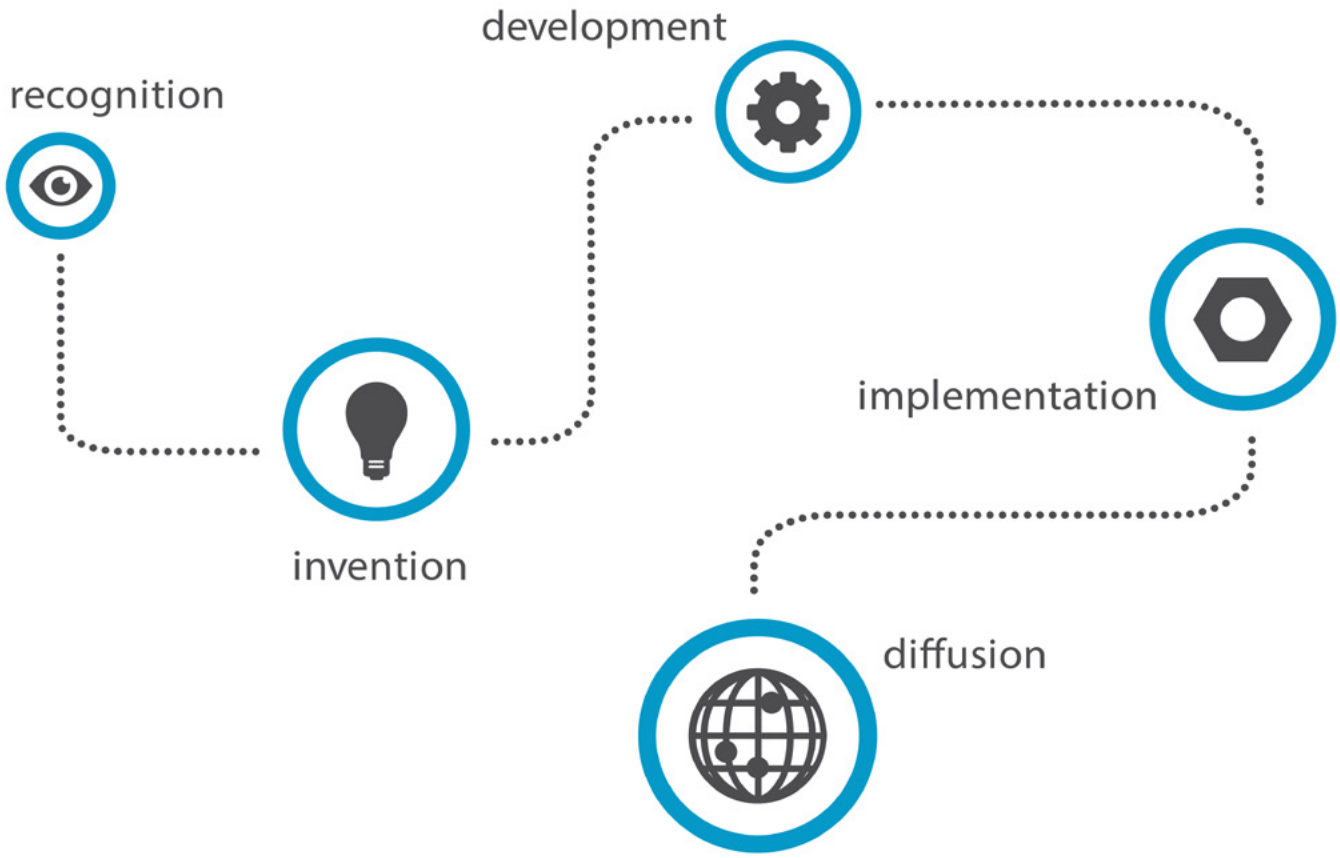
3. The innovation process

The stages through which successful innovations progress are often unpredictable and dynamic in nature, but there are often similarities. It is therefore useful to understand this innovation process when trying to capture why particular innovations succeed or fail.

There are various models to describe the innovation process, but HIF uses a model based on five stages:

- **Recognition** of a specific problem, challenge or opportunity to be seized
- **Invention** of a creative solution or novel idea that addresses a problem or seizes an opportunity
- **Development** of the innovation by creating practical, actionable plans and guidelines
- **Implementation** of the innovation to produce tangible examples of change, testing it to see how it compares with existing solutions
- **Diffusion** of successful innovations – taking them to scale and promoting their wider adoption

These five steps provide a useful archetype for the innovation process and are used in the HIF case study methodology. But they come with the caveat that innovation is complex and non-linear, and that identifying deviations from this model is just as important as (and possibly more so than) confirming the applicability of the model itself. The HIF-ALNAP case studies will seek to map in greater detail the chronology of these stages and how they overlap and interact for each HIF grantee.



3.1 Recognition

VAM (Vulnerability Analysis and Mapping) is WFP's food security analysis service.[10] The challenges of data collection are widely recognised across VAM. According to Chief Economist Arif Husain, WFP is 'always looking at ways we can collect data that are more relevant, faster and inexpensive and, above all, that allow us to get information from hard-to-reach or difficult areas'.[11]

The mVAM project was established in 2013 with the aim of integrating mobile technologies into WFP's existing systems in order to collect food security data more effectively. It was initiated by Jean-Martin Bauer, an analyst at WFP, who had worked for VAM in West Africa for a decade. Bauer returned to WFP headquarters in Rome in 2012 at a time when the VAM unit was going through a period of transition. He recalls, 'When I got [to Rome], questions were very much around, "How do we monitor food security in a way that delivers information that people can use?" We were in a rut.'[12] WFP had already begun to experiment with new technologies that could help address the limitations with face-to-face surveys, with enumerators using personal digital assistants (PDAs), tablets or smartphones in the field. However, these approaches still require staff to collect data in-person – a labour-intensive and, at times, dangerous endeavour. According to WFP Food Security Analyst Marie Enlund, at the time, 'We were realising that WFP is increasingly working in places where we don't always have access, whether due to conflict or just long distances. It is expensive to send people out, even if you can.'[13]

mVAM conducted a field test of SMS data collection in DRC in partnership with private polling service GeoPoll. This established the potential of SMS as a high-frequency, low-cost and user-friendly approach to data collection[14] but also flagged a number of limitations, particularly to collecting complex types of data and in areas with low literacy rates. The test reinforced the importance of 'mixed-mode' data collection systems, combining remote and face-to-face surveys so as to manage their respective strengths and weaknesses.[15]

3.2 Invention

Alongside the field test in DRC, the mVAM team continued to search for complementary approaches. A number of events and encounters led them towards mobile voice technology. Jean-Martin Bauer was in the US during the run-up to the elections. He recalls his mother receiving incessant automated phone calls.[16] It was this that made the idea hit home: 'Since this is something the private sector uses so freely, why wouldn't it help us for humanitarian purposes in places like Congo and Somalia?'[17]

He returned to Rome and discussed the idea with his team. They began exploring the literature and searching for relevant projects. One stood out: the World Bank's Listening to Dar in Tanzania, which was using IVR and call centres to regularly contact a panel of respondents for approximately $7 per month. 'It was high frequency, low cost – which seemed to be the Holy Grail for us.'[18]

WFP placed an application to the HIF to conduct a pilot test of mobile voice technologies in DRC and Somalia. These locations were chosen because the team believed, 'If we can make this work in these

difficult countries, it can work anywhere.'[19] Securing external funding was crucial in getting the pilots off the ground; according to Bauer, 'The HIF grant gave us sanctuary and space to test new things, without being systematically challenged. It protected us from competing demands.'[20]

The technologies mVAM employed had already been in use in the private sector, and elsewhere in the humanitarian and development sectors, for a number of years. In 2010, the World Bank initiated the Listening to Latin America and the Caribbean (L2L) project, which used mobile technologies, including SMS, IVR and live voice calls, to collect data for use in policy decision-making following crises.[21] Listening to Dar, a project initiated by Twaweza in 2010, uses biweekly phone surveys to monitor citizens' views and experience of the city's public services.[22] Both projects collect high-frequency panel data, contacting the same respondents via mobile technology on a regular basis. Following Haiti's 2010 earthquake, the International Federation of Red Cross and Red Crescent Societies (IFRC) deployed an IVR system in a humanitarian setting for the first time, in order to disseminate information and gather feedback from beneficiaries.[23] Such methods are now proliferating. Ground Truth Solutions, for instance, uses a range of technologies including SMS and IVR to collect regular data on affected populations' experience of and perspectives on humanitarian aid, with the aim of enhancing 'demand-side' accountability.

WFP's innovation was to integrate these technologies into its existing food security monitoring systems and to use them to conduct high-frequency data collection in remote and hard-to-reach areas. This is innovative not only in the technology employed but also in the shift towards high-frequency data collection away from the large-scale, comprehensive but irregular surveys that are most common in food security monitoring. Through mVAM, WFP is collecting data on fewer indicators but with a higher frequency, which is an approach few other organisations have adopted.[24]

3.3 Development

VAM has a reputation for being a relatively innovative space within WFP.[25] It has been involved in the emergence of a number of new initiatives, such as the use of remote sensing for food security analysis. An important factor enabling this innovation to emerge was that VAM senior managers actively created an environment that encouraged experimentation. This was clear from interviews with project members, managers and external reviewers: 'What we do […] is to do these experiments where the key is that you can be wrong. You give people the ability to experiment, and if it doesn't work, it's no big deal. It takes time, it takes effort, it takes energy, but we invest in that.'[26]

Those implementing the project in WFP country offices conceptualised the pilot as an experiment and an opportunity to learn.[27] There were no explicit incentives for innovation, but a number of factors influenced engagement at the country level. The mVAM team initially worked with VAM officers with whom they had a pre-existing personal relationship. In general, they tried to work with larger offices in which VAM teams had capacity for implementation, with support from IT and procurement.[28]

Country managers recognised the potential of mVAM to enable them to play a leading role locally by providing information to other agencies.[29] The former head of Somalia's VAM unit said the local office saw the potential effectiveness and economies of scale the tools offered and took strong ownership of the project. Over time, the Somalia country office wanted to extend their use from VAM to include monitoring and evaluation. The project's name in Somalia was changed from mVAM to mKomeer, Somali for 'monitoring', because, 'It was not VAM any more – it belonged to the entire office.'[30]

The mVAM team built a six-month preparatory phase into its plans, which made it possible to conduct baseline surveys and experiment with different options for IVR and live calls. The team worked collaboratively with country offices to select locations and draft plans.

Face-to-face baseline surveys were conducted in both locations. These were an opportunity to recruit pilot participants and collect background information on respondents, establishing data against which mVAM results could later be compared. In DRC, it emerged only 24% of respondents owned a mobile phone, so the decision was made to distribute mobiles to all those who had signed up to the surveys.[31]

The mVAM team tested a number of platforms for IVR and selected the software Verboice for its free, open-source nature and user-friendly interface. There was regular contact with Verboice's developers, InSTEDD, which helped manage technical issues. mVAM trained other WFP staff in how to use Verboice and conducted around 300 test calls to ensure the call flows worked.[32] After researching call centre options in both countries, the decision was taken to place live calls 'in-house' with WFP staff acting as operator. The team recruited call centre operators and drafted a manual for operators.

The project team was proactive in building partnerships and bringing new ideas and expertise into the development process. As a result, mVAM benefited from the involvement of diverse actors from across the humanitarian and private sectors. Early on, Jean-Martin Bauer reached out to Johannes von Engelhardt, Project Manager at Listening to Dar. This enabled mVAM to build on lessons already learned by the Listening to Dar team, such as the need to provide respondents with incentives and to keep surveys short. The team were flexible and adjusted some of their plans in light of this learning. Drawing on advice from Johannes von Engelhardt, the team decided to begin the pilots with live calls and to introduce IVR later, once respondents were familiar with phone surveys.

The mVAM team initially experienced some challenges in interactions with the private sector. Commercial call centres in DRC and Somalia were approached, with significant time and effort put into discussions, before it was realised that the pilot was too small to involve them.[33] Instead, WFP recruited its own operators to place live calls from local WFP offices.

Over time, the mVAM team built partnerships with companies that already had significant experience of mobile data collection, such as GeoPoll. GeoPoll is a mobile survey platform specialising in understanding trends in countries where data have traditionally been difficult to obtain. Its user database, built through relationships with mobile network operators, contains information on 200 million users.[34] There were clear benefits for GeoPoll in this partnership: it was the first time it had been involved in food security data collection and therefore offered a significant opportunity for learning.

The mVAM team also benefited from the involvement of WFP's Private Sector Relations Unit in Washington, DC, which is skilled in reaching out to and speaking the same language as potential private sector partners. In 2014, the unit connected mVAM to global information and measurement company Nielsen, an existing WFP partner. Nielsen provided pro bono technical support to mVAM. For Nielsen, the partnership offered an opportunity for its associates to apply and develop their skills, such as in questionnaire design, sampling and survey methodology in a new context.[35] The partnership included a particular focus on the comparative effects of different modes of survey and included experiments that compared face-to-face and SMS surveys, and SMS and IVR surveys. The collaboration was therefore an opportunity for both parties to learn about the potential biases associated with different survey modes.

3.4 Implementation

mVAM launched live calls in DRC in January 2014. In February, operators reported problems reaching respondents. A focus group discussion (FGD) revealed that respondents couldn't afford to charge their phones. A solar charging station was set up in the camp in collaboration with the camp's incoming-generating activity management committee. Respondents could charge their phones at no cost on three days a week.[36]

Respondents in DRC elected a management committee, which organised FGDs and dealt with issues such as lost or stolen phones, with support from the local WFP team. The mVAM team had neither anticipated nor planned for this, but it did learn from it: according to Marie Enlund, 'Now we know to advise other country offices who are thinking about the same issues […] they could set up committees, or work with local community-based organisations.'[37]

The team was very quickly able to see it was generating credible data[38] that made sense when compared with the data collected at the baseline and in relation to seasonal events (See Text Box 1). With a number of iterations, it also managed to increase response rates in DRC, from 40% in January, to 45% in February, to 67% in March.[39]

There were delays in beginning data collection in Somalia, as a result of difficulties in recruiting operators. Live calls began in Somalia in April.

The mVAM team introduced IVR gradually after several months of live calls, when respondents were comfortable with the surveys. IVR calls were closely monitored in real time via a laptop showing the responses. After the automated call, operators would call back the respondents and ask for feedback, which helped fine-tune the process.[40] Local WFP teams continued to experiment with the IVR approach over time. For example, at the time of writing, the team in Somalia was planning to record survey questions with the voice of a popular local radio station host.[41]

Throughout implementation of the pilots, the mVAM team kept plans flexible and worked closely with local WFP teams to solve problems as they arose. It monitored progress regularly, using a project dashboard to collect key indicators. Johannes von Engelhardt observed: 'They were really open to finding solutions to problems that they had and then giving responsibility to local problem-solvers.'[42]

Field-level innovation – such as establishment of the solar charging station and volunteer committee – was crucial to the success of the project. An independent review states: 'The volunteer committee was key in supporting the monitoring through problem solving and communication. Community-based approaches and staff facilitation were essential to the success of the pilot.'[43]

3.5 Diffusion

Jean-Martin Bauer states that they 'don't think of diffusion as the thing we do at the end, but that you do continuously'.[44] The mVAM team blogged regularly throughout the process, helping build affinity with the project within WFP from an early stage,[45] and wrote or contributed to articles aimed at a wider humanitarian audience, including for the Humanitarian Practice Network, Devex's Development Innovators Blog and the Guardian's food hub. Team members have also spoken about mVAM in conferences and produced a short video on the project.[46] In DRC, information on the project was presented to the Kinshasa Food Security Cluster.

However, it was an unforeseen set of circumstances that contributed most significantly to mVAM's diffusion. In 2014, the Ebola virus disease (EVD) spread across West Africa. Movement restrictions and quarantines prevented traditional food security monitoring from taking place. Talking to those directly affected by Ebola in person was not a viable option.[47]

Jean-Martin Bauer and Arif Husain proposed to Denise Brown, Regional Director of WFP in West and Central Africa, that they roll out mVAM in Guinea, Liberia and Sierra Leone. WFP launched a full deployment of IVR and SMS data collection in all three countries in September 2014. To deploy so quickly in this environment required a very different approach than had been taken in DRC and Somalia. The mVAM team provided advice and technical support but listened to and took the lead from the West Africa Regional Bureau in terms of what indicators to collect and how mVAM could be effectively contextualised for this new situation.[48]

mVAM systems were functioning and delivering data in around one month. Data were collected on household coping strategies and food prices through SMS and IVR. WFP monitored the performance of the two modalities, finding SMS performed better in terms of cost and data quality.[49] Low cell phone coverage and ownership in all three countries led to some biasing towards male respondents and better-off, urban households. This was accounted for in analyses and highlighted in reports.[50]

The data showed low purchasing power, rather than food price increases, was the main barrier to household food access. Food security indicators were poorer in rural locations than in urban centres, despite having a comparatively low number of Ebola cases.[51] These data were used to inform WFP's strategy for food assistance[52] and enhanced its ability to advocate for funding and support for Ebola-affected communities.[53]

mVAM's first scale-up into a new location was driven primarily by demand in its environment; according to Denise Brown, 'Because movement was limited, talking to people directly affected by Ebola was not an option at that time […] we wouldn't have rolled it out at scale if we didn't have this very practical problem that needed to be overcome.'[54] However, the actions of the mVAM team

also contributed. The processes and partnerships put in place during the pilots, and the learning that had taken place, meant the team was in a position, at the time of the crisis, to deploy quickly. The decision was also informed by the fact that Denise Brown had a strong, pre-existing relationship with Jean-Martin Bauer and Arif Husain and had a high degree of confidence in them.[55]

The rollout of mVAM in the Ebola crisis enabled a clear and dramatic example of success early in the lifespan of the project. It marked a tipping point for mVAM, and rapidly increased its visibility and credibility within and beyond WFP.

Photo: Face-to-face survey in Galkao, Somalia; Credit: WFP

4. Was this a successful innovation process?

Inherent in all innovation processes is some degree of failure. This presents a challenge to understanding what contributes to a good innovation process: even successful processes will experience difficult pilots or setbacks in design or diffusion. The HIF-ALNAP research on innovation processes therefore distinguishes between a good innovation – an output of an innovation process that leads to measurable gains in effectiveness, quality and efficiency – and a good innovation process. This research defines a successful innovation process through three criteria:

Table 1: Criteria of success for innovation processes

Increased learning and evidence	There is new knowledge generated or an enhanced evidence base around the problem the innovation is intended to address, or around the performance of the innovation itself.
Improved solution	The innovation offers a measurable, comparative improvement in effectiveness, quality, or efficiency over current approaches to the problem addressed by the innovation.
Adoption	The innovation is taken to scale and used by others to improve humanitarian performance.

Through the research process for the case studies, ALNAP and HIF are also seeking to understand how HIF grantees define success in their work, in order to identify unexpected or unacknowledged benefits from engaging in innovation.

The research team used evidence collected for this case study to assess the success of the mVAM innovation process against the above three criteria. Overall, it was highly successful in increasing evidence and learning and in achieving wide adoption. It was moderately successful in delivering an improved solution: while mVAM has significant potential, particularly for high-frequency data collection in insecure areas, further adaptation and improvement will be required as the programme expands. Specifically, findings were as follows:

Increased learning and evidence

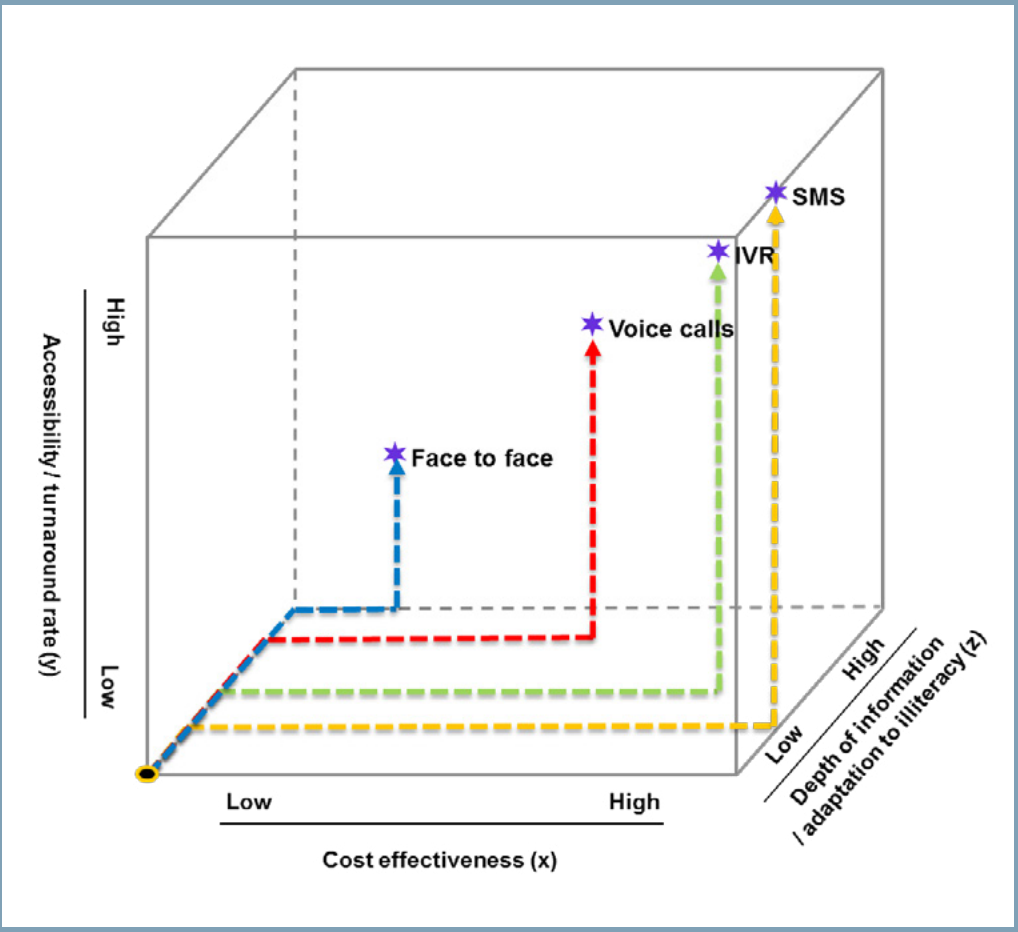
Those involved in implementing mVAM – in WFP headquarters, country offices and partner organisations – have learnt a great deal about the complex process of conducting remote food security data collection using mobile technologies. Getting the project off the ground, generating reliable data and contextualising the tools to a diverse set of new locations have required constant learning and experimentation.

The team documented progress and challenges through the project blog, which represents a significant repository of learning about the use of mobile technology for data collection and about the process of innovation. However, traffic on the blog has been fairly low, at around 150-200 visitors per month.[56]

mVAM has contributed to the evidence around mobile data collection and high-frequency monitoring. The team has compared the performance and trade-offs of IVR, SMS and live calls and explored how the choice of modality affects responses. Findings are captured and shared in articles and reports[57] and visualised in the VAM cube (pictured below). Learning has been used to inform the choice of modalities and indicators in new settings and reinforced the need for mixed-mode data collection methods.[58]

The mVAM team also shared learning in articles for the Overseas Development Institute's (ODI's) Humanitarian Practice Network (HPN),[59] the Communicating With Disaster-Affected Communities Network (CDAC Network),[60] the Daily Development blog[61] and the Africa Policy Journal,[62] among others.

Figure 2: The mVAM cube, comparing the performance of different modalities of data collection



Improved solution

An external review, commissioned by VAM, states that mVAM 'demonstrates that inexpensive data collection in difficult contexts is possible and that high frequency monitoring can be efficiently achieved'.[63]

mVAM offers significant improvements in terms of the cost of data collection and the speed at which data can be collected, analysed and given to decision-makers. Traditional face-to-face surveys cost $20-40 per questionnaire to implement, and around six weeks to turn around.[64] By contrast, SMS costs $3-6 and live calls and IVR cost $7-9 per questionnaire, with a one week turnaround time for SMS and two weeks for live calls and IVR. Using SMS, live calls or IVR allows data to be collected more cheaply and also ensures data is available quicker for decision-making.

mVAM also offers benefits in terms of security for enumerators and remote communication with crisis-affected communities in areas where conflict or disease prevents face-to-face data collection. Data gathered through mVAM in West Africa influenced WFP's programming during the Ebola crisis and strategy for food assistance delivery in this region. At one stage, data collected by mVAM through SMS was the only household food security information available.[65] Data collected using mVAM are now available for six locations on the mVAM webpage,[66] including, most recently, Yemen.

However, the improvements come with a number of trade-offs, as data can be collected from more respondents at a high frequency but do not offer the same level of depth as face-to-face surveys. These trade-offs are captured in the VAM cube, pictured above. Risks to the quality of data associated with respondent bias and sample attrition will require additional research going forwards (See Box 1). A recent review of the mVAM project also highlighted a number of aspects of this innovation that require improvement, including the level of community engagement and beneficiary participation built into the programme, and the processes and safeguards in place for protection and privacy of respondents.[67]

Overall, mVAM succeeds in collecting data more quickly and cheaply. It also offers access to populations in areas affected by conflict or disease without placing enumerators at risk. However, the success in ensuring credibility of data and protection and privacy of affected people is a complex picture, as discussed above. Those implementing this innovation emphasise the need for mixed-mode systems, combining both remote and face-to-face data collection. Such systems can take advantage of the benefits of mobile technology to improve access, reach and frequency of data collection, while continuing to use face-to-face surveys to monitor and triangulate data and ensure greater depth.

Adoption

WFP is primarily focused on rolling out this innovation internally, and has been highly successful in achieving this. mVAM is now being implemented in more than 11 WFP country offices. It has been operative in Iraq since January 2015 and in Yemen since July 2015, and is being used to gather data from areas where insecurity prevents face-to-face monitoring. Demand has arisen from field offices, demonstrated by requests to implement mVAM from country directors. WFP proposes to scale up mVAM into 30 countries by 2018.

Box 1: Data quality and remote food security monitoring

One of the greatest challenges faced during the innovation process related to how to ensure, assess and demonstrate the credibility of data collected remotely.

As described above, WFP used panel studies to collect food security information from 300 households in the DRC and 400 households in Somalia at regular intervals. Respondents were identified through face-to face surveys, during which enumerators collected data on cell phone ownership and identified individuals interested in participating in mobile surveys.

Panel studies can be vulnerable to biases which arise from inaccurate self-reporting by respondents, the risk of 'gaming', unequal access to mobile phones and sample attrition.

Gaming occurs when respondents change answers based on real or perceived incentives. An external review of mVAM found local WFP operators, who place live calls to respondents, could use contextual knowledge, such as seasonal food availability, to probe for accurate responses from respondents.[68]

Biases may also arise from inequalities in mobile ownership along lines of wealth or gender. In DRC, mVAM attempted to reduce this by distributing mobiles. However, the evaluation found this increased participants', especially women's, risk of attack and raised tensions in households and the camp.[69]

Sample attrition occurs when respondents drop out of the survey. One staff member involved with mVAM in Somalia noted, 'People can get bored of somebody they don't know, calling again and again, asking silly questions and never giving them anything. People can get bored of calling the call centre for complaints and not receiving any feedback.'[70] To improve completion rates, WFP provided incentives such as airtime credit for participation and experimented with the appropriate survey length in each modality. WFP also found it was crucial that respondents understood the reason for the call.

Choice of modality can also influence data quality. Participants respond differently to SMS, IVR and live voice surveys. Different food security indicators may also perform differently. The mVAM team conducted comparisons of each modality and the impact of the choice on the quality of data collected for different indicators. Findings were used to inform the choice of modality in different contexts, and were documented online, including through the mVAM blog and two articles for HPN.[71]

WFP staff noted the importance of transparency about potential issues with data credibility and the risk of bias: 'We have been extremely transparent about what works and what doesn't. The data are all on the web, the reports are all on the web and transparency builds confidence and it builds traction.'[72]

WFP does not have an active strategy for external diffusion. Instead, the mVAM team is actively sharing and disseminating its methods and tools, making these freely available for anybody to use. Sample materials, such as survey questionnaires, are available online through the mVAM toolkit.[73]

Although WFP is not actively seeking to diffuse the survey technology externally, this innovation has been successful in achieving wider adoption owing to partnership with the private sector. GeoPoll has now launched the Food Security Measurement Service, which builds directly on its work with WFP, using SMS and IVR to collect data on the Food Consumption Score (FCS) and Reduced Coping Strategies Index (rCSI). Other humanitarian agencies are adopting a similar approach to data collection. For example, in November 2014, the Famine Early Warning Systems Network (FEWS NET) began implementing remote surveys in Ebola-affected countries using the same methods and provider as mVAM.

There are a number of significant examples of mVAM data being utilised by the wider humanitarian community, including in the cadre harmonise, an interagency analysis of food insecurity in West Africa. Other HIF grantees are adopting diffusion strategies that rely on heavy diffusion by a private sector partner; to the extent that there has been significant external adoption of the mVAM software due to GeoPoll's ongoing work in this area, this case study serves as an example of how this strategy can work well.

However, the review of mVAM highlighted the need for considerable improvement in the way mVAM data are presented and disseminated, including the quality of data bulletins, dashboards and reports. The review also recommended the mVAM team place greater emphasis on engaging with its stakeholders, including donors, implementing partners and beneficiaries.[74]

Photo: SMS for food security in camps;
Credit: WFP/ Marie Enlund

5. What are we learning about innovation?

Drawing on research from the humanitarian sector and beyond, including previous case study material, HIF has identified a range of factors generally held to be fundamental to successful innovation processes. An important part of the case study research lies in testing, through the experience of the HIF grantees, the extent to which these propositions hold true in humanitarian settings.

- **Managing relationships and setting common objectives**

  Innovation always involves multiple actors – partners, implementers and end users – all of whom can change over the different stages of an innovation process. Assigning specific time and resources to managing these relationships and ensuring common objectives across the different stakeholders of an innovation will contribute to a successful innovation process.

- **Dividing tasks and responsibilities**

  Given the complexity of many innovation processes, a clear division of tasks and responsibilities between individuals and organisational units is important for developing a successful innovation.

- **Resourcing an innovation**

  Working in innovation requires flexibility to deal with the unknown, and this is particularly so with an innovation in the humanitarian sector. Budgets and resource plans therefore need to be suitably flexible to accommodate several possible outcomes (e.g. the need for further trials) as well as likely deviations from the original plan.

- **Flexibility of process**

  At its heart, managing an innovation process is about creating space for flexibility. Processes featuring flexible timelines, feedback loops for adaptation during the piloting phase and individuals resourced to execute changes in response to emerging results will be more likely to succeed.

- **Assessing and monitoring risk**

  Innovation processes in humanitarian action need to have an appropriate relationship to risk. We expect processes will be more likely to produce improved solutions and achieve uptake when they include an assessment of the different risks that might have an impact on the effectiveness of the innovation, as well as a strategy or plan to monitor and adjust development in light of changes in these risks on an ongoing basis.

- **Drawing on existing practice**

  Knowledge of existing practice and experiences is expected to contribute to more effective innovations through a better understanding of past attempted solutions, an accurate initial understanding of the problem or opportunity addressed by the innovation and an awareness of potential users and their needs.

Findings for these six propositions are presented in the graphics on the next few pages.

Managing relationships and setting common objectives

How this factor worked in this case study

Throughout the innovation process, grantees proactively extended networks, bringing in new ideas, experience and knowledge through both formal partnerships and informal relationships.

Objectives with private sector partners such as Nielsen and GeoPoll were developed collaboratively and formalised in agreements. In 2014, WFP launched a global tender for its mobile data collection services which resulted in a Long-Term Agreement between GeoPoll and WFP covering five years.

Within WFP's private partnerships division, partner relationships were allocated to one account manager, a structure employed to build relationships and trust.[75]

During the pilots, mVAM in headquarters also played a relatively hands-on role, particularly where capacity was limited: e.g. data were sent to Rome to be analysed, with reports then sent back to country offices.[76] This raises questions about the potential for future deployments in countries with more limited staff capacity and about the level of support to be provided by headquarters as mVAM expands.

Local WFP staff in DRC ensured a good level of engagement with respondents and the wider community. This was not built into design but rather emerged from the initiative of local staff members.

Challenges

At the outset of pilots in DRC and Somalia, the mVAM team explored the option of using private companies to place live calls. However, the scope of the pilot was too small to attract the involvement of phone companies. Instead, the team implemented live calls in-house – recruiting and training operators and placing calls from WFP offices.

There were challenges in resolving issues remotely and some WFP staff in country offices felt issues with procedures for implementation were raised but not necessarily resolved.[77]

How this factor related to the performance of the innovation process

The fact that WFP already had a relationship and formal agreement in place with GeoPoll significantly contributed to the speed with which it was able to scale up into Ebola-affected countries. It built on GeoPoll's existing presence in these countries, which enabled them to begin to contact respondents without face-to-face surveys within a month.[78] GeoPoll is now able to provide WFP with entry points to new countries.

The independent review of mVAM stated that a community-based approach and engagement with respondents undertaken by the country office in DRC was crucial to the success of the pilot in that location. The review recommends greater participation of mVAM participants in future programme design and implementation.[79]

While a structured approach to relationship management was viewed as helpful to the success of the innovation process, informal relationships and infrequent communication with individuals implementing similar projects also contributed significantly to the success of the pilots. 'Informal relationships and ad hoc communication enabled the team to build on prior knowledge and others' experiences, and to build visibility and affinity with the project in their community of practice.'

Dividing tasks and responsibilities

How this factor worked in this case study

Standard Operating Procedures (SOPs) were developed in collaboration with country offices, and outlined roles and responsibilities.

The rollout of mVAM into Ebola-affected countries followed the established division of roles and responsibilities employed by WFP, and therefore ensured a swift and effective emergency response.

mVAM was therefore integrated into existing structures for the collection, analysis and sign-off of data. Decision-making structures and lines of communication were already in place.

Challenges

Throughout the pilots, the involvement of WFP in Rome was fairly intensive, particularly as a result of limited capacity in country offices. It was highlighted during the review that, as the project develops, the headquarters team may need to develop a more purely supportive role, with a focus on capturing and sharing learning and facilitation. This could enable greater ownership of the project by field offices.[80]

How this factor related to the performance of the innovation process

The clear division of tasks and responsibilities was observed as being supportive to the success of this innovation process. In particular, working through existing structures of command and communication in the EVD response enabled rapid scale-up and helped manage risks.

Resourcing an innovation

How this factor worked in this case study

mVAM benefited from the availability of flexible funding from the HIF at an early stage. However, it began to build partnerships and to seek further funding early into the pilot. The funding that was secured to scale mVAM was more closely tailored to specific elements of the programme. A grant from Cisco Corporate Responsibility facilitated the development of a two-way communication system, while funding from Google supported mVAM's role in the Ebola response.

mVAM's ability to secure funding from and partnerships with private sector organisations was facilitated, in part, by the support it received from WFP's private sector partnerships division. It had access to skilled individuals who knew how to speak the language of the private sector, seek out synergies and broker effective, complementary relationships.[81]

Private sector partnerships were built strategically, with a strong focus on mutual benefit and learning. Nielsen's learning, for example, is documented in a new report on 'Revolutionising Data Collection',[82] while GeoPoll has launched its own Food Security Measurement Service. [83]

For adoption of the mVAM survey tools within WFP, country offices are responsible for funding their own mVAM deployments. Additional funding is being sought for the scale-up. WFP is contributing some funding to the scale-up ($1.2 million out of a $5.3 million total budget) but this is primarily in staff time.

Challenges

Building functioning mobile data collection systems is a labour-intensive process.[84] Each of the pilots and subsequent deployments have required significant human resources.

How this factor related to the performance of the innovation process

Gaining dedicated funding at the outset was important, and helped propel the project from invention to development. Having flexible, external funding gave space internally to focus on the project and to experiment.

During the implementation phase, WFP was already actively seeking further resources. This meant it was able to increase staff capacity and resources in order to seize opportunities and meet the demands of a rapid scale-up.

The profile of some of the donors – such as HIF and Google – helped build mVAM's credibility both internally and externally.[85]

'The resources we have available are limited, so the fact that Nielsen gave expertise to help us grow the project, and to be experts in the way we do mobile data collection – that was key.'[86] Marcela Ossanden Avetikian, formerly Private Partnerships Manager and Digital Strategist, WFP

Flexibility of process

How this factor worked in this case study

Grantees, their managers and implementers in country offices explicitly viewed mVAM as a learning process.[87] Plans changed over time, with significant deviations made. This was done explicitly: from the outset, the intention was to be flexible in response to what works and what doesn't.[88]

This flexibility is evident throughout the pilot projects and subsequent deployments of mVAM. With diverse factors influencing each deployment – such as culture, context, infrastructure and technical capacity – easy replication is not possible. This necessitates a level of flexibility in each implementation.

Challenges

Experimentation and adaptation – e.g. in starting IVR calls – has been time- and labour-intensive.

The mVAM team is now trying to put more structured, systematic processes in place[89] in order to meet the demands of their rapid scale-up.

How this factor related to the performance of the innovation process

The level of experimentation and flexibility involved contributed to success in a number of ways. For example, achieving high response rates (taking rates from other projects, such as Listening to Dar, as a benchmark) required significant trial and error. The impact of this flexibility on mVAM's success is reflected in rising response rates.[90]

> **'It was flexible in its rolling out. It rolled out in response to needs in its environment, as opposed to a blueprint approach that is somebody's supply driven idea of what needs to be done.'**

Nancy Mock, External mVAM Reviewer

Assessing and monitoring risk

How this factor worked in this case study

The mVAM team's agile approach to project development, continual monitoring of key indicators and regular communication with country teams enabled them to identify and manage risks as they arose.

A shared project dashboard collected key indicators related to the project. This enabled issues to be rapidly identified. Regular calls between mVAM headquarters and country offices were used as an opportunity for reflection and discussion of arising issues. These processes enabled them to learn quickly when something wasn't working and to make rapid adjustments.

Challenges

There was little formal risk assessment undertaken in the early stages of the project.

As the project developed, new partnerships and funding applications required more formal risk assessments to be produced.

WFP has now undertaken an extensive assessment of risks associated with expansion of mVAM.

How this factor related to the performance of the innovation process

This case study indicates that risk analysis and monitoring is relevant to the success criterion of whether an innovation leads to an improved solution. A number of risks to the privacy and safety of respondents were inadequately addressed, particularly risks arising from the distribution of mobile phones in DRC. The independent review claims 'increased risk of attacks and theft to participants, particularly for women, and raised tensions within households particularly between couples'.[91] 42 phones were stolen during the pilot. A lack of understanding in the camp about why some individuals were given phones and not others led to contention. The review highlights the need to mainstream privacy and protection commitments in future activities. Lack of attention to these issues significantly weakened the degree to which this innovation offered an improvement over existing practices.

However, the constant learning and adaptation built into mVAM's development were an effective way of managing risks to its success because issues could be addressed as soon as they arose.

The risk that the data collected would not be credible was managed by constant monitoring of performance indicators, including duration of calls, response rates and user-friendliness of modules. Additional risks relating to bias and gaming of responses were managed by triangulating data against other sources and comparing with baseline surveys wherever possible. In addition, WFP was very transparent in the way it presented its data and open about its methodology and its limitations.

Drawing on existing practice

How this factor worked in this case study

mVAM was initiated by a group of people with extensive experience of data-gathering and analysis for WFP. Some had been in the VAM unit for a long time and had good knowledge of the requirements, limitations and complexity of data collection. They were very tuned into the system and how to collect data that would be used.

In addition, the mVAM team was proactive in reaching out to a diverse range of actors who shared experience and contributed ideas. This enabled the innovation to become a collaborative product, benefiting from input from experts at field and headquarter levels, within and outside WFP and across and beyond the humanitarian sector.

Challenges

There had been few attempts to integrate high-frequency, technology-based monitoring systems into food security data collection previously, and so existing practice to draw on in the food security sector was limited.

How this factor related to the performance of the innovation process

The outward-facing attitude of the project team brought many new ideas into the innovation process and ensured it built on – rather than replicated – past experience.

mVAM benefited significantly from this input of ideas, expertise and resources from a diverse range of actors.

An important factor is that this engagement with existing practices has continued throughout the innovation process. The team has stayed responsive to new approaches and practices happening elsewhere that are relevant to the project. For example, it recently began using a form of sentiment analysis developed by the Computational Linguistics & Psycholinguistics Centre at University of Antwerp to analyse its data in a new way.[92]

This continual monitoring for new approaches, pieces of work and learning that could be relevant to the project represents a distinct area of good practice.

Additional potential contributing factors:

Expertise and passion within the project team

How this factor worked in this case study

Those leading mVAM are resourceful and motivated. They put a significant amount of time and energy into overcoming challenges and making the pilot projects and scale-up deployments work effectively. They also have significant experience of the WFP system and had worked for VAM in regional and country offices. They also had significant linguistic abilities, contributing to global scale-up, and could work effectively in French and English, which was crucial for communicating across the UN system.

Challenges

mVAM is expanding rapidly and those who have driven the innovation cannot take as time-intensive and hands-on an approach as has so far been the case.

The independent review suggests the mVAM headquarters team might now consider moving towards a role that is more closely focused on facilitation and learning.[93]

How this factor related to the performance of the innovation process

The ability of the team to gain the confidence of its managers ensured it was able to gain the initial permission and space to get the project going.

The strength of the team and credibility of those involved encouraged the rollout in the Ebola crisis which, in turn, significantly contributed to diffusion. Denise Brown had worked closely with Arif Husain and Jean-Martin Bauer in other challenging contexts and had a lot of confidence in them; without this, she said, she 'probably would not have made that decision [to roll out]'.[94]

Support from senior leadership

How this factor worked in this case study

Senior managers in VAM created an environment that was conducive to innovation and gave the mVAM team space and support to experiment. Partially, this space stemmed from the managers' confidence in Bauer and his team. It can also be attributed to the personalities and leadership styles of those in management positions.

Challenges

No challenges.

How this factor related to the performance of the innovation process

Members of the mVAM team identified this as a key success factor in getting the innovation off the ground. They were encouraged to experiment and were given the space and flexibility to change their approach as and when needed.

Senior leaders also gave public support to the innovation, which has helped increase its visibility.

In December 2014, mVAM won WFP's internal Innovation Challenge, significantly enhancing its internal visibility. WFP's executive director introduced the project to around 200 senior managers.

In February 2015, WFP's executive director mentioned mVAM in her opening remarks for the First Regular Session of Executive Board[95] and again in her closing remarks, in relation to the need for WFP to 'speed up investment in our ability to collect and manage data, essential for evidence-based decision-making and also our investments in mobile technology'.[96]

6. Emerging lessons for best practice in innovation

- Great ideas come from diverse sources, at all levels (from senior management to beneficiaries), both within and outside the humanitarian sector – reaching out and creating a network of interested individuals and organisations is crucial.
- Managers, donors and many others outside the immediate project team have a significant role to play in creating a culture of experimentation, and enabling a flexible process.
- While formal relationships are key to a well-organised innovation process, the trust that comes from informal relationships and 'intangible' goods, such as professional reputation, are critical for creating the opportunities that enable successful partnerships and pilots.
- Having an emergency arise can be a 'lucky' opportunity to trial an innovation—however, humanitarian actors do not seem to spend sufficient time on understanding the risks posed to affected people when trialing innovations that involve direct engagement with affected people in a crisis.

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Other case studies from HIF and ALNAP on innovation

Improving water quality and quantity in emergencies: The Inclined Plate Settler water treatment system

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