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Case study: Do MAD researchers add value for smallholders?

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Abstract



This presentation explores the deployment of mobile acquired data (MAD) via tablet-based apps in research for development initiatives. It assesses pros, cons and unexpected consequences in the field, for both researchers and smallholder farmers, using the ACIAR-funded, University of Queensland Vanuatu Beef Project as a case study. In 2015, ACIAR sought to understand the potential benefits – intended and unintended – that mobile acquired data (apps on tablets) might deliver to its funded projects. In pursuit of this, AgImpact (an R4D company) was commissioned to design and manage a small research activity which reviewed nearly 20 ‘off the shelf’ apps, then conducted three weeks of field testing in Indonesia surveying beef producers, in partnership with the University of Udayana. The researchers concluded that the use of apps for in-field research has significant potential to improve relationships between researchers and smallholder farmers by improving two-way information exchange in near real time. Some of the key findings were: (i) survey times were reduced by approximately 53%; (ii) 93% of farmers found the use of apps informative when research results were provided to them in near real time; (iii) 73% of farmers found the overall survey experience using apps to be positive. By mid-2016, the research activity had gained momentum and evolved into the ACIAR Mobile Acquired Data (MAD) research series, now involving nine ACIAR projects adopting apps in research for the first time. An exemplar project led by the University of Queensland, ‘Increasing the productivity and market options of smallholder beef cattle farmers in Vanuatu’, designed and built apps featuring auto-calculation functions, look-up tables and case histories, to track changes in cattle production performance and cattle prices for individual animals in real time.

AgImpact is a research-for-development (R4D) company based in Sydney. This talk uses a very brief outline of a specific case study to try and answer the title question: do MAD researchers add value for smallholders?

First, a bit of history. For 16 years I was a farmer on the Darling Downs in Queensland; 10 years ago I sold the farm so I could focus on international research for development; five years ago I started managing small research activities for ACIAR, mainly in Indonesia. The reason for telling you that is so you understand that I see R4D activities through the eyes of a farmer, and I have extremely low tolerance for machinery and technology unless it adds value.

This paper has been prepared from a transcript and the Powerpoint slides of the presentation.

Two years ago, Peter Horne, General Manager of Country Programs for ACIAR, commissioned AgImpact to evaluate off-the-shelf Mobile Acquired Data, otherwise known as MAD platforms. ACIAR was seeing a lot of projects allocating resources to building tailor-made apps from scratch, writing original code. Peter felt there had to be commercially available technologies that researchers could use to build research apps using very friendly drag-and-drop technology: you didn't need to be a computer programmer.

We performed a desktop study evaluating 17 off-the-shelf apps in the marketplace, and through a series of analyses and criteria we narrowed the list to two apps that we believed were most suited to ACIAR's types of projects. They needed to function in low-resource settings with quite complex workflows.

Pilot trials

AgImpact ran pilot trials with the two apps in the field in Indonesia with young university researchers, collecting data from cattle producers in the north of Bali (e.g. Figure 1). Kopernik, a local NGO, oversaw the independent evaluation of the users' perceptions of the apps. The mandate from ACIAR was quite clear and direct: to try and break the apps.

What I liked most about this study was that it aimed to understand the impact that the use of apps would have on relationships particularly between the farmer and the field researcher.

The pilot trials were to last for three weeks, and in the first hour we found a critical flaw that differentiated the two apps: it was to do with syncing data to the cloud. That meant we had three weeks then to focus on understanding these relationships, so we focused on knowledge and time: we asked what was the app doing to share knowledge between the researcher and the farmer, and what was it doing to the time spent by both on collecting the data?

Working with David McGill from the University of Melbourne, we built some apps using simple algorithms to calculate liveweight of the cattle. We would sit



Figure 1. Collecting cattle data in the pilot trial, Bali. *Photo: AgImpact Pty Ltd.*



Figure 2. Interviewing using the app rather than paper. Photo: AgImpact Pty Ltd

with farmers and ask them their cattle weights and then we would show them what the algorithm could do for them. This was real proof-of-concept.

The feedback from the farmers (this was quite a small subsample) was that more than 70% (up to 73%) were positive about receiving information back in real time; it was a huge benefit to the farmer. (I know David has since done more work in Pakistan on the experience of farmers receiving information using apps.) One issue they raised was that they were cautious about where the data would end up and who would be using it.

Then we looked at interview times. We simulated a household income survey and compared the time it took to interview using paper and also using apps (e.g. Figure 2). Very simply, using the app completed the survey in about 53% of the time it would take using paper. That was a result of using skip logic, calculations in the app and planning the workflow using the tablet.

Researchers might look at that result and think, “Wow, I can ask a lot more questions in the same amount of time”, but from the farmers’ perspective the shorter time is valuable because they can then get back to doing what they would prefer to be doing at that moment. That is value!

Conclusions from the pilot study. At the end of the pilot, we had to address three simple questions: (i) Should ACIAR promote going digital to the projects that it funds? We came to the conclusion that the answer was ‘yes’. (ii) If so, which app? Our answer here, after a whole series of analyses, was an app called ‘CommCare’. (iii) If so, how should ACIAR promote the use of apps? This was the question that triggered the MAD research series.

The MAD research series: an example

A year ago, nine ACIAR projects (Figure 3) started to adopt mobile acquired data, so those teams became MAD researchers for the first time. One example is the research project led by the University of Queensland (UQ), called ‘Increasing the productivity and market options of smallholder beef cattle farmers in Vanuatu’. Dr Simon Quigley of UQ is the project leader, with Cherise Addinsall of Southern

Case study: Do MAD researchers add value to smallholders? – Stuart Higgins



Figure 3. Research institutions working with ACIAR in the MAD research series.

Cross University and Dr Scott Waldron (also UQ), working in Vanuatu. Although the project started only recently, they are already doing some really interesting things with MAD research and the smallholder farmers. Here is part of the transcript from a short video clip about the project (with both local and project-team speakers).

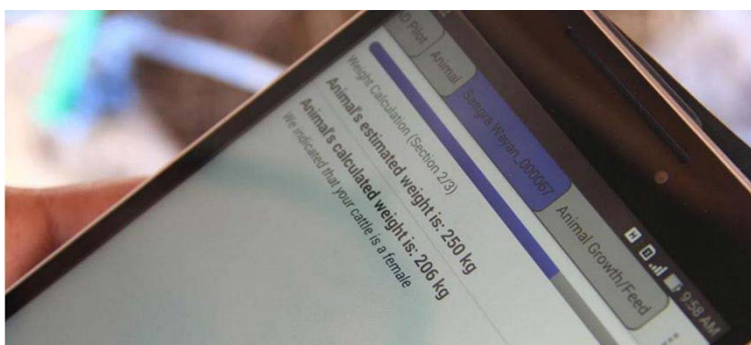
In the Vanuatu Beef Project we've been working with smallholder cattle farmers, here and in Espiritu Santo in Vanuatu, and we've been collecting baseline data on individual animals within their herds [e.g. Figure 4]

...

For me, the key thing that we've got set up is that we generate a summary form of liveweight of every animal we register on the day or measure on the day, and we can print that out in the field and give that to the farmer on the day that we do it. Next time, coming back, we can weigh them again



Figure 4. Collecting data on individual cattle, and using the app to calculate and record liveweights.
Photos: AgImpact Pty Ltd



and put it in here and you can see the change in body weight. And we also give some information, to give you some extension material.

...

My advice to someone starting out to build apps in other projects, is just to get in there and have a go. Don't be scared about crashing it. We've killed our app many times. Think through it logically. There's a new language to learn, but there's plenty of help out there. If you're having a problem, for sure someone else had that problem before.

...

At the moment, the use of the app is costing us time. A lot of time is going into the development and the deployment and testing and training using the app. Longer term, I've got no doubt that it's going to add value into our project, in that we're going to have more streamlined, efficient data management and analysis and those types of things. By the end of the project I expect it will be of great benefit

...

Conclusion

To finish, I want to point out that although the farmer may not have a tablet or mobile phone just yet, a researcher using mobile acquired data can actually pay that farmer for the data, not in currency but in 'knowledge', the universal currency. They can pay that farmer in knowledge. The critical component is real time ... because a farmer's brain is always working, it never stops.

Stuart has 16 years' experience in leading, managing or contributing to international research for development, primarily for multilateral agencies such as the UN Food & Agriculture Organization (Rice Policy in Laos), World Bank (Value Chain Studies in Africa) and Asia Development Bank (Irrigation Evaluations in Cambodia). Over the past five years, he has led multiple research activities on behalf of DFAT and ACIAR, predominantly in Eastern Indonesia, including the Mobile Acquired Data (MAD) Research Series. The MAD series aimed to evaluate the tangible 'value-add' of digital data collection apps deployed within ACIAR-commissioned projects and programs, and to understand the impacts of technology on the relationship between smallholder farmers and researchers. Prior to moving into the international research for development sector, Stuart was a primary producer (cotton & grain) on the Darling Downs in Queensland. He holds a Masters Degree in Agricultural Science from University of New England, is a recipient of the Vincent Fairfax Ethics in Leadership Award, and delivered an award-winning radio series ('Grow Your Own') on ABC Radio National.