

Case Study: MbeguChoice

Leveraging an existing database of crop variety information to provide farmers and those who support them with the latest information about new varieties and where to plant them



BECAUSE OUR FARMERS DESERVE TO KNOW

Introduction

Access to useful, accurate and timely agricultural information is a key factor leading to higher yields, and potential reduction of losses, for farmers. In particular, access to information about inputs, and especially seed, is critical.

Smallholder farmers (SHF) in sub-Saharan Africa generally seek agricultural information from a variety of sources such as government extension officers, agrodealers, and fellow farmers.

In recent years, however, digital provision of information has become more common, although many smallholder farmers are not yet regular users of digital information sources. Globally, knowledge transmission and information provision through Information Communication Technologies (ICT) has become a major driver of social and economic transformation, especially in the developing world with increased mobile phone usage and internet access.

The Problem/Challenge

Farmers in Kenya have long complained about the scarcity of extension services in their localities. According to The African Seed Access Index (TASAI) Kenya 2016 Report, there is only 1 extension officer for every 910 farmers in Kenya, which is well below developed countries of Europe, North America and Asia, which have ratios averaging about 1:400 (FAO). In addition, extension officers in Kenya are, for the most part, severely under-resourced so that even if they are present they are frequently unable to carry out their job responsibilities due to lack of funds for transit and communications.

As a result, SHF often turn to local agrodealers, friends, and family members for information about inputs, including seed. However, there has been little accurate, easily accessed information about crop varieties and seed available to the general public, including people upon whom farmers may depend for good information about seed. As a result, the Kenyan crop seed sector was characterized in 2013 by the following:

- Newly bred and released crop varieties, which improved upon older varieties, were relatively unknown to SHF and even to those who advise them.
- Many farmers were planting varieties “out of position” – that is, in agroecologies and at elevations for which the varieties would not perform optimally.
- Many farmers continued to recycle seed endlessly, despite accumulated presence of diseases and loss of purity, rather than refresh their seed stock with newly produced, certified seed.

The Starting Point

In 2013, when Kenya Markets Trust (KMT) began its work in Kenya's crop seed sector with their implementation partner, Agri Experience Ltd., there was little information about crop varieties that could be easily accessed for decision-making purposes by seed companies, agrodealers, or farmers. While it was possible to get information about newly released varieties by asking the Kenya Plant Health Inspectorate Service (KEPHIS) for a list of released varieties, the list supplied was in the form of a static pdf file containing hundreds of varieties, and much information that would be useful for farmers, such as which companies were licensed to sell seed of the varieties, or whether or not the varieties were even being marketed, was not included.

While KEPHIS had the legislative mandate to formally release varieties, the owners of the varieties were either seed companies or a public research institute such as the Kenya Agriculture and Livestock Research Organization (KALRO, formerly known as KARI). The seed companies and the research organizations held much of the technical information about the released varieties, but it was not available in one place for consumer viewing or consumption, nor was it available for comparison and analysis.

Early in the life cycle of the crop seed project, the team determined that it would be important to build a comprehensive database about available crop varieties, marrying the regulatory and scientific perspectives to transparently provide information to those who needed it. By September 2014, this database had been constructed, named SeedWorks, and made available to anyone who needed the information via the Seed Sector Platform KENYA (www.seedsectorplatformkenya.com).

The Platform was, from the outset, intended to be used as a business-to-business (or public-to-private) tool, with a relatively narrow audience (i.e. seed company managers, development partners, researchers, and regulators.) However, shortly after the Platform was launched, many users of the Platform encouraged Agri Experience to reformulate the delivery channel for the data into a second, more farmer-friendly format. In particular, there was interest in creating a digital tool which allowed farmers and those who support them to begin their crop variety query by first entering their planting location and subsequently filtering the results so that the crop varieties recommended through the tool would be suitable for their farming location and also targeted to their specific interests, such as early maturity or drought tolerance.

Since the major cost of building the database had already been incurred for the Platform, working with KEPHIS and KALRO to capture and combine information for over 500 varieties of 18 crops, the project team agreed to consider developing a more

farmer-centric tool using a subset of the database, which could be done at a modest cost.

The Journey

The creation and testing of the new, farmer-centric tool took approximately six months. The project team worked with a broad set of collaborators, including KEPHIS, KALRO seed companies and the site construction firm to design, test, and refine various design approaches.

A key conclusion reached during the early design stage was that the first two pieces of information needed to make crop recommendations were the county, and agroecological zone within the country, where the seed was to be planted. Subsequent questions for users would cover the crop of interest, the seasons under consideration, and special attributes of the crop variety, such as maturity or drought tolerance, that were desired. This approach would relay the most accurate and useful recommendations to farmers, but there was no easy way to link all of the crop varieties within the database to various agroecology zones in counties.

Ultimately these linkages were built the old fashioned way – by defining zones within counties, naming them, and then working with researchers to clarify which varieties were suited to which zones. The data, after a tedious period of collection and creation of the appropriate linkages, were added to the database.

It was also decided that the search results would be listed with the newest varieties appearing first, chronologically, with older varieties positioned further down the list. This would ensure that a user would become aware, first, of the newest technology and read about it.

A key question throughout the entire process was: Who would be the ultimate audience? While the tool was talked about as being farmer-centric, and farmers certainly needed the information, smallholder farmer use of online tools was low. Even when smallholder farmers did know how to use online tools they often did not have data coverage, or did not choose to spend money on mobile data. The vision of the most likely audience shifted to include: telephone farmers (urban dwellers who had a farm in their home village, or people employed off the farm in professional jobs who still carried out farming activities); educated family members of farmers, particularly sons and daughters who might help their parents purchase seed; and agrodealers, extension workers and other specialists who advised local farmers. While these numbers were certainly smaller than “all crop farmers in Kenya”, it was recognized that this was still a large group, hungry for easily accessed information on the best crop varieties for their locations of interest.

Implementation

The final product, the online tool MbeguChoice (mbegu is Kiswahili for seed) was built, tested, and ready to take live by mid-2015. To get to this point, the project team worked collaboratively with a broad group of stakeholders, including KEPHIS, KALRO and seed companies. The final result was made available online at www.mbeguchoice.com.

The subset of the Platform data that drove MbeguChoice included:

- ✓ all crop varieties currently for sale in Kenya, currently over 200 varieties,
- ✓ the seed companies currently producing and selling seed of each crop variety;
- ✓ the maturity of the variety; and
- ✓ information from scientists and seed companies about special attributes of each variety (e.g., cooking properties, disease tolerance, value as a fodder crop, etc.)

A sample of an MbeguChoice result is shown to the right. This image resulted from a farmer entering her/his county, indicating the agroecological zone (in this case a mid to high altitude zone was selected), and selecting common bean as the crop of interest. The farmer may have further refined the selection to look for an early maturing variety like Chelalang.

Crop	COMMON BEAN
Variety	CHELALANG
Type	TRUE BREEDING
Year of Release	2008
Commercializing Cos	FRESHCO KENYA LIMITED,KENYA SEED CO. LTD,LELDET LTD,OIL CROP DEVELOPMENT
Production Altitude(Masl)	1800-2200
Seasons/Rains	LONG
Maturity(months)	2.5 - 3.5 MONTHS
Special Attribute(s)	RESISTANT TO BEAN COMMON MOSAIC VIRUS TOLERANT TO RUST

MbeguChoice was formally launched at a stakeholder event which included media in June, 2015. Media coverage, including international media, was extensive. Excerpts from selected examples of coverage are provided below.

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This week's top [climate change](#) stories from the Thomson Reuters Foundation:
 For daily news on climate issues including adaptation, low-carbon development, food security, human migration, health concerns, deforestation, conflicts/security, disaster risk reduction and many others, please take a look at [our website](#).

AFRICA

[New app to connect Kenyan farmers with climate-smart seeds](#)

Source: Thomson Reuters Foundation, top story in weekly climate change newsletter

SUNDAY NATION

In Summary

- MbeguChoice allows farmers and local seed sellers to access a list of suitable seed varieties for specific weather conditions and soils for their areas.
- Currently, the online database contains over 200 commercialised crop varieties, including 61 varieties of maize, 25 of common bean, 11 of cassava, 13 of Irish potato, and 12 of sorghum.
- In the past, farmers have relied on trial-and-error methods and take years before getting the right seeds, leading to massive losses and poor harvests.
- The database will also ensure that only certified seeds are on the market and that unscrupulous seed vendors will be locked.

Source: Sunday Nation, Kenya, June 14, 2015

New online tool to find right seeds for specific areas

SATURDAY JUNE 13 2015



In Summary

- MbeguChoice generates a list of suitable seed varieties along with the names of the seed companies producing and distributing them.
- Early trials of the service have revealed that MbeguChoice could also be popular with urban professionals who help family members living in rural areas make planting and other farm management decisions.
- Seed industry experts hope that by providing farmers, agrodealers and extension workers with more information on the seed market, agrodealer shops will see a higher demand for certified seed.

By CHRISTABEL LIGAMI, TEA Special Correspondent



Source: Standard Online Newspaper

More than 80% of sub-Saharan Africa's population is engaged in farming, but there are just 70 agricultural researchers for every million people, according to the Alliance for a Green Revolution in Africa.

Harun Munuve, who grows a variety of crops at his farm in Ruiru, a few kilometres north of Nairobi, says: "Initially we used to rely on neighbours or agri-dealers to find out what kind of seeds to plant. Last season I planted a certain variety that, it turned out, didn't work in my region."

Mr Munuve, part of an increasingly networked generation, turned to web app MbeguChoice for help.

Source: BBC News, 31 July 2015

Initially MbeguChoice was only available in English, but by September, 2015, it had been translated into Kiswahili and users could select their language of preference when they first entered the site.

In April 2016, the MbeguChoice App for android phones was built and added to the Google Play Store. Once downloaded (for free) from the App store, users were able to search for seed varieties offline and update the App periodically when connected to the Internet.

After the formal launch in June, 2015, which included a panel of public and private stakeholders in addition to media coverage, the real work of promotion and education began. Unlike the narrow audience of the Platform, MbeguChoice potentially had a much larger audience.

The central team at KMT played a large role in the initial promotion. Media experts on the team determined that promotion through a popular morning talk show in Nairobi, during the commuting time, was the best way to inform telephone farmers and Nairobi-based friends and family of rural farmers, in addition to reaching policy-makers with key messages. This campaign was carried out, wrapped in the overarching messages that Kenya had serious food security challenges, that everyone needed to play a role, and that use of certified seed of improved varieties was a major part of the solution. MbeguChoice was presented as a new way to learn about seed. (The KMT advice proved to be very prescient, as shortly after the Nairobi-based media campaign, which included positive encouragement about solving the food security challenges in Kenya, policy-makers restarted the regulatory reform efforts, in earnest.)

Second and third waves of promotion were carried out in the second half of 2015 and the first half of 2016. This time, the campaigns were presented in vernacular languages, on local radio stations in key target locations. This time, the campaigns did not seek to

create awareness of the food security challenges in Kenya, or of MbeguChoice.com, specifically. Rather, the campaigns were aimed at changing farmer attitudes and behavior related to certified seed, and MbeguChoice.com was mentioned at the end of the promotion as an online tool that agrodealers, farmers, and friends and family of farmers could use to learn more about crop varieties. Within the project team, these campaigns were referred to as the “MbeguChoice behaviour” campaigns. Their main goal was to create farmer awareness around: 1) the existence of certified seed for new and better varieties, particularly for crops other than maize; 2) the dangers of endlessly recycling seed; and 3) the need to plant seed of varieties that are most suited to a farmer’s location. For these campaigns, the farmer depicted in the radio programs was a woman, in a specific attempt to reach female smallholder farmers.

Additional promotion efforts included an MbeguChoice Facebook page and Facebook ads, plus limited promotion at various agricultural shows and local convening places such as churches, in addition to some continued media coverage.

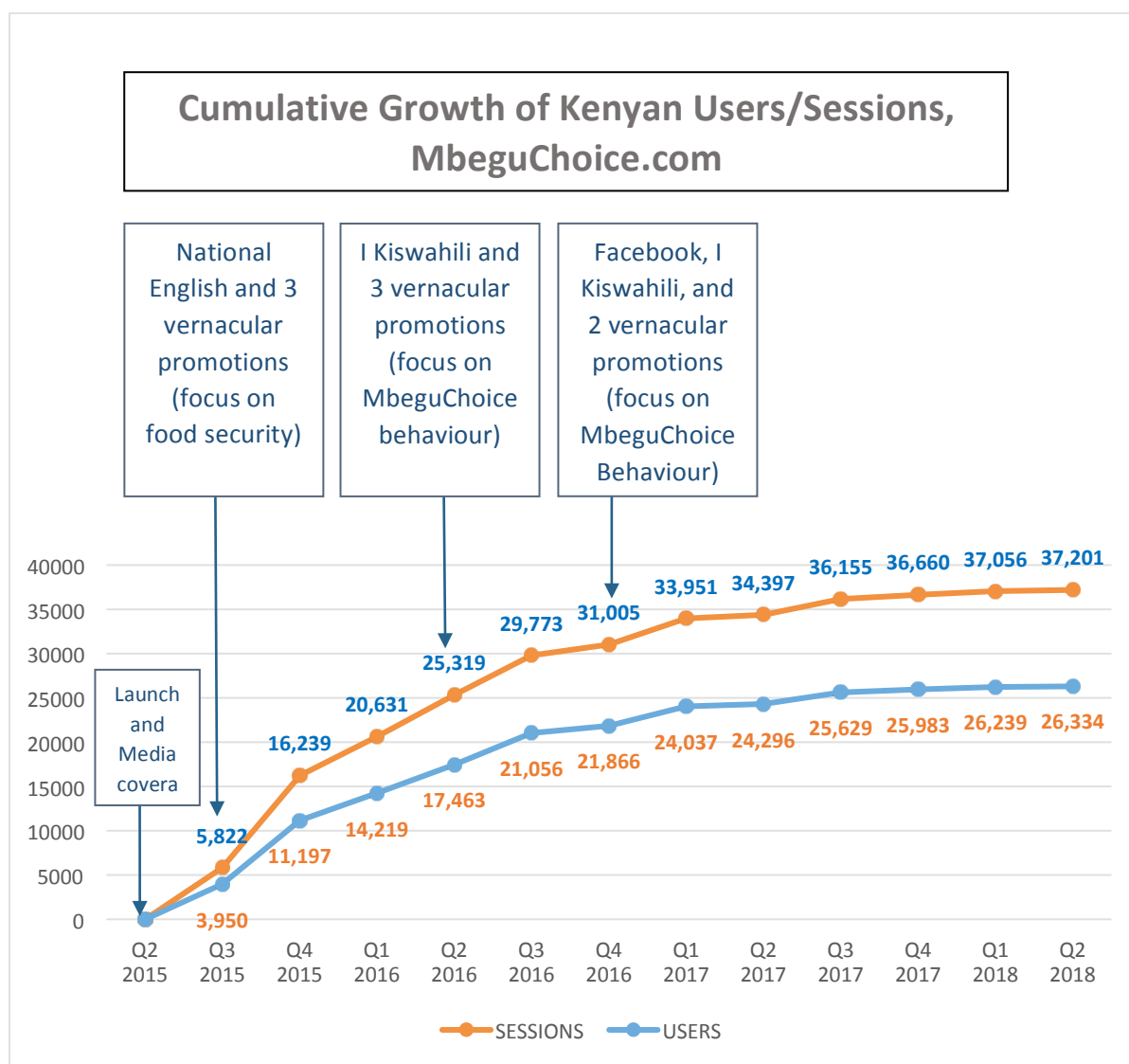
Results

Since the launch there has been a steady increase in the number of users and sessions. By mid-2018, over 26,000 people in Kenya had visited/used the site, 35% of whom were repeat users. As at the end of June 2018, the offline App had been downloaded over 2,200 times from Google Play store, despite the lack of any significant promotion of the App.

Not surprisingly, the number of users increased significantly during media campaign periods, which were intentionally aligned with the short rain planting seasons of 2015 and 2016 and the long rain season of 2016.

However, despite the absence of formal promotion since 2017, growth has continued organically although at slower rates. There are still many potential users unaware of MbeguChoice.

The growth in usage and sessions, charted with the main promotional activities, is provided in the graph below.



Source: Google Analytics of MbeguChoice.com

Pre and post evaluations were carried out following the successful running of the “MbeguChoice behaviour” promotion campaigns. One pre-/post- set took place in October 2015, the other in May 2016. The evaluations, covering a total of ten counties, were aimed at measuring the effectiveness of the promotions and whether or not the campaigns led to any change in farmer intentions and behaviour.

The studies carried out for the short rains of 2015, which interviewed 657 farmers, reported that: 1) 62% of farmers who heard the promotions but were already using certified seed purchased a new variety after hearing the promotions; and 2) that 23% of farmers who heard the promotions and had previously been using recycled seed changed their behavior and purchased certified seed after hearing the promotions.

When the pre- and post- studies were repeated with 643 farmers during the long rains season of 2016, the 2015 results proved to be relatively robust, with percentages of 48% (certified seed users purchasing a new variety) and 33% (recyclers purchasing certified seed) reported in 2016. The 2016 study also found that there was an increase of 28% of MbeguChoice.com awareness as a source of information on certified seed and 40% of the farmers interviewed (from the 2016 study) had told at least 3 other people about MbeguChoice.

No MbeguChoice promotion was undertaken by the crop seed project after the long rains of May 2016, due to project funding constraints. However, usage continued to grow organically, although at a slower rate.

In June of 2017, MbeguChoice was formally handed over to STAK, as the ideal market actor to host it. The project team supported STAK by providing training for their ICT officer on how to manage the database and promote MbeguChoice via Facebook, emails and SMS. STAK now takes an active role in updating the databases, and in May 2018 paid the full hosting fee (\$170 per year) and domain fee (\$50 per year) for MbeguChoice. STAK is currently considering revenue generating activities from MbeguChoice, such as linkage to seed companies or including advertising on the online site and App, as a way of defraying these costs.

Samuel, Farmer – Uasin Gishu County

"I came to know about MbeguChoice (MC) when an employee from eMobilis visited our school when I was there. He talked to us of how people are developing Apps and gave an example of MC. So, I downloaded it and later checked out maize seed varieties; I settled on and planted H6213 based on the available characteristics. The maize is doing so well. MC really helped me. I have referred a number of people but have not received responses on their experience. More varieties of different crops will help farmers."

Geoffrey, Agrodealer – Busia County

"I am using MC and most of my customers use it too. For me as an agrodealer, I needed to reduce the time spent on advising my customers on seed choices. MC reduces the time I spent on my customers because by the time a customer comes to purchase seed; they already have an informed choice on what seed to purchase. My customers are happy with the choices they make and some come back saying that the seed they purchased and planted turned out well. However, some farmers get disappointed by the seed they buy and seed companies take too long to investigate and solve the issues. An appropriate complaint mechanism should therefore be created for farmers to lodge complaints. You also need to simplify the platform – narrowing the location to sub-county or village could help farmers. Adding other information, say on fertilizer and agronomic practices on the platform; and expanding the crop options on the platform to include vegetables will also help many farmers."

Lessons Learnt & Future Considerations

A significant number of lessons were learned through the MbeguChoice work. The key lessons from the project team perspective are presented below.

1. An IT tool can't be everything to everyone – know the limitations of your tool, and stick to: 1) what you can do well, and 2) a tool with a user experience that suits the level of sophistication of your target audience.
2. In promoting an IT tool, you do not need to lead with ICT. It is best to "wrop" the tool in a behavioural and advisory promotional approach, or a big picture

description of the problem. You can then follow with the ICT tool as a valuable part of the solution.

3. Facebook is a cost-effective promotional channel for a tool such as MbeguChoice, possibly reaching telephone farmers, children of farmers and diaspora family members of farmers.
4. Tech savvy farmers want to ask questions via a dedicated Facebook page – but will ask questions about all kinds of seed, in addition to other agronomic questions. They appear to be actively searching for respected purveyors of information.
5. In using a tool like MbeguChoice, farmers are more likely to understand and select a specific description of their agroecological zone (e.g. high altitude) than an altitude range or even the name of their subcounty. (Most farmers do not appear to know the name of their sub-county.)
6. The vast majority of agrodealers are far less tech savvy than they purport to be, or than others may think they are.
7. Online usage of a tool like MbeguChoice is preferred versus the App. This may be due to data download costs, or lack of phone memory.
8. Radio programming, if carefully crafted, can be very persuasive with behavioural change. The effective vernacular radio promotion used included a female farmer and an agrodealer speaking in a shop. Issues such as limiting the use of recycled seed, the value of certified seed, and the value of new varieties were covered.
9. Friends and families of farmers are a viable and high potential target for online agricultural ICT tools. In particular, considering issues around low access to smart phones and literacy levels in rural Kenya, the primary target for agricultural ICT platforms are the younger generation who are friends and family members of farmers, particularly those who are employed and may be helping their parents secure inputs, or who may be “telephone farmers” themselves. Most of the younger generation can easily access these platforms and advise their parents who are SHF back in the rural villages.
10. Farmers rarely know about the proper positioning and special attributes of new crop varieties. In addition, many farmers do not believe seed company claims about maturity.

Recommendations for potential future support include:

1. Support STAK to promote MbeguChoice via sms blasts, Facebook, and other low cost methods after new varieties are added each year to encourage agrodealers, families and friends, and others to refer to MbeguChoice for the latest information on varieties in the market
2. Support STAK to add a banner to MbeguChoice indicating the date of the latest addition of new varieties (should be at least twice a year, well in advance of

each planting season) to encourage users to return to see if there have been additional updates.

3. Consider devising a promotional plan to position MbeguChoice as Kenya's most trusted source of (crop) seed information, and aim for 100,000 users in Kenya. At this level of scale, monetization potential is significant.
4. With STAK, explore monetizing MbeguChoice via linkage to seed companies' Facebook pages or customer service contacts.
5. With STAK, explore the potential of adding vegetable varieties.
6. With STAK, consider linking MbeguChoice to education about broader agronomic practices, possibly directing users to specific resources, e.g. information about Fall Armyworm.
7. With STAK, consider collaborating with other already established agricultural platforms and Facebook pages such as Mkulima Young and Digital Farmer to promote MbeguChoice usage at the onset of the planting season