GSMA mAgri

Airtel Kilimo Baseline Evaluation

May 2014

About the GSMA Association

The GSMA represents the interests of mobile operators worldwide. Spanning more than 220 countries, the GSMA unites nearly 800 of the world's mobile operators with 250 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and Internet companies, as well as organisations in industry sectors such as financial services, healthcare, media, transport and utilities. The GSMA also produces industry-leading events such as Mobile World Congress and Mobile Asia Expo. For more information, please visit the GSMA corporate website at **www.gsma.com.** Follow the GSMA on Twitter: **@GSMA**

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mAgri

About the GSMA mAgri Programme

mAgri catalyses scalable, commercial mobile services that improve the productivity and incomes of smallholder farmers and benefit the agriculture sector in emerging markets. The GSMA mAgri Programme is in a unique position to bring together mobile operators, the agricultural organisations and the development community to foster sustainable and scalable mobile services that improve the livelihoods of smallholder farmers.

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Research methodology and report writing were designed and supported by Firetail and the ALINe initiative.

For more information on the GSMA's mAgri Programme, please contact us on magri@gsma.com

Copies of the regional case study and the study methodology are available on request.

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Executive Summary

Airtel Kilimo is an agricultural value added service (Agri VAS) developed and managed by Airtel Kenya. The service provides customised information about crops, weather and market prices to farmers in Kenya via their mobile phones.
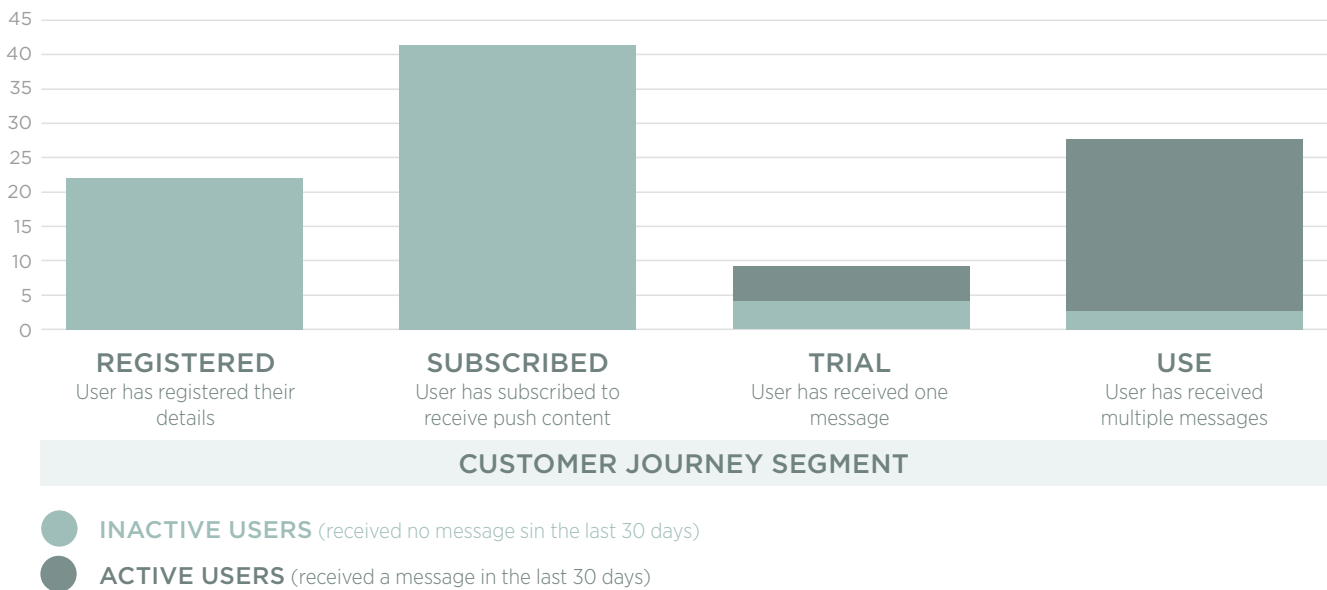
Users and their needs

Airtel Kilimo users are smallholder farmers – but are far less likely to fall under the national poverty line than the average Kenyan (5% vs. 45%). A significant proportion (40%) of the user base are women. During field research, farmers highlighted that a lack of access to capital is the biggest challenge to running successful farms, followed by external factors such as harsh and unpredictable weather conditions, low availability of farmers' unions to champion their rights and difficulty accessing markets for their produce. Airtel Kilimo offers weather and marketing information services as a part of the product mix, but these are currently under-used by the customer base.

Current users see the potential in Airtel Kilimo; however they do not feel the service is delivering value as yet.

Customer Journey

More than 60% of users that registered for Airtel Kilimo have not received content from the service (the 'registered' and 'subscribed' segments shown in figure 1). In May 2014, at the time of the baseline, 30% of the total user base was active (had received information during May) and generating revenue for the service.

Figure 1

The Airtel Kilimo customer journey

REGISTERED	SUBSCRIBED	TRIAL	USE
User has registered their details	User has subscribed to receive push content	User has received one message	User has received multiple messages

CUSTOMER JOURNEY SEGMENT

● **INACTIVE USERS** (received no message sin the last 30 days)

● **ACTIVE USERS** (received a message in the last 30 days)

See the customer journey analysis for more details.

Key findings

Airtel Kilimo is reaching less than 1% of the 5.15M addressable market stated in the original service concept. Airtel Kilimo will therefore need to reach significantly more customers to become a viable business proposition.

MAY 2014 SERVICE SNAPSHOT	
Number of registered users	**6,699**
Number of active users (users who received content during May)	**2,049**
ARPU (USD)	**0.02**

To achieve greater user numbers:

➡ Increase marketing to reach wider audiences.Blast SMS and advertising spots around agricultural radio have helped other Agri VAS to scale.

➡ Customers may need to be reassured about the Airtel brand, so providing a reliable service is paramount.

Thirty seven per cent of the user base had generated revenue by receiving SMS from Airtel Kilimo by the end of May 2014. Airtel can increase the number of charged messages sent by:

➡ Playing to the more user-friendly registration and subscription methods using voice channels. Slow down the voice instructions on the IVR registration and direct users who failed to complete the registration process via USSD to the IVR menu through engagement messaging. In Kenya, regulation does not allow short-codes for IVR numbers, but in markets where this is possible a short number is preferable.

➡ Adding more crops, particularly high value cash crops, to increase the value proposition. Airtel Kilimo's audience is restricted by the small number of crops the service currently covers.

➡ Ensuring the pricing structure is designed around target audiences' willingness and ability to pay and is reflective of farmers' seasonal incomes. Only 54% of content requested by subscribers is delivered to the user; these low delivery rates are often due to insufficient airtime. Customers interviewed also thought that KSH1 3 was too expensive for one SMS tip.

➡ Including a more interactive way for farmers to access agricultural information. Farmers who participated in user testing and focus groups emphasised that a helpline would add value to the service. Partnering with organisations who can complement a mobile service with live demonstrations of service use and agricultural practices would also enhance the value proposition for farmers.

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1. Kenya Shilling

Introducing Airtel Kilimo

Airtel Kilimo is an agricultural value added service (Agri VAS) developed and managed by Airtel Kenya. The service provides customised information to farmers in Kenya via their mobile phones.

Airtel partnered with CABI as the lead partner for content creation for different agro-climatic zones in Kenya. Other content partners include the Kenya Agricultural Commodity Exchange (KACE) for market price information, the Kenya Meteorological Department (KMD) for weather information and Kilimo Media International (KiMI) for content stylization including the creation of voice content and formatting agronomy content into SMS tips. Through a strategic partnership between CABI[2] and the Kenya Agricultural Research Institute (KARI), the content available through Airtel Kilimo is validated before being sent out to farmers.

Airtel Kilimo received risk capital and technical support through the GSMA mFarmer Initiative. At the time of the baseline, the service was not yet breaking even. The service was launched in April 2013 and had registered 6,699 customers by the end of May 2014. Airtel is targeting 125,000 customers by the end of 2014.

Airtel subscribers (both prepaid and postpaid) can register for the service via USSD by dialing *760# or via IVR by dialing 0900 730 760. The technology platform for both channels was developed and managed by VAS provider

OnMobile at the time of the baseline[3]. During registration customers provide details about their gender, location (county level) and preferred language, as the service is available in Kiswahili and English. After completing registration, the customer is asked to subscribe to the content type they are interested in (agronomy tips, market prices and weather) and, if choosing crop agronomy or market prices, to include their crop preferences.

Once successfully subscribed, customers receive an SMS to confirm their choices. The user then receives three SMS per week per crop selected, daily SMS for weather and two SMS per week for market price information. The messages are customised according to the registration information provided by the user - geographical location and crop type. SMS are charged individually at KSH 3 (0.03 USD) per message. Customers can also listen to information through an IVR channel by dialling 0900 730 761. Browsing the IVR menu is free of charge, however, on reaching content, customers are charged KSH 3 per minute[4]. Airtel intend to add a helpline to allow customers to speak directly to agronomy experts.

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2. A not-for-profit research, publishing and international development organization; http://www.cabi.org/.
3. From June 2014 Mobipay took over the management of Airtel Kilimo from OnMobile.
4. At the time of publication, the charging model was moving towards KSH 20 per week for unlimited access to content.

Agronomy content is designed as a set of tips around key value chains. Tips cover the full agricultural cycle from field preparation and seed selection to post harvest techniques, and provide advice on how to increase yields and prevent pest and diseases across the range of crops (table 1):

Table 1
Crop information on Airtel Kilimo

CONTENT AVAILABLE IN MAY 2014	CONTENT TO BE ADDED LATER IN 2014	
Maize	Kale	Aquaculture
Tomato	Cabbage	Coffee
Mango	Banana	Goats
Rice	Passion fruit	Pig
Amaranthus	Bean	Tea
	Tea	Nuts (Ground nuts and cashew nuts)
	Cattle (Beef and Dairy) Poultry	Cattle Fodder
	Potato	

Agronomy content is purchased from content partner CABI who store and manage their content in the Direct to Farm (D2F) database. CABI generate factsheets on each crop. Based on these factsheets, KiMI create individual SMS tips which are translated and validated by Kenya Agriculture Research Institute (KARI) to ensure a high quality of content. KiMI also adapt the factsheets to voice format for the IVR[5]. KiMI works predominantly in agricultural programming for local radio stations and is staffed by a network of agriculture and media experts from various institutions including Kenya Broadcasting Company (KBC) and local universities. Experts from CABI and KiMI were initially responsible for identifying the crops covered by Airtel Kilimo. They selected major crops grown in various ecological zones of the country.

Up to date market prices for certain crops are provided by the Kenya Agricultural Commodity Exchange (KACE) for six major markets: Eldoret, Kitale, Machakos, Mombasa, Nairobi and Nakuru. However this function was not delivering content at the time of publishing due to challenges with the integration of different partners' systems. Daily weather updates specific to the user's location are provided by the Kenya Meteorological Department.

Having subscribed, customers with sufficient airtime will receive messages until they choose to unsubscribe. This is accessed from the 'settings' menu of the USSD (*760#) and IVR (0900 730 760) menus. Once registered, a subscriber can unsubscribe and re-subscribe whenever they choose.

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5. Future SMS and IVR cotent will be generated by CABI

Market Overview

Kenya is a global leader in the mobile money transfers market and a cradle of the African mobile boom pioneered by Safaricom's M-PESA service. The unprecedented popularity of M-PESA cemented Safaricom as market leader in Kenya with 66% market share (Q1 2014); Airtel are Kenya's second biggest network operator with 18% market share[6].

A focus group discussion highlighted that participants had less than positive attitudes towards Airtel as a brand. Some stated that it had changed its name several times since inception, which gave the impression of being 'unstable'. Safaricom, by comparison, were seen as a very strong and innovative operator. Focus groups saw the launch of a product aimed at the rural market as a positive step in repairing Airtel's image; however this reputation, if it persists elsewhere, may count against other users trying the service.

Two additional mobile operators (yu and Orange) joined the market leading to a 70% decrease in call prices during the last four years.[7] However, yu has recently been bought out by the country's two largest players[8]; Orange also plans to withdraw services in Kenya in the near future[9].

Kenya is classified as a low-income country[10] and 98% of mobile customers in the market use prepaid SIMs. While 96% of the population is covered by a mobile network, market penetration is only 33% in Kenya – suggesting there are millions of unconnected Kenyans, predominantly in rural areas. Rural users are likely to be farmers; Airtel Kenya estimate the total addressable market[11] at 5.15m for Airtel Kilimo. Entrepreneurs have been quick to pick up on the opportunities for engaging rural people in mobile services, so the market is no stranger to Agri VAS. The GSMA's mAgri deployment tracker shows 10 other mobile agricultural services in Kenya (table 2).

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6. GSMA Intelligence 2014
7. Ibid.
8. http://www.mobileworldlive.com/safaricom-airtel-get-go-ahead-yu-tough-conditions-attached-reports
9. http://www.ventures-africa.com/2014/03/orange-exit-set-to-rock-kenya-telecom-market/
10. World Bank data
11. Total number of smallholder farmers nationally growing the originally identified crops of coffee, horticultural crops, maize, rice and tea.

Table 2

Sources of agriculture information in Kenya

	SERVICE (PROVIDER)	OFFERING
MOBILE	Agrimangr (Virtual City, Safaricom)	High end tool for supply chain automation
	Juhudi Kilimo	Financing specific agricultural assets for small-holder farmers offered through M-PESA
	ACRE, formerly Kilimo Salama	Index-based drought insurance for smallholder farmers.
	M-Farm Ltd	SMS and web-based application to improve weaknesses in the agricultural value chain
	National Farmer's Information Service, NAFIS (National Agriculture and Livestock Extension Programme)	Information service allowing farmers to access extension information by internet or phone
	Soko Shambani (mFarmer Kenya)	Holistic program that enables small-scale potato farmers to carry out profitable potato farming
	Soko Hewani (Kenya Agricultural Commodity Exchange (KACE) Limited, Safaricom)	Agricultural radio programme accompanied by SMS and IVR market information service for farmers in Kenya
	Sokopepe	Integrated supply chain solution. SMS updates on climate, methods, prices & buyer/seller matching
	iCow (Green Dreams, Safaricom)	Feature phone and SMS app originally to help farmers to monitor their cows; they now offer more general agricultural tips
	iKilimo (Avallain Africa)	A database of farming information freely available online
	Airtel Kilimo (Airtel)	Agronomy, market prices and weather.
PERSON TO PERSON	Government extension	Experts on all aspects of farming. Irregularly organise demonstration days for several villages.
	KARI (Kenya Agricultural Research Institute)	Specialised in dry land agriculture. Provides information on agronomy, storage, marketing, and weather through demonstrations at the local branch of the institute.
	Input providers (e.g. Agro-vet)	Pest and disease control information is offered via free brochures but the language would appear to be difficult to understand for illiterate farmers.
	Peer farmers	Agronomy and marketing. One of the most traditional information sources yet information credibility varies.
TRADITIONAL MEDIA	TV, radio, internet, and Saturday nation (pull-out magazine)	Besides agronomy related information, information on marketing (TV and radio) and weather (internet and magazine) is provided. Information reliability is acknowledged.

Among the information suppliers listed above, interviews with Airtel Kilimo customers in Machakos County identified that the most commonly used information sources among farmers appear to be person-to-person methods and radio due to their long history as trusted farmers' information sources.

Information Supply and Demand

In Machakos County, a case study revealed that farmer's information needs may be very different from what others may expect.[12] Non-farmer informants stated that the most important information gap was around modern farming techniques, followed by farm management practices and marketing. Farmers identified access to capital as their biggest issue, followed by external factors such as harsh and unpredictable weather conditions, low availability of farmers' unions to champion their rights and difficulty marketing their produce (Table 3). This difference in opinion proves the case for assessing the needs of end users when designing a service rather than relying solely on expert opinions. A service focusing on these areas would provide the highest value for these users.

Table 3

Ranking of farmers' information needs[13]

	RANKING FROM KEY INFORMANTS	RANKING FROM FARMERS
MODERN FARMING TECHNIQUES	1	4
FARM MANAGEMENT PRACTICES	2	4
MARKETING	3	2
PESTS & DISEASE CONTROL	3	4
EXTERNAL FACTORS	3	2
SOURCING CAPITAL	6	1

1 NEEDED MOST

6 NEEDED LEAST

12. Nine key informants were interviewed to gain an overview of agriculture in the area. These were a village chief, a branch manager from a farmers' credit organization, 2 assistant chiefs, 2 senior church members, a business person, a secondary school teacher, and an extension worker. Focus group discussions were carried out with 15 farmers (users and non-users) in a region south west of Nairobi. See 'Methodology' for details.
13. Farmers and key informants ranked the sources of information during the case study in Machakos and the results were aggregated.

The case study highlights gaps in existing information supply (Table 4). Even the topic areas that farmers ranked as the most sufficiently supplied (modern farming techniques, farm management practices, and pest & disease control) scored barely more than half of the total possible score. This indicates that there is room for service providers to improve access to all of these content areas. This resonates with the participants' overall feedback that the current sources are unsatisfactory.

Table 4
Analysis of gaps in information supply

SUPPLY \ DEMAND	MODERN FARMING TECHNIQUES	FARM MANAGEMENT PRACTICES	MARKETING	PESTS & DISEASE CONTROL	EXTERNAL FACTORS	SOURCING CAPITAL	SCORE
AIRTEL KILIMO	◯	◯	⊗	◯	◯	⊗	4
EXTENSION WORKERS	◯	●	◯	●	●	⊗	8
KARI	●	●	◯	●	◯	◯	9
INPUT PROVIDERS	◯	◯	⊗	●	⊗	⊗	4
PEER FARMERS	◯	◯	◯	◯	⊗	◯	5
RADIO	◯	◯	◯	◯	⊗	⊗	4
TV	◯	◯	◯	◯	⊗	◯	5
INTERNET	◯	◯	⊗	◯	◯	⊗	4
SATURDAY NATION	●	◯	◯	◯	◯	◯	7
SCORE	11	11	6	12	6	4	

● Sufficiently provided = 2   ◯ Provided but insufficient = 1   ⊗ Not provided = 0

Farmers ranked KARI (Kenya Agricultural Research Institute) and extension workers highest for the breadth and sufficiency of information topics provided (9 out of 12 and 8 out of 12 respectively). These are suppliers with whom farmers engage in person. Those providers with the lowest scores (Airtel Kilimo, radio, and internet, scoring 4 out of 12) provide information remotely (rather than in-person services). A shift from personal interaction to remote methods reflects a significant change in mindset for these users highlighting the need to:

➡ Partner with organisations who can complement a mobile information service with live demonstrations[14] of the service and of agricultural techniques would enhance the value proposition for farmers.

➡ Target younger users who are more technologically literate and more receptive to mobile solutions.

➡ Perform frequent, iterative, user testing to ensure information is meeting user needs. The content provided by Airtel Kilimo was judged 'insufficient' across the board.

Despite Airtel Kilimo ranking low in terms of information depth, it was voted most accessible, most understandable, and most affordable of the information sources[15]. Airtel Kilimo scored highest (42 out of 50)[16] of the remaining sources followed by public seminars and TV. Farmers identified reliability of information as the most important feature common to these three providers. Participants view information from these sources as free from bias (of actors with agricultural commercial interests) therefore more credible than other sources. Farmers also appreciate the accessibility and convenience of information sent directly to a mobile phone. TV was ranked higher than seminars using this criterion because seminars often involve long-distance travel. Affordability is an issue for some users but not others; those who had seen benefits from the service found it reasonably priced, whereas other users found it expensive (discussion of price continues through the following sections).

The participants also pointed out that the information from Airtel Kilimo and TV is too generic, too theoretical rather than practical, and not always timely. Participants clearly stated, that Airtel Kilimo is still too new to be considered an important information provider. However, users in focus group discussions clearly valued its potential.

➡ Users think Airtel Kilimo is accessible, convenient and reliable – they need to emphasise these strengths in their marketing campaign.

➡ Airtel Kilimo should continue work with content partners to improve the timeliness and practicality of the messages.

Who is using Airtel Kilimo?

40% — 40% of Airtel Kilimo customers are female –the highest ratio of women in any mFarmer supported service

82% — The vast majority of customers appear to be subsistence smallholder farmers selling surplus produce - 82% work on farms under 2 hectares

5% — Only 5% of customers are below the national poverty line compared to a national average of 42-49%

User behaviour analysis shows 60% of users are male, giving a high ratio of female users compared to other mFarmer services.[17] Reasons for this are not fully understood, but are likely to be influenced by cultural differences between the mFarmer target countries – India, Kenya, Mali and Tanzania – that govern women's ownership of and access to mobile phones or roles in managing crops and livestock on the farm.

A phone survey suggests the majority of users are farmers: 93% identify themselves as farmers, 61% state farming as their primary source of income (including 6% of casual farm labour). The assumption that Airtel Kilimo users are smallholder farmers is supported: 82% work on farms smaller than 5 acres (around 2 hectares) and 84% of the surveyed customers grow crops for both domestic consumption and sale at markets. Only 19% of users are commercial farmers, and a small number of customers appear to be non-farmers with primary income sources in trading, salaried work, and others.

Results suggest that Airtel Kilimo customers are better off than the wider population in rural Kenya[18]. Approximately 42-49% of the population of Kenya falls below the national poverty line[19] compared to only 4.6% of surveyed Airtel Kilimo users[20]. Although estimated poverty levels are lower among mAgri service users for all four mFarmer grantees (in India, Kenya, Mali and Tanzania), the disparity is much larger with Airtel Kilimo users. Further research is needed to establish the cause of this disparity. Hypotheses for the user base being mainly above the national poverty line include lower levels of phone ownership and access, poorer literacy rates and less disposable income to spend on VAS subscription amongst the poorest rural Kenyans. The results may also reflect how questions around poverty were asked during the survey: survey enumerators may not have asked certain questions so as to avoid bias. However, around 75% of the Airtel Kilimo customers taking part in focus group discussions in Machakos County expressed that the service was too expensive, at KSH 3.0 per SMS, suggesting that Airtel Kilimo may price itself out of its target market.

Focus group participants and key informants confirmed that maize and beans are the most widely grown subsistence crops for Kenyan farmers while coffee and maize represent the most important commercial crops. In terms of livestock, dairy and traditional cattle farming are the most practiced. Most of the farmers participating in the field study were subsistence farmers practicing mixed farming, with a combination of crops and livestock.

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17. The results from the phone survey with 505 valid samples also found a similar sex ratio to the total user base with a slight bias towards male users; approximately 30% of users are female and 70% are male.
18. The phone survey included a set of questions from Grameen Foundation's Progress out of Poverty Index (PPI) tool, to estimate customers' household poverty levels.
19. KSh 52.08/day for rural area by the government of Kenya, 2007.
20. The figure becomes even smaller if we compare this with the international poverty line: 1.1% of Airtel Kilimo customers remain below the poverty line compared to 43.4% of the wider population

How are customers using Airtel Kilimo?

GSMA describes the way users engage with a service as a customer journey (Figure 2). The customer journey illustrates how a user must progress through a series of stages, from becoming aware of the service, through registering, subscribing and trialing to repeat usage. Customers may get 'stuck' at each stage of the customer journey due to different barriers related to issues with service design, content or marketing.

Figure 2

Airtel Kilimo customer journey

UNAWARE	AWARE	REGISTER	SUBSCRIBE	TRIAL	REPEAT USE
Potential users who don't know about the service	Potential users who know about the service	Users have registered but not subscribed	Users who have subscribed to at least one content stream	Airtel Kilimo has sent one content message to the user	Airtel Kilimo has sent more than one content message to the user
(99% of addressable market)		**22%** of customer base	**41%** of customer base	**9%** of customer base	**28%** of customer base

BOTTLENECKS					
Limited marketing reach and quality affects customer awareness and understanding of value proposition					
	Connectivity issues: users have trouble connecting to the service in order to register/subscribe				
	Service design: difficulties with registration and subscription processes hamper users. Requested content is sometimes not sent due to system errors.				
.	**Content:** many crops and other topics beneficial for users are not yet available on the service. Users complain that content is not always timely and actionable.				
Preference for more traditional information sources: the target market for Airtel Kilimo are used to receiving information face-to-face, so a mobile solution requires a big change in information seeking behaviour.					
Price: almost all focus group participants saw KSH 3 per message as expensive; most of the messages sent to Airtel Kilimo users are not content messages, but messages explaining that their balance is too low to receive content.					

Potential users unaware of the service

BARRIERS

- Lack of reach of marketing campaigns

Airtel have marketed their Kilimo service largely through presence at regular farmer events in partnership with the Kenya Livestock Producers Association. An external marketing company was also contracted to promote the service through regional teams and educate customers in rural areas. Although face to face marketing is effective in educating farmers about the service and helping them to register, it is also geographically limited because a lot of time and effort needs to be spent on very few users without gaining the kind of reach necessary to scale a service. Airtel Kilimo currently reach 0.1% of its addressable market and it is likely that the majority are unaware of the service. This may be addressed by:

- Using national level marketing campaigns to increase awareness of the service, such as radio.
- Considering partnering with extension services, farmers' groups and other organisations that can more effectively reach communities on the ground.
- Leveraging the existing network of Airtel Sales & Distribution teams to promote the service.

Potential users aware of the service

BARRIERS

- Unclear value proposition
- Difficulties with the registration process
- 'Unstable' brand image and strong penetration of competing MNO
- Preference for more traditional, face-to-face learning
- Perceived high price per message (discussed in the following section)

Lack of marketing visibility not only means that potential users don't know about Airtel Kilimo, it also means that people who are aware of the service may not fully appreciate what the service is offering or how it can be useful to them. User testing performed in January 2014[21] revealed that the Airtel Kilimo promotional flyer did not help users to access the service, primarily because the font was too small for many users to see. Airtel Kilimo need to provide clear, legible instructions on marketing materials and test them with BOP users.

User testing also revealed the registration process was not straightforward and almost all of the farmers tested were unable to register without assistance.

The IVR registration menu was criticised during user testing as users couldn't locate the option for the Swahili menu – the default menu was in English. Language settings have since been moved to the first place in the menu, so users can experience the service in their preferred language from the start. Users asked for a more detailed service introduction when they call the IVR number to help them understand the purpose of the service and how to use it. Remembering the number for IVR was also an issue, as the IVR code (0900 730 760) is lengthy due to regulations imposed on all MNOs in Kenya.

Users generally enjoyed the experience with USSD more, mostly as the speed of the voice on IVR was deemed too fast. However, USSD also

suffered from timing issues – timeout was a huge problem, as users in many cases had never used a USSD menu before and didn't know how to go through the stages of the menu. This was a problem particularly for older users. The USSD short code (*760#) proved much easier for users to remember than the long IVR number.

Users preferred the USSD channel to register – but problems with the USSD menu (i.e. timeout) is a part of the technology and cannot be fixed.

➡ Improvements could focus on slowing down the voice, providing clearer introduction and instructions on the IVR registration.

➡ After the IVR menu has been improved, users who failed to complete the registration process via USSD could be directed to the IVR channel through engagement messaging. This will allow users who struggle with USSD to advance through the customer journey.

Registered users

Registered users have registered for the Airtel Kilimo service, but have not been able to continue on the customer journey by subscribing to a content stream. Twenty two percent of Airtel Kilimo customers are 'stuck' at this stage.

BARRIERS

- Unclear or complicated process for subscribing to content streams after registration
- Network issues
- Information on some important crops lacking
- Perceived high price may deter potential users from completing subscription

This group is not significantly different from the rest of the user base, displaying similar sex ratio and proportion of customers identifying themselves as farmers. In terms of land holding, this segment has a slightly higher proportion of larger farmers; 75% of this segment works on less than 5 acres land holding as compared to 82% across the whole customer base group. Registered users also appear more likely to engage in farming on a commercial basis than the entire customer base: 27% of registered non-users report that they usually sell all of their harvest, compared to 18% across the whole customer base.

➡ This group is more likely to contain farmers with more land and more disposable income, so appealing to them would be advantageous for Airtel.

Usage logs show that the majority (98%) of these customers have attempted to subscribe but failed to complete this step; the most crucial bottleneck of the registration stage occurs before the subscription process is completed. Customers appear to become frustrated with the subscription process and give up, or they are unaware that registering and subscribing to content of their choice is a two-step process. However, only 2% of customers at the register phase (0.4% of the entire customer base) made no attempt to subscribe after receiving a welcome message with the instruction on how to continue. It is likely that infrastructure issues such as network or application failure play a big part in this bottleneck. This problem requires further investigation since this large portion of potential customers has been hindered from progressing further to subscribe to receive content and becoming revenue generating customers.

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21. 15 farmers (9 female, 6 male) from Kiambu and Banana Hill (rural areas near Nairobi) were involved in user testing. None of the participants had used the services before.

Alternatively, users may be reaching subscription stage, only to find that the service has nothing to offer them in terms of content tailored to their preferences. Interviews and focus groups with Airtel Kilimo customers in Machakos County found a demand for information on horticulture crops – vegetables – which participants felt was not adequately met by the service at present. Demand for information on horticulture is likely to be higher around urban centres;[22] vegetables perish quickly, making transport over long distances difficult, so vegetables farmers tend to flourish near large markets in urban areas. Adding content streams for other vegetables may help increase subscriptions from farmers in these areas. Lessons from other mFarmer services[23] suggest that high-value cash crops are the highest interest crops for entrepreneurial smallholder farmers who are an important target audience for Agri VAS, as traditional information sources (e.g. fellow farmers) cannot typically provide quality support on these topics. At the time of writing, there were plans to add 17 new crops to the service in the near future (Table 1) increasing the potential value proposition.

Limited disposable income could also deter some users from subscribing to content. Around 75% of the customers participating in a focus group discussion in Machakos County stated that the current service cost of KSH 3 per SMS could be a hindrance to some farmers and should be reduced to KSH 1-1.5.

One customer expressed:

"Ksh. 3 per SMS is quite expensive; more so when two messages are sent in one day. This may make the farmers opt for other service providers such as Safaricom. I feel that messages should cost between 1-2 shillings."

Airtel should ensure that the cost of the service is in line with the target audiences' ability to pay.

22. The case study was conducted with farmers living near Machakos town.
23. Tigo Kilimo field work , NDA

Subscribed users

Users stuck at this stage have subscribed to content but have never received any messages from Airtel Kilimo. Almost half (41.4%) of Airtel Kilimo customers have successfully subscribed to receive information via at least one content stream, but have not been sent any content messages. Three quarters of customers at the subscriber stage of the customer journey have subscribed to receive content on maize or tomatoes.
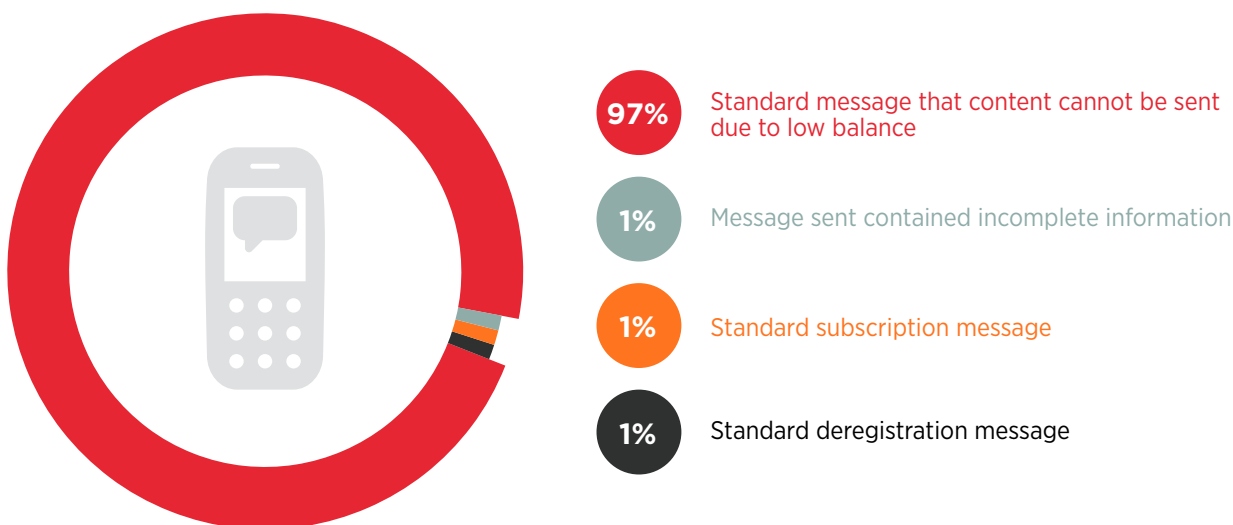
BARRIERS

- Subscribers have insufficient balance to receive messages
- System errors may be stopping content getting to users

The majority of subscribed users (54%) have not been sent any messages despite subscribing to at least one content stream. Analysis of usage logs for the period show that 97% of messages that were sent to this segment did not contain Airtel Kilimo content, but were standard messages informing the user that their content cannot be delivered due to low airtime balance (figure 3). Other messages (3%) were incomplete due to an uploading error,[24] or messages informing users they had subscribed or unsubscribed on certain content streams. If all of these users had received and paid for one content message, Airtel Kilimo would have seen increased total revenue of 25% over the baseline period.

Figure 3

Messages sent to Airtel Kilimo customers at the "subscriber" stage of the customer journey

97% Standard message that content cannot be sent due to low balance

1% Message sent contained incomplete information

1% Standard subscription message

1% Standard deregistration message

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24. Some said simply 'Dear farmer,'

Many users have low airtime balance which prevents them from receiving messages. Fears over costs of Airtel Kilimo messages could also discourage customers from topping up their Airtel SIM card, and therefore affect use of other Airtel services. Some of those interviewed stated that they avoided putting credit on their Airtel SIM cards (opting for another provider instead) as their Airtel credit would be automatically deducted by Airtel Kilimo.

➡ Pricing the service with the consumer in mind will ensure that the service becomes helpful rather than being a hindrance in gaining new customers and retaining old ones. Airtel Kilimo should consider introducing other pricing models (e.g. packages) that are simple, transparent to the customer and make it as easy as possible to receive messages. Freemium models have been successful in other mAgri supported services in allowing users to experience the value of the service before they decide whether they can afford the service or not. They could consider sending some information (e.g. weather information, which is not currently being used to its full potential) for free, whilst continuing to charge for 'premium' agricultural content.

It is also possible that content was not being sent to users due to system errors in some cases. Quick action should be taken to ensure that subscribers are receiving the content that they request.

➡ Ensure the source of the problem is identified and any technical faults are fixed.

Trial users

Users at the 'trial' and 'repeat use' stages (addressed in the next section) are the "revenue generating users", however only a small minority of Airtel Kilimo users (9%) are at this stage. Trial users have successfully subscribed to a content stream but have received content only once (i.e. one SMS message).

BARRIERS
- Subscription costs are too high
- Customers do not see value in the content they received

All trial users subscribed to maize content. Some users tried to subscribe to another content stream but did not complete the process. The demographic characteristics of this group are very similar to the customer base average.

78% of messages received by this group are 'low balance' messages. The majority of users in this group do not receive content due to low airtime levels, augmenting evidence from other groups that rural customers do not tend to keep sufficient airtime to pay 3 KSH/day for content (or more if they subscribe to multiple content streams).

➡ The reasons why trail users do not receive more than one message are similar to those in the other segments (low balance, possibly unsubscribing or technical failure). Similar actions should be taken to address these.

➡ Trial users have received one message from Airtel Kilimo and have seen the potential value of the content. Customers in this segment should be prioritized for marketing efforts as they have experienced the service already.

Repeat users

28% of customers have overcome the barriers of registering and subscribing to the service and have received multiple content messages, generating revenues for the service.

KEY FINDINGS

- 28% of Airtel Kilimo customers are repeat users
- 89% of sent messages in April and May 2014 were on maize
- Majority of field study participants remain cautious about using a new service like Airtel Kilimo as their primary information source; however, a few of those greatly appreciate it and have changed their behaviour accordingly

BARRIERS TO LONG-TERM REPEAT USE:

- Price of the service is too high
- Content perceived as too 'generic' and not relevant enough to farmers' needs

While repeat users are more likely to be male (71%) than the customer base average, this group share similar demographic characteristics with the customer base.
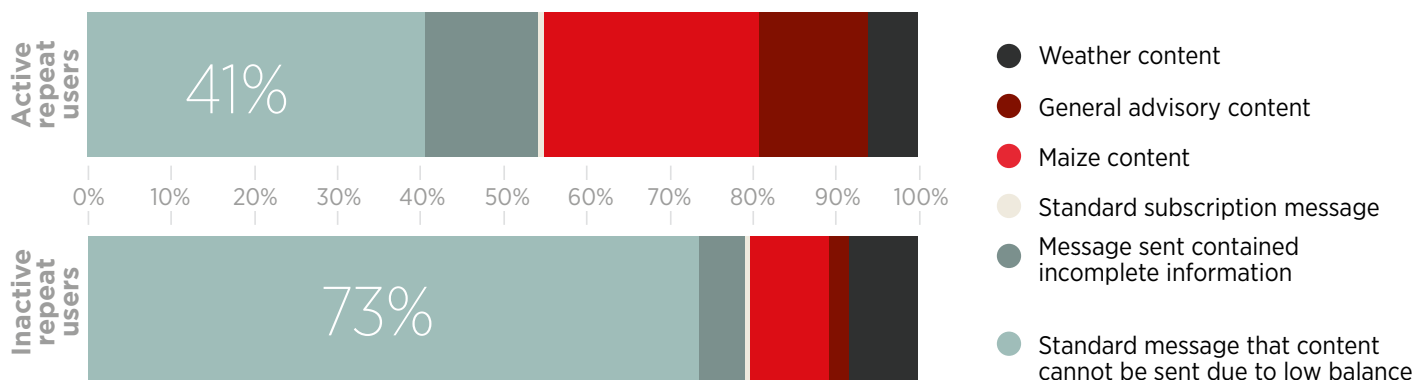
Most content messages sent were regarding maize (88%) with some messages were sent about tomato (4%), weather (3%), amaranthus and mango (both 2%) and Nerica rice (1%).

The majority (90%) of repeat users were active in May 2014; for those users who dropped out of the service, low balance appears to have been the main problem. Analysis of sent messages during April and May 2014 shows that inactive users were 32% more likely to receive a 'low balance' message than active users (figure 4). Note that no significant number of users (<1%) receive a message saying they have unsubscribed from their content stream, suggesting that users do not want to, or do not know how to, stop receiving content from Airtel Kilimo.

➡ Most customers leave the service because they can't afford the content. Airtel should consider alternative pricing options such as a freemium model.

Figure 4

Messages delivered to active and inactive repeat users during April and May 2014.

Legend:
- ● Weather content
- ● General advisory content
- ● Maize content
- ● Standard subscription message
- ● Message sent contained incomplete information
- ● Standard message that content cannot be sent due to low balance

Although 28% of customers have successfully subscribed to receive content from Airtel Kilimo and received multiple messages, focus group discussions and interviews with customers in Machakos County identified a number of issues with the content they received, which could undermine customer loyalty and long-term subscriptions.

Airtel Kilimo sends agriculture advisory messages to customers based on the content streams that they subscribe to, and the county they select when registering. The county selected is used to segment customers into broad ecological zones so that the messages they receive will be localized and timed according to the seasonal calendar for their selected crops. However, focus group discussions point to some potential issues with this process for delivering valuable content to customers through an SMS push service. First, testimony from interviewed customers suggests (as above) that some customers require information on crops which are not yet available or who have subscribed to (or are being delivered) irrelevant content:

"The information received from Airtel Kilimo is too general. It doesn't touch on the specific needs of us as farmers. You know sometimes we may not be growing similar crops all of us and being fed with information about crops that you don't grow may be expensive and irrelevant."

"…if a farmer grows tomatoes and is being fed with information relating to maize then that information is irrelevant to that farmer."

Second, some customers feel that the agriculture messages they receive do not coincide with the timing of the cropping cycle, suggesting that there is a flaw with the localized content:

"The information provided is not timely like if it is planting season and the information being provided pertains to harvesting, then that information is not well timed and does not serve the farmer's needs."

"Farmers in Makueni should be given information about fruits which they commonly grow while those from Machakos be provided with information relating to vegetables and dairy cattle."

Content for Airtel Kilimo is designed to be specific to a certain crop, agro-climatic zone and time of the season, so such complaints should not strictly arise with this service.

➡ To understand these cases, further tests should be conducted to ensure that customers are correctly receiving the content that they subscribed for.

➡ Airtel should ensure the content sent is relevant and timely by investing in a detailed seasonal crop calendar. Work with content partners to ensure their solutions are meeting farmer's needs.

These issues also point to the challenges of providing automated push content to large populations of farmers who reside across very large areas, while ensuring the messages are still relevant to individual farmers' specific needs and represent value for money. The addition of a pull service that allows farmers to search for information according to their own needs may help address some of these difficulties. Demand for a helpline service resonates with the findings from a mock call centre[25] set up for the purpose of user testing in January 2014. All the farmers in the test stated that they had no difficulty in accessing the service and expressed high satisfaction. They also express their willingness to pay the tariff of KSH 3-5/minute to be able to call an expert directly. Including a helpline would allow users to access truly bespoke information.

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25. A user test was implemented to examine the demand for a helpline and assess satisfaction of the response through installation of a mock call centre by CABI during January 2014. 15 users called an expert to ask questions (9/15 were farmers).

Airtel Kilimo and behaviour change in farmers

Three focus group participants (two of them women) claimed to have changed their agricultural practices by following Airtel Kilimo advices. One respondent testified that hearing the word kilimo (meaning agriculture in Kiswahili) motivated her to learn about the service.

"Because I am a farmer, I struggle much to find my way out of agricultural problems; when I heard of the word Kilimo this caught my attention."

Having had a positive experience with the service, she also stated the cost of the Airtel Kilimo service was "cheap" and "very minimal cost."

"To be frank with you I have never noticed that I pay for the messages. I only realized today during the panel interviews. So it is cheap, and available to the farmers."

These users cited making changes in crop spacing, grain drying, and fertilization (all maize related), and testified about the efficacy of the services by observing healthier crops.

"Yes, I have already made some few changes like how to space maize. I applied it and I can see that the crops are better than the ones I had before."

"I have changed how I used to dry my grain produce to avoid aflatoxin contamination as a result of information I was sent from Airtel Kilimo service."

"The information received has not brought in many changes in the way I manage my farm but as a result of that information, I have started using spray fertilizer and am noticing improvements in the way my crops are yielding out."

As a consequence, two of the participants report that they have already reduced dependency on other information sources but rely more on Airtel Kilimo by assessing that Airtel Kilimo provides trustworthy and balanced information.

"To some extent I have reduced using other sources of information even though it is to a minimal level."

"Airtel Kilimo information is reliable because it is not aimed at marketing certain products, that is, the information is neutral since it is not aimed at promoting certain farm inputs."

➡ Airtel could use testimonials in marketing campaigns to illustrate how the service provides value, paying for itself by improving crop health.

Next steps

The methodology for the baseline study in this report provides actionable insights and business intelligence to the service provider as well as to the wider mobile agriculture industry. This is because we recognise that the success of business-lead services could be more adequately assessed by a business-oriented framework and appropriate user segmentation. Structured business intelligence insights combined with qualitative data collection are more likely to result in the 'learning' component than a single report on progress against a set of indicators. The mFarmer initiative intends to apply a segmentation approach when analysing the behaviour change within the target population across all four mFarmer projects. It will also assess the impact created within the segments of users with higher likelihood for changes in income and livelihood, such as repeat and power users, for one of the selected projects.

Methodology

The baseline survey was carried out through a combination of three methods: user log analysis, a phone survey of 505 Airtel Kilimo customers, and a field study conducted in Machakos County (south-eastern Kenya) using focus group discussions (FGDs) and interviews with service customers and key informants.

User log analysis covered the period of April – May 2014. It was intended that all data since service launch would have been used – however inconsistencies in the data before April 2014 made this impossible. The analysis is based around the MMU customer journey framework and further work outlined in the Mobile User Analytics Tool case study by the M4D Impact team.

ISON conducted a phone survey towards 2,345 registered numbers and obtained 22% of success rate (505 samples) between April and May 2014. Based on the survey guidance prepared by Firetail, the call centre operators asked the confirmation of survey cooperation as well as the questions primarily around each user's socio-economic status. Firetail then cleaned and analysed the collected data to evaluate the generalised socio-economic image of Airtel Kilimo users' characteristics. The analysis also concentrated on calculation of progress out of poverty index (PPI) score of the Airtel Kilimo users and the comparison of it against both Kenyan national and international poverty line.

Finally, field study was conducted by a local consultant from mid to end of May 2014 in Machakos County (located in the south east of Nairobi) which had one of the highest numbers of new subscribers from February to March 2014. Field study consisted of three elements: FGDs, in-depth interviews, and key informant interviews. For identification of FGD and in-depth interview participants, first, pre-screening survey and the further analysis identified 2 geographical clusters[26] of subscribers. Then, confirmation of participation and replacement of unavailable participants were done until the study secured 20 participants (10 participants for one FGD). The actual attendance of the FGD days was 6 participants for FGD Group-1 (2 women and 4 men) and 9 for FGD Group-2 (5 women and 4 men). The consultant then carried out in-depth interviews after FGDs with 7 FGD participants. Informant interviews were conducted with nine key actors in local agricultural sector[27]. While a semi-structured questionnaire was employed for informant interviews, discussion guide and interview guide were separately prepared for FGDs and in-depth interviews. Matrix and mapping were also introduced during two FGDs to identify farmers' information needs and existing agronomy information sources available to farmers. One of the most critical limitations was that the study could not conduct a scheduled interview with a public extension worker due to another engagement.

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26. Mumbuni, Kimutwa, Katheka Kai, Mua and Mitaboni.
27. These actors include village chief, farmers' credit organization branch manager, senior church members, business person, secondary school teacher, etc.