

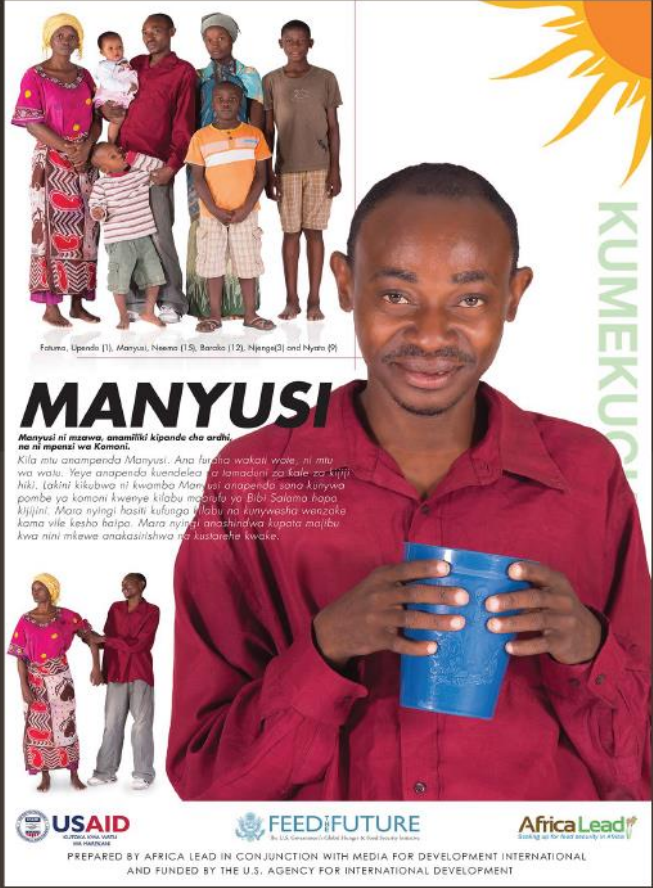
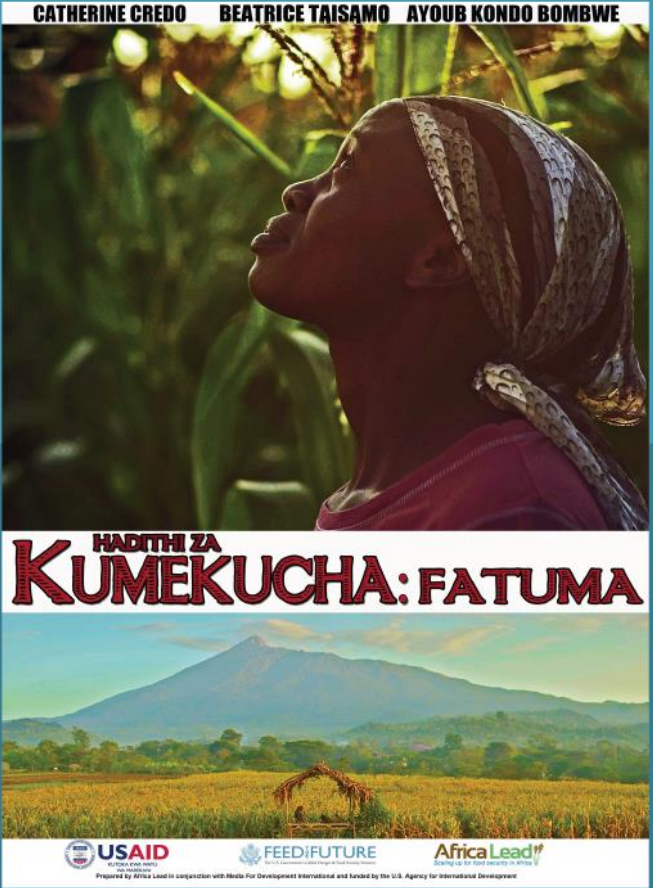


Evaluation of *Kumekucha*: An Agricultural Edu-Media Campaign

FEED THE FUTURE: BUILDING CAPACITY FOR AFRICAN AGRICULTURAL TRANSFORMATION (AFRICA LEAD II)

This publication was produced on November 2018

This publication was produced by the Feed the Future: Building Capacity for African Agricultural Transformation Project (Africa Lead II) for the United States Agency for International Development.



Evaluation of Kumekucha: An Agricultural Edu-Media Campaign

Program Title:	Feed the Future: Building Capacity for African Agricultural Transformation (Africa Lead II)
Sponsoring USAID Office:	USAID Bureau of Food Security
Award Number:	AID-OAA-A13-00085
Awardee:	DAI
Date of Publication:	November 2018
Author:	IPSOS Tanzania (Research Team: Samuel Muthoka, Evangeline Wanyama)
Cover photo credit:	Africa Lead

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

CONTENTS

EXECUTIVE SUMMARY	2
INTRODUCTION	7
1.1 BACKGROUND OF KUMEKUCHA MEDIA PROGRAMING	7
1.2 PURPOSE OF THE EVALUATION	8
1.3 EVALUATION QUESTIONS	8
METHODOLOGY	9
2.1 EVALUATION DESIGN	9
2.2 QUANTITATIVE SURVEYS (BASELINE AND END-LINE)	10
2.3 MONTHLY TELEPHONE “TRACKING” INTERVIEWS	11
2.4 QUALITATIVE FOCUS-GROUP DISCUSSIONS (BASELINE AND END-LINE)	12
2.5 ANALYTICAL APPROACH	12
2.6 METHODOLOGICAL LIMITATIONS	13
FINDINGS	15
3.1 CHANGES IN KNOWLEDGE AS A RESULT OF EXPOSURE TO KUMEKUCHA	15
3.2 CHANGES IN PERCEPTION AS A RESULT OF EXPOSURE TO KUMEKUCHA	21
3.3 CHANGES IN PRACTICES AS A RESULT OF EXPOSURE TO KUMEKUCHA	25
3.4 BARRIERS TO BEHAVIOR CHANGE	30
3.5 KUMEKUCHA’S REACH AND VIEWERSHIP	30
3.6 PERCEPTIONS OF KUMEKUCHA	32
RECOMMENDATIONS	32
CONCLUSION	35
APPENDIX	36
6.1 REQUIRED SAMPLE SIZE FORMULA & ASSUMPTIONS	36
6.2 DIFFERENCE-IN-DIFFERENCE ANALYSIS	36
6.3 DESCRIPTIVE FINDINGS	38

EXECUTIVE SUMMARY

Africa Lead II engaged Media for Development International (MFDI) to design and implement *Kumekucha*, a multi-media campaign broadcasting educational content on agriculture. Kumekucha's goal was to improve Tanzanian women and youth's knowledge, perception, and practices in modern farming, agricultural leadership, and agribusiness along the agricultural value chain.

Africa Lead commissioned this evaluation to measure Kumekucha's impact on women and youth's knowledge, perception, and practices in modern farming, agricultural leadership, and agribusiness along the agricultural value chain.

The evaluation targets women and youth living in rural and urban households in the Southern Agricultural Corridor of Tanzania (SAGCOT). Quantitative surveys and qualitative focus-group discussions (FGDs) were conducted at the baseline and end-line of the program. The baseline evaluation was conducted in June-July 2016; the end-line, in April - May 2018.

This report presents the evaluation's findings and resulting conclusions and recommendations for future campaigns.

Overall, the findings indicate that the Kumekucha campaign had a positive impact on youth and women's knowledge and practices around agriculture as a source of income, technology in agriculture, leveraging collaboration and linkages in farming, and sources of income. In almost all spheres, this impact on knowledge translated to an impact on attitudes and practices. Women and youth showed increased knowledge of the benefits of involving women in decision-making, however changes in practice with regards to the engagement of women in financial and farming decision-making lagged far behind.

METHODOLOGY

The Kumekucha impact evaluation employed a quasi-experimental¹, difference-in-difference (DiD)² design. Its mixed-methods approach consisted of baseline and end-line quantitative panel surveys and qualitative focus-group discussions (FGDs).

After the baseline panel survey and FGDs, respondents took part in 12 monthly telephone interviews (CATIs). These interviews established which respondents had listened to or viewed Kumekucha programs over each previous month. By the end of the first year, respondents could be grouped by level of listener/viewership of Kumekucha (see definition boxes on page right).

At the end-line, 2,547 respondents were interviewed from households in rural and urban locations across three regions of Tanzania's SAGCOT: Mbeya, Iringa and Morogoro.

Individuals identified as low- and high-intensity listeners/viewers of Kumekucha were invited to take part in FGDs at end-line. Respondents involved in the FGDs were grouped according to age and sample group (women or youth). These sessions provided an in-depth understanding of the knowledge, perception, and practices of each target population. They also provided insights into the context in which the quantitative findings occurred.

Non-listeners/viewers: respondents who had not listened to or watched Kumekucha.

High-intensity listeners/viewers: respondents who had listened to at least three Kumekucha radio drama episodes of Kumekucha on radio and/or watched a Kumekucha video on any platform (i.e. TV, YouTube, Movie Banda)

¹ Quasi-experimental designs capture data for two or more study groups including an intervention and a comparison group.

² DiD analyses determine the causal impact of an intervention by studying the differences between baseline to end-line (difference 1) and between an intervention group and a comparison group (difference 2).

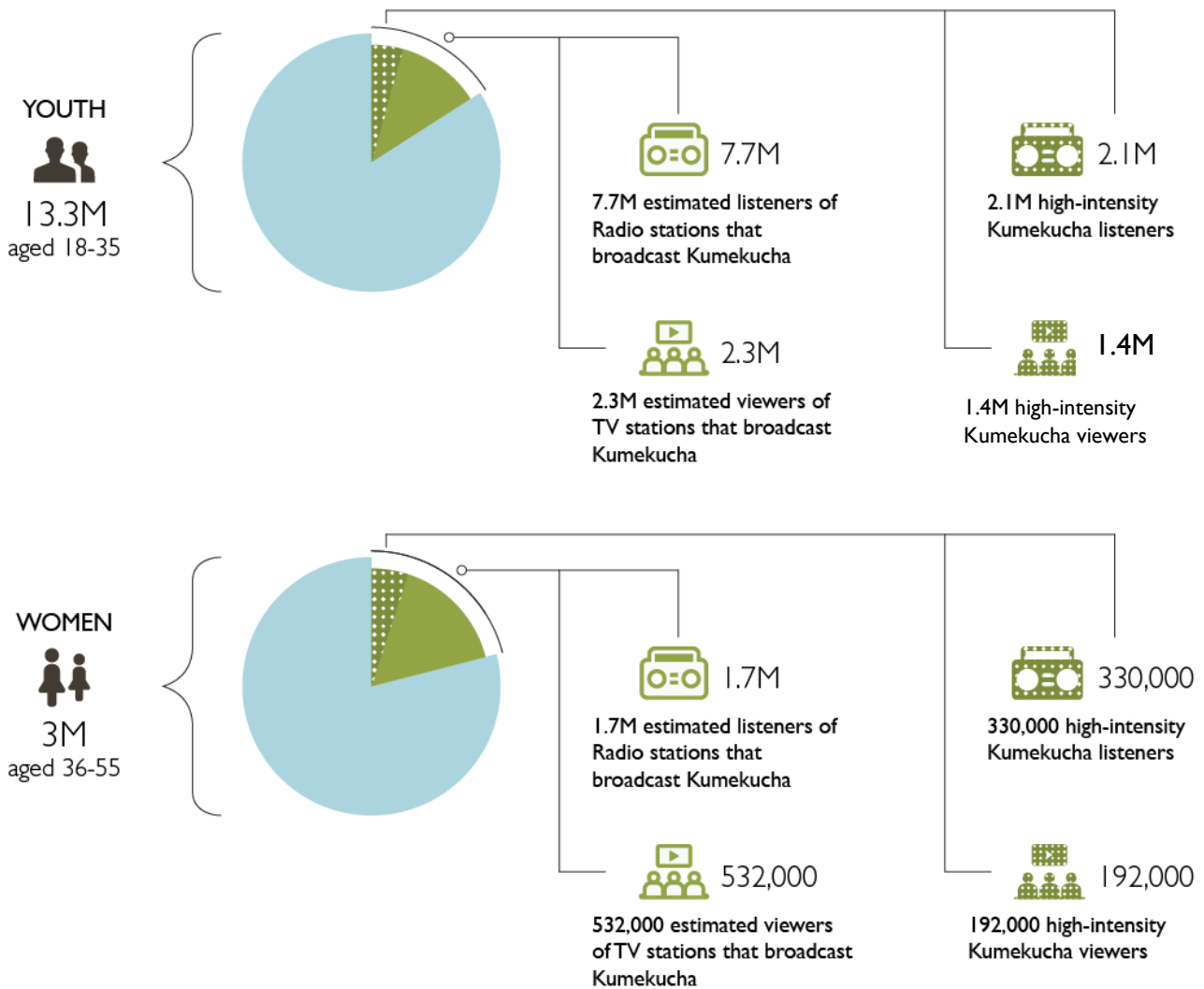
KEY FINDINGS

- **Kumekucha listener/viewership had a positive impact on awareness of income-generating activities beyond farming, particularly hawking/animal produce. It did not show significant impact on other specific agricultural value chain knowledge.** Among women and youth, high-intensity listeners/viewers' scores relating to awareness of income-generating activities beyond farming increased significantly more than non-listeners/viewers'. However, Kumekucha's impact was primarily focused on areas of the agricultural value chain where individuals already demonstrated high-levels of awareness.
- **Kumekucha listener/viewership had a positive impact on knowledge of market information sources. Knowledge of women groups and agricultural shows increased significantly.** Among women, an 18.10% increase in awareness of agricultural shows and a 7.78% increase in awareness of women groups as sources of market information may be attributed to Kumekucha listener/viewership. Increases of 8.14% and 11.8% respectively may be attributed to Kumekucha listener/viewership among the youth interviewed. This might indicate that Kumekucha was effective in reducing reliance on informal channels of information and elevated the use of more formal sources.
- **Kumekucha listener/viewership had some positive impact on awareness and use of agricultural technologies. It had no impact on knowledge and use of mobile-based technologies.** High-intensity Kumekucha listener/viewership contributed to an increased likelihood of taking up the selling farm produce and cattle rearing in the two years between baseline and end-line.
- **Kumekucha had a positive impact on youth knowledge of the benefits of involving women in agricultural decision-making, both financial and farming. This impact did not extend to changes in practices.** According to respondents' self-reporting, Kumekucha's messages relating to the empowerment of women and their involvement in decision making and messages promoting agriculture as a business had the strongest reach. This was reflected in Kumekucha's measured impact on knowledge of the benefits of involving women in decision-making; however, this was not enough to graduate individuals into making changes to their practices and behaviors.
- **Kumekucha listener/viewership had a positive impact on willingness to collaborate with government agricultural agencies.** Kumekucha's impact on collaboration and linkages with other entities was not significant in the quantitative analysis, however the statement that "farmers lose agricultural produce through fraudulent middle men" came the fifth in a ranking of the main messages taken from Kumekucha according to high-intensity listeners/viewers. This negative messaging may have played an important role in this shift towards formal collaborations among high-intensity listeners/viewers.

KUMEKUCHA LISTENER/VIEWERSHIP

In total, the Kumekucha campaign was listened to and viewed by an estimated 4.6 million youth and 686,000 women in Tanzania, of which 3.4 million and 522,000 were high-intensity viewers.

Graph 14: Audience Estimation for Kumekucha's Radio and TV Campaigns



LIMITATIONS

The intervention and comparison groups were selected as a result of exposure to the program (ex-post) rather than through random allocation (ex-ante). It is possible that assignment to the high-intensity listener/viewer group was correlated with confounding variables, such as being more likely to be sensitive to media programs pertaining to agriculture topics in the first place.

Agricultural households were overrepresented relative to non-agricultural households in the sample. This is a result of focusing the survey in the SAGCOT, where 90% of the respondents surveyed were engaged in at least one agricultural activity as an occupation.

The monthly CATI tracking survey required that panel members either own or have access to a working mobile phone to participate. Even with a penetration of over 70% of mobile phone access in Tanzania, there were panel members with limited or no access to a mobile phone during the data collection period who were thus excluded from the CATI survey.

Samples were critically unbalanced at baseline and end-line. The PSM did not adequately control for education, device ownership, or exposure to other agricultural education programs. The analysis initially compared individuals who had been exposed to Kumekucha (whether once or twice, or as high-intensity listeners/viewers) to a group combining individuals who had not engaged with any edu-media agricultural programs and some who had. The analysis had to be repeated using new intervention and comparison

groups to better control for exposure to agricultural education programs. The “non-listeners/viewers” referred to throughout this document were selected for having viewed other agricultural programs not including Kumekucha. This dramatically reduced the sample size, but allowed for more consistent comparisons and appropriate impact attribution.

Non-listeners/viewers were excluded from the end-line FGDs. There was therefore no comparison group for the qualitative aspect of this evaluation, making impact attribution impossible to draw from the FGDs excepting selected self-reported statements.

There was evidence of leading questions and experimenter demand. When asked where they first encountered Kumekucha, respondents mentioned a number of platforms that were not part of the campaign. Respondents were contacted once a month for CATIs. This frequent contact may have led some respondents to report that they had listened/watched Kumekucha. It’s plausible that some of the individuals identified as listeners/viewers of Kumekucha had not in fact engaged with the campaign.

RECOMMENDATIONS

RECOMMENDATION 1

Improve the aspects of this campaign which were ineffective in changing perceptions as these were an important indicator for changes in practices and behaviors.

The evaluation did not measure any significant impacts of Kumekucha on high-intensity listeners/viewers’ perception of agriculture as a source of income.

RECOMMENDATION 2

Take a closer look at knowledge of and barriers to engagement with mobile-based technologies.

Kumekucha listener/viewership had some positive impact on awareness and use of agricultural technologies; however, this impact did not extend to newer mobile-based technologies. Mobile-based technologies were mentioned by less than 1% of high-intensity listeners/viewers at baseline and end-line, despite 95% reporting mobile phone ownership.

Use mobile phone technology to reach larger audiences. While radio remains key in reaching the SAGCOT region and by extension the majority of the rural populations at large, the high penetration of mobile phones suggests a growing point of contact that can be used to reach larger audiences (SMS, USSD, and Apps among others).

RECOMMENDATION 3

Consider effective ways of improving knowledge of underexploited income-generating activities along the agricultural value chain in order to influence changes in practice. Kumekucha listener/viewership had a positive impact on awareness of income-generating activities beyond farming, but showed no significant impact on specific agricultural value chain knowledge beyond hawking farm/animal produce. These areas of impact were reflected in respondents' agricultural practices.

RECOMMENDATION 4

Improve reach among individuals with lower levels of education. Listeners/viewership of edu-media agricultural programs was closely tied to higher levels of education. Future programming must consider modes of delivery, actors, and language of use for a more balanced reach.

RECOMMENDATION 5

Ensure that messaging around collaboration presents collaboration with government agricultural agencies as part of a broad set of possible linkages and does not paint other more informal collaborations in a negative light.

In line with Kumekucha messaging, high-intensity listeners/viewers were on average 9.8% more likely to be willing to collaborate with government agricultural agencies, alongside this increase high-intensity listeners/viewers reported a decrease in collaboration within more informal networks.

RECOMMENDATION 6

Substantial improvements need to be made around messaging on involving women in decision-making. It is particularly important that these campaigns are better targeted at men, not only women, as it seems plausible that they are the gate keepers to practical changes in this aspect.

Contrary to changes in agricultural activities and use of agricultural technologies, changes in the involvement of women in decision making relating to financial and farming matters did not improve between baseline and end-line among non-listeners/viewers and high-intensity listeners/viewers, despite the positive impacts on knowledge of the benefits of the involvement of women attributed to Kumekucha.

INTRODUCTION

1.1 BACKGROUND OF KUMEKUCHA MEDIA PROGRAMING

Africa Lead II engaged Media for Development International (MFDI) to design and implement *Kumekucha*: a multi-media campaign broadcasting educational content on agriculture.

Kumekucha's goal was to improve Tanzanian women and youth's knowledge, perception, and practices in modern farming, agricultural leadership, and agribusiness along the agricultural value chain.

MFDI broadcast Kumekucha in Tanzania between June 2016 and February 2018. The campaign consisted of:

	52 Radio drama episodes	 30 mins
	104 Radio spots/public service announcements	 30-60 secs
	1 TV series	 -
	2 Feature films (Tunu & Fatuma)	 90 mins
	8 Television spots/public service announcements	 60 secs

Africa Lead and MFDI designed Kumekucha in response to a context of underexploited economic opportunities for women and youth within the agricultural value chain.

The World Bank estimates that three-quarters of the world's poor live in rural areas and that 86% of these individuals are dependent on agriculture as their main source of income and employment.³ Increasing agricultural productivity and income thus addresses many issues including poverty, food security, malnutrition, gender disparities, and youth economic opportunities.

The Food and Agriculture Organization (FAO) reports that women produce 60-80% of food in the developing world and 50% globally.⁴ Reflecting this global trend and despite their limited decision-making power and access to resources compared to men,⁵ women make up 52% of Tanzania's agricultural labor force and perform most of the sector's labor activities.⁶ Meanwhile, youth constitute over 60% of the world's population and are, according to a working paper by the Institute of Development Studies (IDS), minimally engaged in agriculture.⁷

1.2 PURPOSE OF THE EVALUATION

³ The World Bank (undated): World Development Report 2008: Agriculture for Development[online]. Available at <https://openknowledge.worldbank.org/handle/10986/5990> (Accessed in May 2017)

⁴ FAO 2011, *The role of women in agriculture*, Available at <http://www.fao.org/docrep/013/am307e/am307e00.pdf> (Accessed October 2018)

⁵ AIDOS (undated) *Women and sustainable food security* [Online]. Available at <http://www.fao.org/docrep/x0171e/x0171e02.htm> (Accessed 21st June 2018)

⁶ Ministry of Health, Community Development, Gender, Elderly and Children (MoHCGEC) (undated) *Gender and Economic Growth in Tanzania; Creating Opportunities for Women* [online]. Available at http://www.mcdgc.go.tz/index.php/publications/more/gender_and_economic_growth_in_tanzania_creating_opportunities_for_women/ (Accessed in May 2017).

⁷ Institute of Development Studies, *Who Wants to Farm? Youth Aspirations, Opportunities and Rising Food Prices* [Online]. Available at <https://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/3550/Wp439r.pdf?sequence=4> (Accessed in August)

Africa Lead II commissioned this evaluation to measure the impact of the Kumekucha program, on women and youth's knowledge, perception, and practices in modern farming, agricultural leadership, and agribusiness along the agricultural value chain.

The evaluation targets women and youth living in rural and urban households in the Southern Agricultural Corridor of Tanzania (SAGCOT). Quantitative surveys and qualitative focus-group discussions (FGDs) were conducted at the baseline and end-line of the program. The baseline evaluation was conducted in June-July 2016; the end-line, in April-May 2018.

1.3 EVALUATION QUESTIONS

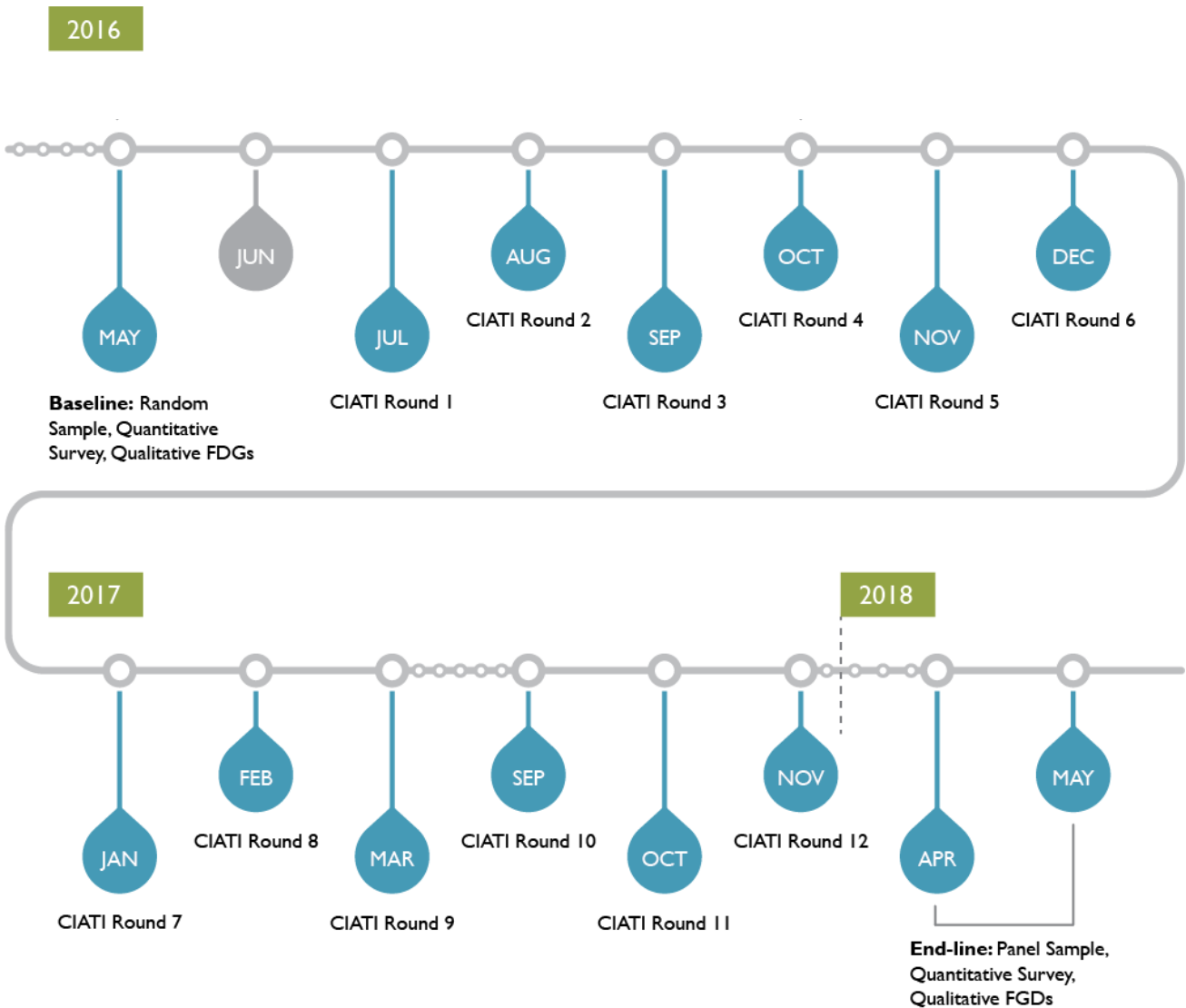
The Kumekucha impact evaluation seeks to answer the following questions:

1. What changes in **knowledge**, if any, has Kumekucha contributed to?
2. What changes in **perception**, if any, has Kumekucha contributed to?
3. What changes in **practices**, if any, has Kumekucha contributed to?

METHODOLOGY

2.1 EVALUATION DESIGN

The Kumekucha impact evaluation employed a quasi-experimental⁸, difference-in-difference (DiD)⁹ design. Its mixed-methods approach consisted of baseline and end-line quantitative panel surveys and qualitative focus-group discussions (FGDs):



After the baseline panel survey and FGDs, study respondents took part in monthly telephone interviews over the course of the first year of Kumekucha’s campaign. These interviews established which respondents had listened to or viewed Kumekucha programs over each previous month. By the end of the first year, respondents could be grouped by listener/viewership of Kumekucha, as follows:

⁸ Quasi-experimental designs capture data for two or more study groups including an intervention and a comparison group.

⁹ DiD analyses determine the causal impact of an intervention by studying the differences between baseline to end-line (difference 1) and between an intervention group and a comparison group (difference 2).

Non-listeners/viewers:
respondents who had not listened
to or watched Kumekucha

High-intensity listeners/viewers:
respondents who had listened to at least three
Kumekucha radio drama episodes of Kumekucha
on radio and/or watched a Kumekucha video on
any platform (i.e. TV, YouTube, Movie Banda)

For the purposes of the DiD analyses, high-intensity Kumekucha listeners/viewers were matched¹⁰ against non-listeners/viewers to control for age, gender, education level, and viewership of other agricultural programs.

2.2 QUANTITATIVE SURVEYS (BASELINE AND END-LINE)

2.2.1 QUANTITATIVE SAMPLE SIZE AND DISTRIBUTION

In total, 2,547 respondents out of the 4,224 interviewed at baseline, were interviewed at the end-line survey.

Although two of the stations broadcasting Kumekucha (TBCI and TVI) have a national reach, Kumekucha was targeted at farming communities, which are most strongly concentrated within the SAGCOT. The panel survey sample was therefore carried out in households in rural and urban locations across three regions of Tanzania's SAGCOT: Mbeya, Iringa and Morogoro.

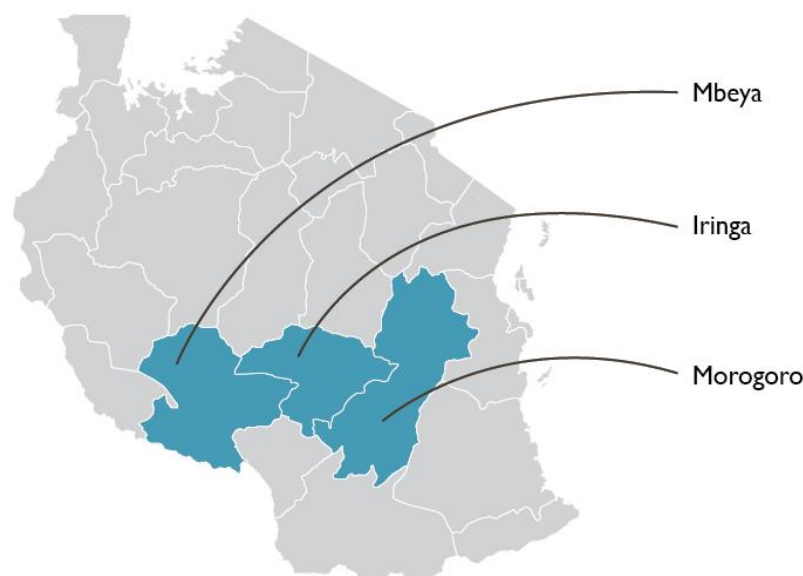


Figure 1: Map of the Regions Evaluated within the SAGCOT

The sample consisted of two groups: women aged 36-55 years and youth aged 18-35 years¹¹ (male and female). These were distributed by geographical location and urban/rural residence proportional to the share of women and youth in the overall population (according to the latest Tanzanian National Census in 2012).

As expected between baseline and end-line panel surveys, there was some attrition of respondents. This attrition affected distribution ratios across the board.

¹⁰ Propensity score matching is a statistical method used to find a comparison control group (in this case, non-listeners/viewers) with similar characteristics as the intervention group(s) (Kumekucha listeners/viewers) to account for other variables that may influence the difference between the samples on the outcomes being tested. Specifically, a statistical model (binary regression model) is built that estimates a propensity score for each respondent. Non-listeners/viewers are matched to listeners/viewers based on this score.

¹¹ This definition of youth was adopted from Tanzania's legal classification of youth.

Table 1: Baseline versus End-line Achieved Quantitative Sample

		Baseline	End-line	% Attrition Rate
	TOTAL	4,224	2,574	50.73%
SETTING	Rural	3,127	2,081	39.82%
	Urban	1,097	466	45.94%
SAMPLE CATEGORY	Youth	2,112	1,168	44.70%
	Women	2,112	1,379	34.71%
REGION	Iringa	675	406	39.85%
	Mbeya	1,956	1,243	36.45%
	Morogoro	1,593	898	43.63%

2.2.2 QUANTITATIVE METHODS

Respondents for the baseline survey were randomly sampled by household. The survey questionnaire was administered in electronic format using hand-held devices. It took an average of 45 minutes to administer. The end-line survey was administered to the same respondents selected and surveyed at baseline.

The baseline and end-line surveys presented a series of questions measuring knowledge, perception, and practices in various aspects of agribusiness. The surveys consisted of open and closed-ended questions, alongside a series of statements for each thematic area with a 10-point scale for respondents to choose from (1 - completely disagree, 10 - completely agree).

2.3 MONTHLY TELEPHONE “TRACKING” INTERVIEWS

Following the baseline quantitative surveys, respondents were tracked and evaluated through computer-aided telephonic interviews (CATI). The 12 CATIs comprised of ten-minute, telephone-based tracking surveys, conducted once a month. These measured the panel’s media consumption habits and exposure to the Kumekucha program. The CATIs ran from July 2016 to November 2017 and were completed before the end-line assessment, which was conducted in April - May 2018. The aim of the CATIs was to establish which respondents had listened to or watched Kumekucha programs over the previous month, and eventually to assign respondents to either the high-intensity listener/viewer or the non-listener/viewer groups.

2.4 QUALITATIVE FOCUS-GROUP DISCUSSIONS (BASELINE AND END-LINE)

2.4.1 QUALITATIVE METHODS

A total of 16 FGDs were carried out with women and youth living in the SAGCOT; eight at baseline and eight at end-line. The FGDs were semi-structured, facilitated discussions with 6-10 respondents. The end-line FGDs involved only of individuals identified as listeners/viewers of Kumekucha (both high- and low-intensity).

Respondents involved in the FGDs were grouped according to age and sample group (women or youth). The FGDs provided an in-depth understanding of the knowledge, perception, and practices of each target population. They also provided insights into the context in which the quantitative findings occurred.

2.5 ANALYTICAL APPROACH

Kumekucha aired content related to a set of six consistent agricultural themes across the life of the campaign:

- Agriculture as a source of income
- Agricultural value chains
- Marketing farm produce, capital sourcing, and creating linkages/collaboration
- Technology in agriculture
- Women in decision making in agriculture
- Nutrition and agriculture

In the analysis, changes in each of these agricultural themes were examined through three distinct questions:

1. What changes in **knowledge**, if any, has Kumekucha contributed to?
2. What changes in **perception**, if any, has Kumekucha contributed to?
3. What changes in **practices**, if any, has Kumekucha contributed to?

DiD analysis was carried out between high-intensity and non-listeners/viewers wherever consistent survey data for baseline and end-line was available. Chi-square testing was also used to determine statistical differences between the two groups. Only statistically significant differences are included in the main findings.

Qualitative data, such as self-reported changes in knowledge, attitude, and behavior, are used to support the quantitative findings. Conclusions draw on both qualitative and quantitative analysis.

2.6 METHODOLOGICAL LIMITATIONS

2.6.1 SELF-SELECTION BIAS

The intervention and comparison groups were selected as a result of exposure to the program (ex-post) rather than through random allocation (ex-ante). It is possible that assignment to the high-intensity listener/viewer group was correlated with confounding variables, such as being more likely to be sensitive to media programs pertaining to agriculture topics in the first place.

2.6.2 SAMPLING BIAS

While quasi-experimental designs can limit the amount of sampling bias in the sample, they typically cannot eliminate it entirely.

Agricultural households were over-represented relative to non-agricultural households in the sample. This is a result of focusing the survey in the SAGCOT, where 90% of the respondents surveyed are engaged in at least one agricultural activity as an occupation.

There was a disproportionate share of respondents in the sample engaged in the basic agricultural activities of ‘crop farming’ and ‘animal rearing,’ as opposed to respondents engaged in other activities along the agricultural value chain.

The monthly CATI tracking survey required that panel members either own or have access to a working mobile phone to participate. Despite mobile phone penetration of over 70% in Tanzania, some panel members had limited or no access to a mobile phone during the data collection period and were therefore excluded from the CATI survey.

2.6.3 UNBALANCED SAMPLES

Samples were critically unbalanced at baseline and end-line. The PSM did not adequately control for education, device ownership, or exposure to other agricultural education programs. The analysis initially compared individuals who had been exposed to Kumekucha (whether once or twice, or as high-intensity listeners/viewers) to a group combining individuals who had not engaged with any edu-media agricultural programs and some who had. The analysis had to be repeated using new intervention and comparison groups to better control for exposure to agricultural education programs. The “non-listeners/viewers” referred to throughout this document were selected for having viewed other agricultural programs not including Kumekucha. This dramatically reduced the sample size but allowed for more consistent comparisons and appropriate impact attribution.

2.6.3 IMPACT ATTRIBUTION

In some areas of in-depth thematic analysis, baseline vs end-line data was unavailable. In these instances, changes in knowledge, perception, and practices are studied between high-intensity Kumekucha listeners/viewers and non-listeners/viewers at end-line only. Looking at end-line data only, it is impossible to verify whether the differences between the two groups were pre-existing. Attribution of impact to Kumekucha within this evaluation is therefore often limited to instances where the self-reported impacts back-up the quantitative end-line results.

Non-listeners/viewers were excluded from the end-line FGDs. There was therefore no comparison group for the qualitative aspect of this evaluation, making impact attribution impossible to draw from the FGDs excepting selected self-reported statements.

None of the respondents reported awareness of Kumekucha’s YouTube and Facebook campaigns. This makes it impossible to draw conclusions on their effect on knowledge, perception, and practices among the target population.

2.6.4 EXPERIMENTER DEMAND

There is suggestion that a leading questioning style was used during the telephone interviews and FGDs. There were some unexplained dramatic changes from baseline to end-line, for example in ownership/access to radios. During the FGDs, respondents were prompted to list the main messages they had picked up from the Kumekucha campaign.

There was evidence of experimenter demand. When asked where they first encountered Kumekucha, respondents mentioned a number of platforms that were not part of the campaign. Respondents were contacted once a month for CATIs. This frequent contact may have led some respondents to report that they had listened/watched Kumekucha. It's plausible that some of the individuals identified as listeners/viewers of Kumekucha had not in fact engaged with the campaign.

The 10-point scale questions had no dummy or control statements and came towards the end of a very long survey (average completion time of 45 minutes). Additionally, sets of statements were repeated across similar questions.

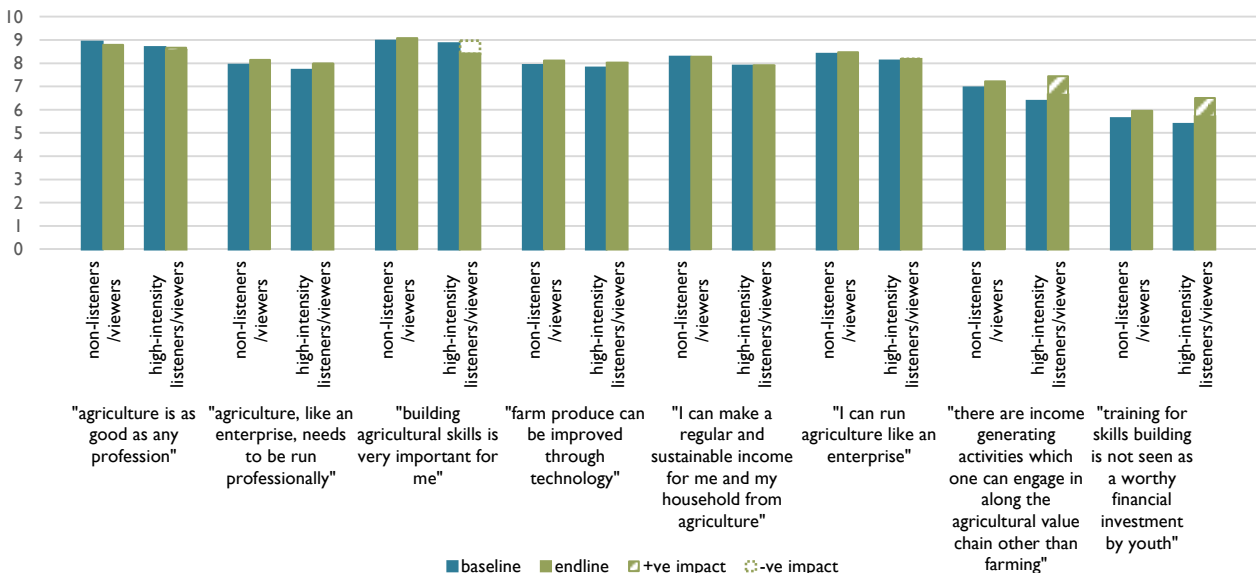
FINDINGS

3.1 CHANGES IN KNOWLEDGE AS A RESULT OF EXPOSURE TO KUMEKUCHA

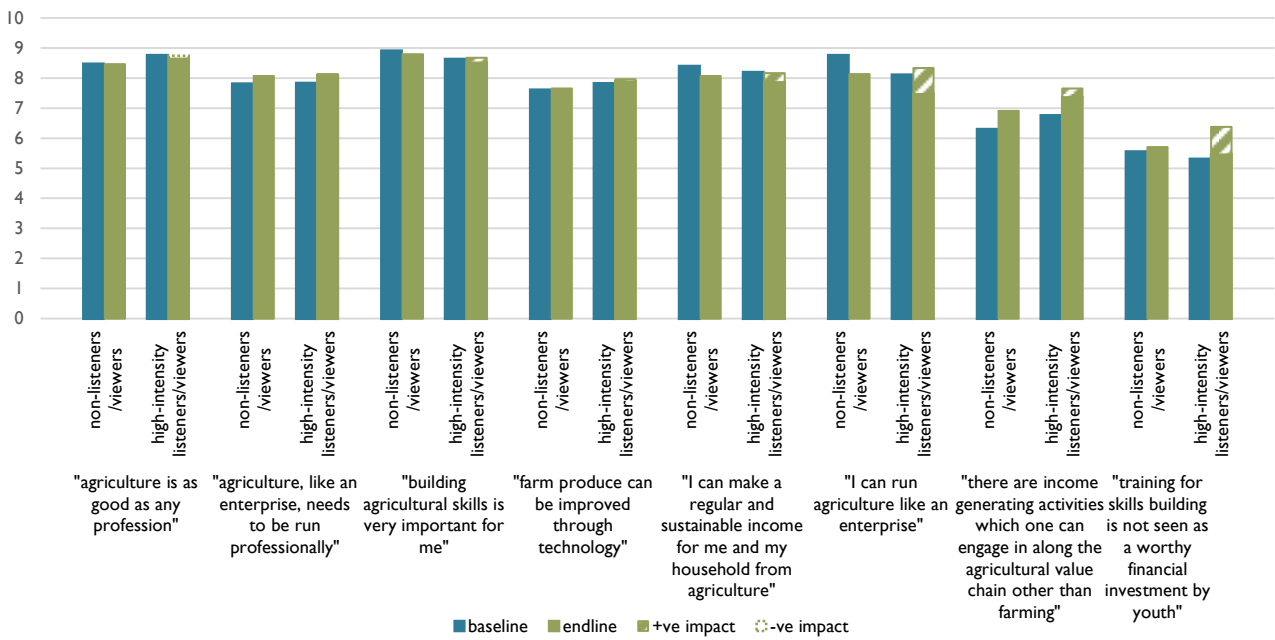
Kumekucha listener/viewership had a positive impact on awareness of income-generating activities beyond farming, particularly hawking/animal produce. It did not show significant impact on other specific agricultural value chain knowledge.

At baseline and end-line, respondents scored statements about agriculture as a source of income from 0-10 (0 – disagree, 10 – agree completely). Among women and youth, high-intensity viewers/listeners’ scores relating to awareness of income-generating activities beyond farming increased significantly more than non-viewers/listeners’ (see scores for “There are income generating activities which one can engage in along the agricultural value chain other than farming” in Graph I below).

Graph I.1: Statement Scores on Knowledge of Agriculture as a Source of Income (Women)



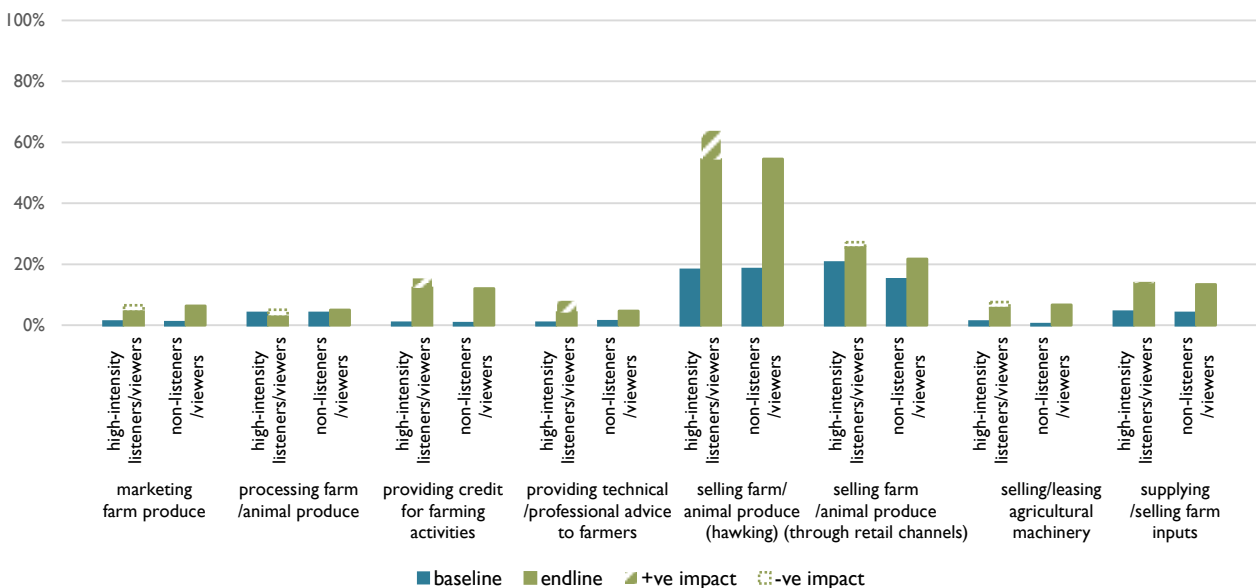
Graph 1.2: Statement Scores on Knowledge of Agriculture as a Source of Income (Youth)



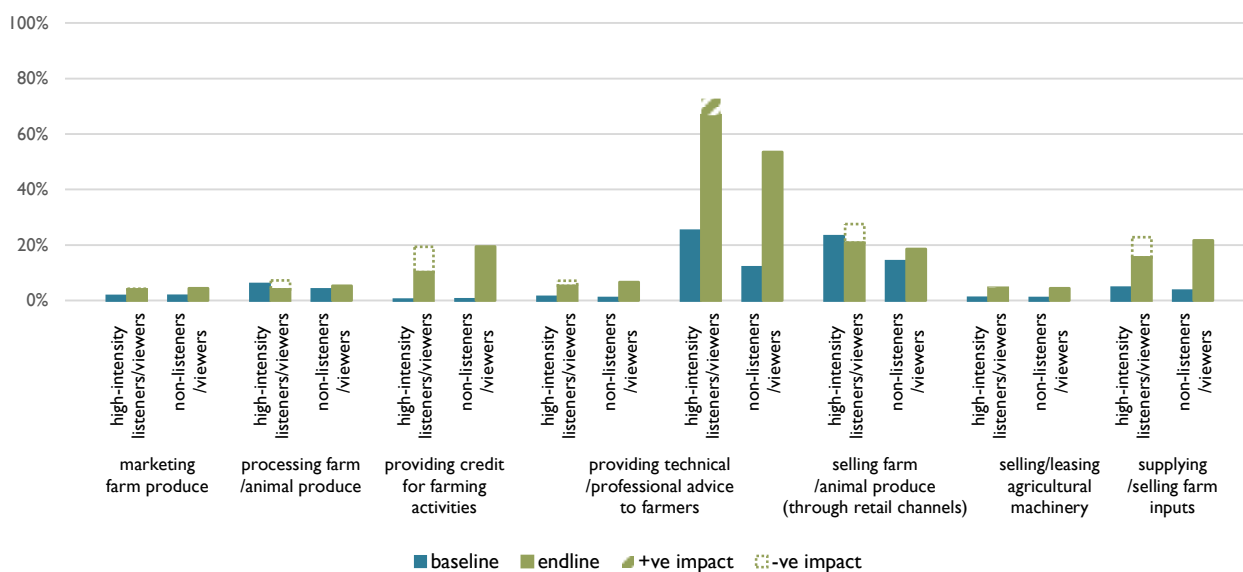
To assess knowledge of the income sources within the agricultural value chain, respondents were asked to name non-farming income-generating activities. Overall, knowledge of income-generating activities increased in the two years between baseline and end-line.

Kumekucha’s impact was primarily focused on areas of the agricultural value chain where individuals already demonstrated high-levels of awareness. Among women, a 9.43% increase in knowledge of hawking farm/animal produce may be attributed to Kumekucha listener/viewership as well as a marginal increase in knowledge of providing credit, technical advice, and supplying/selling farming inputs. Among youth, Kumekucha listener/viewership shows a possible positive impact on knowledge of hawking farm/animal produce, but no impact on knowledge of other non-farming income-generating activities.

Graph 2.1: Recall of Non-Farming Agricultural Value Chain Activities (Women)



Graph 2.2: Recall of Non-Farming Agricultural Value Chain Activities (Youth)

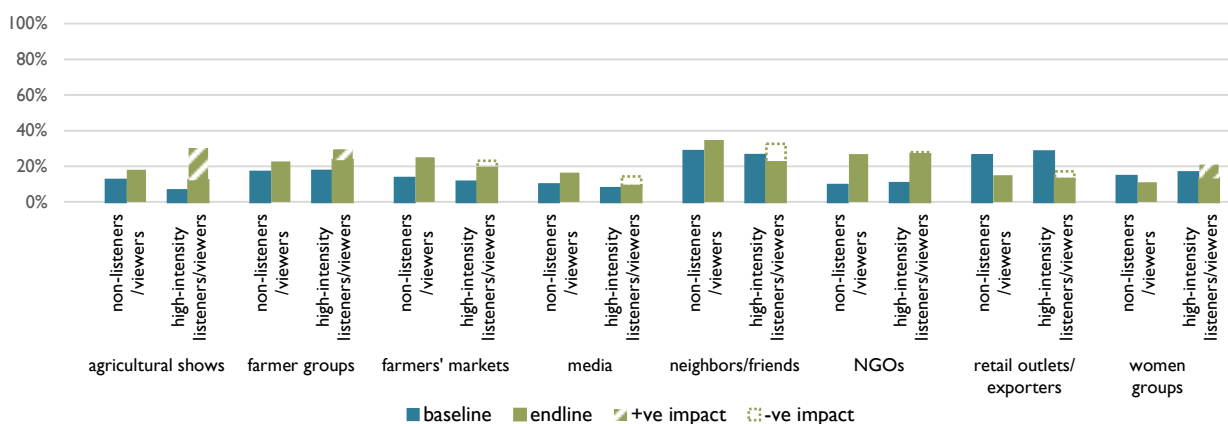


Kumekucha listener/viewership had a positive impact on knowledge of market information sources. Knowledge of women groups and agricultural shows increased significantly.

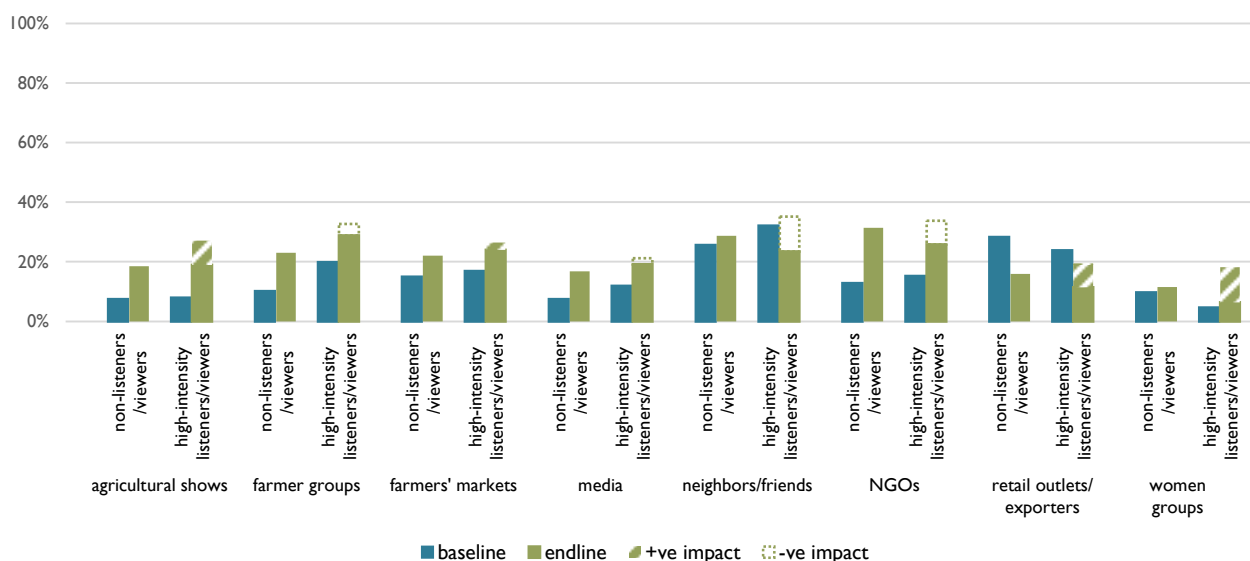
At baseline and end-line, respondents were asked to name market information sources. Overall, knowledge of market information sources increased in the two years between baseline and end-line. Farmer groups and collaboration with stakeholders have increased as reported sources of information among both high-intensity listeners/viewers and non-listeners/viewers. Informal information sources declined for the high-intensity listeners/viewers while they increased for non-listeners/viewers.

Among women, an 18.10% increase in awareness of agricultural shows and a 7.78% increase in awareness of women groups as sources of market information may be attributed to Kumekucha listener/viewership. Increases of 8.14% and 11.8% respectively may be attributed to Kumekucha listener/viewership among the youth interviewed. This might indicate that Kumekucha was effective in reducing reliance on informal channels of information and elevated the use of more formal sources. To a lesser extent, changes among non-viewers echoed the above, suggesting that alternative messaging around marketing sources was also taking effect among the population.

Graph 3.1: Knowledge of Sources of Market Information (Women)



Graph 3.2: Knowledge of Sources of Market Information (Youth)

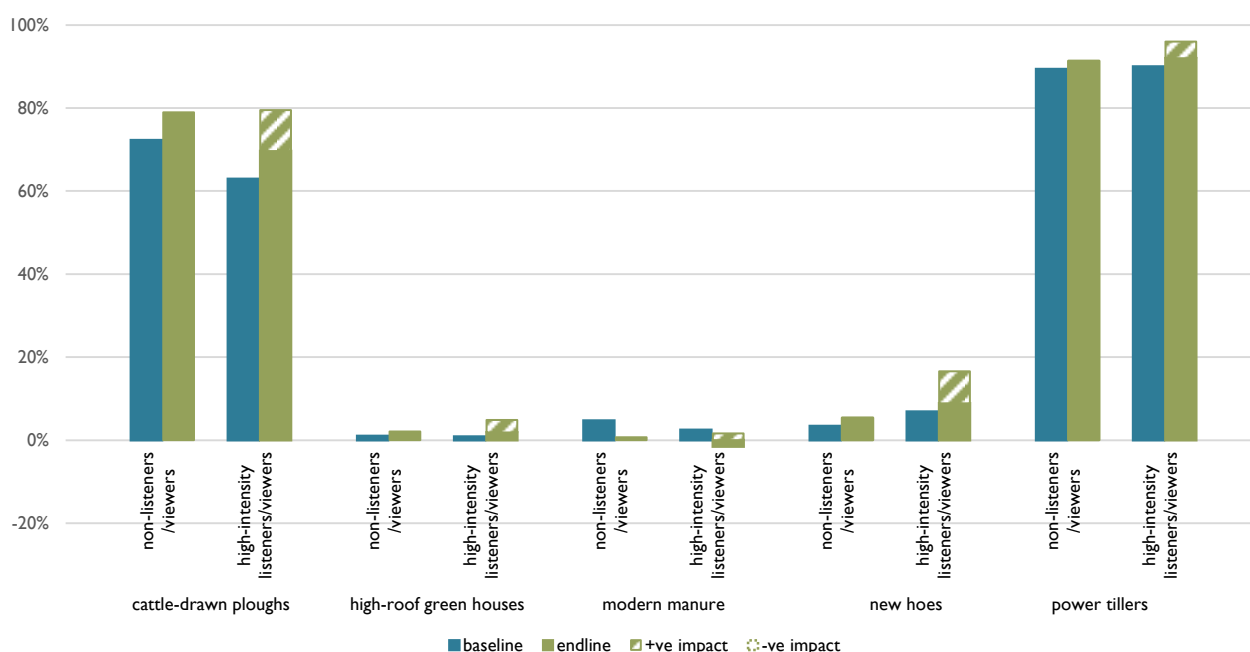


Kumekucha listener/viewership had some positive impact on awareness of agricultural technologies, however this impact did not extend to newer mobile-based technologies.

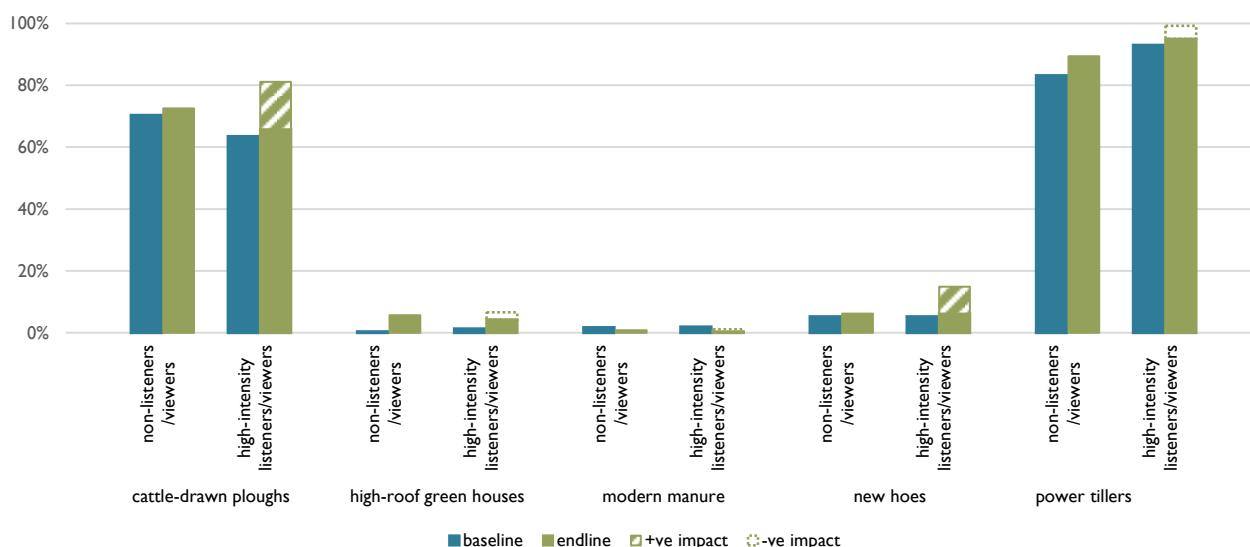
As part of its educational messages, Kumekucha sought to raise awareness on the importance of technology for increased productivity. 12.49% of the increase in high-intensity listeners/viewers' spontaneous recall of cattle-drawn ploughs and new hoes may be attributed to Kumekucha. Awareness of agricultural technologies increased among non-listeners/viewers and high-intensity listeners/viewers.

Mobile-based technologies were mentioned by less than 1% of high-intensity listeners/viewers at baseline and end-line, despite 95% reporting mobile phone ownership.

Graph 4.1: Knowledge of Agricultural Technologies (Women)



Graph 4.2: Knowledge of Agricultural Technologies (Youth)



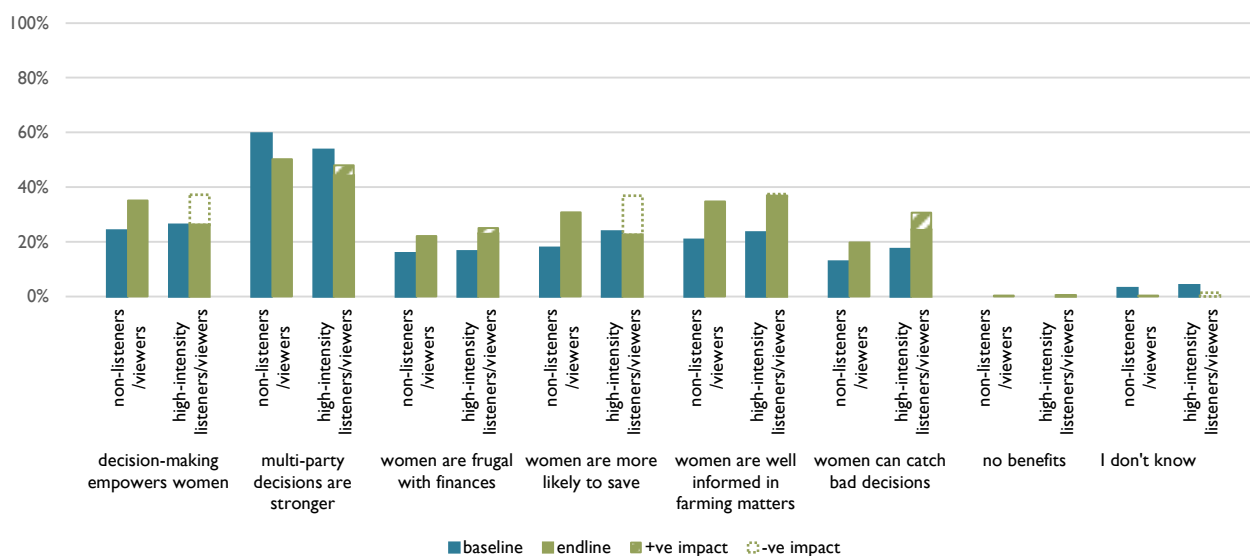
Kumekucha had a positive impact on youth knowledge of the benefits of involving women in agricultural decision-making, both financial and farming.

Among youth, minor positive impacts attributed to Kumekucha can be noted across the board except in acknowledging the impact involving women can have on female empowerment.

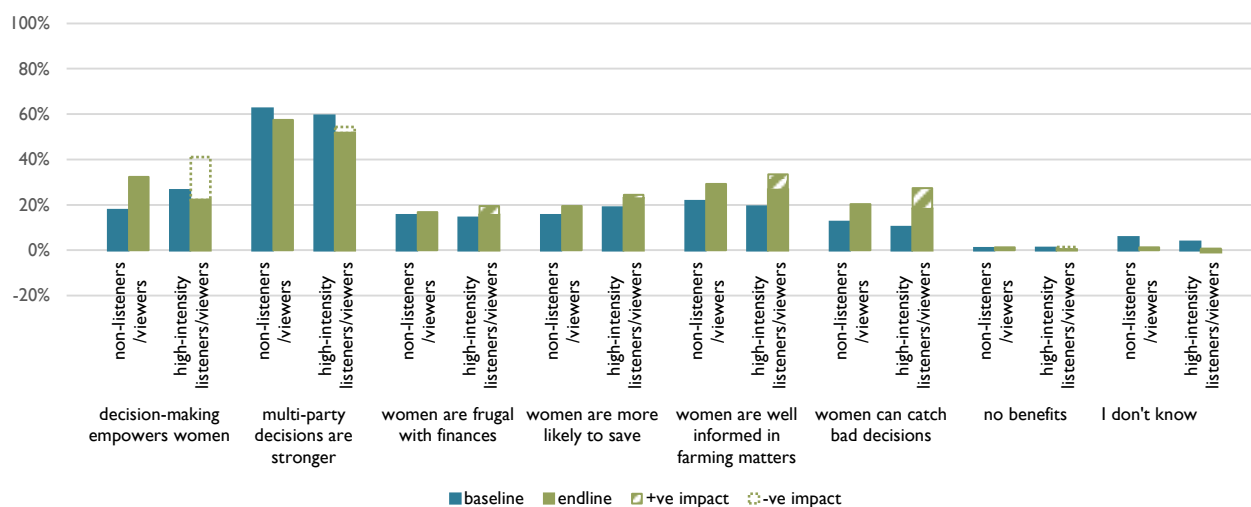
Among women, a 16.93% increase in agreement that “women act as a check on bad decisions” may be attributed to high-intensity listener/viewership of Kumekucha. On other decision-making aspects, the impact on women was not pronounced.

Overall, despite the positive impact that may be attributed to Kumekucha, youth (both high-intensity and non-listeners/viewers) showed lower levels of knowledge of the benefits of involving women in agricultural decision-making. It is likely that these numbers are brought down by lower levels of knowledge among men vs women among the youth.

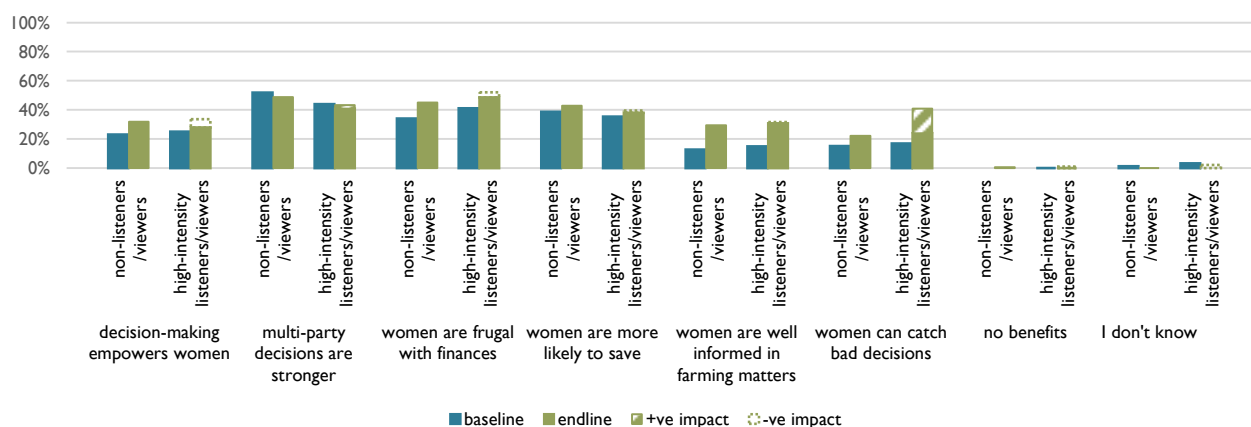
Graph 5.1.1: Knowledge of Benefits of Involving Women in Farming Decision-Making (Women)



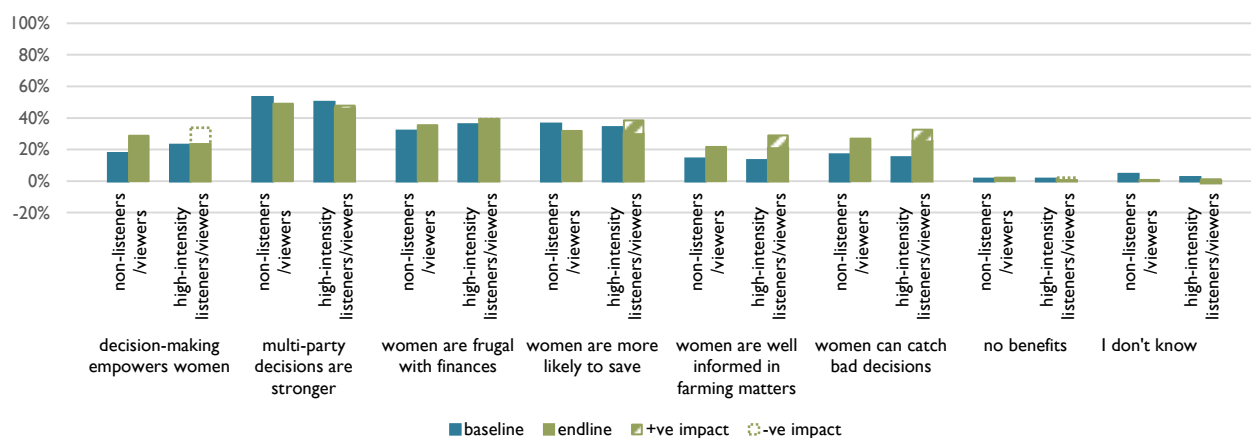
Graph 5.1.2: Knowledge of Benefits of Involving Women in Farming Decision-Making (Youth)



Graph 5.2.1: Knowledge of Benefits of Involving Women in Financial Decision-Making (Women)



Graph 5.2.2: Knowledge of Benefits of Involving Women in Financial Decision-Making (Youth)



“We used to think costs of hiring tractors were high, so we used to farm hands with hand held hoes, but we have come to realize that tractors work best and saves us a lot of time” – Woman, Morogoro

“They said agriculture is like any other business you have to invest money before you can profit. They talked about all aspects of the business, from suppliers to farmers...they all make money” – Woman, Mbeya

“I got instruction on how to farm cabbages and water melons” – Youth, Mbeya

“[Kumekucha] took us through every step from the start, what to do and what not to do, till the end when the crop matures and becomes fruitful” – Youth, Mbeya

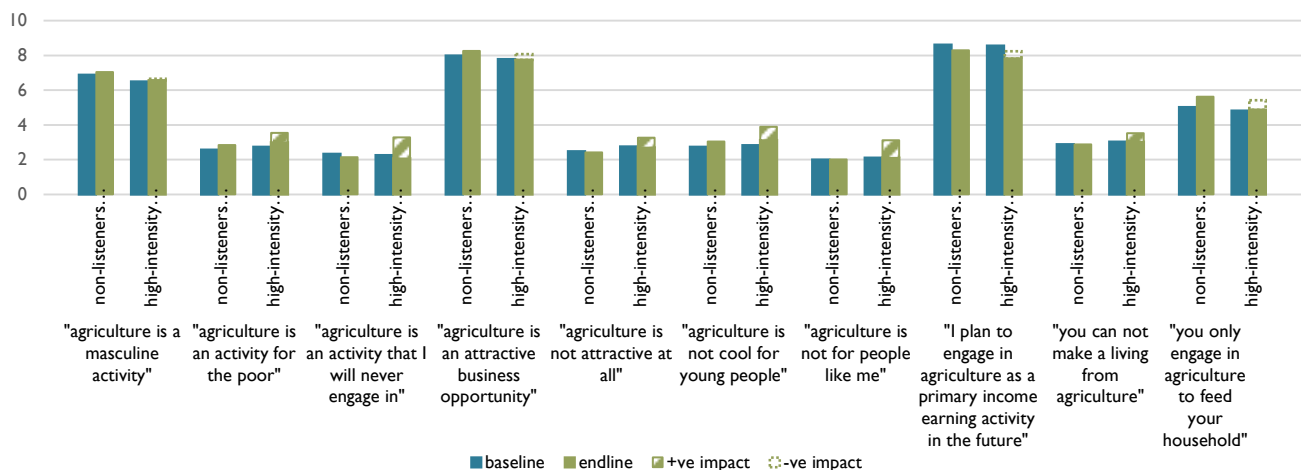
“I have learnt that if I am on time in preparing the farm and use modern equipment and quality seeds, then I will get huge yields” – Woman, Iringa

3.2 CHANGES IN PERCEPTION AS A RESULT OF EXPOSURE TO KUMEKUCHA

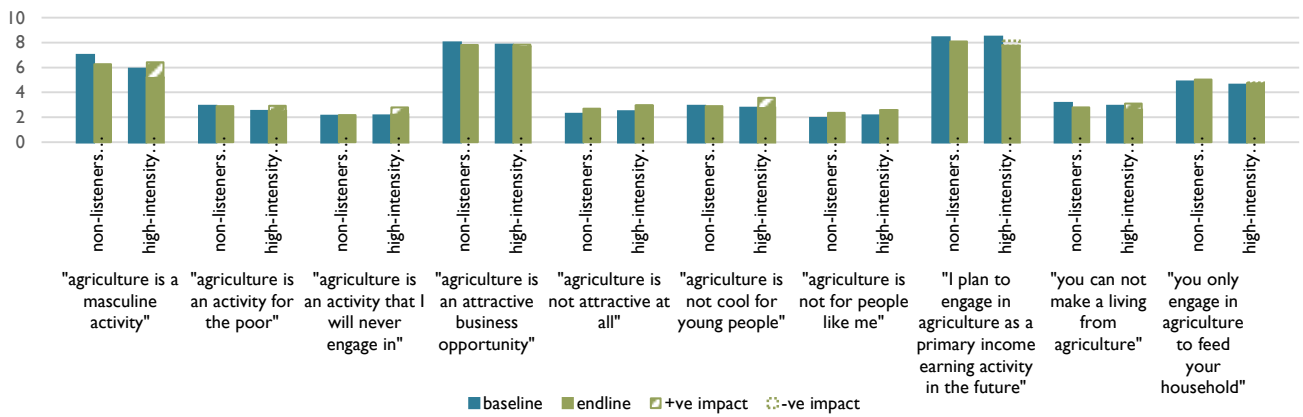
The evaluation did not measure any significant impacts of Kumekucha on high-intensity listeners/viewers’ perception of agriculture as a source of income.

Changes in the mean scores from baseline to end-line were marginal, except for the statement “agriculture is the preserve of rural people” which increased substantially from an average score of 3 at baseline to an average score of 6 at end-line for youth and women, high-intensity and non-listeners/viewers.

Graph 6.1: Statement Scores on Perceptions of Agriculture as a Source of Income (Women)



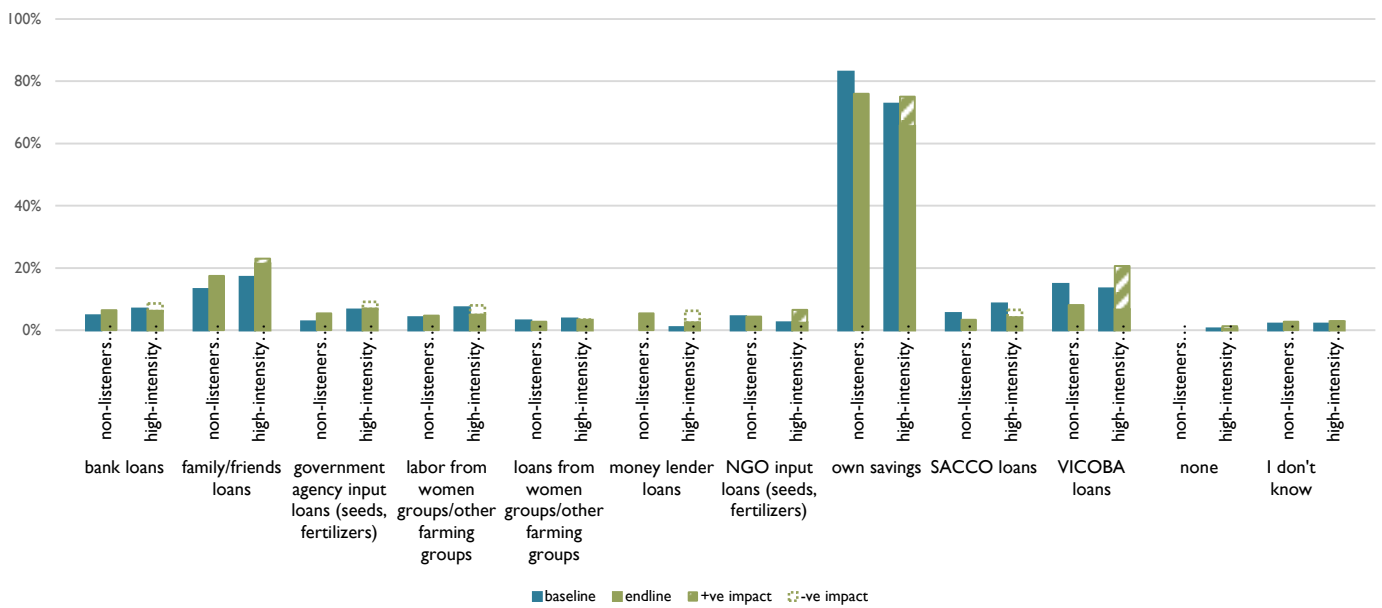
Graph 6.2: Statement Scores on Perceptions of Agriculture as a Source of Income (Youth)



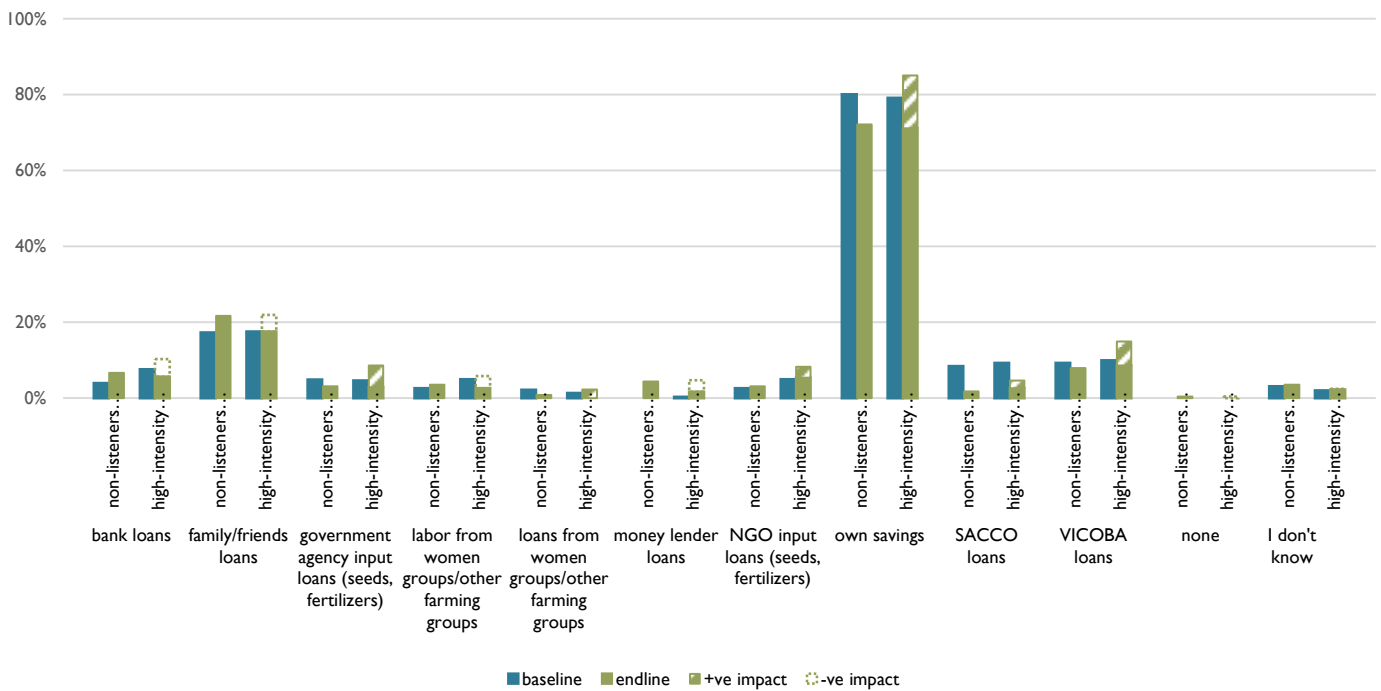
Between baseline and end-line, women and youth high-intensity listeners/viewers showed an increased willingness to access loans from Village Saving Banks (VICOBA).

Meanwhile, non-viewers’ willingness to access VICOBA loans decreased over the same time period. Among youth, “own savings” showed a declining trend among both non-listeners/viewers and high-intensity listeners/viewers but remained by far the top source of finance at baseline and end-line.

Graph 7.1: Willingness to Access Sources of Capital (Women)



Graph 7.2: Willingness to Access Sources of Capital, (Youth)

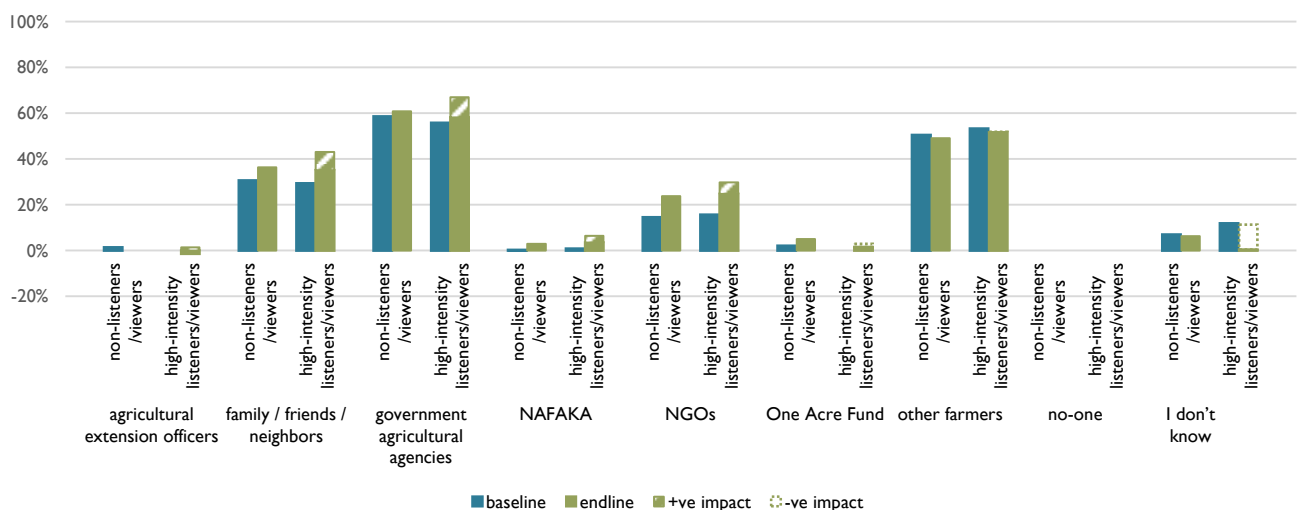


Kumekucha listener/viewership had a positive impact on willingness to collaborate with government agricultural agencies.

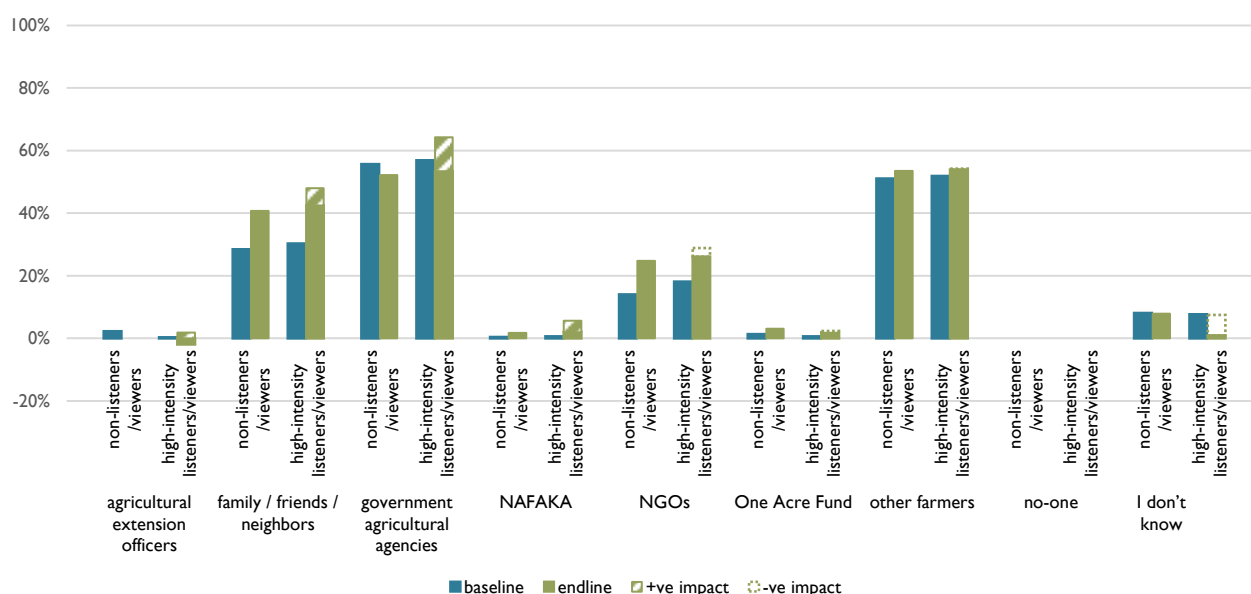
To gauge respondents’ perceptions of entities they can create links with for professional advice on agricultural matters, respondents were asked to name the organizations with whom they would be willing to collaborate.

In line with Kumekucha messaging, high-intensity listeners/viewers were on average 9.8% more likely to be willing to collaborate with government agricultural agencies. Kumekucha’s impact on collaboration and linkages with other entities was not significant in the quantitative analysis, however the statement that “farmers lose agricultural produce through fraudulent middle men” came the fifth in a ranking of the main messages taken from Kumekucha according to high-intensity listeners/viewers. This negative messaging may have played an important role in this shift towards formal collaborations among high-intensity listeners/viewers.

Graph 8.1: Perceived Opportunities for Collaboration and Linkages (Women)



Graph 8.2: Perceived Opportunities for Collaboration and Linkages (Youth)



3.2.1 SELF-REPORTED CHANGES IN PERCEPTIONS

According to respondents’ self-reporting, Kumekucha’s messages relating to the empowerment of women and their involvement in decision making and messages promoting agriculture as a business had the strongest reach.

Respondents were asked to list the main messages they had picked from interacting with Kumekucha. Women appeared to recall messaging about women in agriculture more often than youth.

“As a result of Kumekucha...”	Women	Youth
...I see agriculture as a viable commercial activity”	32%	38%
...I understand that women do a lot of work in agriculture but do not have a say in the sale of agricultural outputs”	35%	29%
...I appreciate that women can run successful agricultural enterprises”	24%	18%
...I see that as women play a significant role in agricultural production, they should also have a say on the incomes from agriculture”	20%	16%
...farmers lose agricultural produce through fraudulent buying by middlemen”	14%	15%

“[Kumekucha] has changed my attitude and helped me to know that I can improve my income through cash crops...I can do agriculture for food and as my source of income” - Woman, Morogoro

“[Kumekucha] has helped me know when to sell my crops, save money, and keep records of expenditures” - Woman, Morogoro

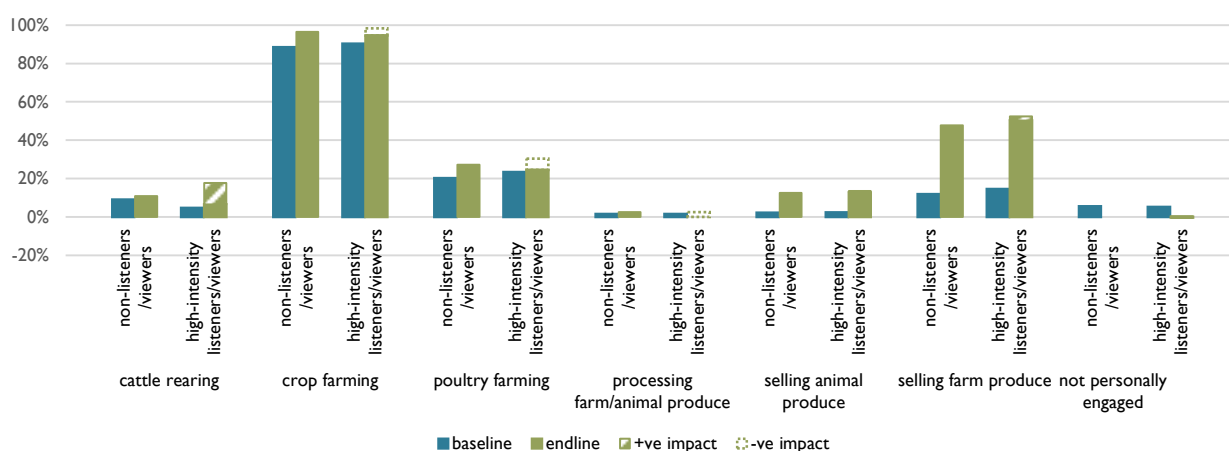
“[Kumekucha] changed my mindset about man being the only one concerned with sales of crops” - Woman, Iringa

3.3 CHANGES IN PRACTICES AS A RESULT OF EXPOSURE TO KUMEKUCHA

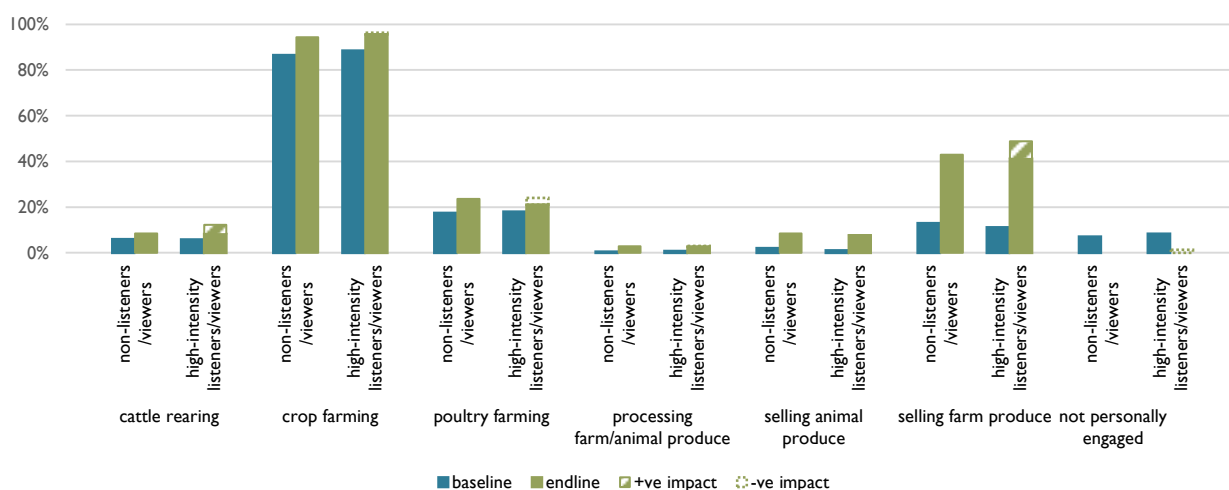
High-intensity Kumekucha listeners/viewers were more likely to start selling farm produce and take up cattle rearing in the two years between baseline and end-line.

The increase in cattle rearing was more pronounced among women and selling of farm produce was more pronounced in youth. These changes in practices are in line with the positive impact on knowledge of cattle-drawn ploughs and selling of farm produce attributed to Kumekucha in section 3.1: *Changes in Knowledge as a Result of Kumekucha*. Along the same line, there was very little change in practices relating to income-generating activities further along the agricultural value chain.

Graph 10.1: Agricultural Activities Engaged in (Women)



Graph 10.2: Agricultural Activities Engaged in (Youth)

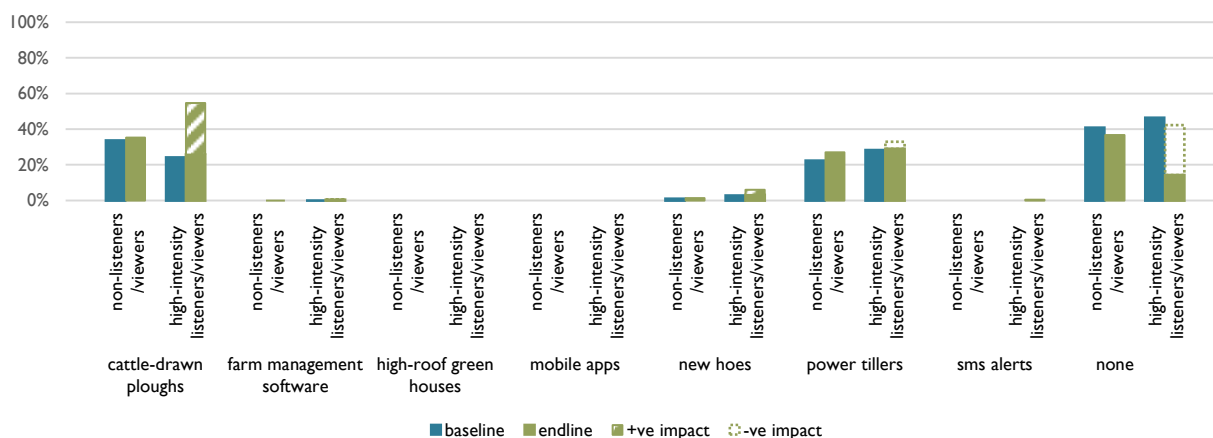


Kumekucha listener/viewership had a positive impact on use of traditional agricultural technologies, however this impact did not extend to newer mobile-based technologies.

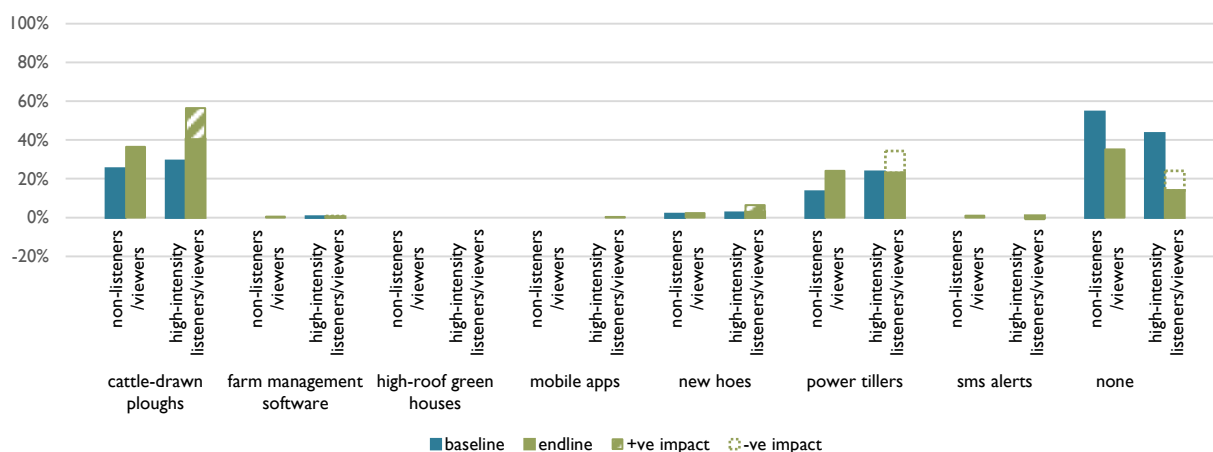
As above, increases in knowledge of agricultural technologies attributed to Kumekucha listener/viewership were matched by increased use of the same. Women and youth high-intensity listeners/viewers were 30% and 10% more likely to have started using some form of agricultural technology between the baseline and end-line. It appears that the majority of these individuals took up the use of cattle-drawn ploughs. This

increased use of cattle-drawn ploughs appears to relate with the increase in cattle rearing by high-intensity listeners/viewers demonstrated in Graph 10.

Graph 11.1: Use of Agricultural Technologies (Women)



Graph 11.2: Use of Agricultural Technologies (Youth)

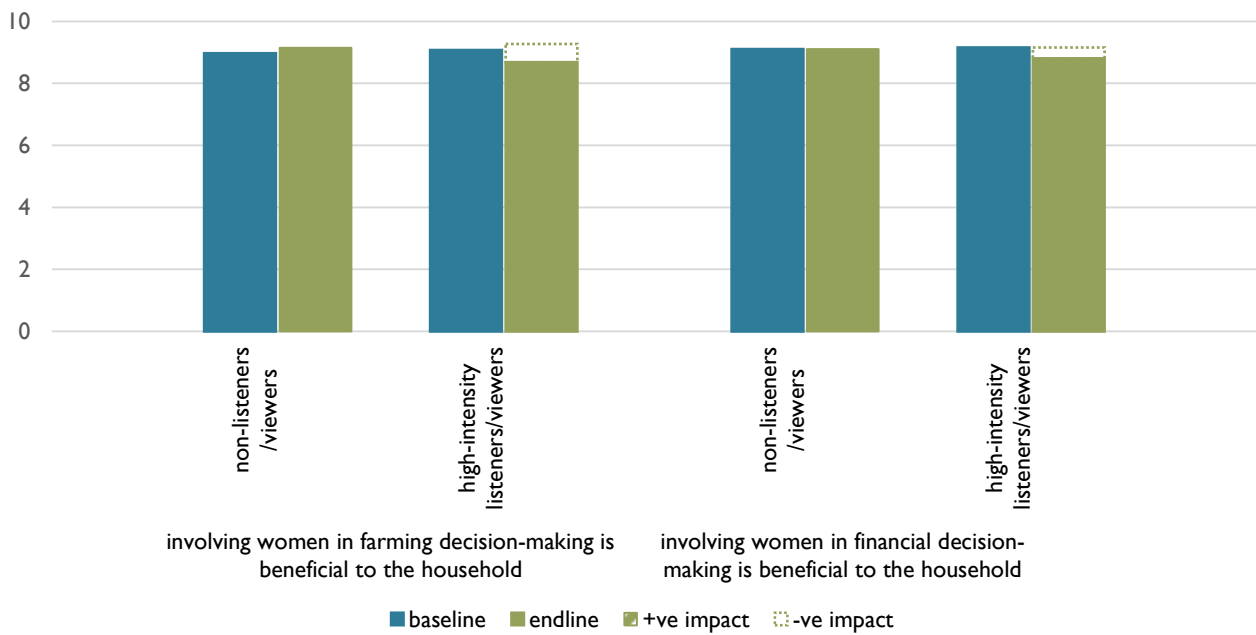


Kumekucha had no impact on practices around involving women in decision-making in agriculture.

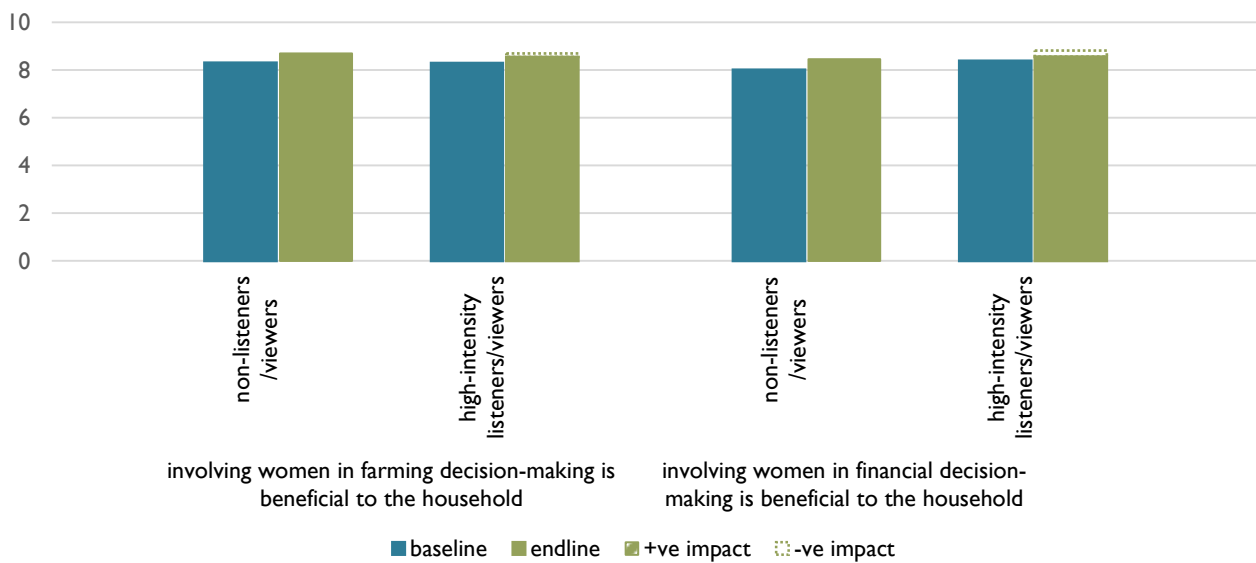
Contrary to changes in agricultural activities and use of agricultural technologies, changes in the involvement of women in decision making relating to financial and farming matters did not improve between baseline and end-line among non-listeners/viewers and high-intensity listeners/viewers, despite the positive impacts on knowledge of the benefits of the involvement of women attributed to Kumekucha in section 3.1.

The impact of Kumekucha on listeners/viewers knowledge of the benefits of involving women in agricultural decision-making was not enough to push individuals into making changes to their practices and behaviors.

Graph 12.1: Involving Women in Agricultural Decision Making (Women)

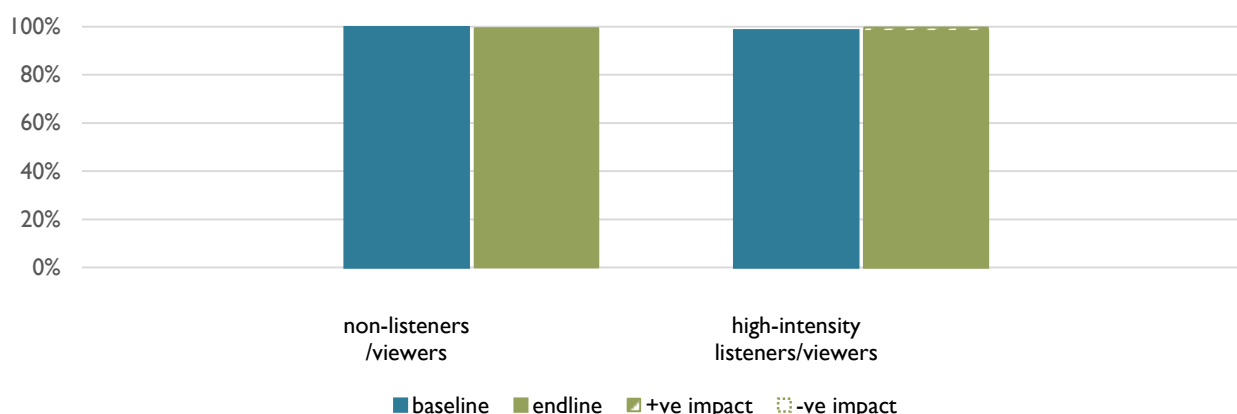


Graph 12.2: Involving Women in Agricultural Decision Making (Youth)

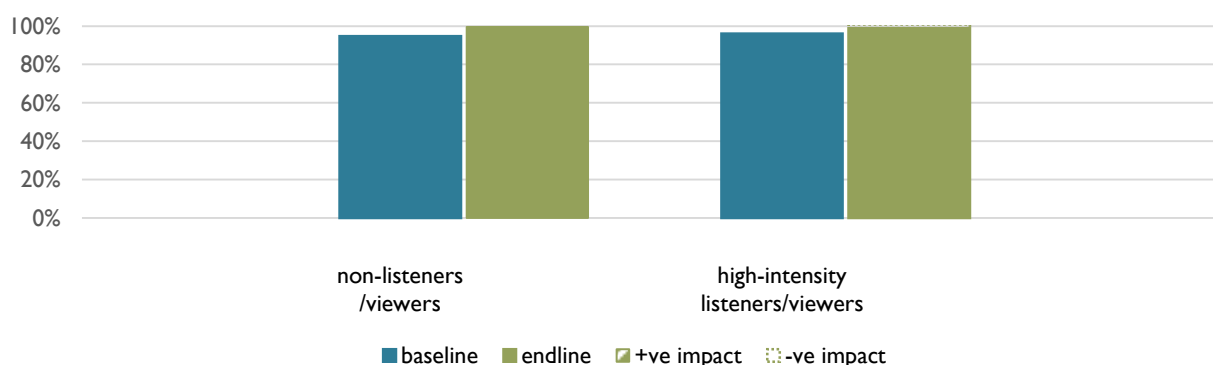


Kumekucha had no impact on listeners/viewers likelihood to retain produce for family consumption. At baseline, over 95% of all respondents reported that they would retain produce for family consumption if they were to farm commercially. This increases to 99% at end-line, with no difference between non-listeners/viewers and high-intensity listeners/viewers. It seems that SAGCOT individuals were already highly sensitized to the importance of nutrition for farmers before the Kumekucha campaign.

Graph 13.1: Respondents who would Retain Produce for Family Consumption (Women)



Graph 13.2: Respondents who would Retain Produce for Family Consumption (Youth)



3.3.1 SELF-REPORTED CHANGES IN PRACTICE

In line with the quantitative findings, respondents interviewed in the FGDs reported low levels of change in practice compared to changes in perception and attitudes.

The FGD results support the quantitative findings, matching the changes in practice above with 21% of youth and 16% of women reporting that they graduated from subsistence-only farming to commercial farming as a direct result of listening to or watching Kumekucha.

“As a result of Kumekucha...

	Women	Youth
...I engage in both commercial and subsistence farming”	16%	21%
...I practice modern farming by using fertilizer/spraying maize with pesticides”	10%	12%
...I put more effort into farming because I consider it my employment”	11%	9%
...I conduct my agriculture differently”	8%	8%
...I include my family in making decisions”	5%	6%
...I cooperate with other farmers in agriculture/making decisions”	5%	5%
...I’m aiming to get an income from my farming”	6%	3%
...I give priority to agriculture in order to get a good life”	3%	4%
...I get information on markets from trusted sources”	2%	3%

...I've joined a farming group to learn more on agriculture and savings"	5%	1%
...I've learned how to set prices / sell crops"	1%	4%

"We used to strip grains of maize cobs with sticks and hit it, but we now use machines" - Youth, Iringa

"I used to grow maize mixed with legumes. After watching the program, I don't do that. I followed their advice and I have improved my yield compared to previous years" - Women, Morogoro

"We now use farm inputs, pesticides, fertilizers, and quality seeds" - Youth, Mbeya

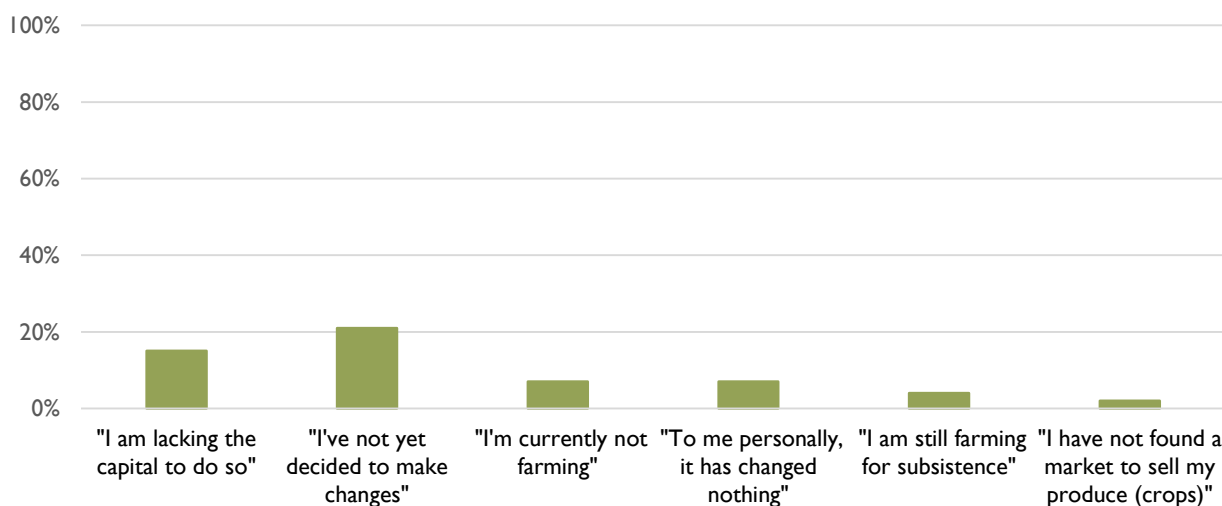
"Previously we were not using tractors, we were farming without fertilizers and used short-duration seeds. Now we use tractors, farm inputs, and better seeds" - Youth, Morogoro

"We used to consider all our harvest as food, now we set some of it aside for business" - Youth, Iringa

3.4 BARRIERS TO BEHAVIOR CHANGE

Respondents who reported no change in behavior, despite reporting a change in attitude attributed to the campaign, were asked to share the barriers they faced. Youth respondents accounted for the largest proportion of these. Lack of capital and delayed decision making were the most prevalent barriers among youth and women respectively.

Graph 14: Barriers to Behavior Change (46 respondents who reported changes in perception but no changes in behavior)



3.5 KUMEKUCHA'S REACH AND VIEWERSHIP

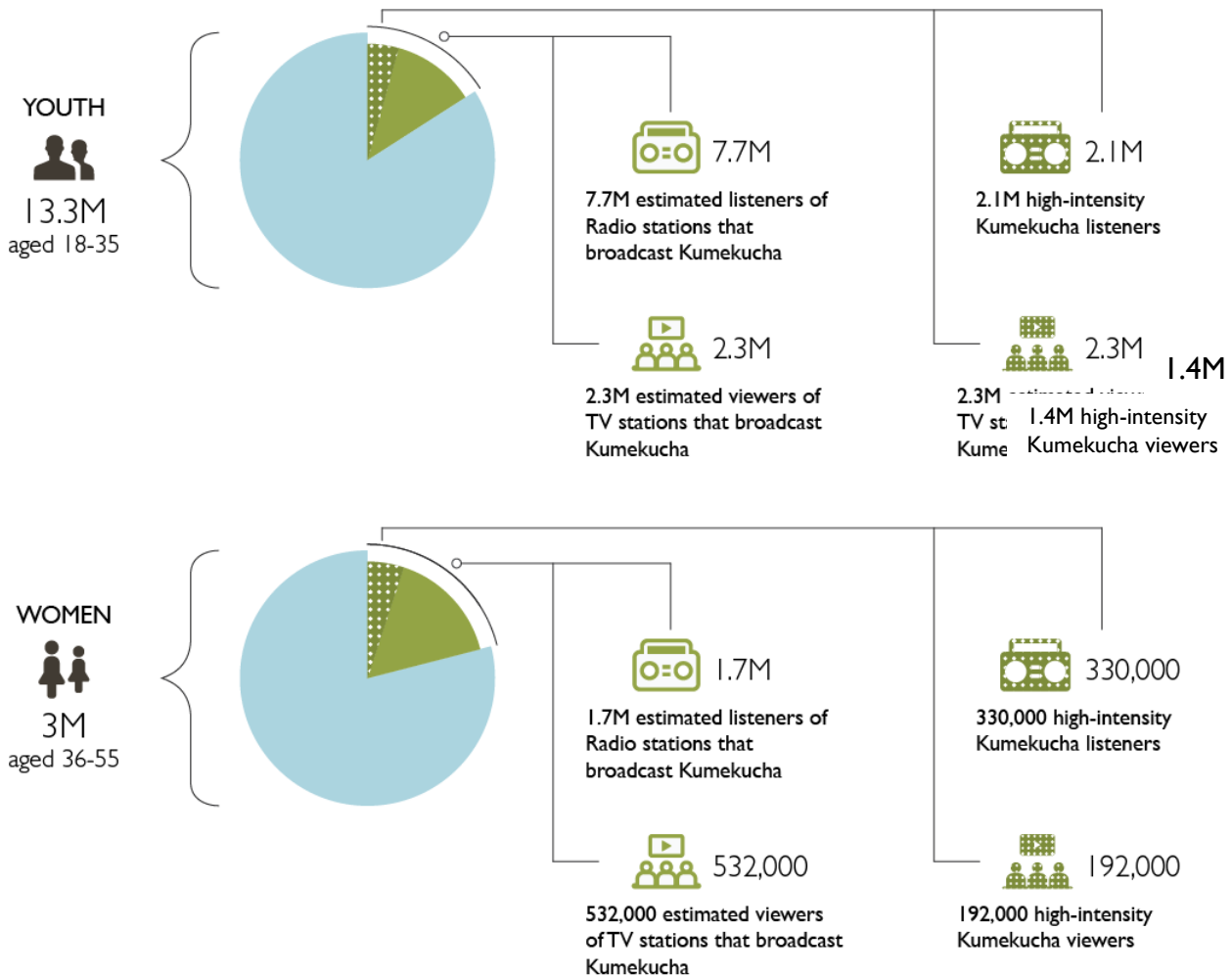
In 2016, there were an estimated 13.3 million Tanzanian youth aged 18-35 and three million women aged 36-55.¹²

34% of Tanzanians watch TV at least once a week.¹³ The channels on which the Kumekucha campaign was broadcast (Star TV and TV One) hold an estimated audience share of 52%, i.e. 2.3M possible youth viewers and 532,000 possible women viewers.¹⁴

95% of Tanzanians listen to radio at least once a week.¹⁵ The channels on which the Kumekucha campaign was broadcast (Radio Free Africa, Abood FM, Ebony FM, and Boomba FM) hold an estimated audience share of 61%, i.e. 7.7M possible youth listeners and 1.7M possible women listeners.¹⁶

In total, the Kumekucha campaign was listened to and viewed by an estimated 4.6 million youth and 686,000 women in Tanzania, of which 3.5 million and 522,000 were high-intensity viewers.

Graph 15: Audience Estimation for Kumekucha's Radio and TV Campaigns



¹² Calculated with figures from: United Republic of Tanzania, National Bureau of Statistics, 2013, Population Distribution by Age and Sex, [tanzania.countrystat.org/fileadmin/user_upload/countrystat_fenix/congo/docs/Population%20Distribution%20by%20Age%20and%20Sex%20Report-2012PHC.pdf](https://www.countrystat.org/fileadmin/user_upload/countrystat_fenix/congo/docs/Population%20Distribution%20by%20Age%20and%20Sex%20Report-2012PHC.pdf), and, 2018, National Population Projections, <https://www.nbs.go.tz/nbs/takwimu/census2012/Projection-Report-20132035.pdf>, accessed 12 Dec 2018

¹³ Intermedia, 2004, Tanzania Media Environment, Current Access, Potential for Growth and Strategies for Information Dissemination, https://www.intermedia.org/wp-content/uploads/Tanzania-Media-Environment_0.pdf, accessed 12 Dec 2018

¹⁴ African Media Development Initiative, 2006, Tanzania Research Findings and Conclusions, <http://africanmediainitiative.org/wp-content/uploads/2015/10/AMDI-Report-Tanzania.pdf>, accessed 12 Dec 2018

¹⁵ Intermedia, 2004, Tanzania Media Environment, Current Access, Potential for Growth and Strategies for Information Dissemination, https://www.intermedia.org/wp-content/uploads/Tanzania-Media-Environment_0.pdf, accessed 12 Dec 2018

¹⁶ African Media Development Initiative, 2006, Tanzania Research Findings and Conclusions, <http://africanmediainitiative.org/wp-content/uploads/2015/10/AMDI-Report-Tanzania.pdf>, accessed 12 Dec 2018

Radio was the top source of engagement with Kumekucha. A very small minority of listeners/viewers had come across Kumekucha on social media. Given the rural context of many of the target listeners/viewers, access to TVs and social media was limited. Despite this, listeners/viewers reported that they preferred the TV spots over the radio spots.

3.6 PERCEPTIONS OF KUMEKUCHA

Kumekucha was perceived to have relevant content, particularly in addressing challenges which are farmers actively facing day to day. Listeners/viewers expressed that they found Kumekucha educational and entertaining, and that the content was well organized.

Listeners/viewers recommended that Kumekucha be aired more regularly and at a specific time and day to enable audiences to engage with its content more regularly.

“They should add more time, at least it should be for an hour and should be broadcast when people are settled... from six to seven pm in the evening, when people are home. In the morning people are too busy to listen” – Women, Morogoro

Listeners/viewers perceived Kumekucha’s messaging as duplicative. They reported that there was little differentiation from other agricultural programs such as Shamba Shape up.

RECOMMENDATIONS

RECOMMENDATION 1

Improve the aspects of this campaign which were ineffective in changing perceptions as these are an important indicator for changes in practices and behaviors.

The evaluation did not measure any significant impacts of Kumekucha on high-intensity listeners/viewers' perception of agriculture as a source of income.

RECOMMENDATION 2

Take a closer look at knowledge of and barriers to engagement with mobile-based technologies.

Kumekucha listener/viewership had some positive impact on awareness and use of agricultural technologies, however this impact did not extend to newer mobile-based technologies. Mobile-based technologies were mentioned by less than 1% of high-intensity listeners/viewers at baseline and end-line, despite 95% reporting mobile phone ownership.

RECOMMENDATION 3

Use mobile phone technology to reach larger audiences. While radio remains key in reaching the SAGCOT region and by extension the majority of the rural populations at large, the high penetration of mobile phones suggests a growing point of contact that can be used to reach larger audiences (SMS, USSD, Apps, among others).

Consider effective ways of improving knowledge of underexploited income-generating activities along the agricultural value chain in order to influence changes in practice.

Kumekucha listener/viewership had a positive impact on awareness of income-generating activities beyond farming but showed no significant impact on specific agricultural value chain knowledge beyond hawking farm/animal produce. These areas of impact were reflected in respondents' agricultural practices. High-intensity Kumekucha listeners/viewers were more likely to have started selling farm produce and taken up cattle rearing in the two years between baseline and end-line, however there was very little change in practices relating to income-generating activities further along the agricultural value chain.

RECOMMENDATION 4

Improve reach among individuals with lower levels of education. Listeners/viewership of edu-media agricultural programs was closely tied to higher levels of education. Future programming must consider modes of delivery, actors, and language of use for a more balanced reach.

RECOMMENDATION 5

Ensure that messaging around collaboration presents collaboration with government agricultural agencies as part of a broad set of possible linkages and does not paint other more informal collaborations in a negative light.

In line with Kumekucha messaging, high-intensity listeners/viewers were on average 9.8% more likely to be willing to collaborate with government agricultural agencies. Kumekucha's impact on collaboration and linkages with other entities was not significant in the quantitative analysis, however the statement that "farmers lose agricultural produce through fraudulent middle men" came the fifth in a ranking of the main messages taken from Kumekucha according to high-intensity listeners/viewers. This negative messaging may have played an important role in this shift towards formal collaborations among high-intensity listeners/viewers.

RECOMMENDATION 6

Substantial improvements need to be made around messaging on involving women in decision-making. It is particularly important that these campaigns are better targeted at men, not only women, as it seems plausible that they are the gate keepers to practical changes in this aspect.

Contrary to changes in agricultural activities and use of agricultural technologies, changes in the involvement of women in decision making relating to financial and farming matters did not improve between baseline and end-line among non-listeners/viewers and high-intensity listeners/viewers, despite the positive impacts on knowledge of the benefits of the involvement of women attributed to Kumekucha.

Overall, youth (both high-intensity and non-listeners/viewers) showed lower levels of knowledge of the benefits of involving women in agricultural decision-making. It will take much higher impact to graduate individuals from increases in knowledge and positive attitude towards women into practical changes in behavior.

CONCLUSION

The Kumekucha impact evaluation used a mixed-methods approach consisting of baseline and end-line quantitative panel surveys and qualitative focus-group discussions (FGDs). This approach allowed for difference in difference assessment, distinguishing Kumekucha's impact on high-intensity listeners/viewers from the impact of time and other edu-media agricultural programs. Specific aspects of the methodology placed extensive limitations on the ability to determine the statistical significance of the impact measured in the quantitative analysis; however, the qualitative data collected in the FGDs corroborated these measures and allowed us to present the findings with a higher degree of confidence.

Overall, the findings indicate that the Kumekucha campaign had a positive impact on youth and women's knowledge of agriculture as a source of income, the role of women in decision-making, technology in agriculture, leveraging collaboration and linkages in farming, and sources of income. In almost all spheres, this impact on knowledge translated to an impact on attitudes and practices. However, changes in practice with regards to the engagement of women in financial and farming decision-making lagged far behind. This lag appears to have been caused by a lack of engagement among male youth on these issues, suggesting that changes in practice of involving women in decision-making requires an approach better targeted at males – the current decision-makers, in many cases.

Kumekucha's impact on the use of agricultural technologies was closely tied to respondents' engagement with agriculture as a source of income. High-intensity listeners/viewers were more likely to have taken up cattle rearing and selling of farm produce in the time between baseline and end-line. Alongside this, they were likely to have started using cattle-drawn ploughs. There was no effect on engagement further along the agricultural value-chain, nor on the use of newer mobile-based technologies. Future campaigns should consider how best to tap individuals into these under-exploited income-generating opportunities.

Kumekucha had a clear impact on listeners/viewers willingness to collaborate with government agencies. This success was strongly corroborated by feedback from the FGDs. However, respondents drew attention to the fact that informal sources of market information were actively discouraged by Kumekucha, specifically, the use of middle men for sales of produce. A sensitive approach to encouraging more formal collaborations is encouraged, although it must be considered that part of the success may have been down to the effectiveness of contrasting formal collaborations with informal, presenting one as a positive alternative to a negative.

Radio listenership was much higher than TV viewership. In total, it was estimated that the Kumekucha campaign was listened to and viewed by 4.6 million youth and 686,000 women in Tanzania, of which 3.5 million and 522,000 were high-intensity listeners/viewers. These figures were based on high-end estimations of Kumekucha's chosen radio and TV broadcasting channels' audience share. Kumekucha's high-intensity listeners/viewers had high levels of education relative to the average in their locality. It seems that Kumekucha was reaching a similar audience to other existing edu-media agricultural programs, such as Shamba Shape-up. An opportunity presents itself here, to reach untapped audiences by targeting individuals with lower education levels and the associated lower rates of access to devices.

APPENDIX

6.1 REQUIRED SAMPLE SIZE FORMULA & ASSUMPTIONS

The sample size for the study was determined using the formula found below and incorporating the assumptions shown in Table 2.

$$n_A = kn_B \text{ and } n_B = \left(\frac{p_A(1 - p_A)}{k} + p_B(1 - p_B) \right) \left(\frac{z_{1-\alpha/2} + z_{1-\beta}}{p_A - p_B} \right)^2$$

Where;

$K=n_A/n_B$ is the matching ratio; α is type I error; β is type II error

Table AI: Total Sample Calculation and Assumptions

Description	Number
10 percentage point effect size (50% to 60%) ¹⁷	-
5 percent (.05) probability of Type I error (α) ¹⁸	-
80 percent (0.80) statistical power ($1 - \beta$) ¹⁹	-
2-sided hypothesis test	-
Minimum sample needed per group	384
Number of groups (youth and women)	2
Total sample	768
50% of the sample will be assigned to the treatment at the end-line	1,536
10% panel attrition (loss of respondents from baseline to end-line)	1,690

¹⁷ The effect size is the expected change in the key variables of interest from the baseline to the end-line.

¹⁸ A Type I error is the incorrect rejection of a true null hypothesis (a 'false positive').

¹⁹ Statistical power is the likelihood that the sample will detect an effect size of 10 percentage points when such an effect exists. β is the probability of a Type II error, which is incorrectly accepting a false null hypothesis (a 'false negative').

6.2 DIFFERENCE-IN-DIFFERENCE ANALYSIS

Table A2: DiD Analysis of the Impact of Kumekucha on High-Intensity Listeners/Viewers - Knowledge

Women	Baseline		End-line		Diff-in-Diff	
Dummy Variables	Diff (T-C)	P-value	Diff (T-C)	P-value	End-line Diff (T-C)- Baseline Diff (T-C)	P-value
Agricultural Value chain	0.084	0.028**	0.048	0.205	-0.035	0.511
Knowledge on marketing	0.013	0.008***	0	1	-0.035	0.059*
Technology in Agriculture	0.01	0.481	0.005	0.709	-0.005	0.815
Women in Decision-making	0.013	0.466	0.03	0.090*	0.017	0.493
Nutrition in Agriculture	-0.012	0.133	-0.001	0.941	0.011	0.313
Number of observations: non-listeners/viewers n=298; high-intensity listeners/viewers n=248						
Inference: * p<0.01; ** p<0.05; * p<0.1						
Youth	Baseline		End-line		Diff-in-diff	
Dummy Variables	Diff (T-C)	P-value	Diff (T-C)	P-value	End-line Diff (T-C)- Baseline Diff (T-C)	P-value
Agricultural Value chain	0.11	0.004***	0.147	0.000***	0.037	0.68
Knowledge on marketing	-0.003	0.008***	0	1	0.003	0.352
Tehcnology in Agriculture	0.028	0.079*	0.035	0.031**	0.007	0.774
Women in Decision-making	0.005	0.784	0.073	0.000***	0.068	0.013**
Nutrition in Agriculture	0.008	0.575	-0.004	0.778	-0.012	0.552
Number of observations: non-listeners/viewers n=223; high-intensity listeners/viewers n=302						
Inference: * p<0.01; ** p<0.05; * p<0.1						

Table A3: DiD Analysis of the Impact of Kumekucha on High-Intensity Listeners/Viewers - Practices

Women	Baseline		End-line		Diff-in-Diff	
Dummy Variables	Diff (T-C)	P-value	Diff (T-C)	P-value	End-line Diff (T-C)- Baseline Diff (T-C)	P-value
Technology use in agriculture	-0.048	0.237	0.251	0.000***	0.3	0.000***
Agriculture as a source of income	-0.04	0.108	0.018	0.464	0.059	0.098*
Value chains in agriculture	-0.048	0.237	0.251	0.000***	0.3	0.000***
Women in Decision-making	0.013	0.466	0.03	0.090*	0.017	0.493
Nutrition in Agriculture	-0.012	0.133	-0.001	0.941	0.011	0.313

Number of observations: non-listeners/viewers n=298; high-intensity listeners/viewers n=248

Inference: * p<0.01; ** p<0.05; * p<0.1

Youth						
Dummy Variables	Baseline		End-line		Diff-in-Diff	
	Diff (T-C)	P-value	Diff (T-C)	P-value	End-line Diff (T-C)- Baseline Diff (T-C)	P-value
Technology use in agriculture	0.125	0.003***	0.194	0.000***	0.106	0.044**
Agriculture as a source of income	0.035	0.204	0.06	0.030**	0.025	0.526
Value chains in agriculture	0.156	0.000***	0.159	0.000***	0.003	0.953

Number of observations: non-listeners/viewers n=223; high-intensity listeners/viewers n=302

Inference: * p<0.01; ** p<0.05; * p<0.1

Table A4: DiD Analysis of the Impact of Kumekucha on High-Intensity Listeners/Viewers – Intent to Change Practices

Women						
Dummy Variables	Baseline		End-line		Diff-in-Diff	
	Diff (T-C)	P-value	Diff (T-C)	P-value	End-line Diff (T-C)- Baseline Diff (T-C)	P-value
Intent to use technology in agriculture	0.66	0.811	0.043	0.079*	0.037	0.284
Intention to engage in agricultural value chain	0.040	0.111	0.147	0.000***	0.105	0.006***

Number of observations non-listeners/viewers n=1002; high-intensity & low-intensity listeners/viewers n=356

Inference: * p<0.01; ** p<0.05; * p<0.1

Youth						
Dummy Variables	Baseline		End-line		Diff-in-Diff	
	Diff (T-C)	P-value	Diff (T-C)	P-value	End-line Diff (T-C)- Baseline Diff (T-C)	P-value
Technology use in agriculture	-0.025	0.333	0.103	0.000***	0.128	0.000**
Intent to engage in agricultural value chain	0.068	0.012	0.173	0.000***	0.025	0.526

Inference: * p<0.01; ** p<0.05; * p<0.1

6.3 DESCRIPTIVE FINDINGS

Livestock keeping is underexploited as an income-generating opportunity in the SAGCOT region.

Table ? presents a summary of top main occupations in which the sampled households were engaged. Crop cultivation was the primary source of livelihood for most of the respondents surveyed across all the sample segments examined. This was to be expected since the SAGCOT is mainly a crop farming region.

There was relatively little engagement in the agricultural value chain by survey respondents and minimal involvement in agricultural activities as cattle rearing and pastoralism. This suggests more untapped income-generating opportunities in the value chain.

Table A5: Respondents' Main Occupations

	Women		Youth	
	High-intensity listeners/viewers	Non-listeners/viewers	High-intensity listeners/viewers	Non-listeners/viewers
Crop Farming	84%	84%	80%	71%
Self employed (not farming) - Employs other workers	6%	8%	5%	7%
Livestock Keeping	2%	2%	1%	3%
Employee- small/medium private company	2%	1%	2%	2%
Entrepreneur - (Self-employed sector not specified)	1%	2%	5%	5%
Pastoralism	1%	0%	0%	0%
Employee – Government	1%	2%	2%	2%

Radio ownership decreased while mobile phone and TV ownership increased between the baseline and end-line. Future programs should take this into account while taking note that access to the internet remains low. It would be useful to know the proportion of smart phones and access to mobile internet data to further inform media campaigns aimed at mobile users.

Table A6: Access to Media through Ownership of Devices

	Women (n=1,379)		Youth (n=1,168)	
	Baseline	End-line	Baseline	End-line
Radio	93%	64%	96%	74%
Mobile Phone	74%	81%	81%	87%
TV	23%	30%	22%	36%
Personal Video Recorder	14%	21%	17%	26%
Digital Set (Top Box)	14%	22%	13%	26%
Pay TV	10%	17%	8%	19%
Satellite Dish	4%	4%	4%	3%

Internet connections	2%	2%	7%	7%
MP3 Player	2%	5%	2%	7%
Desktop Computer	1%	1%	1%	1%

Women’s access to other people’s devices increased while youth’s access to others’ devices decreased dramatically between the baseline and the end-line. The evaluation did not yield any data to explain why this happened.

In the case that respondents did not own a device, respondents were asked to identify whether they accessed particular devices at all, even if it was through someone else. These results were then compared between baseline and end-line. As can be seen in Table 26 below, there was an increase in the access to other people’s devices between baseline and end-line for the women sample segments, while there was a decline among the youth.

Table A7: Access to Media through Others’ Devices

Table 2: Access to Media through Others’ Devices

	Women (n=1,379)		Youth (n=1,168)	
	Baseline	End-line	Baseline	End-line
TV	20%	30%	36%	23%
Mobile Phone	10%	81%	87%	9%
Digital set, top box (for TV)	7%	22%	26%	11%
Radio	5%	64%	74%	1%
Personal Video Recorder (PVR)	5%	21%	26%	6%
Laptop	2%	1%	2%	4%
Fixed Phone line	2%	0%	0%	1%
MP3 Player	1%	5%	7%	1%
Internet connection	1%	2%	7%	1%
Pay TV service	1%	17%	19%	1%
Desk top Computer	1%	1%	1%	3%
Satellite Dish	1%	4%	3%	2%
Tablet	1%	0%	1%	0%