Are communication interventions effective in driving behavior change?

A case study of tea farmers in Nandi County

April 2022

Busara

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OUTLINE

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Mercy Corps' AgriFin programming (MCAF) represents USD 35 million in innovation funding from the Mastercard Foundation, Bill and Melinda Gates Foundation and the Swiss Development Corporation to support development, testing and scale of digitally-enabled services for smallholder farmers.

- Our objective is to develop sustainable services that increase farmer income and productivity by 50%, with 50% outreach to women
- MCAF works as an innovation partner with private sector scale partners and such as banks, mobile network operators, agribusinesses, as well as technology innovators and governments committed to serving smallholders at scale
- We help our partners develop, test and scale bundles of digitally-enabled financial and non-financial services supporting partnership development between market actors that leverage their strengths
- We combine MCAF team expertise with strategic subsidy to jointly implement iterative, fail-fast engagements with partners on a cost-share basis, sharing public learnings to drive market ecosystem growth
- Since 2015, we have completed more than 200 engagements with over 120 partners across Africa
- With the onset of the Desert Locust in East Africa, the Skoll Foundation funded AgriFin's first emergency response work leveraging digital tools
- **With this support, AgriFin now reaches more than 8 million smallholders**

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Engagement Overview

In this report

This report presents the findings from the impact evaluation conducted on behalf of Producer Direct and Mercy Corps AgriFin. In this report, we focus on the impact of varying the frequency of SMS on farmer Covid-19 behavior and the information processing flow farmers interact with from accessing to sharing information. The findings from this report can be used to understand effective ways of reaching famer populations with life-saving information and behavior change across communication channels.

The engagement was carried out in two phases. Phase 1 took place in 2020 with a mixed method approach to understand what information farmers need regarding Covid-19 and preferred communication channels. Phase 2 between 2021 and 2022 with the objective of testing messaging frequency and understanding farmer information processing.

Workstream 1	Workstream 2	Workstream 3	Workstream 4	Workstream 5
Phase 1 We evaluated the combined SMS + In-person campaign delivered by Producers Direct and WeFarm to understand knowledge, attitude and behavior change.	**Baseline Survey** We conducted a baseline survey with tea farmers from Nandi county to understand their level of knowledge, attitude and behaviors around Covid-19. We also covered sections on sources of information, communication channels and their current WASH practices.	**Mini- RCT: SMS frequency** We utilized SMS in this study to test the SMS frequency required for retention and accurate transmission. **Control group**: receives no messages or messages related to general farming information **Group 1**: receives one behavioral message encouraging a certain practice prevention practice over the study period **Group 2**: receives messages every week encouraging the same practice during the study period	**Endline Survey** We conducted an endline survey with the same farmers in the baseline to capture their new knowledge, attitude and behavior levels.	**Qualitative phase** Lastly, we held in-depth interviews with farmers from previous work streams to understand how farmer interacted with different media. Their information processing, retention and second order dissemination.

Study Design

Approach

We sought to evaluate the impact of current communication campaigns on knowledge, attitudes, and behavior regarding Covid-19 and safe farming practices among selected farmers in Kenya and found SMS and TV as preferred communication channels for farmers.

We then evaluated the combined SMS + In-person and combined SMS + TV campaign delivered by Producers Direct and WeFarm to understand behavior change.

We used a mixed method approach to assess Covid-19 information delivery

- Quantitative survey- Producers Direct conducted baseline and endline surveys. We used a difference-in-difference approach to measure knowledge, attitude and behavior against a control group that did not receive the communication solutions. Then, we applied a narrative approach by asking respondents to tell us the impact of the Covid-19 communications campaigns, specifically how the messages changed their Covid-19 knowledge, attitude, and behaviors.

- Qualitative interviews-We used in-depth interviews to understand farmer motivation and preferences.

- Administrative data analysis-We analyzed partners administrative data to understand farmers' questions and concerns regarding Covid-19.

Approach

Building off the lower behavior change scores in phase 1 and SMS being a preferred communication tool we tested an intervention of increased frequency of SMS to farmers on the change in behavior farmers, related to Covid-19.
The hypothesis for the testing was that **increase of frequency of messaging targeting behavior change would lead to better Covid related behavioral practices**

We used a mixed method approach to assess the impact of Covid-19 information delivery

- Quantitative survey- We conducted baseline surveys, rolled out the SMS intervention(RCT) and conducted endline surveys to estimate the effect of the intervention on farmer behavior.

- Qualitative interviews-We used in-depth interviews to understand how farmers process and share information.

SMS RCT Design

- Control group: Received **no message** is sent
- Treatment group 1: Received 1 message in a span of 4 weeks
- Treatment group 2: Received 1 message **per week**

Note: The treatment arms were randomized and all are within the same age range and gender balance

Phase 1 Findings

There were positive and significant effects on overall knowledge, attitude, and behavior compared to a control group. The combined SMS + In-person Covid-19 campaign had a positive effect on farmer behavior. These positive effects were driven by farmers knowing more about social distancing, about livestock and Covid-19 transmission, and about tool sharing. Farmers in this cohort are washing their hands more, however there were poorer practices of social distancing and mask wearing.

There is a near universal preference for receiving information through the SMS channel. Convenience and trust are the main drivers for this preference. Surveyed farmers trust the information that they receive through the SMS channel. This might be explained by the fact that the SMS channel has been around longer than other relatively newer channels like social media platforms. It takes time to build trust on newer digital channels. A mixed-channel messaging campaign can be used to build trust on digital channels that farmers are less familiar with.

Each case study can be optimized by providing tailored Covid-19 content that supports farmers in maintaining their livelihoods in face of Covid-19. There is evidence that farmers are particularly concerned about livelihoods. Providing Covid-specific content that takes farmers crop cycle into account such as providing information about working safely in the planting season or traveling to markets post-harvest, would be relevant to farmers.

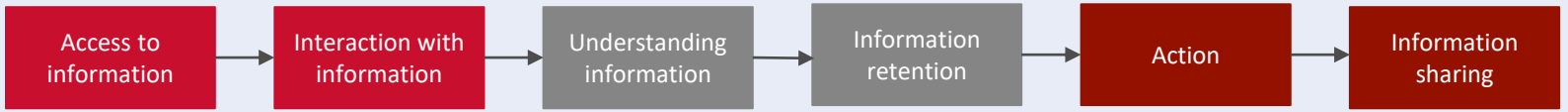
Phase 2
Executive Summary

Executive Summary

The age of farmers has a positive association with farmer behavior towards covid-19. Older individuals are more careful with their Covid-19 behavioral practices. Targeted communication should be emphasised for the younger farmers for behavior change.

Increased frequency of SMS does not have a significant effect on farmer behavior regarding Covid-19 . The different treatment arms did not show lead to any difference in behavior scores after intervention roll- out. Farmers have been receiving a lot of information around covid-19 and could be experiencing message fatigue. However, this does not entirely rule out the effectiveness of SMS interventions for behavior change as there are more avenues to explore such as increasing the sample size and timing of messaging (behavioral fatigue/saturation for Covid-19 info), other communication channels, etc.

Farmer information processing can be mapped onto a six step journey from information access to sharing.
Understanding the information process flow taken by farmers is important to understand the barriers and levers for information processing. Unpacking and considering the level of saturation, modalities and social environment should be incorporated in future communication campaigns with farmers.
The information flow process:



KAB Scores

Some detail on knowledge, attitude, behavior scores

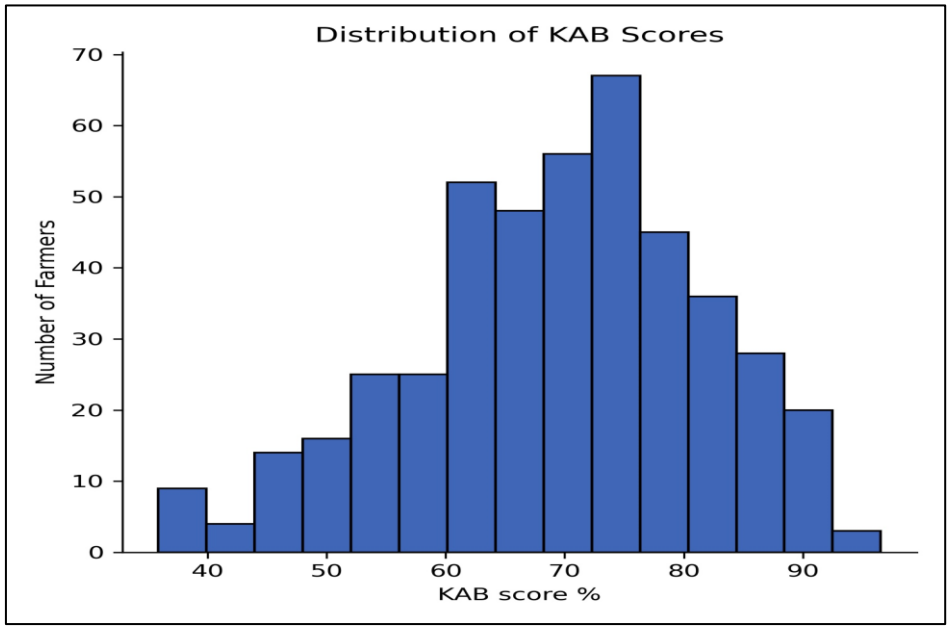
Segmenting of farmers by the KAB Score

We developed a score to understand the level of knowledge, attitude, and behavior (KAB) among surveyed farmers. The joint KAB scores were computed by an equally weighted geometric mean and subsequent fractile grouping was done to rank low, medium, and high scores. Understanding these various levels of knowledge, attitude, and behaviors will allow Producers Direct to tailor their communications to suit the needs of their farmers.

The KAB score is made up of three key areas:

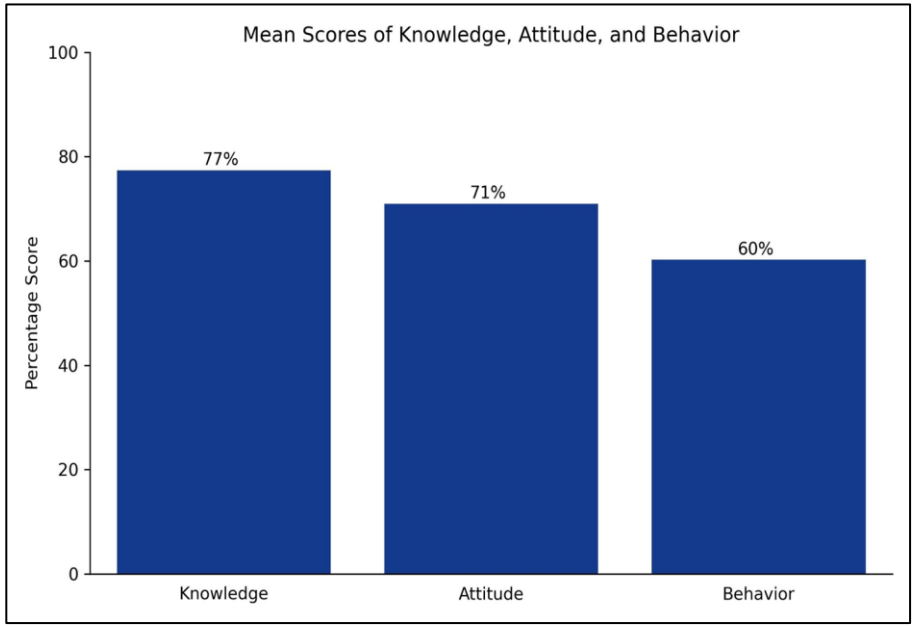
- **Knowledge-** This represents the understanding of Covid. An aggregate knowledge score was created by grading objective questions on Covid symptoms, prevention, transmission and social distancing guidance. Questions were created based on Covid messaging.
  - Example question: “Is Covid- 19 the same as common cold?”
- **Attitude** - This refers to a farmers feeling towards Covid. An attitude score was created by grading subjective responses to attitudes surrounding Covid prevention and response. Positive attitudes towards using preventative measures were graded favorably.
  - Example question: “Do you think your chance of getting Covid-19 is low,medium,high, or do you have no risk at all?”
- **Behaviors** - Behavior refers to ways in which a farmer demonstrate their knowledge and attitude through their actions. A behavior score was created by grading behaviors, as they align with Covid prevention methods such avoiding mass transportation and wearing a mask.
  - Example question: “How often do you sanitize your tools after sharing with other farmers?”

Overall Knowledge, Attitudes and Behaviors Score at baseline



- Low KAB scores ranged between 0- 40%, medium between 41- 65% and high score between 66%- 100%.
- The average KAB score is 69%, no farmer scores below 35% and the highest score is 97%.
- Farmers earning below 10,000 have a score of 62% which is the lowest.
- Similar to the behavior scores above, 18-25 year olds have the lowest KAB score of 60% across the age groups.
- **Females and males** have **similar** mean **KAB scores**.

Surveyed farmers scored lowest on Behavior



- Low behavior scores ranged between 0- 40%, medium between 41- 65% and high score between 66%- 100%.
- The behavior mean score was lowest among farmers.
- Focusing on the behavior score, the **lowest mean score was observed by those who earn below 10,000** with a score of 51%.
- **18-25 year olds (n=40) also recorded the lowest mean behavior score** at 43%.
- Earning below KES 10,000 and being young is associated with scoring low on behavior.

Drivers of Covid-19 related KAB

A deep dive into the KAB and behavior score

Predictors of positive behavior

Variable	Influence on behavior score	Insight
Age	Age is a positive driver of behavior score, a unit increase in age drives a 0.21 percentage point increase in behavior.	Older individuals are more careful with their Covid-19 behavioral practices. Targeted communication should be emphasised for the younger farmers for behavior change
Knowledge	A unit increase in knowledge (a perfect score) leads to a 18 percentage point increase in behavior.	This is a good indication that existing knowledge level of Covid-19 related symptoms has positive influence on behavior.
Attitude	A unit increase (a perfect score) in attitude leads to a 87 percentage point increase in behavior.	Attitude is proving to be a strong predictor of behavior, this shows that **communication targeting attitude as well as behavior** can prove to be powerful. This, however, should be tested further.
Primary and undergraduate level education	Being educated up to primary level or undergraduate level shows a positive influence on behavior (12 and 20 pct point increase respectively)	**Literacy levels** are associated with influencing positive behavior. Individuals could be seeking out more and scrutinising information carefully.
Smartphone ownership	Smartphone ownership leads to a 10 percentage point increase in behavior	Smartphone ownership might be correlated with other variables such as higher income levels, educated and are also **prone to receiving more Covid-19 related information**

Factors adversely influencing behavior scores

Variable	Influence on behavior score	Insight
Constant- without any intervention. (The natural/ constant state of farmers)	At status quo, farmers are likely to have a **drop of 40 percentage** points in their behavior score	Farmer behavior is already adversely affected hence efforts towards influencing positive Covid-19 related behavior should be put into consideration.
Income level below KES 10,000	If a farmer earns below KES 10,000 post harvesting period, their **behavior score is likely to be lower by 11 percentage points**	Poorer farmers are recording lower behavior scores. This is also likely confounded with other factors such as exposure to information

Note: Gender was not a significant variable in influencing KAB and behavior scores

Factors positively associated with higher KAB scores

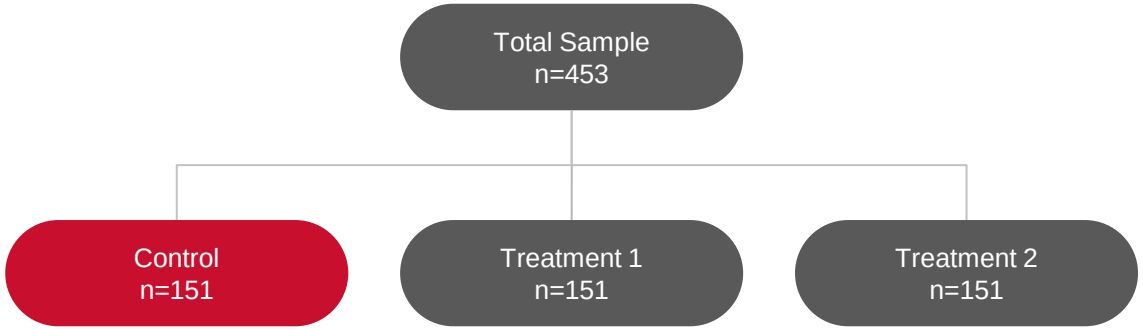
Variable	Influence on behavior score	Insight
Constant- without any intervention. (The natural/ constant state of farmers)	All individuals on average are reporting positive KAB scores. This is an improvement from phase 1 of the study. Holding other factors constant farmers are reporting a KAB score of 66%	A **delayed effect** of improvement of scores from the previous studies.
Age	Similar to behavior score, KAB scores are also influenced positively by age. A unit increase in age, increase the overall KAB score 0.1 percentage points.	Communication campaigns should also target younger audiences who might have lax attitudes and behavior from the ideal.
Undergraduate education	If someone has achieved undergraduate level education, they are likely to achieve a higher KAB score by 12.31 percentage points.	Communication strategies can be associated with favoring the more educated individuals.

Experiment Results

Key Insights

- The overall mean **behavior and KAB scores** post intervention did not change significantly.
- Messaging interventions are promising in **changing attitudes** as receiving one message had a positive effect on a proportion of farmers who received the intervention.
- Our hypothesis that **increase of frequency of messaging targeting behavior change would lead to better Covid related behavioral practices does not hold.**

Experiment design and summary of results



- The experiment was conducted over a period of 4 weeks, where farmers received **Covid related messages targeting behavior change**.
- Our hypothesis that **increase of frequency of messaging** targeting behavior change would **lead to better Covid related behavioral practices does not hold**. The primary outcome is the behavior score extracted from Covid-19 related knowledge, attitude, and behavior (KAB) score.

Note: Messaging information for the treatment arms can be found in the appendix

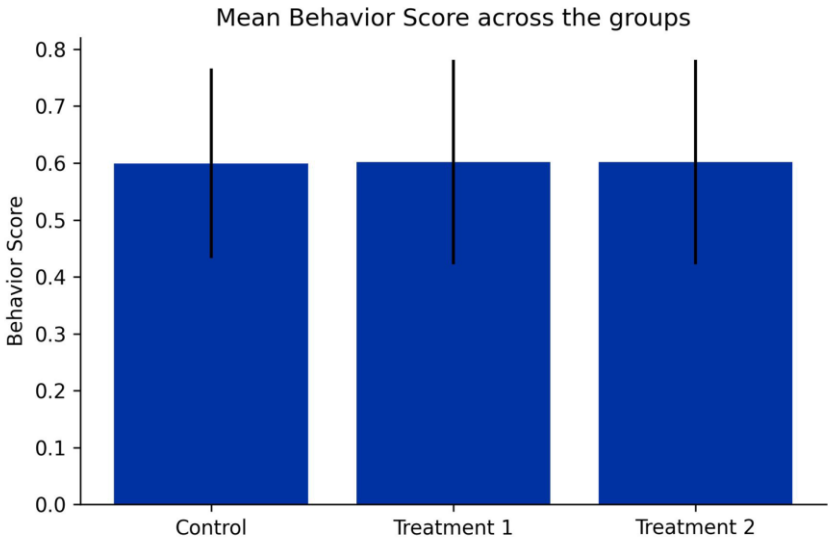
Experiment design and summary of results

- The overall mean KAB scores post intervention did not change significantly indicating that our intervention had **no effect on overall KAB.**
- The behavior score was higher for both treatment group 1 and 2, however, this was only applicable to 9.9% and 16.2% of the population respectively. This means that our **interventions had no significant effect on these groups**.
- The KAB scores for the three groups after the intervention were not significantly different.

❏ control group - 69.7%
❏ treatment 1 (one message) - 69.4%
❏ treatment 2 (two messages) - 69.9%

- However, this does not entirely rule out the effectiveness of SMS interventions for behavior change as there are more avenues to explore such as increasing the sample size and timing of messaging (behavioral fatigue/saturation for Covid-19 info), other communication channels, etc.

Digging deeper, behavior scores still show to be similar across groups



The mean behavior scores of the groups are as follows:

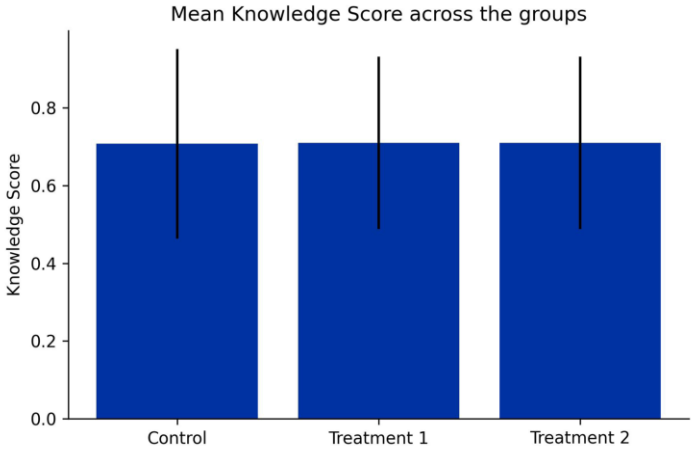
- control group - 57.1%
- treatment 1 (one message) - 57.1%
- treatment 2 (two messages) - 57.1%

After the SMS intervention, behavior scores for the farmers in the different treatment arms are the same, signaling that repeated messaging did not work in changing farmer behavior.

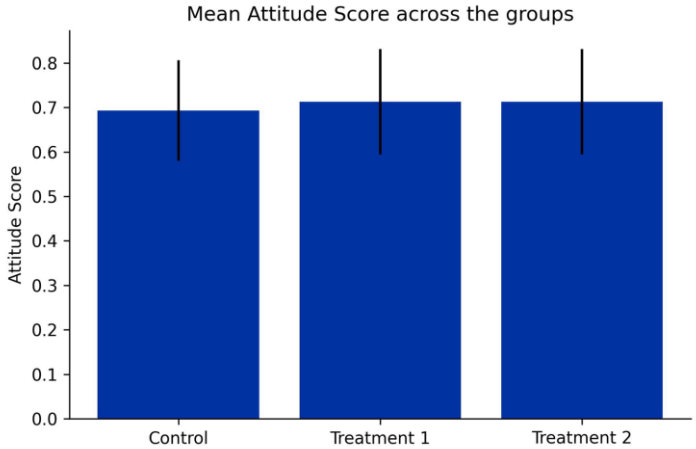
Our hypothesis that there are better behavior scores with repeated messaging of interventions does not hold.

The baseline mean score behavior for the sample was 60% indicating that there was a slight drop in the scores. Some farmers expressed that the information would have been targeted to other farmers who were not aware of the effects of Covid- 19. The farmers who received messages could have message fatigue.

Messaging interventions are promising in changing attitudes



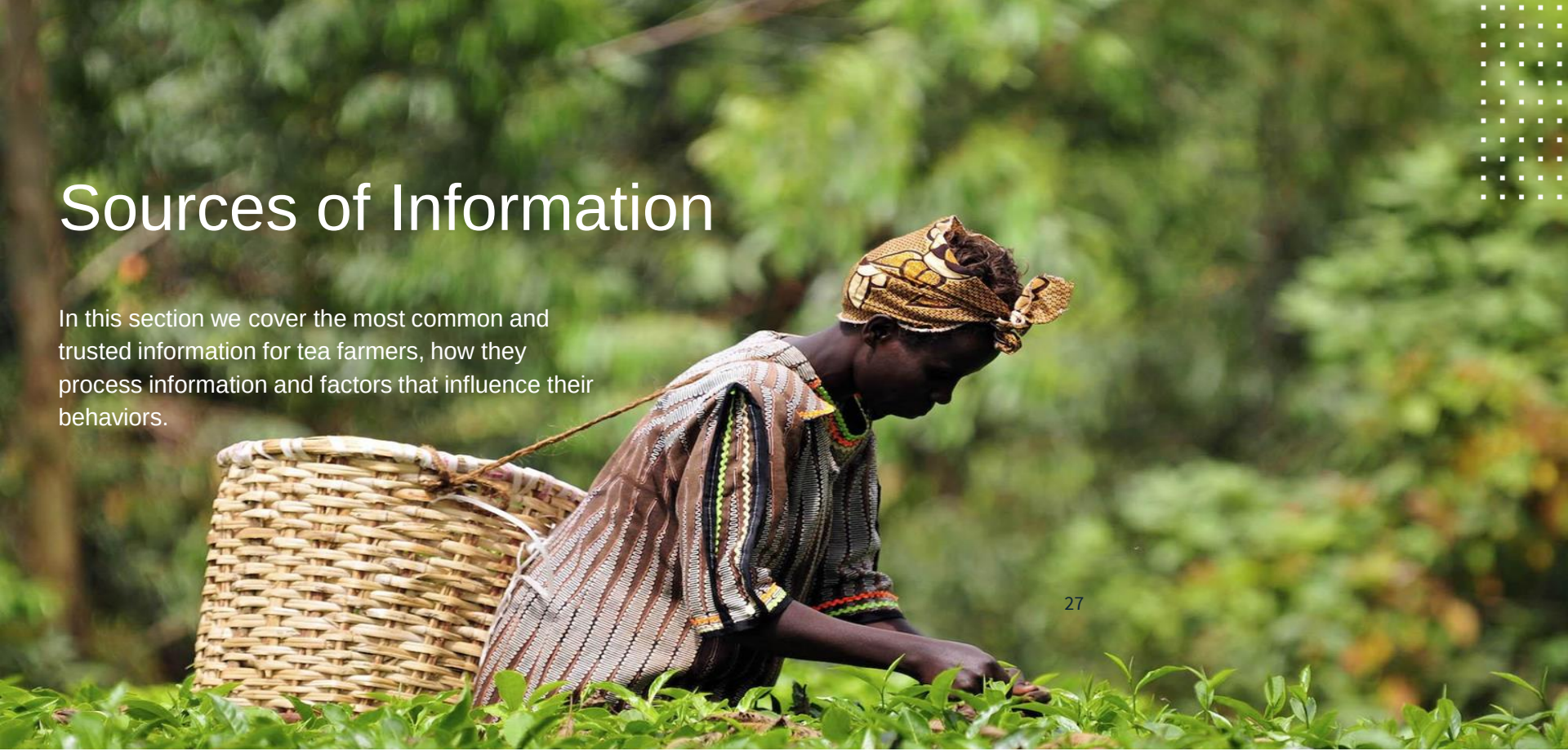
The median knowledge scores for the different groups is 75%, this score cuts across all the groups. The regression for this score also yielded non significant results - however, the group that received two messages were adversely affected by the treatment with their means dropping by 2.03%.



The control group had a lower attitude mean score than the rest of the groups that received the intervention. Regression results indicated that the group that received one message *treatment 1* scored better by 0.2% however, this finding is only significant for 86.9% of the sample under treatment 1. **In other words, our one messaging intervention had a positive effect on 87% of the farmers who received the intervention.**

Sources of Information

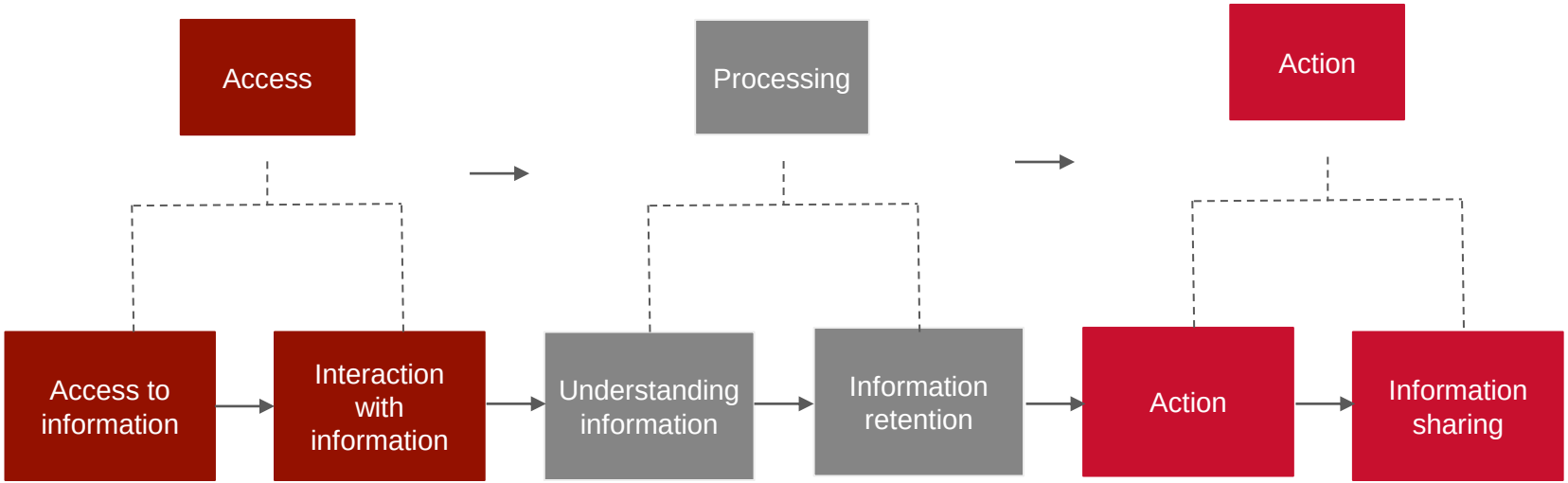
In this section we cover the most common and trusted information for tea farmers, how they process information and factors that influence their behaviors.



Key Insights

- Farmers receive most of their information from TV, radio, posters, SMS and call centers.
- Information processing for farmers follows a series of steps, from access, perception, understanding, retention, action and sharing.
- Farmers prefer receiving information through SMS and call centers compared to social media.
- The messenger effect and visual appearance of campaign material impact perception of information shared.
- Shorter messages sent over a longer duration of time is preferred by farmers for better understanding and retention of information.
- Farmer behavior towards covid- 19 is influenced by the messenger, their subjective risk level, framing of messaging, ease of understanding information and reminders around information.

Information processing flow



Farmers access to information

Farmers rely on traditional communication channels and the messenger is vital to their perception of the message

Farmers mostly access information through TV, radio, posters, SMS and call centers

Information is mainly accessed by farmers through channels such as TV and radio. The use of SMS is also popular amongst the farmers due to the convenience of easily accessing information sent and widespread phone ownership. Farmers also like receiving information through call centers because they have an opportunity to ask questions during the call.

"because we communicate at the same time and I can ask questions if I don't understand anything"

42 Year old female farmer

The messenger who delivers the information influences how farmers perceive it

The person who delivers a message has an impact on how people pay attention and perceive it. The messenger effects leads the farmers to be more attentive to information from The Ministry of Health and medical professionals. They are influenced by those they trust and are in positions of authority.

"Our people listen to what is recommended from above like from the Ministry of Health. When they hear of that, they trust it"

35 year old female farmer

Farmers access to information

Commonly used channels of communication such as SMS and call centers are preferred over less frequently used ones e.g social media

A few farmers do not trust social media. They trust information from SMS and call centers more which concur with quantitative findings in terms of usage. Farmers frequently use call centers and SMS compared to social media and are likely to access information sent via the frequently used channels (**status quo bias**)

"I use the phone for phone calls and sms, I don't use whatsapp a lot because it is easily accessible"
52 year old male farmer

Table: Frequency of reason for phone use

Frequency of use	Phone Calls	SMS	Whatsapp	Internet/ Google	Facebook
Very Frequently	53%	24%	21%	18%	18%
Frequently	36%	44%	18%	13%	11%
Occasionally	9%	21%	30%	31%	30%
Very Rarely	2%	6%	11%	13%	16%
Never	0%	5%	20%	24%	24%

Farmers access to informations

Visual appearance of materials captures attention and increases understanding while repeating same information to farmers has adverse effects on perception

Visual appearance of materials is essential in capturing the attention and increasing understanding of information

Farmers find the illustrative pictorials used in the posters appealing and attractive which makes it easy for them to understand the information therein. This is especially the case for the illiterate or those with hearing impairments.

"Because a deaf person or illiterate person can still see what is being communicated. Someone can see the poster from afar and someone who can't talk can also see and get the communication"

35 year old male farmer

Repeating the same information to farmers has the potential to be a nuisance

Some farmers found same repetitive information as a pain point. Receiving the same message can lead to saturation of information.

Mixing covid-19 information with general farmer information could reduce the fatigue farmers are facing towards covid-19 information.

"The repetition makes it annoying because sometimes you may think it is an Mpesa message but get it is a message telling you to wash your hands. About the structure, they should change how it reads. They should not send the same message today and tomorrow."

30 year old male farmer

Information Processing

Simplifying messages, integrating vernacular language and personalizing messages improves understanding and interaction of information.

Farmers easily understand short and simply worded messages especially in vernacular language

Using shorter messages with simple words is one of the ways to reduce friction to information understanding. Farmers prefer to receive the messages in their vernacular to make it easy for them to comprehend the information being relayed.

"It is using simple language that the farmer can understand and follow what is happening. "
52 year old male farmer

Personalized messages to farmers signals to they are the target audience and are receptive to the information

Farmers find SMS appealing because it appears personalized to individual farmers and are therefore likely to take the information in the SMS seriously and act on it. Use of salutations such "Dear farmer" makes the messages appear tailored for individual recipient and consequently instill a feeling that they are being watched and therefore pay more attention to the information

"Personally I have no problem with SMS because I get it personally and also because I know how to read a bit so it's a good method."

42 year old male farmer

Information Processing

Communication to farmers in the afternoon is best suited given they are less distracted and busy at the time

Farmers are less distracted in the afternoon and would benefit from communication sent at the time since they are less distracted

Most farmers had a similar routine that involved farming and market activities in the morning and mid- morning. Receiving messages on SMS and radio would be preferred in the afternoon and specifically before news on the radio when farmers are most attentive.

Action after information processing

Fear of covid-19 infection and awareness of other farmers affected by covid-19 encourages protective measures adherence by farmers

Higher subjective risks of getting Covid-19 increases uptake of preventative measures

Farmers who believe that they are likely to contract Covid-19 take actions such as washing hands often, wearing masks and receiving the covid-19 vaccine to protect themselves from getting infected.

"First of all, being infected with covid means death so it is important for you to take action like if I have been informed then I'll have to take certain measures. "

42 year old male farmer

Some farmers have adopted a wait and see attitude but take action once they learn of covid cases in their neighbourhood.

Being aware of people who have contracted covid-19 in the neighbourhood encourages farmers to take preventive action because they get to appreciate that covid is real and they can suffer similar consequences if they don't follow covid protocols.

"Most of our people want to experience. When they see a certain person has been sick or contracted COVID, they will adhere to the prevention measures. Another thing is giving them information about the reality of COVID and how dangerous it is."

35 year old female farmer

Action after information processing

Information sharing to those who do not own phones and TVs is common and driven by their social identity as farmers

Farmers share information to others, especially to those who do not have phones or TVs

Farmers feel compelled to share information they receive on covid with other farmers who cannot access it due to lack of phones or TV. The do so for the good of the other farmers without expecting anything in return(**altruism**). The propensity to share information with other farmers depend on how well the person sharing have understood the information.

"Yes. When I watch on the TV the spread of COVID, I do share with others who don't have a TV the information I got. I share with them because I want them to be protected as well"

45 year old male farmer

Information sharing amongst farmers increases due to shared social identity

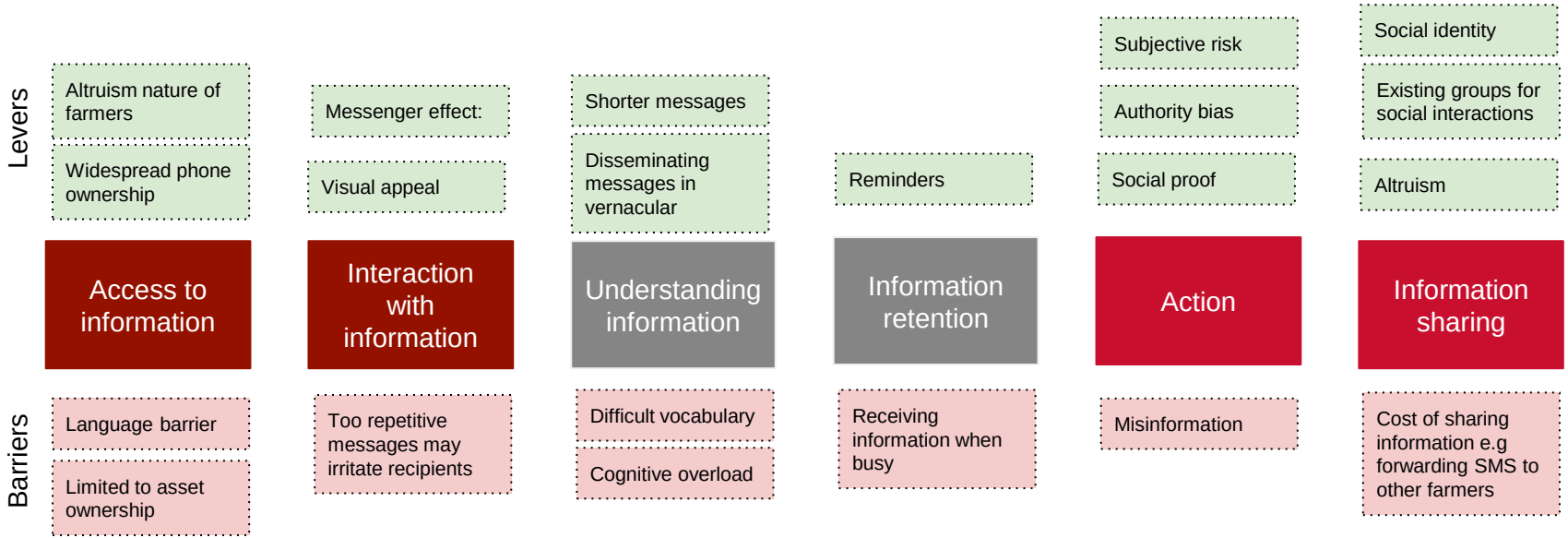
Farmers generally share information they receive to their friends because they feel obliged to share information with people with whom they share common social identity during their social interactions.

"Yes, I'll tell them. Because one of our neighbors died because of COVID-19 and she was a farmer like us.. So whenever I hear anything about COVID I must share it with my Fellow farmers."

58 year-old male farmer

Summary: Barriers and levers across the information processing flow

The information processing flow was developed from the qualitative interviews to create the journey farmers go through from when they access information to action and information sharing. The barriers and levers are mapped across the journey to identify opportunities to leverage on while designing communication campaigns.



Reminders, ease of understanding and learning from peers influence farmers to take covid-19 measures

Farmers prefer to receive messages in vernacular as it makes them easily understandable

Understanding the language and the words of the messages enhances farmers' understanding and retention of information. Good understanding of the information is expected to drive action on preventative measures and encourage information sharing with others.

> ***"I said the sms can be okay if it is using the local language. .. If you use English most of the farmers will not understand what you are talking about.***
>
> ***52 year old male farmer***

Farmers seek to perform covid- 19 preventive behaviours when they see fellow farmers practise them.

Some farmers emulate fellow farmers in adopting covid preventive measures being implemented by other farmers. This is the case around mask wearing and hand washing.

> ***"When they hear they are being told to put on a mask. Also when they see their fellow farmers having their masks on"***
>
> ***34 year old male farmer***

Availability of detrimental health effects of Covid-19 in farmers' memories encourages behavior change

Most farmers believe the awareness about detrimental health effects of Covid-19 influence actions of other farmers to change their behavior and adhere to covid-19 measures. Seeing/hearing of other farmers who have been affected and infected with covid influence other farmers to take preventive action.

> ***"When a farmer sees a person already affected with COVID, they will take action since it will affect their job and also what they see on TV about COVID."***
>
> ***27 year old female farmer***

Multiple messages act as reminders to farmers

Receiving SMS frequently about covid preventive measures act as reminders which nudge farmers to pay attention to the information and take action. Reminders in the form of visitations from authority such as MOH personnel & health facilities is also key in influencing farmers to take covid-19 preventive action.

> ***"When you get something frequent, it grabs your attention. Telling them to wear a mask and to wash their hands keeps on reminding them. "***
>
> ***30 year-old male farmer***

Although farmers are influenced to take action by people who are in authority, they tend to make decisions individually

Messages from authoritative individuals/ groups are trusted by farmers

Farmers trust messages from MoH and medical professionals. Some expressly prefer accessing covid-19 information via the government provided USSD code *719# to access more information on covid and messages sent by the ministry of health while others access information by word of mouth from health professionals who visit them to disseminate information on covid

"There is a number that I dial and I get the information. if you want to get information on covid you will dial *719#"

28 year old female farmer

Farmers make decisions on behavior at an individual level

Decision making is done at the individual level. The decision to wear masks is made individually instead of collectively as a community. This has an advantage in that they do not exhibit herd behavior that may have adverse consequences on their behavior.

"It's better to make your own decision because you don't know who you will disagree with."

38 year old male farmer

Community leaders and educated farmers have influence on other farmers

Farmers are equally influenced by the community as much as they influence other farmers. The more educated farmers and community leaders have more influence on farmer behavior.

"I do have influence over my friends who do not that much because they are few and I have more influence over them because of the experience I have and my level of education."

30 year old male farmer

Recommendations on impactful communication channels

In this section we explore the communication channels that will have most impact to tea farmers going forward

Key Insights

- ❏ Leverage figures of authority to increase credibility and trust of information campaigns.
- ❏ Introduce chatbots with automated responses and contacts to call for farmers who would like to ask questions.
- ❏ Design short and concise messaging to simplify information for farmers and improve information understanding.
- ❏ Disseminating information in vernacular especially through radio for some farmers who do not understand english/ kiswahili.
- ❏ Incorporate personalization of messages to farmers in campaigns.
- ❏ Enhance the visuals in posters to incorporate pictorials that are self- explanatory and easen information understanding.
- ❏ Design testimonial messages from other farmers who have been affected by Covid-19 to increase availability of risk exposure to farmers.
- ❏ Incorporate Covid-19 information in other general messaging due to message fatigue over the past 2 years.

Leverage figures of authority to increase credibility and trust of information campaigns

Interaction with information

THEORY OF CHANGE
Engaging figures of authority who are credible and experienced with regard to covid-19 information increase confidence in material.

CHALLENGES/ OPPORTUNITY
Trust in authoritative figures

Leverage existing communication channels

Farmers prefer receiving information via convenient and inexpensive channels which they have used over a long period of time such as SMS and call centers.

Farmers also find information disseminated by government officials such as health professionals to be more credible than those from other sources.

Behavioral Mechanisms

Messenger effect
Lend credence to information being disseminated and enhance uptake of the covid prevention practices

Authority bias
Farmers attributes greater accuracy to the opinion of an authority figure(Ministry of health and medical professionals) and are likely to practise the recommended activities.

Introduce chatbots with automated responses and contacts to call

Information Access and Interaction

THEORY OF CHANGE
Engaging with a platform that can offer responses is an important feature that can be incorporated to SMSs to enhance interaction and perception of information

CHALLENGES/ OPPORTUNITY
Interactive features farmers like from phone calls

Farmers use phone calls most frequently and prefer receiving information via phone calls because it gives them an opportunity to ask questions and seek clarification as they are conversing with the caller.

Integrating feature that allows farmers to ask clarifying questions even through, SMS such as the SMS code *719#, would be meeting a communication need. An advanced version of the chatbot could be integrated a with dial- in contact for farmers to call and ask additional information.

Behavioral Mechanisms

Messenger effect
Disseminate messages through from trustworthy sources such as Ministry of health

Designing short and concise messaging to simplify information for farmers

Information understanding and retention

THEORY OF CHANGE
Short and concise messaging reduces the risk overloading farmers with information and presents them with adequate information to take action

CHALLENGES/ OPPORTUNITY
Easen understanding of information

People are more likely to read, pay attention to, and act on information they can easily understand.

The processing fluency of information is important that simple messages are rated by readers as more rich in content and concise. Conversely, messages that are dense and difficult to process are less likely to be read, understood and acted upon. Often such messages are ignored entirely.

Behavioral Mechanisms

Reduce friction
Shorter simplified messaging reduces the level of difficulty in understanding the information.

Cognitive overload
Using simply worded short messages which are rich in content reduces the effort needed to process and understand the information by the recipient
.

Testimonials from other farmers affected by Covid-19 in form of edutainment

Action

THEORY OF CHANGE
Testimonials from other farmers increases the availability of information in the memory of those not taking precaution.

CHALLENGES/ OPPORTUNITY
Misinformation, encouraging action

Testimonials from other farmers who have been affected by Covid-19 can encourage other farmers who either:

- Have wrong information regarding Covid-19
- Currently not taking any preventative measures

The information can packaged as edutainment to reduce the message fatigue phenomenon and make the information more interesting.

Behavioral Mechanisms

Descriptive Social Norms
In situations where a person doesn't know what to do, information (presented through testimonial posters) on what others like them are doing can encourage .

Incorporate Covid-19 information in other general messaging due to information fatigue over the past 2 years

Interaction with information/ Action

THEORY OF CHANGE
Resistance in message processing due to message fatigue and likelihood to reduce compliance to preventive behavior

CHALLENGES/ OPPORTUNITY
Messaging fatigue

Past research has examined the effects of message fatigue on resistance in messages processing. This is how fatigued people respond to an incoming message on a health issue they already feel tired of hearing about.
It is important to ensure there is substantive exposure which could be conducive to positive outcome, in this case preventative measures.
However, it is equally imperative to recognize and guard against potential effect of too much exposure, especially in a media- saturated environment.

Behavioral Mechanisms

Message fatigue
Phenomenon of feeling tired of receiving similar messages

Incorporate personalization of messages to farmers in campaigns

Interaction with information

THEORY OF CHANGE
Curating an experience for the farmers to make the messages customized emphasizes the farmer as the target audience of the information

CHALLENGES/ OPPORTUNITY
Identifying/relating to information

Personalization refers to the use of specific information of an individual to curate their experience on a platform, making it more customized.

When asked to send messages to other farmers on what they had learnt from the information campaigns, most farmers started the messages with the term “ Dear farmer…” which is a signal of the need to personalize the messages to farmers.

This can increase the sense of identity with the message and increase awareness of the message being targeted to them.

Behavioral Mechanisms

Personalization
Bolster understanding of information and nudge people to perform intended behavior

Disseminating information in vernacular especially through radio

Information understanding

THEORY OF CHANGE
Some farmers are not literate and may not understand english or kiswahili. Including vernacular increases the audience reached.

CHALLENGES/ OPPORTUNITY
Reaching illiterate farmers

Owing to the ethnic homogeneity of the intended audience of the messages, disseminating information in vernacular is likely to enhance understandability and retention amongst the respondents.

Behavioral Mechanisms

Reduce Friction
Disseminating covid messages in the intended recipients' own language reduces the effort that spend in trying to process the information being relayed and consequently makes it easier for them to understand and retain the information.

Including pictures and illustrations to improve visual aspect of posters

Interaction and understanding of information

THEORY OF CHANGE
Visual illustrations increase the self-explanatory nature of the message on the material

CHALLENGES/ OPPORTUNITY
Easing message understanding

Adding pictures and illustrative visual features in the posters would increase the chances of the information being understood.

Some farmers who are not literate might benefit from illustrative images that make the information straightforward to understand.

Appendix

Messages sent to farmers

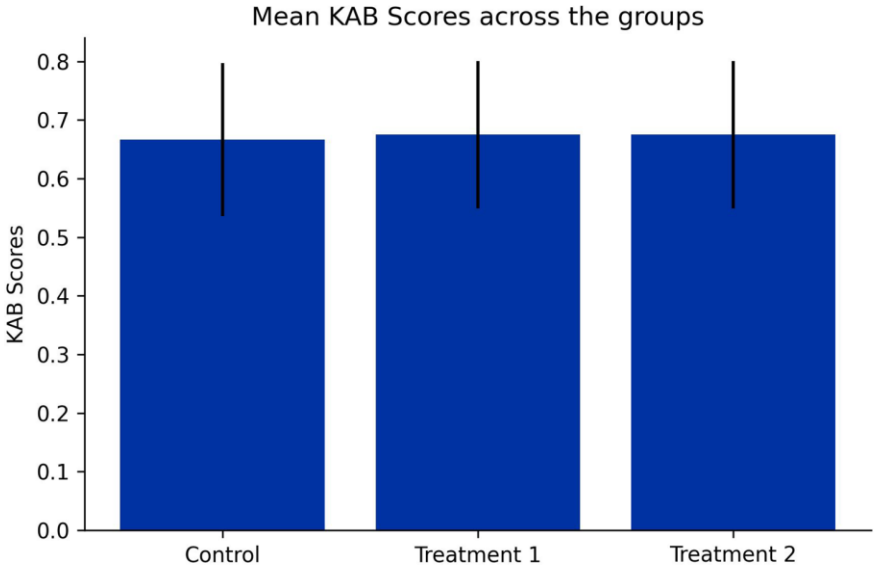
Week 1: Wear a mask to keep you and your family healthy and safe from COVID-19 as recommended by the Ministry of Health. Find out more by replying with 1.

Week 2: Keep safe and help stop the spread of COVID-19. Stay physically distance from anyone around you by 2ft. Learn other ways to protect yourself by replying with 1

Week 3: It is good practice to wash and sanitize your tools whenever you share them with other farmers. Reply with 1 to learn more or send a free text to 40244

Week 4: Avoid physical contact when interacting with other farmers to prevent contracting Covid-19.To learn more about other ways you can protect yourself, reply with 1

Scores across the different experiment groups are consistent



Control	Treatment 1	Treatment 2
66.65%	+0.84%	-0.46%

The median KAB scores of the groups are as follows:

- control group - 69.7%
- treatment 1 (one message) - 69.4%
- treatment 2 (two messages) - 69.9%

The highest score recorded was for the group that received two messages. However, checking for significant effects, none of these results yielded significant results. This could be driven by the fact that only 74% of the sample recalls receiving an SMS from Producers Direct.

This means that, the communication interventions had limited effectiveness on Covid-related KAB, this could be due to saturation of information among farmers as baseline KAB scores for all farmers yielded similar results of a median score of 69%.

Some farmers expressed that the information would have been targeted to other farmers who were not aware of the effects of Covid- 19.

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