Impact of Agricultural Communication Interventions on Improving Agricultural Productivity in Malawi

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Abstract

Agricultural communication (AGCOM) has been known to aid in disseminating research-based agricultural information among Malawian farmers. In 1958 the Malawi Government, via the Ministry of Agriculture, established the Agricultural Communications Branch (ACB) in an attempt to increase access to and adoption of scientifically-proven technologies among farmers. Moreover, in 2000 the Malawi Government started implementing an agricultural extension policy that promoted pluralistic demand-driven extension, which led to the increased availability of non-governmental organizations providing AGCOM services to farmers. However, after several decades of using different communication tools to promote new technologies, low productivity in most small holder farms remains a challenge, with limited adoption of improved technology as one of the contributing factors. In this exploratory, convergent, mixed methods study, 30 Malawian farmers and six AGCOM officers who were selected using convenient and snow ball sampling respectively participated in key informant interviews. In addition, 64 AGCOM officers who were selected using simple random sampling were involved in a survey. The findings of the study revealed that information delivered to farmers does not address farmer needs in most cases. Specifically, existing policies, source and availability of funding, and the agricultural calendar influenced choice of information that was disseminated. For example,the existing policy does not allow AGCOM officers to disseminate local and innovative farmer practices unless they are tested and approved by scientists. Such policies, perpetuates a mindset among farmers that innovations originate from outside their communities, thereby making it hard for them to share their local, indigenous ideas with their colleagues. Moreover, it has contributed to the inability of AGCOM to be used as an innovation creation tool, hence AGCOMs' limited impact.

Keywords: adoption, improved technologies, agricultural communication, increased productivity, information dissemination

Introduction

Since its inception, agricultural communication (AGCOM) has been known to aid in disseminating research-based agricultural information to farmers (Cash, 2001). This led to the use of AGCOM as a tool rather than as a science for understanding behavior (Tucker, 1996). However, for developed countries like the U.S., there have been changes in AGCOM focus, one of which include the inclusion of the general public and not only farmers as the audience for AGCOM (Tucker, Whaley, & Cano, 2003). While for most developing countries like Malawi, AGCOM is still used as a promotional and awareness creation tool among rural farmers to facilitate adoption of improved technologies for increased productivity in small farms (Masambuka-Kanchewa, 2013; Masangano, Kambewa, Bosscher, & Fatch, 2017; Ragasa, Aberman, & Mingote, 2017).

In Malawi, agricultural communication interventions dates back to 1958, when the Malawi Government, via the Ministry of Agriculture, established the Agricultural Communications Branch (ACB) in an attempt to increase access to and adoption of scientifically-tested and proven technologies among farmers (Manda & Chapota, 2015). Moreover, implementation of a pluralistic, demand-driven extension service in 2000 led to an increased availability of non-governmental organizations providing agricultural extension services to farmers (Masangano et al., 2017). Inorder to improve efficiency and increase extension coverage, most of these organizations adopted the use of Information Communication Technologies (ICTs) as a tool for delivering information on improved technologies to farmers (Steinfield, Wyche, Cai, & Chiwasa, 2015). After several decades of using different communication tools to promote emerging technologies, low productivity among most small holder farms remains a challenge (Lunduka, Fisher, & Snapp, 2012; Ragasa et al., 2017). Furthermore, access to information to guide farmers production practices is still highlighted as a major constraint(GoM, 2016, p4). Despite, increased focus on the use of AGCOM as an improved technology dissemination tool, little is known regarding its impact on addressing farmers' needs as well as capturing farmers' voices (Masambuka-Kanchewa, 2013; Ragasa et al., 2017; Masangano et al., 2017). Effectiveness of AGCOM interventions can only be achieved if these tools are used to address different challenges faced by farmers at various stages of their production and decision making processes (Masangano et al., 2017). Therefore, the limited impact of AGCOM on the adoption of improved technologies among small holder farmers raises a question as to whether using AGCOM as an awareness or technology promotion tool in Malawi is effective.

Theoretical Framework

Framing Theory (Scheufele, 2000) and the Theory of Diffusion of Innovations (Rogers, 2003) were used to guide the study. Framing "refers to the process by which people develop a particular conceptualization of an issue or reorient their thinking about an issue" (Chong & Druckman, 2007, p.104). Framing is important for presenting complex ideas as it is known to be useful in improving comprehension of ideas and concepts (Scheufele & Tewksbury, 2006). Framing is achieved through selection, placement, and presentation of specific topics or issues in a way that allows the audience to focus on specific elements while making salient selected components (Matthes, 2009). Frames are categorized as either individual or media frames (Scheufele, 1999). Individual frames are described as "internal structures of the mind (Kinder & Sanders, 1990, p. 74). These frames are "mentally stored clusters of ideas that guide individuals' processing of information" (Entman, 1993, p. 53). On the other hand media frames are "a central organizing idea or story line that provides meaning to an unfolding strip of events . . . The frame

suggests what the controversy is about, the essence of the issue" (Gamson & Modigliani, 1987 p. 143). Media frames assist journalists package information in a way that is easily understood and apprehended by the audience (Gitlin, 1980). Intellectuals, political leaders, or other people with power and vested interests are responsible for building frames, while the media is responsible for setting the frames (Scheufele, 2000). Frame building involves formation of ideas or narratives that feed into news stories or narratives that are transmitted by the media (Scheufele, 1999) while frame setting "is concerned with the salience of issue attributes (Scheufele, 1999 p.166).

In most developing countries, AGCOM has been framed by the policy makers, scientists and other players as an awareness creation and improved technology promotion tool (Briggs & Moyo, 2012; Dhaka & Chayal, 2016; Šūmane et al., 2018). As such dfferent mass media channels, such as radio and newspapers, have been useful and influential in reaching out to more people as they are believed to contribute towards the adoption of improved technologies (Doerfert, & Irlbeck, 2011; Graybill-Leonard, Meyers, Mcquail & Windahl, 1995; Tucker, et al., 2003). However, effective communication entails provision of opportunities for dialogue between and among farmers and other players so they are able to express their concerns and needs as well as incite a response from relevant stakeholders (Rodriguez-Colombia, 2015). Morever, a lot of research in AGCOM frames has been conducted in U.S.A and has focused on the impact of mass media framing of agricultural information and its impact on public perceptions about agriculture (Charanza & Naile, 2012; Sellnow & Sellnow, 2014; Specht & Beam, 2015).

The importance of communication channels in disseminating agricultural information cannot be over emphasized as indicated by the Diffusion of Innovations Theory (DoI) (Rogers, 1976). DoI theory looks at how a new idea or innovation spreads or is accepted by people in a social system and people's decision-making process (Rogers, 1976). Diffusion is defined as "the process by which an innovation, perceived as a new idea, spreads via certain communication channels over time among the members of a social system" (Rogers, 2003, p.13). Innovations have been perceived as originating from outside the social system (Dagron, 2009), hence the need for communication channels to diffuse them into the social system.

Individuals go through different stages as they decide to adopt or reject a technology or an innovation. Rogers (2003) identified these stages as: "knowledge, persuasion, decision, implementation, and confirmation" (p. 20). Therefore, the effectiveness of communication channels in diffusing innovations depends on which stage a person is in during the decision-making process. However, for AGCOM, the focus has been mainly on mass media including ICTs and their role in improving farmers' access to information on improved technologies (Rogers, Shinghal, & Quinlan, 2009) while ignoring the differences that exist in farmers' decision mamking stages. Interpersonal communication channels, as opposed to mass media communication channels, have been known to be effective during the persuasion stage while mass media channels are said to be effective during the knowledge phase (Rogers, Shinghal, & Quinlan, 2009). Therefore, knowledge of an individual's stage in the decision making process is crucial in ensuring that relevant communication channels are slected and used. Moreover, framing of AGCOM as a tool for disseminating information on improved technologies to farmers affects the use of communication channels and how information is disseminated within a social system (Rogers, 2003).

Purpose and Research Questions

The purpose of this study was to explore the effectiveness of AGCOM interventions towards improving agricultural productivity in Malawi. The following research questions were

used to guide the study: 1) What factors influenced choice of content and communication channels? 2) How did farmers perceive AGCOM and its role on improving agricultural productivity? and 3)What perceptions did AGCOM officers have regarding the role of AGCOM?

Methods

Using a pragmatic paradigm lens (Badley, 2003; Jacobson, 1993), the researcher sought to understand how AGCOM activities were implemented in Malawi including the involvement of farmers' and AGCOM officers. The pragmatic paradigm was used to guide the researcher in understanding the underlying factors for the use of agricultural communication and their practical and empirical implication on agricultural development (Badley, 2003; Johnson & Onwuegbuzie, 2004; Yvonne Feilzer, 2010). Therefore, the results of this study were not only expected to be statistically significant but socially significant as well. An exploratory, convergent, mixed-method research design was employed to capture both farmers' and AGCOM officers' perspectives (Creswell & Creswell, 2017). Therefore, both theoretical and methodical triangulation were employed (Denzin, 1970). Theoretical triangulation involves the use of more than one theory to study a given construct (Denzin, 1970). Therefore, theoretical triangulation was applied in this study and involved the use of two theories: diffusion of innovation, and framing theories. The methodological triangulation involved both "in method and between method triangulation" (Denzin, 1970, p. 298).

In method and between method triangulation was used in this study through collection of data in multiple ways such as: content analysis of communication artifacts and other documents, interviews with farmers and communication officers and surveys with communication officers. The qualitative data from the communication officers were collected before conducting the interviews with the farmers as such farmer interviews were used for triangulation. Triangulation was useful in this case because it assisted in understanding the drivers of AGCOM from both farmers' and AGCOM officers' points of view (Greene, Caracelli, & Graham, 1989; Kwok, 2012). Surveys were used to collect quantitative data and key informant interviews were used to collect qualitative data in order to have an in-depth understanding of the issues under study.

AGCOM Officer Survey

Population and Sampling.

The population of interest for this part of the study were AGCOM officers working in Malawi for both the public and private organizations. A sampling frame was created from the Department of Agricultural Extension's communication officers' database of AGCOM organizations in Malawi. Using simple random sampling, 64 AGCOM officers were recruited from a population of 100 to participate to ensure the sample was representative of all AGCOM officers in Malawi (Creswell, 2011). AGCOM officers recruited were from 34 AGCOM organizations throughout the country which included: public organizations, both local and international non-governmental organizations, private, and farmers' organizations.

Instrumentation, Data Collection and Analysis

The AGCOM officer questionnaire contained both closed-ended, Likert scale-type questions which were developed based on the results of a content analysis of the communication artifacts developed by various AGCOM organization in Malawi between 2010 and 2016 (Masambuka, Rodriguez & Buck, 2018). In addition, closed-ended and Likert scale-type questions were modified from existing scales to capture the officers' perceptions of AGCOM (Ajzen, 2006; Jirojwong, Johnson, & Welch, 2014). Two constructs were created based on the responses: *Role of AGCOM in agriculture* and *Importance of AGCOM* . The Likert scale items

ranged from 1 – *Strongly disagree* to 5 – *Strongly agree*. The closed-ended items included 10 dichotomous items which assessed factors influencing choice of messages to deliver. These were created from a list of items that identified reasons why officers developed messages based on the results of the content analysis. In addition 10 items that assessed choice of channels used were also included based on the results of the content analysis.

A panel of experts that included a statistician, two U.S.A based AGCOM professors, a research design expert and two AGCOM practitioners was used to ensure face, content and construct validity. A pilot test was run with 30 respondents from five countries in Sub-Saharan Africa namely; Malawi, Zambia, Kenya, Tanzania and Namibia. Internal reliability for all each scale was calculated *ex post facto* with a Cronbach's alpha coefficient of .84 for Role of AGCOM in agriculture and .85 for Importance of AGCOM and uses of AGCOM. Moreover, the upper and lower bound correlation coeffiecient for the dichotomous variables (Sun et al., 2007) was calculated *ex post facto* with a cronbach's alpha coefficient of .82 for choice of channels and .80 for choice of messages.

Two trained enumerators and the primary researcher distributed the survey to the respondents at their various offices. The research team left their contact details with the respondents, and the respondents communicated with them through WhatsApp whenever they had completed the survey. In addition, the enumerators collected contact information from the respondents and followed up with them up to three times for a period of three weeks before considering the respondent as non-responsive. Data collected from the surveys were analyzed using Statistical Package for Social Scientists (SPSS) version 25. Descriptive statistics including frequencies and cross tabulations were used to analyze the data.

Farmer and AGCOM Officer Interviews

Population and Sampling.

A total of 30 (both crop and livestiock) farmers, 15 men and 15 women, were recruited using convenience sampling to participate in the key informant interviews. The use of convenience sampling ensured that only those participants who were available and willing to take part in the study were recruited (Dörnyei, 2007). Participants were drawn from three villages representing the three regions of the country so differences in production and cultural systems as well ecological patterns, which may have an impact on farmers' experiences and knowledge, were incorporated. Moreover, an equal number of men and women were recruited from each village to take part in the interviews to accommodate differences that may exist among farmers due to gender differences (Ary, Jacobs, Sorensen, & Razavieh, 2010; Flyvbjerg, 2006).

In addition, six AGCOM officers were recruited using snowball sampling (Goodman, 1961). Snowball sampling was used to ensure only participants that were knowledgeable about the subject matter were recruited so relevant and accurate information was captured (Ghosh et al., 2013). Of the six AGCOM officers, five worked with the ACB, a part of the public extension provider within the Ministry of Agriculture. One AGCOM officer was from a private extension provider known as Farm Radio Trust (FRT). Deliberate measures were put inplace to ensure that only officers whop had served for at l;east up to five years were included in the interviews to ensure that only experienced officers were involved. As such there were more participants from the Ministry of Agriculture because most of the organizations did not have officers who had served for that period of time.

Instrumentation and Data Collection.

Two semi-structured interview guides were used – one for farmers and the other for AGCOM officers. To ensure the semi-structured interview guides contained relevant and objective questions, a content analysis was conducted on communication artifacts, such as video and radio programs, as well as print materials developed and disseminated to farmers between 2010 and 2016 (Holsti, 1969; Masambuka et al., 2018). The farmers' interview guide was pilot tested with 20 farmers from Columbus, Ohio while the AGCOM officers' interview guide was pilot tested with five AGCOM officers from Malawi who did not take part in the full study.

Two trained enumerators and the principal investigator conducted the interviews. All the farmer interviews were conducted at a central location chosen by the community members. Extension workers for each community recommended mobilizing the farmers to meet at a central location. The extension workers communicated with the community members a day before each meeting so the farmers could come to a specific meeting place which ranged from churches, schools, to community grounds. To ensure every participant was able to express their views without being interrogated (Morgan, 1996), arrangements were made so the one-on one interview were conducted privately. All the farmer interviews were conducted in Chichewa, as the vernacular language for Malawi, and lasted for a maximum of one hour. While the AGCOM officer interviews were held in the officers' offices in English. Each AGCOM officer interview lasted approximately 30 minutes. All the interviews were recorded using audio recorders.

Reflexivity Statement.

The researcher acknowledges that her experience and knowledge about the AGCOM programs in Malawi may have influenced her interpretation and analysis of the data. The researcher was a doctoral student at the time of the interviews but had previously held a role as an AGCOM officer for the Ministry. Moreover, before starting her doctoral program, the researcher was responsible for coordinating all AGCOM in Malawi and had previously interacted with some of the interview participants.

Data Analysis.

Both inductive and deductive data analysis approaches were used (Thomas, 2006) during and after the data collection process. Field notes were taken after each interview and analyzed to identify emerging themes which were then followed up in subsequent interviews. All interviews were transcribed and translated prior to data analysis. Pseudonyms were used to cover the identity of the participants where one initial such as J was used for female respondents and two initials such as PE were used for male respondents. NVivo Pro was used to analyze the data from the key informant interviews with emergent themes and subthemes generated. The themes were reported based on the number of times statements corresponding to a given theme emerged. For example, if a statement was mentioned by four or more AGCOM officers, the word "majority or most" was used and for those themes that had two corresponding statements, the word "few" was used (Harding, 2013). The same approach was used for the farmer interviews. In this case, if there were more than 20 corresponding statements, the word "majority" was used and if there were more than 15 corresponding statements, the word "some" was used. If there were less than fifteen statements, the word "few" was used.

Data Integration.

Data from the key informant interviews and the surveys were analyzed independently and then integrated to interpret the meaning of the results (Bazeley, 2012, Creswell & Creswell, 2017; Sandelowski, 2000). The quantitative results were explored and reported in line with the qualitative results (Eisner, 1991; Fetters, Curry, & Creswell, 2013). Specifically, quotes from the

interviews were used to substantiate the findings of the quantitative research (Bazeley, 2012). The quotes were chosen regardless of the content as long as they addressed the questions that appeared to be significant in the quantitative results. Therefore, quotes were selected regardless of the existing discrepancies with the quantitative results.

Results

Demographics of Survey Respondents

A total of 64 AGCOM officers, comprised of 27 women (42%) and 37 men (58%) working for 30 different organizations in Malawi were surveyed. Respondents ranged from 24 to 69 years of age (M = 35.00; SD = 8.14). The majority of the respondents (n = 29) worked for the ACB as it is the major public AGCOM organization in the country followed by respondents who were working for international non-profit organizations (n = 15). Only 35% had a college degree in journalism. While less than 10 perecent (n=6) had associate degrees in others fields which included agribusiness management, sociology, website management, and administration.

Demographics of Key Informant Interviews Participants

The six AGCOM interview participants included two women and four men. Their years of service ranged from nine to 21 years. Almost all of the participants indicated serving in one position except for one officer who reported they had switched organizations. A total of 30 farmers participated in the key informant interviews including 15 men and 15 women from three districts. The farmers' years of farming ranged from six years to 50 years with the majority having farmed for 20 years. Maize was indicated as one of the crops grown by the farmers in all the communities. However, there were variations in other types of crops grown and livestock raised from district to district.

Factors Influencing Choice of Content and Communication Channels Used

Factors Influencing Choice of Content.

AGCOM officers were asked to indicate factors that influenced their choice of content. Importance of the message in addressing farmers' needs was reported as the major influencing factor (n = 63; 98 %) followed by organizations' requirements (n = 58; 90 %). Availability of farmers to share negative experiences as the least influential factor n=32; 90 %). However, during the interviews, the agricultural calendar, availability and source of funding, and the existing policies emerged as influencing choice of content from the interview data.

Agricultural calendar.

The majority of the officers reported the agricultural calendar was used as a guide when deciding the type of content and message to disseminate. For example, PE stated,

> We are able to identify the message needs by identifying gaps where we feel that farmers are supposed to get information depending on the agriculture calendar which we have, so using the calendar we are able to decide as to what messages we are supposed to produce each month.

The agricultural calendar is a handbook that provided instructions on different agricultural activities that are supposed to be implemented based on the ecological zones. However, the last time the calendar was updated was in 2000.

Availability and source of funding.

The availability of funding and the source of funds were reported by the majority of the officers as influencing choice of content to develop and disseminate. For example, it was reported that in most cases, choice of content to disseminate was influenced by the objectives of

different projects. MN stated, "Some projects they pay… the project comes with their own objectives for example, some projects promote only maize others promote rice production." Moreover, the source of funding not only influence the type of message to disseminate but also the locations that are visited for the collection of content. J summarized this well when he stated,

> ...We cannot cover some places where that project is not working so we go where that project is working but the message goes to the whole country...But for content collection it's that area where the project is working but for the message it goes nationwide.

Existing policies.

The majority of the participants indicated they were not supposed to disseminate any technologies that have not been scientifically proven, even in cases where farmers have innovations that seem to be working as summarized in the following response from PE:

> We cannot disseminate messages on our own without waiting for the researchers telling us to disseminate the information. For example, this year most we had an army worm outbreak and one farmer in Zomba had a concoction that he was using and managed to eliminate the problem in his field. We went and talked with him during a field day, but we could not promote what he was using because the researchers have not tested and approved it.

Factors Influencing Choice of Communication Channels Used.

Table 1 shows the respondents' results when they were asked to list the factors influencing their choice of communication channels. The results indicated the type of message being delivered (n = 62) and number of people reached by the media (n = 60) were the top factors influencing choice of a communication channel. Respondents' competency in using the media channel was indicated as one of the least influencing factors *(*n = 46), followed by requirements from funding organization (n = 44).

Table 1.
Factors influencing AGCOM officers' choice of communication channels

Influencing Factor	*F*	*%*
Type of message	62	95
Number of people reached	60	92
Availability of resources	59	91
Farmers' media accessibility	57	88
Farmers' ability to use media	56	86
Time required to send the message	58	89
Organization requirement	50	77
Officer's media accessibility	47	72
Officer's competency using the media	46	71
Funding organization requirement	44	66

**Note: n= 64. The officers were asked to respond to each question*.

In terms of media channels used when delivering agricultural information, the majority of the respondents (86%) reported using print media, followed by radio (83%). Television and mobile phones were reported as the least used media channels (65% and 63% respectively).

Availability of funding emerged as one of the themes that influenced the type of channels used during the interviews. Specifically, the participants indicated availability of funding influenced the times at which various radio programs were aired, quantity of print publications produced and disseminated, as well as the frequency at which radio programs were aired.

Moreover, the officers reported airing programs during times when they were aware that farmers would not be able to access the messages. PE summarized this well stating,

> Many people were saying that we would be able to listen to the program soon after six o'clock because that's when we are at home…So, what we decided to do was to look at the monetary issue. After six o'clock was very expensive.

The impact of funding was also reported as affecting continuation of various radio or television programs even in cases where farmers still demanded the programs as summarized in the following response from PN:

> Farmers were asking why we are not watching these programs so it's difficult to explain the truth to farmers that we are failing to this because of the issue of political issues we can't say the government do not have monies.

Funding availability was also observed as contributing to limited production of print materials. K stated, "We produce less copies for the farmers because of financial problems so many farmers do not have uhm, what can I say I can say do not have access to the publication that we do produce here."

Farmers' Perceptions of AGCOM and its Impact on Implementation of AGCOM Interventions

In order to explore farmers' perceptions about AGCOM, participants were asked to describe what they perceived as the purpose of the information they received as well as their involvement in the content and channel selection. All the interviews revealed the farmers perceived AGCOM as being used to improve technology dissemination and as an instruction delivery tool. Moreover, the farmers also indicated they are not involved in channel and content selection.

AGCOM as an Improved Technology Dissemination Tool.

The majority of the participants indicated that most of the information they had access to was aimed at disseminating new and improved technologies as summarized in the following response from E: "We hear more about improved farming practices such as conservation agriculture which is being promoted nowadays."

In addition, it was observed the farmers believed only successful farmers who had adopted improved technologies were featured in the radio programs. As such they were willing to share their success stories about adopting improved technologies. For example, FS stated,

> Am comfortable to share my input because I have benefitted from the advice that I have been getting from the radio unlike how I used to benefit in the past, so I feel I am supposed to be providing input.

AGCOM as an Instructional Tool for Dissemination of Proper Farming Practices.

The majority of the participants indicated they viewed AGCOM as being aimed at teaching them about different farming practices as such viewed themselves as just passive learners as summarized in the following responses from M: "They teach us how to make manure, proper farming practice" which was echoed by PK: "They tell us to start preparing our land, making manure, making and buying fertilizer."

Relevance of the Messages in Addressing Farmers Needs.

When the participants were asked about their opinions regarding the relevance of disseminating information on improved technologies, the majority indicated they found the information useful. CC stated, "When we have access to agricultural information you are able to learn and apply so that one is able to differentiate modern agricultural practices with traditional

ones." However, despite their acknowledgement of the information being relevant and useful, some expressed the information does not address their needs. K stated, "In this area farmers are receiving information on crops that farmers in this area do not grow…, sometimes they are provided with information on rice production and yet people in this area farmers do not grow rice."

Timing for the delivery of the messages was also indicated as affecting farmers' ability to perceive the information as being relevant. CC stated, "The information comes at the wrong time because of that you end up failing to get the message because you have not been able to access the message." This was echoed by KK: "They said we should be making manure that is last year sure, but the message came in late after the rains had already started so we failed to make manure."

The participants also expressed concerns regarding the information on improved technologies. They felt it was not location specific which makes it hard for them to benefit fully from such messages. WB stated, "When providing advice please advise farmers to plant seeds that are indeed beneficial based on their geographical locations because the areas are different. Because in some cases, they send seeds to areas where they cannot do well…"

Additionally, the majority of the participants indicated they do not find the information disseminated through various channels as being trustworthy based on their experiences. E stated,

> We know that the information that is provided to us is not accurate. So, like I have said that we just listen from the radio and when we get the information from the radio we do not to take the information as gospel truth and wholly as such we try to pick or choose what to take seriously or not…

This sentiment was echoed by M when he stated,

> We just decided to follow the traditional methods because we saw that they were useful in areas where the improved methods were failing. So, we still use a portion of land and practice our traditional methods while another piece we practice the improved ones, but we have seen that our traditional methods still work.

To respond to the challenges associated with the information, the majority of the participants indicated they conducted their own evaluation before implementing what they had been told. TJ summarized this well when he stated,

> We take the advice with caution, for example there was the extension advice on increasing fertilizers we picked it up but not fully, so we start by practicing a little bit by coming up with portions where we implement that and for the rest, we follow our own practices. So we say on this piece of land let me host a demonstration and for this field let me apply this new fertilizers and the other piece the old fertilizer so that I can compare if the demonstration plot works then I am good to go otherwise I do not just go ahead and implement without trying and knowing the answer but you just have to know what will be the outcome so divide the piece of land."

Moreover, TJ and some of the farmers also expressed concern over their lack of involvement in the selection of content and channels used for disseminating agricultural information and indicated that some of messages that they receive are not useful. TJ stated, "…these people just send the messages because they just follow the agricultural calendar since all they know is that during this season these are the activities that farmers are involved in, but they have not seen that we are really doing."

Additionally, the majority of the participants indicated the language used in these programs poses a challenge to farmers to access the information. P shared, "The information that

is delivered in English when farmers in this area do not understand English." This was echoed by KK, stating "…The problem is understanding because the language that they use on the radio and our language here may be different."

Some of the farmers also indicated the information provided through the radio lacked some details. KK stated,

> Uh on the radio, I have never heard then describe differences in the topography of the land, but I heard that we should grow vetiver grass in all the land where there is a water way that's all. They don't talk about the differences in the land topography while the extension worker tells you.

Lack of consistency in providing the messages was also indicated as one of the factors that makes it hard for farmers to fully benefit from the messages. TT shared,

> It happens that at first, we are able to get the information and then after a while we end up not having access to the information anymore even before we got a chance to get all the information that we needed as such we end up being stuck not knowing what to do.

AGCOM Officers' Perceptions of AGCOM

In the survey, respondents were asked to indicate their opinions regarding the purpose of AGCOM by responding to true or false items. The majority of the respondents (n = 63; 97%) had the view that AGCOM was used to inform farmers about improved technologies. This was followed by the opinion that AGCOM was used for communicating farmers' needs to plocy makes and scientists (n = 58; 89%). Sharing farmer success stories with funding organizations was indicated by fewer officers (n = 47; 72%) while the opinion that AGCOM was about informing people with little agricultural knowledge about agriculture was indicated by the least number of respondents (n = 44; 68%).

However, when AGCOM officers were asked their opinions on the purpose of AGCOM during the interviews, the participants indicated the purpose of AGCOM was to disseminate information to the farmers. This was emphasize by KE when he stated,

> The main reason is to make sure that our farmers are always having updated information so that they are able to produce more not like how they used to farm in the past when they used their local and indigenous knowledge.

Conclusion, Recommendations and Implications

The results indicated AGCOM's potential contribution toward improving agricultural productivity not fully explored in Malawi. Limited involvement of farmers in the communication process and increased focus on the use of AGCOM for communicating new ideas and not the adaptation of existing ideas contributes to AGCOM's ineffectiveness (Leeuwis & Aarts, 2011). This is the case despite availability of studies dating back several decades (Higgins, 1991) which emphasized the importance of promoting two-way communication between farmers and policy makers, as well as researchers. Currently, AGCOM has been framed as a tool for disseminating information on improved technologies to farmers (Aker, 2011; Manda & Chapota, 2015; Matthes, 2009; Ragasa et al., 2017). Moreover, there is increased focus on using AGCOM as an instructional tool or for creating awareness which limits farmers' ability to demand services (Masangano et al., 2017; Ragasa & Chiyu, 2017). Use of AGCOM as an instructional tool or as an awareness creation tool has contributed to a failure by farmers to value local and indigenous knowledge. Hence, leading to the promotion of a mindset among farmers that only outsiders have and can provide answers to their problems. As such, it denys farmers the opportunity to address their own problems using local resources and knowledge.

Furthermore, the existence of policies that deny the dissemination of farmers' innovations through established communication channels perpetuates the perception that AGCOM should be used for communicating to farmers and not with and among farmers. There is a need to revisit policies on technology dissemination so farmers are provided with opportunities to use established and efficient communication channels to share their ideas and innovations. Moreover, there is a need to take advantage of the strong social networks that exist in rural areas to promote information and innovation sharing among farmers with support from extension agents (Briggs & Moyo, 2012; Šūmane et al., 2018).

Increased focus on using AGCOM as an awareness creation tool ignores the importance of communication in other stages of the DoI process (Rogers, 2003). As a result, it has contributed to the increased use of mass media channels with the expectation that increasing awareness of a given technology will contribute to the adoption of the technology. However, such an approach ignores the role of other channels, including interpersonal communication, when persuading farmers to adopt or reject a technology explaining part of the reason for low adoption rates related to emerging technologies despite increased efforts to disseminate the technologies to farmers using different mass media channels.

Most of the mass media channels used in agriculture do not provide opportunities to include farmers' innovations, voices, and demands; thus, limiting farmers' ability to demand services or share their views (Masangano et al., 2017; Ragasa et al., 2017). For AGCOM to have a positive impact on sustainable agricultural development, there is a need to a shift the focus from using AGCOM as an improved technology transfer or awareness creation tool to one that communicates farmer's needs, experiences and perceptions about different technologies, enhancing and promoting dialogue among farmers, policy makers and researchers.

The existence of various ICTs, such as mobile phones, presents an opportunity to capture real time farmer needs with messages that are location specific. However, in order to explore the effectiveness of various communication channels in enhancing the adoption of scientific innovations, there is need for more research on the role of AGCOM in the other stages of the DoI. Specifically, more research is needed that explores the use of ICTs as a way of increasing extension coverage taking into consideration both scope and size.

Despite only using descriptive statistics, the differences in the responses from the surveys and key informant interviews calls for the need for further research utilizing mixed method designs coupled with inferential statistics to examine factors that influence the development and dissemination of agricultural information. The results of this study revealed AGCOM programs and activities are not driven by farmers' information needs but rather by requirements from funding organizations. Considering AGCOM activities in most developing countries is dependent upon project funding, there is need for more research to be conducted to asses the impact of project fund dependency on AGCOM activities. Furthermore, the interviews with the AGCOM officers indicated they do not contribute to the selection of communication channels but rather are dictated by the organizations for which they work. Therefore, there is need for more research aimed at assessing perceptions of the role of AGCOM officers in various AGCOM organizations. Finally, there is also need for more research to examine AGCOM programs course offerings, especially in developing countries. Such research will be important in identifying the skills and knowledge AGCOM student's acquire while obtaining their degrees, and its importance in enabling AGCOM officers to serve as dialogue promoters as opposed to information disseminators.

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