

The Implementation of External Communication Strategies and Its Challenges: The Case of Jimma Agricultural Research Center

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Abstract: This research was aimed at investigating challenges and prospects in the implementation of external communication strategies. A descriptive survey design and both primary and secondary sources of data were used for the study. Key Informant Interview (KII) and Focus Group Discussion (FGD) helped to gather data. The key informant interviewees and the FGD discussants were selected purposively. Focus group discussions were held with Mana woreda farmers' group. The researchers also used document review which were only used in 2013/14 and 2014/15 (GC). As part of the data analysis, content analysis was employed. The findings of this study revealed that the types of external communication strategies used by the research center ranges from booklets to TV. Regarding appropriateness, printed types of communication tools were the appropriate tools than the non-printed. The challenges encountered in the implementation of external communication strategies of JARC were human resources and staffing, policy and structure, management and technical networking, partnership and collaboration. In addition, the result revealed that the prospects of those external communication strategies exercised by the research center were radio and television. Finally, the recommendations were there should be a comprehensive, holistic and well defined policy provision or communication strategy guideline that could dictate and direct the communication work. Instead of the printed communication items used by the center, billboards, banners, and posters (both fixed and movable ones) could be possibly more accessible to the wider community as long as these are posted where many could have access to vividly see them.

Keywords: Communication strategies; External communication; External communication strategies

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1. Introduction

The conceptualization of the word ‘communication’ varies among authors and the difference lies in the author’s primary interest. For instance, some people understand that communication is a process of interaction with others on daily basis aiming at exchanging information. Here, the word can be conceptualized as an interactive process in which relevant information, knowledge and skills are exchanged between and among various actors (source or provider and receiver) either personally or through media (Benedict and Akpomovic, 2010). Allen, Tompkins, and Busemeyer (1996) consider communication as a process of sending and receiving messages that create and maintain a system of consciously coordinated activities. This approach emphasizes the dynamic and interactive characteristics of communication. Others understand communication as a tool by which organizational activities can be unified whereby members understand their own role (Sinha and Reddy, 1991). At an organizational level, communication may be divided more narrowly as internal and external.

In any institutions, both external and internal communications (corporate communication) are indispensable. Since the external public can highly control and influence the different resources of an organization, institutions should continually develop and maintain relationships with the outside environment. Establishing productive communication with the external public is of considerable importance for every organization, for this leads to the achievement of goals for the benefit of both parties (Stuart, Temple, and Moore, 2007). However, based on the role, mission and objectives of institutions, contents of information and their accessibility can vary. To this end, as any other research institute, Jimma Agriculture Research Center (JARC) has diversified information to be disseminated to its various stakeholders.

As an organization, JARC shares Ethiopian Institute of Agricultural Research (EIAR’s) visions and missions. The stated vision of the center is “to see improved livelihood of all Ethiopians engaged in agriculture, agro-pastoralism and pastoralism through market competitive technologies.” The mission of JARC is to conduct research that will provide market competitive agricultural technologies for increased productivities and production, enhanced agricultural product qualities, and sustainable natural resource management. EIAR, as a federal research institute, provides strong leadership in coordinating national excellence research centers and commodities within Ethiopian agricultural research centers.

Profile of the research center shows that JARC is among the earliest research centers in Ethiopia involved in enhancing research on different aspects of crops (improving productivity, producing disease resistant varieties, breeding different seeds suitable for different agro-ecological zones of the country) and disseminating them to farmers at all corners of the country. Therefore, the JARC is a center for generating and disseminating diversified scientific knowledge in agricultural products, invented techniques and current information. It also maintains collections of publications produced by such institutions and serves as an important repository for agricultural research, contemporary information and knowledge resources.

As the research center's documented information indicates, the institution is expected to use different means of communication such as proceedings, newsletters, leaflets, booklets, posters, reports, research papers, bulletins, journals, magazines, training and technical manuals and production guidelines published in English and other official and local languages to reach out to the end users. In addition, the satellite research and training centers disseminate information verbally on site through trainers and field practitioners.

To be readily consumed, the content and nature (complexity and approach) of information addressed to different stakeholders vary. The introduction of new agricultural research output (e.g. disease resistant cereal crop variant) cannot be communicated to farmers in the same way the information can be communicated to the scientific communities. In this regard, the content and structure of information communicated by JARC to stakeholders with diversified knowledge background needs to be assessed. In addition, since the center disseminates agricultural research outputs, the front-line beneficiary and the most important stakeholders are farmers, universities, investors, zonal and woreda/district agricultural offices and those closely associated with this firm. According to the research center's document, the center has a large number of researchers, which is about 100 excluding the support staff. These researchers have experimented a number of issues and are still doing so in agricultural areas of Jimma zone with the intent of making contribution to improve the agricultural and economic development. This study was intended to investigate the external communication aspect of the center so as to make its own contribution to the better achievement of the center.

To increase productivity, increasing human knowledge is very crucial. To make successful adoption of innovations possible, communication of ideas, knowledge and skills are essential strategies (Melekote and Steeves, 2001). The transfer of capital and technology, the basic requirement for development, is possible only with communication that significantly alters behavior and attitude of the receiver. Taking into account that, agriculture has been taken as the backbone of Ethiopia's economy, and EIAR is engaged in agricultural research and extension activities, and mandated in finding innovative and effective means of technology dissemination. In line of this, a study conducted in Wolayita zone - South Nations, Nationalities and Peoples' Regional State (SNNPR), Ethiopia - identified several barriers of communication that target rural audiences: social and political barriers, gender and barriers of age biases (Alemayehu, 2012). In his study, Alemayehu (2012) tried to describe and explain aspects of enhancing rural communication for agricultural transformation in Wolayita zone. He, then, concluded that rural communication should be revised in such a way that serves the rural population and avoids social and political barriers for the inclusion of women in the communication process.

On the other hand, several studies confirmed that external communication improves images of the institutions and hence boosts business (Antra, 2012). However, unless the information to be communicated is short, precise, well structured, adequate, non-ambiguous, simple, understandable, target oriented, timely, relevant, and well managed, it may not attain the intended goal (Jutta, 2012). Therefore, for

organizations to plan and implement effective external communication, they should regularly assess the way information is being disseminated and challenges and opportunities must be reviewed.

A study conducted to investigate effectiveness of trainings offered to farmers in three centers (Holleta, Malkaa Sa'aa and Bishoftu) revealed that trainings significantly improved knowledge, attitude and level of practice of farmers compared to those untrained sample farmers (Tsion, Ranjan and Teklu, 2010). Thus, the existing external communication strategies and knowledge transferring and information dissemination mechanisms being employed by Jimma Agricultural Research Center, among others, should be assessed so that the strategies and mechanisms can further be strengthened and used to their optimum.

This is more important as there is no (as to the knowledge of the current researchers) scientific research conducted regarding identifying challenges and prospects in the implementation of external communication strategies in JARC. Consequently, this research assessed the type of communication strategies, the appropriateness of the tools and identified possible shortcomings and gaps in the course of their implementation, and it forwarded possible recommendations.

External communication vs. internal communication

It is important to emphasize the difference between internal and external communication. Internal communication is an important factor for development of employment engagement (Welch and Jackson, 2007). It can be understood as communication between organization's strategies supervisors and internal stakeholders, in order to promote commitment to organization with the means of belongingness, awareness and understanding of goals (Welch and Jackson, 2007).

On the other hand, external communication is the one focusing on audiences outside the organization (consumers, investors, regulatory bodies, etc), contributing mostly to company's bottom line. External communication deals with communication that takes place outside the organization or company with different communication tools (Saunders, 1999). There is sufficiently more literature focusing on internal than external communication, as internal communication shapes the engagement of employees, conveys values of organization to all its employees (Welch and Jackson, 2007).

There is an Ethiopian proverb which goes as "Ideas enter through the eyes" that highlights how effective communication gets when it is conducted face-to-face. Face-to-face communication has a greater impact than any other single medium. This two-way communication encourages involvement in the process. It also clarifies ambiguities and increases the probability that the sender and the receiver of the message are connected appropriately. Accordingly, it is the best way that feedback can be used to correct deficiencies immediately in the communication process. One of the best advantages of face-to-face communication is the ability of the participants to pick up nonverbal cues as the interaction unfolds. This adds richness to the presentation of the message as well as the emotional aspect of the communication which otherwise might be hidden (Klein, 1996).

DeWitt (2004) states that it is especially important to consider external communication when an organization communicates with its customers. External communication reaches out to the customers to make them aware of the products or services and give them a reason to buy. This is to mean that the more organizations use good external communication strategies, the more the external public is attracted towards the organization.

Communication models/approaches

Rivera (2002) has recently broadened the Agricultural Knowledge Innovation System (AKIS) model to include rural development (RD), renaming this as AKIS/RD. Their model looks at four main actors with interests in agricultural/RD innovation: Research, extension services, education and training, and support systems.

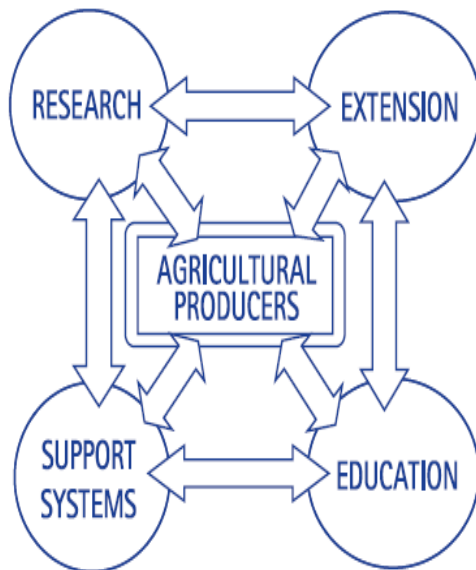


Figure 1: Agricultural knowledge innovation system (AKIS). A model adapted by Dockès *et al.* (2008) from Rivera (2002).

In this model, the four actors act upon the knowledge of farmers and rural actors and generate innovations in response to problems and opportunities, desired outcomes, system drivers and regulative policies and institutions. However, as the model's left component shows, problems are not simply given by the context. Rather, they are framed in different ways by specific paradigms. The same is true of material inputs and knowledge, which are also shaped by paradigms. Such differences are important in framing research priorities, societal choices and public accountability.

AKIS includes a number of basic knowledge processes such as generation, transformation, integration, storage and retrieval. Knowledge generation appears to be more effective when carried out in groups than when attempted by individuals. Empirical studies have shown that the productivity of researchers is related to the extent to which they participate in networks.

Communication channels and criteria for appropriateness of external communication strategies

Communication channels refer to means and media used to get a message sent (Hargie and Tourish, 2004). The channels in internal and external communication depend on each organization's needs, so the appropriate channel is chosen based on these demands. Thus, the same channels are used regardless of whether an organization is for-profit or non-profit.

Munter (2009) divides communication channels into written and oral channels. Written channels include, for instance, hard copies, public internet, websites, blogs, wikis, and emails. Telephones, voice mails, podcasts, and conference calls are examples of oral channels. Jone (2008) adds face-to-face communication into the list of oral channels. Klein (1996) stresses the importance of face-to-face communication by arguing that it is the most effective way to communicate due to its immediacy and interaction. Clutterbuck and James (1996) agree with this by proposing that the majority of communication should be face-to-face and originate from trusted sources.

The importance of face-to-face communication is evident according to several researchers. However, it is not possible in all situations in every organization at all times. In fact, some researchers argue that the richest channel of communication is a combination of channels (Munter, 2009; Jone, 2008).

A variety of communication channels can be used to reach the targeted receivers and the goals of the communication. According to Windahl, Signitzer and Olson (1992), the channel should be chosen in consideration with the audience, objectives, and contents of the message. Such factors should be considered upon selection and employment of certain specific communication channels. Klein (1996) claims that whichever channel is chosen, a possibility to equal access to the message among all stakeholders in question should be guaranteed. Jone (2008) proposes that the purpose of communication channels is to reach as many of the target recipients as possible, as reliably and quickly as possible, and to get the maximum feedback from them. Besides, issues such as reliability, efficiency, and ensuring of optimum feedback, a selection of a certain communication channels has to consider the target audience as well. The appropriateness of communication channels should be measured by the level of understanding of the receiver of the message and its suitability to the cultural milieu and the overall environment.

It should be noted that the choice of a communication channel plays an important role in delivering messages and in attaining the receivers' intention of communication. There are several factors that should be considered before choosing a specific communication channel.

Challenges on implementing external communication strategies

Effective communication requires fulfillment of several factors. Beginning from the language, culture, gender, the appropriateness of the tool, the way of delivery, etc. have a lot to contribute in this regard. According to Tsion, Ranjan and Teklu (2010), the effectiveness of rural communication is dependent on a host of factors. Gender is one of the factors that has a strong influence on the course of communication process.

Gender influences the expectations and perceptions of women and men, as well as roles, opportunities, and material circumstances of women's and men's lives.

According to Accredited in Public Relations (APR, 1988), the seven Cs of communication help overcome barriers: clarity, credibility, content, context, continuity, capability, and channels.

Clarity has to do with the simplicity and precision of the messages. Credibility deals with the trustworthiness of the source. Content of the message has to do with what about of the actual message. The context is the situation or the surrounding milieu where communication takes place, while the continuity is the time (the how long of the conveying communication), and capability is about the capacity of the organization in delivering the message. Lastly, appropriateness of the communication medium is seen in channels.

To investigate this issue, the current researchers designed research questions: general and specific. The general research question of this study was, "What are the implementation of external communication strategies and its challenges look like?" This research specifically tried to answer the following questions: What are the types of external communication strategies being used by JARC? To what extent are the external communications strategies used by JARC appropriate? What are the challenges encountered in the implementation of external communication strategies used by JARC?

2. Research Methods

2.1. Research Design

This study was mainly exploratory by its nature. Therefore, a descriptive survey was employed. Qualitative research method was employed to undertake this study. Primary data was gathered through Key Informant Interview (KII) and Focus Group Discussion (FGD). Both the key informant interviewees and the FGD discussants were selected purposively. The researchers also used document review from several secondary sources published only in the years 2006 and 2007 Ethiopian Calendar (E.C). The document review was basically about analyzing those relevant and appropriate documents viewed/seen as external communication strategies being used by the center.

2.2. Description of the Study Site

Jimma Agricultural Research Center (JARC) is accountable to the Ethiopian Institute of Agricultural Research (EIAR) and was established in 1967 E.C. with the objective of coordinating coffee research nationally and making JARC as center of excellence for the coffee research in the country. The center is located in Oromia Regional State in Jimma Zone, nearly 12 km away from Jimma town and 377 km from Addis Ababa. It has a total area of 183 hectares of land held for different purposes. Its astronomical location is 7^o46N and 36^oE. It has agro-ecological zone of sub-humid tepid to cool mid highlands. The average altitude is 1753 m.a.s.l. while the average temperature is 9 ^oc minimum and 28^oc maximum. It has an average annual rainfall coverage of 1561mm (<http://www.eiar.gov.et/jarc>).

2.3. Sampling Techniques and Sample Size

The sampling technique used for selecting the interviewees was purposive. That is, 6 interviewees were selected purposively from the research center, 2 from Jimma Zone Agricultural Department, and 2 interviewees (development agents) from the two *Kebeles* in Manna *woreda* Agricultural office. Totally, 10 key informant interviewees were selected and interviewed.

In consultation with the center and the *woreda* and the respective *kebeles*, FGD participants for each group, that is, the best performing (model farmer) and the less performing group (low farmer) were selected based on their demonstrated agricultural performances. To optimally benefit from the FGDs, volunteer farmers representing each group of FGDs from the two *kebeles*, along with the executives of the farmers' Research Group, were included for the FGD. At least one third of discussants were purposively made to be female headed households for FGDs.

In general, four FGDs were made with the purposively selected farmer groups selected based on their performance (best performers versus least performers). From the four FGDs, two comprised the best performers, one female group and the other one male group, each group consisting of 8-12 members. Similarly, two additional FGDs were made with the purposively selected least performing farmer groups: one female farmers group and another male farmer group, each group comprising 8-12 members.

2.4. Data Collection Methods

2.4.1. Key informant interview

A total of ten (10) KIIs were interviewed. First, six (6) key informant interviewees purposively selected from JARC were interviewed, and then four (4) interviewees from JARC's partner organizations, two from Jimma zone agriculture office and two development agents from their respective *Kebeles* in Manna *woreda*, were interviewed.

2.4.2. Focus group discussion

FGD was conducted with the selected high-performing and less-performing farmer groups. High performer FGDs were made with female households from Somodo *kebele* and male farmers from Buture *kebele*. On the other hand, the low performer FGDs were made with female households from Buture *kebele* and male farmers from Somodo *kebele*.

2.4.3. Document analysis

The secondary data were gathered through document analysis of external communication strategies used by the research center in the years 2006 and 2007 E.C.

2.5. Data Collection Procedure

First, key informant interview and FGD guideline were prepared and piloted. During piloting, the researchers used three different people who had experience in the area to check the validity of the interview and the pilot produced good comment. Before the piloting, the guideline was so broad and time taking. But later, it was revised and improved. Due preparation and the necessary facilitation and communication, such as notifying respective authorities, staffing, equipping (the researchers equipped themselves with items needed) oneself with the necessary materials/items were made. Then, the actual data collection was undertaken using the improved guideline.

Secondary data were gathered, reviewed and analyzed from JARC's documents for two consecutive years, i.e., 2006 and 2007 E.C. They were reviewed and assessed to identify external communication strategies which were used by the research center.

2.6. Method of Data Analysis

Before analyzing the data, the researchers transcribed all the data obtained from the key informant interviewees, focus group discussants, secondary document entries and field notes. The process of transcribing allowed the researchers to become acquainted with the data. The researchers created Microsoft Word files for the key informant interviews, focus group discussions, secondary documents and booklet entries and field notes.

The first step in qualitative data analysis was to develop 'thorough' and 'comprehensive' description of the phenomenon under study, which is known as 'Thick description' and includes information about the context, intentions and meanings (OSSREA, 2001). The researchers used the meaning of analysis in context as the unit of analysis for coding and also looked for description. This means that the data was not coded sentence by sentence or paragraph by paragraph, but instead it was coded for meaning.

Basically, as part of the data analysis for the data generated from the secondary sources, content analysis was employed. This means the secondary data gathered from the document was seen in terms of language clarity and accessibility of the communication in order to reach the end users- farmers. This took the form of more qualitative assessment of the words and terms used, as undertaken in certain forms of discourse analysis. It is different from hermeneutics, which analyses texts in order to establish their essential truth and meaning; in content analysis the focus is on description of the contents of the text.

The content analysis established 'meaning' only in the sense of what was explicit in the words used in the text and what was implied by their use from the range of alternatives that could have been employed. The content analysis was done as a simple affair of describing the actual content of a text.

Creating categories was also employed in qualitative analysis as Sayer (1992: 88) guided. Comparisons were made to distinguish forms of relationships between objects or events. As part of achieving this, objects/events and phenomenon were categorized based on their similarities and differences. In the process of organizing data, making comparisons and contrasts, and identification of gaps were considered as well.

Thematic data analysis was opted. Thus, key informant interviews, FGDs, secondary documents (booklets/journals and progress report), and field notes were analyzed for each case. Themes across all cases, including those that were extremely different, were kept.

For the thematic analysis, the researchers followed Braun and Clarke's (2006) step-by-step guidelines. These guidelines are (1) familiarizing self (the researchers) with own data, (2) generating initial codes, (3) reading throughout each transcript to immerse in the data, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. The data for this study was triangulated with the various forms of data collection methods (i.e., interviews, FGDs, secondary documents.).

3. Results and Discussion

3.1. Types of External Communication Strategies Employed in JARC in the Years 2006 and 2007 E.C.

Table 1. Graphic external communication items of the center by type in the year 2006 (E.C)

No.	Printed type/ items	Topic	Language vs. the beneficiaries
1	Poster	Effective coffee planting and its precaution	Prepared in Amharic
2	Brochure	Coffee seedling and nursery preparation guideline	Prepared in Amharic
3	Poster	Coffee tree cutting and replacement	Prepared in Amharic
4	Brochure	Coffee tree planting, nursing and production	Prepared in Amharic
5	Brochure	Coffee and related plants production technology	Prepared in Amharic
6	Booklets	Avocado production	Prepared in Amharic
7	Poster	Coffee tree disease: 'Dhukuba Buna Gogsaa'	Prepared in Afaan Oromoo
8	Booklets	Cassava production and its postharvest	Prepared in Amharic
9	Booklets	Methods of Pineapple production	Prepared in Amharic
10	Booklets	Production of species guideline	Prepared in Amharic
11	Booklets	Production of Ginger guideline	Prepared in Amharic
12	Booklets	Production of 'Koriirimma' cardamom (Aframomun angustifolium) guideline	Prepared in Amharic
13	Booklets	Production of Turmeric (curcuma longer or domestica) guideline	Prepared in Amharic
14	Booklets	Production of "Kundo Berebere", Indian peppercorns	Prepared in Amharic
15	Brochure	Production of improved Sorghum	Prepared in Amharic
16	Brochure	Production of 'Aba Meleko', improved sorghum variety	Prepared in Amharic
17	Booklet	Production of Groundnuts guideline	Prepared in Amharic

18	Poster	Preparation of Pine bean as a food	Prepared in Amharic
19	Booklet	Production of Pine bean guideline	Prepared in Amharic
20	Poster	Pine bean residuals as an organic fertilizer and its usage	Prepared in Amharic
21	Booklets	Heal production guideline	Prepared in Amharic
22	Booklets	Potato production guideline	Prepared in Amharic
23	Booklets	Pine bean –‘Akuri Ater’ production guideline	Prepared in Amharic
24	Booklets	Jimma center, Gera & Haru, & Metu subcenters, Agaro, Mugi stations basic descriptions and progress report	Prepared for each separately and in Amharic language
25	Booklets	Metu agricultural research sub center profile	Prepared in English
26	Booklets	Haru agricultural research sub center profile	Prepared in English
27	Booklets	Extension training methods and employment	Prepared in Amharic
28	Booklets	Tissue culture methods	Prepared in Amharic
29	Booklets	JARC 40 years endeavour	Prepared in English
30	Booklets	Coffee diversity and knowledge book	Prepared in English
31	Poster	Coffee cutting and cultivation methods	Prepared in Amharic
32	Poster	Product residuals management and usage	Prepared in Amharic
33	Brochure	Peritoneum and Mimosa outbreaks controlling mechanisms	Prepared in Amharic
34	Booklet	Jimma agricultural research center basic description and progress report	Prepared in Amharic

Source: Compiled by the researchers (2015)

The above data were compiled by reviewing documents from the offices’ written communication made with external customers and further discussion of the data was made as follows.

As displayed in Table 1, three different types of printed external communication strategies, namely booklets, brochures, and posters were used by JARC in the year 2006 E.C. Among these three printed communication items, booklets were the most widely used (61.8% of the printed items) by the center during the year 2006 E.C., whereas posters (20.6%) and brochures (17.6%) constituted the less widely used printed communication tools by the center in the same year.

In terms of the kinds of languages used in the three types of printed materials, the result shows three languages were used -Amharic, English, and Afaan Oromoo. From the total of 34 printed items, 29 (17 booklets, 6 posters, and 6 leaflets) or 85% of the materials were printed in Amharic. Besides, 12% of the printed items (4 booklets) were in English, and the least used language was Afaan Oromoo (used in only 1 poster (3%).

Evaluation of the materials in terms of the languages used reveals that the allocation of Amharic to be the medium for most of the center’s publications is not target audience oriented because the end users of these graphic type of communication were Afaan Oromoo speaking farmers who need to be communicated in their own language-Afaan Oromoo. So it tends to be difficult to know and clearly

state the extent to which these external communication strategies used by the center were successful or not.

Graphic Communication Items/Materials Prepared and Employed by the Center in the Year 2007 (E.C.) by Type

Table 2. Printed external communication items of the center by type in the year 2007 E.C.

No.	Printed type/items	Quantity in numbers	Remarks
1	Booklet	76	
2	Brochures	33	
3	Leaflets	1000	Prepared along three basic emphasis areas
3	Technical/research reports	98	Comprising different research items, more of for meeting organizational research requirements
4	Seminar papers	21	
5	Manuals	5	
6	Research progress report	-	Number not available and not known
6	Proceedings	4	
7	Jimma center and sub-centers booklets	6	

Source: Compiled by the researchers (2015)

The above data were collected from documents of the office as secondary data, particularly through document reviews made qualitatively, and discussion of the data follows hereunder.

As shown in Table 2, booklets and brochures which were used in the year 2006 E.C. were again used in the year 2007 E.C. In addition to the types of printed materials that appeared in 2006 E.C., leaflets, technical/research reports, seminar papers, research progress reports, manuals and proceedings were used during the year 2007 E.C. as part of printed communication tools.

Table 3. Non-graphic communication strategies/tools types used by the center in the year 2007 E.C

No.	Communication strategy/tools typology	Remarks
1	Training	
2	Organizing farmers' group	
3	Organizing/celebrations of farmers field visit days	
3	Organizing field level demonstrations	Demonstrations were conducted in Seqqa, Dedo, Sekoru, Bedele, Chena, and Gimibo woredas, in Koff'e kebele of Jimma town and Doyo kebele of Manna woreda which was the main scope of the research topic.
4	Consultative workshops	The two consultations were basically on peritoneum and Mimosan weed breakouts in Jimma and Ilu Aba Bora zones
5	Annual research review and monitoring session	The review was conducted at the institute level
6	Coffee date celebrations at regional and national levels	The regional level was hosted at Metu- Ilu Aba Bora zone, While at the country's level it was not properly documented.
7	Radio	Radio coverages were done for the celebrations of farmers field visit days, field demonstrations, and coffee date celebrations
8	TV	The consultative workshops on the weed breakouts and Annual research review and monitoring session were events that got coverage

Source: Compiled by the researchers (2015)

As Table 3 revealed, the communication strategies used by the research center covered or reached only few people because the training, organizing formers' groups, celebration of farmers' field visit days, field level demonstrations, and consultative workshops were not managed to address the end users of the program; many of them are not accessible. Other means of communication like TV and radio were used only for events such as news release. That is, they were intended just to inform the people about the events.

3.2. The Type of External Communication Strategies/Tools Employed by JARC as Generated from the KIIs and the FGDs

Table 4. Types of communication strategies as identified in KIIs and FGDs

Type of external communication strategies/tools	Remarks
From the KIIs	The DAs and the FGD
The DAs and agriculture office staff:	discussants give much emphasis to trainings and field demonstrations
Training, field demonstration, manuals, trainings, celebration of field days	
JARC's staff:	
Demonstration sites, facilitation filed visit day, and trainings brochures , leaflets, booklets and posters	

Source: Compiled by the researchers (2015)

As to the types of communication strategies/tools used by Jimma Agricultural Research Center during the specified two years, it has been found that booklets, brochures, posters leaflets, technical/research reports, seminar papers, manuals and proceedings were among printed tools used. Again, concerning the employment of non-graphic communication tools during the stated period, the results revealed trainings, organizing farmers' groups, facilitations of farmers' field visit days, facilitations of field level demonstrations, consultative workshops, annual research reviews and monitoring sessions, radio and TVs were used.

In further seeing the type of communication strategies identified by the respondents, the informants from the agricultural offices, the development agents and the FGD discussants identified trainings, manuals, field demonstrations, and field visits as types of external communication strategies. Surprisingly, no single discussant from the four FGDs mentioned and/or raised any of the printed communication tools, such as booklets, brochures, posters and the like.

In seeing the preference between tools, broadly speaking, there seemed to be preference for printed types of communication tools over the non-printed ones in the center. However, such tools have not been popular among the farmers community, as the data from the FGDs revealed. The findings from the four FGDs also pinpointed access issue as one major constraint in reaching out to the end users, more specifically, in relation to the printed items of external communication strategies of the center.

Again, within the graphic methods of communication, booklets were the most widely used tools. The printed tools also were found to be more of target oriented in

terms of contents that are intended to serve meeting the public need in general and the farming community in particular. The electronic means, more specifically radio and television, were among those rarely used tools by the center, and even when done, they tend to be more inclined to public relation activities instead of them being focused on transferring knowledge, developing skills, and disseminating information that could possibly better benefit farmers.

3.3. Appropriateness of External Communication Strategies Employed in JARC in the Years 2006 and 2007 E.C

In the context of this study, appropriateness was basically viewed in light of accessibility of the strategies, farmers' knowledge of the language used in the communication strategies, and simplicity (easiness for understanding) of the strategies to the target users, i.e., the farmers. Thus, accessibility is seen as the ability of the center to reach out to many of the public or the tools being accessible to the majority of the public in general, and the farming community, in particular. Certain communication strategies could be categorized as having varying degrees of accessibility basically being based on the number of target persons (people) they could possibly and optimally be capable of reaching.

Jone (2008) proposes that the purpose of communication channels is to reach as many of the target recipients as possible, as reliably and quickly as possible, and to get the maximum feedback from them. Thus, the appropriateness of the external communication strategies/tools employed by Jimma Agricultural Research Center during the study years was evaluated accordingly.

In this appropriateness assessment, more weight was given to the findings derived from the primary data, specifically to the responses of the FGD discussants and the key informant interviewees. Then document analysis of the selected items of the external communication tools were considered to be the next.

In terms of appropriateness, when seen in light of accessibility to the wider public and farming community, it was only the leaflets, out of the graphic communication tools/items, that could be relatively assumed to be distributed to more target recipients (end users). In spite of this, the leaflets were printed in limited copies, i.e., only one thousand copies. Yet, the accessibility of this relatively assumed most distributed item - the leaflets- could be put in question. Taking into account the fact that the center has to reach out to millions of farmers within its scope (jurisdiction), the limited production of leaflets implies that the center was not up to its expected level of excellence in using external communication strategies and reaching out to farmers

As the data obtained from the discussants of the four FGDs revealed, be it booklets, posters, brochures or leaflets, even one of these external communication strategies was not addressed as the implemented strategy other than the training manuals, field demonstrations and field visits.

In their view of accessibility of these external communication strategies, a significant section of the farming community and almost all of the key informant interviewees, without difference, held similar views that accessibility was highly

constrained and they agreed that devising accessible strategies to reach the farmers is urgent and essential.

Of all the reflections made in relation to reaching a significant number of the farming community and in relation to the use of other external communication strategy-related issues, one of the key informant interviewees from the research center described how serious the problems of accessibility, language use, equity, coordination, etc. were as follows:

ኮሚኒኬሽንና ስርወተኛ ጋ በጣም ከፍተኛ ችግር አለ። ምርምሩ ለብቻ ይሮጣል ፤ ስርወተኛ ተንቀራጭ ቆሟል። ሁሉም ለየብቻው የራሱን ዳንስ እየደነሰ ይጓዛል፤ ይባክናል፤ ይሮጣል። ስርወተኛ በተገቢው ሁኔታ፣ በአርሶ አደሮቹ ቋንቋ በበቂ ሁኔታ እየቀረበ አይደለም፤ ታርገትን የመድረስ ችግር አለ። ...ስልጠና እንኳ ሲሰጥ ገበሬና ባለሙያ አንድ ላይ ተደባልቆና ሳይለይ፣ እንግሊዘኛ እየተቀላቀለ በጉራማይሌኛ ነው የሚሰጠው። ...የምርምር ሠርቶ ማሳያውም ቢሆን የሚሰራውም መንገድ ዳር ብቻ ነው። ቅርብና በመኪና ተደራሽ የሆነ ቦታ ብቻ እየተፈለገ ይሰራል እንጂ 10 እና 15 ደቂቃ እንኳን ወደ ውስጥ አንሄድም፤ የምናሰራጨው በጣም ጥቂት ለሆኑ ሞዴል አርሶአደሮች ብቻ ነው...።

The above data collected from one of the key informant interviewees was transcribed in Amharic. Focusing on content, the translated English version is presented as follows.

Serious problem has been observed regarding communication and extension. The research unit is moving in its own way while the extension is sluggish. All dance own dances ...communication and extension have not been implemented sufficiently. Farmers' language is not used in the communication strategies. There is problem of reaching targets. Even trainings are conducted without consideration of the farmers from professionals, mixing English and Amharic. Our research demonstration sites have been only road-sided for convenience to use cars ... We don't even go 10-15 minutes away from the roads...our technology dissemination also targets very few model farmers....

The above response indicated that there is a problem of using effective external communication strategies to reach out to the farmers. The responses also revealed lack of effective organization and coordination of works. Furthermore, the data showed other problems such as the use of inappropriate language and the problem of equity in that only few farmers, rather than the majority, were addressed.

Other than having mere exposures via communication items, targeting farmers to reach through demonstrations was also another issue. This was most contested by a significant number of discussants within each FGD sessions. Besides, most of the discussants raised that selection of farmers for the demonstrations lacked transparency (openness and clarity) because more attention was given to model farmers, giving very less attention to most farmers. Many of the key informant interviewees likewise agreed that sometimes there were not clear procedures in the selection of farmers for demonstration and dissemination, while all interviewees agreed that it should be open and known by the majority of farmers and their agencies as well.

The data obtained from both the FGDs and the key informant interviewees revealed that the use of radio and television could have had much bearing in terms of having and ensuring better communication access. More specifically, radio could be more appropriate and viable as it could be easily affordable by many of the farmers in

addition to its more coverage and easiness to be listened while having engagements. Use of radios and TV as external communication tools by JARC was among those rarely used external communications tools as they were intended only for information transfer instead of using them as means for knowledge, skills and experience transfer and dissemination of technology. Almost all of the radio and TV overages were meant for mere event reporting than aiming at introducing new ways of doing things, disseminating and transferring newly acquired scientific findings and practices that enhance improvement and/or boosting productivity pertinent to the farmers' community.

In terms of relevance of the contents of the external communication, almost all of the key informant interviewees and FGD discussants agreed that the relevance of the contents of the communication items were sound and good. However, without the employment of the appropriate language (or medium) in each context, the relevance of contents, whatever noble information and knowledge they may contain, could not result in much success on its own.

To show this further, this reality could be seen vividly in Table 1 above. In other words, all the graphic communication items in the year 2006 E.C. by JARC were prepared virtually either in Amharic or English. Out of the 34 items (booklets, brochures, and posters), only a single poster was prepared in one of the local languages of the farmers- Afaan Oromoo (that is, Oromo language). No more item was produced in other local languages of the farmers during this study period though there were farmers who use their own native languages other than Afaan Oromoo, like Kaffinano, Shekacho, Bencho, Dawro or any other local languages in the localities where the center has had research engagements. Nevertheless, both of the FGD discussants and the key informant interviewees affirmed that translations to local languages were made to facilitate training events and field demonstrations.

As addressed earlier, Jone (2008) states that the purpose of communication channels is to reach as many of the target recipients as possible, as reliably and quickly as possible, and to get the maximum feedback from them. In this perspective, as part of appropriateness, getting optimum feedback should be one element of good communication tools and channels. This could not be achieved without having regular and frequent contacts with all or most of the targeted farmers, and actually this seems to be true as the center and its researchers were not accessible to the majority of the farmers (not to say all). For instance, the translated English version of the response from one of the FGD discussants revealed the following:

Jimma Agricultural Research Center came up with new technology, for example tomato production, then we took the seed and tried to plant. But after growing, the tomato was affected by disease. That time, we needed to talk to the concerned ones but there was no access to do so.

This shows problem of accessibility or lack of frequent contact and it implies that communication mechanisms were not properly put in place.

3.4. Challenges in the Implementation of the External Communication Strategies

Communication is full of challenges such as the use of appropriate language, the issue of culture, gender, the appropriateness of the tools, way of delivery and so on. According to Tsion *et al.* (2010), the effectiveness of rural communication is dependent on a host of factors. Furthermore, FAO (2000) mentioned that factors that influence effectiveness of communication include policy, institutional capacities, nature of participation of the stakeholders, and the media strategy.

Among respondents, the informants from the research center and discussants in the agricultural offices identified a number of major challenges encountered during the implementation of various external communication strategies used by Jimma Agricultural Research Center. The challenges could be put under several categories. However, those major challenges that are generated mainly from the findings of the primary data could be seen as human resources and staffing, policy and structure, management and technique, networking, partnership and collaboration levels.

3.4.1. Human resources and staffing

There has been serious shortage of experienced and skilled staff working in communication, extension, and dissemination of information. This shortcoming in the area of human resource can be seen in the composition of the staffs. Out of the total 477 permanent staff the center had during this study period, there were 100 researchers, 34 research assistant technicians and 343 support staff. A total of four staff members, two assistant researchers with MSc and two junior researchers with BSc were assigned for all the engagements at the center level. In considering the support unit with regard to information and communication technology process unit, it had only three staff members, working as process representative (BSc), a network technician (BSc) and a librarian (Diploma holder), out of 343 support staff.

In relation to this problem, the English version of the remark given by one of the key informants from the research center fully states the following:

The main task of the researchers is to conduct research and find out new findings and dissemination is the task of the extension unit/team. However, the extension unit has no capacity of delivering this, as it is plagued by lack of enough, well experienced, and senior staffs with adequate knowledge and skill to do so. High turnover of staff has been a problem, and besides, the section does not have enabling institutional structure which is capable of doing this dissemination to farmers. Thus, dissemination of technology could not be done optimally and has been limited only to few sections of the farmers' community, that is, the model farmers. ... For instance, the center had found out and released about thirty-seven (37) improved coffee varieties as research findings. However, how many of these actually have reached the farmer has been a question, let alone the production boosting gained due to these findings.

What is more, there is lack of skills in producing communication/information materials such as leaflets, production guidelines, and posters in the local languages. And there is communication barrier due to the inappropriate language use, for instance, as some of the workers in the extension section do not speak Afaan Oromoo which is one of the local languages widely used by the farmers.

3.4.2. Policy and structure

The data obtained from the key informant interviewees from JARC and Jimma Agricultural Development Office revealed that there was no comprehensive, holistic, and well-defined policy or communication strategy and guideline that overall dictates and directs the center's communication work. In seeing the structure and the institutional arrangement by job division and placement of tasks among sections, the agricultural economics, extension and gender research directorate at the federal institute level has been responsible for handling this external communication and technology dissemination, while the process unit at the center's level with the same name deals with this external communication and technology dissemination. Leaving aside the visibility and boldness in structure, staffing the center with enough professionals was not done as such. Regarding case teams, the agricultural economics and extension research comprised two case teams: agricultural economics case team and agricultural extension case team.

3.4.3. Management/technical

The commitment of the management of the institute in knowledge transfer could also be questioned. Due weight and emphasis have not been given to the dissemination of knowledge findings. In other words, emphasis given by the organization to communication, research dissemination, and knowledge transfer could not be vividly seen, be it in its policy provisions and programme frameworks and management/leadership commitments

3.4.4. Funding and budget

The data from the key informant interviewees sampled from JARC and Jimma Agricultural Development Office also revealed that there was insufficient budget allocation for communication, dissemination and extension tasks, be it to produce enough communication items/tools/information materials or to employ experienced and new additional staff and to retain the staff.

3.4.5. Networking, partnership and collaboration challenges

There seemed to be a missing-link regarding networking and partnership of knowledge dissemination of agriculture. Absence of enabling and strong platform for agricultural knowledge sharing and technology dissemination both at the national and regional levels was the other identified challenge. Of those four main actors with an interest in agricultural and rural development innovation stated by Rivera (2002) and used as conceptual model for this study, research, extension services, education and training, and support systems, only to mention one, education and training has been missing from the whole scene/picture. The collaboration and coordination among the mere existing main actors could be questioned as well. Many of the key informant interviewees were concerned with the existing weak networking and partnerships among stakeholders, particularly emphasizing the gap between the research center and the agricultural office while urging the need for bolstering it. Last but not least,

dissemination of knowledge and transferring it is a challenge on its own nature, more specifically as these require persuasion of target farmers.

4. Conclusions and Recommendations

4.1. Conclusions

Effective communication is imperative to realize agricultural transformation in Ethiopia as increasing productivity requires increasing human knowledge. Without communication, increasing human knowledge cannot be achieved. Ethiopian Institute of Agricultural Research (EIAR) is responsible for coordinating the national agricultural research and undertaking strategic and applied agricultural research at federal level. It is also responsible for advising the government on agricultural and rural development as well as pastoral and agro-pastoral development issues. Furthermore, it is responsible to provide agricultural information and knowledge to a wide range of audiences.

Booklets, brochures, posters leaflets, technical/research reports, seminar papers, manuals and proceedings were the types of graphic external communication strategies/tools used by Jimma Agricultural Research Center during the specified study period. Trainings, organizing farmers' groups, facilitating farmers' field visit days, facilitating field level demonstrations, conducting consultative workshops, annual research reviews and monitoring sessions, radio and TV were the main non-printed external communication strategies/tools employed during the same period.

Printed types of communication tools were the more preferred tools to the non-printed ones, although such tools were not popular enough among the farmers community. Again, within the printed tools of communication, booklets were the most widely used tools. The printed tools also were found to have contents that are intended to meet the public's need in general and the farming community's in particular.

Multimedia means of communication, more specifically, radio and television were among those rarely used tools by the center, and even when done, they were more inclined to public relation activities instead of focusing on transferring knowledge and dissemination of information that could possibly benefit farmers. Radio and television seem to have much bearing in terms of having and ensuring better communication access. More specifically, radio could be more appropriate and viable as it could be easily affordable by many of the farmers and due to its more coverage and easiness to be listened while listeners are in other engagements.

In reaching out to the wider public and farming community, among all of the printed communication tools/strategies, it was only the leaflets which could be assumed to be distributed more widely compared to others. The leaflets were the only items even reaching four-digit limits. That is, they were produced in only one thousand copies.

In their views of accessibility of the external communication strategies by significant section of the farming community, almost all of the key informant interviewees, without difference, held similar views that access was constrained and

suggested that devising strategies that are accessible to majority of the farmers is essential.

All the printed communication items used in the year 2006 E.C. by JARC, were virtually prepared either in Amharic or in English. Out of the 4 items (booklets, brochures, and posters), only a single poster was prepared in the most widely used local language - Afaan Oromoo.

As clearly put in the data presentation section, in relation to relevance of the contents of the external communication tools used, almost all of the key informant interviewees and FGD discussants agreed the contents of the communication item was sound and good. However, without the employment of the appropriate language in each context, relevance of contents (that is, whatever noble information and knowledge contents may contain) could not result in expected outcome by its own.

The challenges encountered in the implementation of external communication by Jimma Agricultural Research Center were human resource and staffing, policy and structure, management and technique, networking, partnership and collaboration. There had been serious shortage of experienced and skilled staff working in communication, extension, and dissemination. There was lack of skills in producing communication/information materials such as leaflets, production guidelines, and posters in local languages. There was no comprehensive, holistic, and well-defined policy provision or communication strategy and guideline that dictates and directs the center's communication work.

Lastly, the other identified challenge seemed to be a missing-link regarding networking and partnership of knowledge, and absence of enabling and creating strong platform for agricultural knowledge sharing and technology dissemination both at the national and regional levels.

4.2. Recommendations

Both at the institute and center level, there should be a comprehensive, holistic and well-defined policy provision or communication strategy guideline that could dictate and direct the communication work at both levels. Among other things, the guideline needs to address the communication strategy outlines, communication objectives-what the institute wants to achieve at the strategic level, primary target audience for communication, setting communication strategies aiming to reach more and more people as much as possible, basic outlines and selection of programs, communications plans, timelines of the strategy- the strategy should be time bounded, and roles specification-who will do what?

The center and the institute should work on refining their extension and dissemination structure and institutional arrangement such as staffing and capacity building of the section (extension staff should be given attention in acquiring the necessary skills and knowledge regarding dissemination of research outputs and their consequent introduction to farmers), retention (the center should work on improving its staff retention in general and the staff of the extension section in particular) and allocating enough amount of budget.

In terms of having and ensuring better communication access to the wider public and farming community, starting to use mass communication channels such as radio and television seem to have much bearing. More specifically, using radio could be more appropriate and viable as it could be easily affordable to both stakeholders, be it from the demand and the supply side. Thus, using the local FM and community radios, using AM and MW radios, and/or setting up of one's own stations can be used in this regard.

Establishing strong platform for agricultural knowledge sharing and technology dissemination at various levels that could link and network partners, research, extension services, education and training, and support systems seem to be essential.

In contrast to all of those printed communication items used by the center, billboards, banners, and posters (both fixed and movable ones) could be possibly more accessible to the wider community as long as they are posted where many could have access to vividly see them.

Addressing and engaging majority of the farmers needs to get serious attention for the purpose of equity and more success though it seems to be difficult to cover all at once.

It also could be worthwhile conducting further research to find out the extent to which the languages used in the printed external communication strategies fit the targeted audience- farmers' needs and they result in the desired success.

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