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Do farmer demographics influence their preference for agricultural extension methods?

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ABSTRACT

This paper assesses the influence of farmer socioeconomic factors on their preferences for extension methods. A multinomial logit model was used on a survey of 816 households from Kisii and Nyamira Counties in Kenya. The most widely used extension methods in declining order of importance were training and visit, farmer field schools, mass media and farmer-to-farmer at 42, 32, 13 and 13 percent respectively. Education, access to markets, risk attitudes and wealth significantly influenced farmer preference for the extension methods. We conclude that participatory approaches should be used in the selection and promotion of agricultural extension methods.

Key words: cross-sectional, multinomial, multistage, outreach, preference, top-down.

1. INTRODUCTION

Agricultural extension is a system designed to build and strengthen the capacity of farmers through information dissemination and introduction of new technologies (Birner *et al*. 2009). Extension services are meant to enhance the decision making ability of farmers through behavioural change (Anderson and Feder 2003). In turn, behaviour change leads to better farming decisions such as adoption of high yielding technologies that result to outcomes such as higher farm productivity, more farm income and ultimately, improved farmer livelihoods. To keep in line with the purpose of improving farmers' decision making ability, agricultural extension has evolved over time, alongside changing farming needs.

Against expectation, the effect of extension services on improving farmers' decision making ability has been dismal. For example, the adoption of fertilizer in Kenya is as low as 12 percent whereas use of improved seed for most crops is less than 10 percent (Olwande *et al.* 2009). Indications of the barely changed farmers' behaviour are amid evidence of positive linkages between access to agricultural extension services and improved farmer decisions (Ochieng *et al.* 2012; Ogada *et al.* 2010). Similarly, Makate *et al*. (2016) found that access to agricultural extension services increased farm diversification decisions in Zimbabwe. Expectedly, literature shows that changed farmers' behaviour lead to improved farm outcomes such as increased farm productivity due to the use of high yielding varieties (Sebaggala & Matovu 2015; Hasan *et al*. 2013; Ragasa *et al*. 2013). Makate *et al.* (2016) also argue that, farmers' decision to diversify led to improved crop productivity, increase in farm income and enhanced food and nutrition security at household level in Zimbabwe. Overall, farming households end up enjoying improved livelihoods.

The fact that many smallholder farmers in Sub-Saharan Africa (SSA) continue to use traditional technologies raises the question whether agricultural extension services have been effective in influencing farming decisions. In response, numerous extension methods have been developed and applied at different times and settings aimed at improving the performance of smallholder farms including training and visit (T&V), farmer field schools (FFSs), mass media and farmer to farmer (F2F) extension methods.

The T&V method was introduced in Kenya by the World Bank in the 1980s and implemented by the Kenya national government. The design of the method was such that, subject matter experts from the World Bank trained government extension officers. In turn, the government officers trained contact farmers following predetermined training schedules. The main approach of farmer training was by using demonstration plots. Despite the financial and technical support by the World Bank, the performance of the T&V method was relatively poor. The T&V method was also expensive to implement, making it unsustainable.

In the early 1990s, the T&V method was replaced by the FFSs which was promoted by the International Fund for Agricultural Development (IFAD) and the United Nation's Food and Agriculture Organization (FAO). The mode of training includes oral training in large gatherings (schools), demonstrations and experience sharing during field days. Davis *et al.* (2012) found that, participation in the FFSs increased farm income by 61 percent in East Africa. Moreover, FFSs improved farm productivity. The method also accelerates positive personal transformation, improves gender roles and relations at household level as well as increasing household economic development (Duveskog *et al.* 2011). At community level, participation in FFSs enhances felt community acceptance and facilitates satisfaction of physiological needs such as the feeling of belongingness (Charatsari *et al.* 2017).

The F2F extension method can be traced back to the 1950s but it has been recently re-introduced, targeting to reach many farmers, more affordably and in a shorter period of time (Kiptot & Franzel 2015). The method uses lead farmers to disseminate information making it ideal for introducing new technologies because farmers mobilize and train fellow farmers improving trust (Lukuyu *et al.* 2014). The main benefits of the F2F method include its low cost of information dissemination, trust among farmers and consistent feedback (Kiptot & Franzel 2015). Moreover, the use of lead farmers addresses the existing inadequacy of extension agents against a large and growing number of farmers (Amudavi *et al.* 2009). The method is not without drawbacks, though, including high financial expectation by the lead farmers despite the voluntary nature of their work, resulting to non-commitment by most of them. In addition, lead farmers have limited time to disseminate agricultural information amidst their personal commitments (Franzel *et al*. 2014).

The mass media is a convenient method as one can access information as they attend to other activities. Nevertheless, it lacks physical contact between the listener and the subject matter specialist limiting the applicability of the information disseminated. Often, this constraint is compounded by the fact that most mass media programs are aired in English or *Kiswahili* limiting the number of farmers who can fully comprehend and apply the skills learnt appropriately especially among the older farmers. However in the recent past, use of mass media has been enhanced by programs that are aired in local languages, increasing the number of farmers who benefit from the method. The most common mass media channels are radio and television.

To boost the performance of extension methods, extension providers should operate within existing policies, ensure technical and financial capacity, have an understanding of the existing farming systems and the characteristics of the target farmers. Such characteristics include farmer preferences for agricultural extension methods. Nonetheless, the design of most extension methods is top-down implying that farmers have minimal role to play (if any) in the selection of extension methods. This makes information delivery unidirectional, assigning extension service providers the responsibility of communicating innovations to farmers (Mwangi *et al.* 2003). The minimal farmer involvement in the selection of extension methods probably explains the poor performance of most of the methods. This indicates that, understanding the factors influencing farmer preferences for agricultural extension methods is important.

The study that has attempted to analyse farmer preferences for, and choice of extension methods Mittal & Mehar (2015) in India pointing to the dearth of evidence. Furthermore, none of the studies were conducted in Kenya. Consequently, the determinants of farmer preferences for agricultural extension methods are still not well understood, founding the purpose of this study. We fill this gap by assessing the factors influencing farmer preferences for extension methods in Kenya. With the expectation that information dissemination and retention would improve if the extension methods used are those preferred by farmers, we test the hypothesis that socioeconomic factors have no effect on farmer preferences for extension methods. The rest of this paper is organized as follows: the study analytical framework (theoretical framework and empirical model) are discussed in section two. Section three presents the study findings while section four discusses them. The paper concludes by making policy implications in section five.

2. ANALYTICAL FRAMEWORK

2.1. Theoretical framework

According to Batz *et al*. (1999) and Debertin (2002), stated preferences amidst uncertainty can be assumed to maximize expected utility. The expected utility theory (EUT) has been criticised with arguments that it is impossible to objectively measure utility due to its physiological nature. Also, researchers argue that the axioms that govern rational decision making processes are unrealistic as preferences are always changing (Keller 2015). Nonetheless, there has not been a consensus on an appropriate theory in studying preferences explaining the observation that the utility theory continues to be used to date (Cipu & Gheorghe 2015). Thus, this study employs the EUT.

Smallholder farmers in developing countries rarely (if at all) get an opportunity to reveal their preferences for extension methods due to the top-down design of most methods. As a result, this study is based on farmers' stated preferences further justifying the use of the EUT. Given a set of J extension methods, the i^{th} farmer's preference for the j^{th} method can be modelled based on unobserved utility function that is influenced by observable socioeconomic factors following Adesina and Zinnah (1993) as;

$$U_{ij}=\beta_i(S_i,E_i,)+\varepsilon_{ij};\ for\ i=1,\ \ldots,n;\ J=1\ldots\ 4 \qquad (1)$$

Where, U_{ij} is the unobservable utility of the i^{th} farmer, S_i,E_i are the socioeconomic factors associated with the i^{th} farmer, ε_{ij} is an error term, β_i is a vector of parameters to be estimated and J is a set of all available methods. The i^{th} farmer would prefer the j^{th} method if only the expected utility is highest relative to expected utility from other available alternatives.

In this study, farmers were asked to choose their preferred extension method from a list of four resulting to an unordered categorical variable that can be analysed using multinomial logit (MNL) or multinomial probit (MNP) models (Greene 2012). In using the MNP model, the error term is assumed to be normally distributed and homoscedastic, otherwise the estimates are inefficient (Greene 2012; Gujarati 2004). The strength of the MNP model is its ability to relax the independence of irrelevant alternatives (IIA) assumption that makes estimates of the MNL model inefficient if violated.

Gujarati (2004) argues that, the MNL model is applicable when the error term is logistically distributed. For cross-sectional data, Bayaga (2010) states that it is difficult to achieve normal distribution of the error term making the MNL model more powerful in analysing it. The major weakness of the MNL model is the IIA assumption which requires that the probability of choosing between alternatives does not change with the introduction or elimination of alternatives from the model. If violated, the IIA assumption renders estimates by the MNL model inconsistent and inefficient.

2.2. Empirical model

The MNL model was used in this study because the data ($y|x$) was logistically distributed. The model is non-linear and yields random utility functions based on the probability of preferring a given alternative relative to other available alternatives (Greene 2012). Following McFadden (1974), the probability that the i^{th} farmer prefers the j^{th} extension method is specified as:

$$P_{ij} = Pr(j|x_i) = \frac{exp\left(\beta_j x_i\right)}{\sum_{i=1}^{4} exp\,(\beta_n X_J)}; \quad 0<Pr_{iy}<1 \qquad (2)$$

Where $Pr(j|x_i)$ is the probability that the i^{th} farmer prefers the j^{th} method and takes a value between zero and one, x_i are characteristics of the i^{th} farmer and β_j is a vector of parameters to be estimated.

Estimates by the MNL model are compared to a base alternative. The model sets the alternative with the highest frequency as the base by default. Alternatively, the analyst can set the base alternative based on other criteria depending on the data being analysed. In this study, the T&V method was set as the base alternative by default because it was preferred by most farmers. Given the four alternatives, four estimations based on equation 2 (one for each of the methods) are possible but three equations were estimated excluding the base alternative against which estimates of the other alternatives are compared to reach a conclusion.

Coefficients of the MNL model do not explain the direct effect of the independent variables on the outcome variable but the relative odds (Otieno 2013). To measure the direct effect of change in any of the explanatory variables on the preference for a particular method, marginal effects are computed by differentiating equation 2 following (Otieno 2013) as shown.

$$ME_{ij} = \frac{\partial P_{ij}}{\partial x_{ij}} = \frac{\partial Pr(j|x_i)}{\partial x_{ij}} = P_{ij}\left(\beta_{kj} - \bar{\beta}_i\right) \text{ for continuous independent variables} \quad (3)$$

$$ME_{ij} = Pr(x_i=1) - Pr(x_i=0) \text{ for dummy independent variables} \quad (4)$$

Where ME_{ij} is the marginal effect and $\bar{\beta}_i$ is the weighted probability of coefficients for the different preference combinations. The rest of the parameters are defined in the same way as in equation 2.

2.3. Measurement of key variables

2.3.1. Dependent variable

The depended variable in this study is categorical with four unordered options: the T&V; the FFSs; Mass Media and the F2F. To measure preference for the different extension methods, farmers were asked two successive questions: i) *which of the following extension methods are you aware about (allow for multiple choices)*? Farmers were required to choose the methods they were about. The response to this question was binary taking the value of one if a farmer was aware of a particular method and zero if unaware. For the method(s) that a farmer was aware about, a follow up question on the main difference between the methods was asked to ensure that they explicitly differentiated the methods they had chosen especially, T&V and FFSs that have several common characteristics. A successive question was asked: ii) *of the methods that you are aware about, which one do you prefer (allow for a single choice)*?

2.3.2 Independent variables

The independent variables included in this study are summarised in Table 1. The independent variables regards the household head who is defined in this study as the main decision maker in the household including decisions on the choice of extension methods.

Table 1: Definition of variables used in the MNL estimation

Variable	Variable definition
Social factors	
Age	Age of the household head in years
Gender	Gender of the household head; 1=male and 0=female
Education	Formal education of the household head in years
Distance	Distance to the nearest market in kilometres
Risk attitude	0 if risk averse, 1 of risk neutral and 2 if risk loving
Household size	Number of persons in a household
Economic factors	
Farm size	Acres per household
Wealth	Wealth status as an index
Off-farm income	1 if household has off-farm income, 0 otherwise

Notes: Household head is defined in this study as the main decision maker in a households. Such decisions include, technology adoption, market participation and revenue allocation.

Wealth index: the wealth index was computed using Principal Component Analysis (PCA) technique. The PCA was applied on the value (in Kenya shillings) of 34 selected household assets including farm implements such as hand hoes. Suitability of the PCA technique was tested using the Kaiser-Meyer-Olkin Measure Sampling Adequacy (KMO-MSA) statistic. The KMO-MSA value was greater than 0.5 indicating that PCA was appropriate as suggested by Gyau *et al.* (2016). The index was computed in three stages. In the first stage, the asset values were normalized (scaled to a score of between 0 – 1) using equation 5 in order to minimize their variance for comparison purposes.

$$i = \frac{x_l - x_{min}}{x_{max} - x_{min}} \qquad (5)$$

Where, i is the normalized asset value, x_l is the actual asset value and x_{min} and x_{max} are the minimum and maximum asset values respectively. In the second stage, the normalized values were used to calculate weights (principal components) for each asset. According to Gyau *et al.* (2016) assets with weights greater than 0.5 significantly contribute to household wealth and were retained for the analysis while those with weights less than 0.5 were dropped from the computation. The last stage used the selected assets (based on the weights criterion) to compute an index as shown in equation 6.

$$W_j = \sum_{i=1}^{k} b_i \ (a_{ij} - x_i)/s_i \qquad (6)$$

Where, W_j is the standardized wealth index for the j^{th} household; b_i represents the weights assigned to the k^{th} asset; a_{ij} is the value of each household on each of the k asset; x_i is the mean of each of the k^{th} asset and s_i is the standard deviation.

Risk attitude: farmers' risk attitude was measured using a self-risk assessment technique. Although the technique is subjective compared to experimental approaches, it is suitable for surveys (Ding *et al.* 2010). Farmers were asked, '*how would you describe yourself in relation to risk? Are you generally willing to take risks or do you try to avoid risks?* Farmers were to choose a single score between 0 - 10, where 0 meant 'not at all prepared to take risk' and 10 meant 'always prepared to take risk'. Following Moscardi and de Janvry (1977), the farmer scores were categorised as follows: scores 0 – 4 were categorised as risk averse, score 5 was categorised as risk neutral and a scores 6 – 10 were categorised as risk loving.

2.4. Sampling and data collection procedure

This study used cross-sectional data of 816 households collected in Kisii and Nyamira Counties, Kenya in October - December 2015. The sample was selected using a multistage procedure that comprised two stages. Africa Harvest International, a local non-governmental organization working in the study area, had registered 94 farmer groups (71 from Kisii County and 23 from Nyamira). In the first stage and considering the number of groups in each County relative to the total groups in the sampling frame, simple random sampling was used to select 48 groups (32 from Kisii and 16 from Nyamira). In the second stage, 20 active members were randomly selected from each of the selected groups. In cases where a group had 20 or less than 20 active members, a group census was conducted. The targeted sample size was 960 households but most of the selected groups had less than 20 active members leading to an active sample size of 816.

3. RESULTS

3.1. Descriptive results

On average, farmers were middle aged and had 9 years of formal education (Table 2). The average farm size was small (1 acre) due to the high population density of over 650 persons per km^2 in the study area. The average farm size was largest among farmers who preferred the T&V method (1.16 acres) and who were also furthest from the market. This is possibly because as the distance to market increases, population decreases and commercial land use opportunities decline leading increase in farm size.

Table 2: Farmer characteristics in Kisii and Nyamira Counties Kenya

Variable	T&V (n=344)	FFS (n=261)	Mass media (n=105)	F2F (n=106)	Overall (n=816)
Age [a] (years)	48.07 (0.61)	48.77 (0.70)	49.18 (1.19)	48.33 (1.09)	48.47 (0.39)
Household size [a] (number)	5.51 (0.09)	5.56 (0.10)	5.44 (0.15)	5.30 (0.17)	5.49 (0.06)
Education [a] (years)***	9.43 (0.16)	9.46 (0.18)	10.23 (0.29)	8.92 (0.27)	9.48 (0.10)
Farm size [a] (acres)**	1.16 (0.03)	1.08 (0.34)	1.01 (0.06)	1.03 (0.06)	1.10 (0.02)
Distance to market [a] (km)*	3.37 (0.11)	2.95 (0.12)	3.24 (0.19)	3.29 (0.19)	3.21 (0.07)
Wealth [b] (percent poor)***	59.01	58.62	62.86	78.30	69.89
Off-farm income [b] (percent access)	82.56	85.44	89.52	84.91	84.68
Risk loving [b] (percent)**	70.93	67.82	66.67	54.72	67.28
Household head is male [b] (percent)	76.45	77.78	80.95	7.7	76.84

*Notes: ***, **, and * imply that differences are statistically significant at 1%, 5% and 10% levels, respectively based on one-way ANOVA ([a]) and Chi-square tests ([b]). Standard errors are in parenthesis; T&V, Training and Visit; FFS, Farmers Field Schools; and F2F, Farmer to Farmer.*

A majority of farmers had a negative wealth index indicating that they were poor. Most of the poor farmers preferred the F2F outreach method. This can be explained by fact that the F2F extension method is relatively affordable as learning is through observation on neighbours' farms requiring no investments other than time. It was further observed that, 67 percent of farmers were risk loving. Most of the risk loving farmers preferred the T&V method possibly because the T&V method is costly and consequently, riskier relative to the other methods.

3.2. Econometric results

The explanatory variables included in the MNL model were tested for multi-collinearity using the Pearson's pairwise correlation and the variance inflation factor (VIF) tests. Coefficients of the pairwise correlation test were all less than 0.5 whereas, coefficients of the VIF test were all less than 10 implying that, multi-collinearity was not a problem in this study. The Jarque-Bera statistic for normality was significant at the one percent level implying that the data ($y|x$) was not normally distributed. Thus, the MNL model was appropriate. The Wald statistic and the generalized Hosmer-Lemeshow statistics were used to test the model's fit. The Wald statistic was significant at the one percent level and the Hosmwer-Lemeshow statistic was not significant indicating the model fitted the data well. The seemingly unrelated (SUEST) statistic was used test for the IIA assumption. This was important because the MNL model yields inconsistent estimates if the IIA assumption is violated (Gensch & Ghose 1997). The results of the SUEST test (Chi^2 [36] = 0.00; *p*-value=1, for all the alternatives) showed that the assumption was not violated and that the estimates are reliable. Table 3 presents the estimates of the MNL regression model.

The T&V extension method was preferred by 42 percent of the farmers while the FFSs method was preferred by 32 percent of the farmers. Mass media and the Farmer to Farmer (F2F) methods were each preferred by 13 percent of the farmers. The econometric results show that education, distance to market, farmer risk attitude and wealth, significantly influenced farmer preferences for extension methods. Accordingly, we rejected the null hypothesis and concluded that, socioeconomic factors influence farmer preferences for extension methods.

Education influenced farmer preferences for mass media positively and the estimate was significant at the one percent level (Table 3). A year's increase in farmer's education

increased the likelihood of preferring mass media by 1.3 percentage points. Distance to the nearest market negatively and significantly influenced farmer preference for the FFSs method relative to the T&V at the one percent level. A kilometre increase in distance to the nearest market decreased the probability of preferring the FFSs method by 2.2 percentage points.

Table 3: Determinants of farmer preference for agricultural outreach methods in Kisii and Nyamira Counties, Kenya

Independent variables	FFSs		Mass Media		F2F	
	ME	SE	ME	SE	ME	SE
Age (years)	0.000	0.002	0.002*	0.001	-0.000	0.001
Gender (dummy)	0.008	0.042	0.028	0.028	0.001	0.027
Education (years)	-0.004	0.006	0.013***	0.004	-0.005	0.004
Farm size (acres)	-0.038	0.030	-0.037*	0.021	0.000	0.019
Distance to market (km)	-0.022***	0.009	0.003	0.006	0.004	0.006
Risk attitude (categorical)	-0.001	0.022	-0.006	0.015	-0.041***	0.013
Wealth (index)	0.039**	0.017	-0.016	0.013	-0.047***	0.015
Off-farm income (dummy)	0.017	0.046	0.044	0.029	0.012	0.029
Household size (number)	0.008	0.010	-0.003	0.007	-0.007	0.007
Observations	816					
Wald Chi^2 (30)	55.04***					
Log likelihood	-995.55					

*Notes: ***, ** and * denotes significance at the 1%, 5% and 10% levels. ME, marginal effects computed at the sample mean. SE, robust standard errors. Dependent variable: preference (categorical). FFSs, Farmers' Field Schools; F2F, Farmer to Farmer. Base alternative, Training and Visit (T&V) method.*

Farmers' attitudes towards risk had a negative effect on the probability of preferring the F2F method and the estimate was significant at the one percent level (Table 3). Risk loving farmers were less likely to prefer the F2F method by 4.3 percentage points. Wealthier farmers were more likely to prefer the FFSs method and the marginal effect was significant at the 5 percent level, but less likely to prefer the F2F method at the one percent level. A unit increase in farmers' wealth index increased the likelihood of preferring the FFSs method by 3.9 percentage points but reduced the likelihood of preferring the F2F method by 4.7 percentage points.

4. DISCUSSION

More educated farmers preferred the mass media extension methods such as radio and television. Education enhances the ability to decode information correctly. Often, educated farmers are engaged in other income generation activities. For example, some of the educated farmers in the study area were teachers and others managed small businesses in the nearby towns. This means that the opportunity cost associated with mass media methods is low as farmers can access information as they attend to other economic activities. Besides, educated farmers can comprehend better and apply appropriately information that is disseminated through mass media especially where information is not aired in local languages further explaining the positive association between education of the household head and preference for the mass media method.

Distance to the nearest market influenced farmers' preference for the FFSs method negatively. FFSs are designed in such a way that a large group of farmers meet at designated venues that are deemed central to the participants, often market centres where there is easy access to transport among other social amenities. However, the venue being considered central does not necessarily mean it is closer to farmers' homes. Consequently, farmers have to set aside time to participate in the training sessions. Likewise, farmers spend money on transport, meals and airtime during their participation. This increases the cost incurred by participants as well as the opportunity cost of time. It is rational that farmers rarely prefer expensive ventures explaining the negative association.

Sixty seven percent of the farmers were risk loving. Farmers' attitude towards risk reduced their preference for the F2F method. Learning using the F2F method occurs through observation on neighbours' farms. The farmer whose capacity is being built invests only time

during the visitation. Often, the proximity of the neighbours' farms minimises the opportunity cost of time. In other cases, it is possible for farmers to observe farming practises in their neighbour's farms while attending to other activities such as going to the market as most rural paths pass through farms. In such cases, the opportunity of learning is zero. As a result, there is no significant risk associated with using the F2F method. As expected, risk loving farmers would not prefer a low risk extension method that is probably less effective given that training is conducted by farmers who are rarely experts. Similarly, Shimamoto *et al.* (2017) found that risk averse farmers were more likely to minimize risk.

Finally, wealthier farmers preferred the FFSs method but were less likely to prefer the F2F method, relative to the T&V method. Wealthier farmers can afford the extra cost associated with the FFSs method such as transport, meals and airtime. In addition, wealth reduces the absolute risk averseness of farmers explaining the negative association between wealth and preference for the F2F method. On the flip side, wealthier farmers can afford private extension services that are more effective because they are provided by experts as opposed to the F2F method. The F2F method has been found to be less effective in disseminating complex practises because the lead farmers are not subject matter specialists in most cases (Feder *et al.* 2004). This may explain the negative association between wealth and preference for F2F method.

5. CONCLUSIONS

Agricultural extension methods are important in boosting decision making capacity of farmers. The effectiveness of extension methods can be increased by using methods that are preferred by farmers. However, farmers rarely get the opportunity to choose the methods that they prefer. Moreover, only a small number of studies have analysed the factors that influence farmer preferences for extension methods (Mittal and Mehar 2015). To fill this gap, we assess the importance of socioeconomic factors in influencing farmer preferences for agricultural extension methods in Kisii and Nyamira Counties, Kenya.

The T&V method was the most preferred method while the mass media and farmer-to-farmer methods were the least preferred. Based on the econometric results, we conclude that, socioeconomic factors influence farmer preferences for extension methods in Kenya. Specifically, education, distance to the market, risk attitude and wealth were highly significant showing that they influenced farmer preferences for extension methods. We conclude that participatory approaches should be used in the selection and promotion of agricultural extension methods. This is expected to enhance their performance.

Despite the robustness of the results, the study was based on stated preferences which sometimes differ from revealed preferences even for the same individual (Parker & Souleles 2017). This points to two potential areas of further research. First, it would be important for an experimental study to be conducted where farmers are given the opportunity to reveal their preferences by choosing and using their preferred extension method(s). Secondly, the effectiveness of different extension methods should be compared when they have been selected in a participatory manner as opposed to the top-down approaches.

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CONFLICT OF INTEREST

There is no conflict of interest in this study whatsoever.

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