Journal of Agricultural Economics and Rural Development
Vol. 3(1), pp. 149-160, April, 2017. © www.premierpublishers.org. ISSN: XXXX-XXXX

JAERD

Research Article

Farmer to farmer extension approach: Analysis of extent of adoption by smallholder farmers in Manicaland and Masvingo provinces of Zimbabwe

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Agricultural extension programs are key means for assisting farmers with information and technology to expand their abilities and improve production. Of late, Zimbabwe has witnessed increased investments by both the government and the development community in the Farmer to Farmer (F2F) extension approach as a key strategy of complementing the overburdened and severely underfunded public extension and advisory services in increasing extension coverage. This study sought to assess the extent of adoption of the F2F extension approach as a major source of extension and advisory services. The study used a sample of 479 smallholder farmers that was drawn using a multi-stage random sampling approach from 6 districts in Manicaland and Masvingo provinces of Zimbabwe. The study found that adoption of the F2F extension approach was low with only 43% of the sampled farmers using the approach. The adoption of the approach was also found to be similar across gender, districts and agro-ecological zones. Results of the binary logistic regression revealed that access to public extension services, training of farmers using the non-block training approach, number of extension visits received by a farmer per year, total area cropped, agro-ecological zone V, and adoption of improved farming practices were significant factors that encouraged the adoption of the farmer to farmer extension approach by smallholder farmers. The study suggests that two things, above all, are important in promoting the adoption of the F2F extension approach by smallholder farmers in Zimbabwe. These are: first, improving access to public extension services to backstop lead farmers and second, training farmers using the non-block training approach as it encourages more interaction amongst farmers as they validate each other in the application of new technologies.

Keywords: Farmer to farmer extension, Smallholder farmers, Zimbabwe, Binary logistic regression.

INTRODUCTION

Increasing agricultural productivity and growth remains an important strategy for alleviating hunger and poverty in the majority of developing countries (Dercon *et al*, 2008). This is because the majority of the populations of these developing countries live in rural areas and their survival is mainly dependant on agriculture. The agricultural sector is the major source of livelihood and employment for at least 75% of the population (Sebaggala and Matovu, 2010). However, despite the critical role agriculture plays in economic development of most developing economies, in many African countries including Zimbabwe, agriculture productivity and growth is relatively low when compared to the rest of the world. This is despite enormous investment in agricultural research and extension (Nahdy, 2004). Furthermore, the rural economies are faced with the challenge of diminishing reserves of potentially cultivable land (Hasan, 2011). In addition, most governments have reduced spending towards agricultural research and extension in recent years.

Agricultural extension programs are the world governments' primary means for assisting farmers by providing information and technology to expand their abilities and improve production (Hasan, 2011; Sharma, 2003). Agricultural education, extension, and advisory services are a critical means of addressing rural poverty through technology transfer, support to learning, assisting farmers in problem solving, and enabling farmers to become more actively embedded in the agricultural knowledge and information system (Hasan, 2011; Davis *et. al.,* 2010; Christoplos and Kidd 2000; Swanson *et al.,* 1998). When provided effectively, extension and advisory services lead to increased agriculture productivity and efficiency which in turn brings positive and meaningful changes in livelihoods and economic development at micro-, meso- and macro-levels. As such, the success or failure of many agriculture and rural development plans is contingent on the quality, effectiveness and impact of extension and advisory services. Thus, by promoting agricultural innovation and information, extension services can improve the livelihoods of the poor (Hasan, 2011).

In recent years, public extension and advisory services in Zimbabwe have been overburdened and severely depleted a state of affairs which has contributed to underperformance in agriculture, thus contributing in turn to food insecurity, malnutrition, and increased poverty. Since the late 1990s, Zimbabwe has witnessed increased investments by both the government and the development community in the F2F extension approach as a key strategy of complementing the overburdened and severely underfunded public extension and advisory services in increasing its extension coverage. At the same time, many developing countries are undergoing a progressive policy change towards more demand driven and market oriented agricultural services. Demand-driven advisory services, including strategies of privatisation, decentralisation, greater participation among farmers is generally seen as the way forward to improve effectiveness of extension. Participatory extension approaches (PEA) under which the Farmer to Farmer extension approach (F2F) falls were introduced in Zimbabwe in 1998 and up-scaled as a means of moving towards more demand-driven and process oriented agricultural services (Ministry of Agriculture, Mechanisation and Irrigation Development and Practical Action, 2010; Hanyani-Mlambo, 2002). With special focus on the Manicaland and Masvingo provinces of Zimbabwe the objectives of this paper were to: (i) ascertain the extent to which farmers use the farmer to farmer extension approach; and (ii) examine the factors that determine the use of the farmer to farmer extension approach.

LITERATURE REVIEW

Agricultural extension and advisory services are defined as systems that facilitate the access of farmers, their organizations, and other value chain and market actors to knowledge, information, and technologies; facilitate their interaction with partners in research, education, agribusiness, and other relevant institutions; and assist them to develop their own technical, organizational, and management skills and practices as well as to improve the management of their agricultural activities (Birner *et al,.* 2009; Christoplos, 2010; Davis and Heemskerk, 2011). The terms agricultural extension and advisory services can also be defined as the entire set of organizations that support and facilitate people engaged in agricultural production to solve problems and to obtain information, skills and technologies to improve their livelihoods (Waddington *et al.*, 2010; Anderson, 2007; Moris, 1991).

Provision of extension services is a process that helps farmers become aware of improved technologies and adopt them in order to improve their efficiency, income and welfare. In its broadest sense, extension is an educational process with communication of information to help people form sound opinions and make good decisions being its core component (Van den Ban and Hawkins, 1996). Agricultural extension is a mechanism by which information on new technologies, more effective management options, and better farming practices can be transmitted to farmers (Owens *et al.,* 2003). Extension agents interact with farmers, providing information and aiding in developing their managerial skills (Birkhaeuser *et al.,* 1991). In addition, extension agents disseminate information on crop and livestock practices, optimal input use, and consult directly with farmers on specific production problems, thus facilitating a shift to more efficient methods of production. That is, agricultural extension not only accelerates the diffusion process and the adoption of new varieties and technologies but also improves the managerial ability of farmers and affects the efficient utilization of existing technologies by improving farmers' know-how. These two distinct roles of agricultural extension could have different effects on the performance of farmers attempting to close the management and technology gaps, respectively.

Extension Paradigms

There are four major paradigms of agricultural extension (NAFES, 2005; Swanson, 2008a; Swanson, 2008b and Swanson and Rajalahti, 2010). These are:

(i) Technology transfer paradigm which is persuasive and paternalistic. It generally uses persuasive methods for telling farmers which varieties and production practices they should use to increase their agricultural productivity and thereby maintain national food security for both the rural and urban populations in the country. The primary goal of this extension model is to increase food production, which helps reduce food costs. This paradigm was prevalent in colonial times and reappeared in the 1970s and 1980s when the "Training and Visit" system was established across Asia and sub-Saharan African countries. Technology transfer involves a top-down approach that delivers specific recommendations to farmers about the practices they should adopt.

(ii) Advisory work paradigm. This paradigm is persuasive and participatory and can be seen today where government organizations or private consulting companies respond to farmers' inquiries with technical prescriptions. It also takes the form of projects managed by donor agencies and NGOs that use participatory approaches to promote predetermined packages of technology.

(iii) Human resource development or non-formal education paradigm. This paradigm is educational and paternalistic and it dominated the earliest days of extension in Europe and North America, when universities gave training to rural people who were too poor to attend full-time courses. It continues today in the outreach activities of most education institutions around the world. Top-down teaching methods are employed, but students are expected to make their own decisions about how to use the knowledge they acquire. It also continues to be used in most extension systems, but the focus is shifting more toward training farmers how to utilize specific management skills and/or technical knowledge to increase their production efficiency or to utilize specific management practices, such as integrated pest management (IPM), as taught through Farmer Field Schools (FFS).

(iv) Facilitation for empowerment paradigm which is educational and participatory. This paradigm involves methods such as experimental learning and farmer-to-farmer exchanges. Knowledge is gained through interactive processes and the participants are encouraged to make their own decisions. An important difference is that front-line extension agents primarily work as “knowledge brokers” in *facilitating* the teaching–learning process among all types of farmers (including women) and rural young people. Under this extension model, the field staff first works with different groups of farmers (e.g., small-scale men and women farmers, landless farmers, etc.) to first identify their specific needs and interests. Once their specific needs and interests have been determined, then the next step is to identify the best sources of expertise (e.g., innovative farmers who are already producing and marketing specific products, subject matter specialists, researchers, private-sector technicians, rural bank representatives) that can help these different groups address specific issues and/or opportunities. The best know examples in Asia projects that use Farmer Field School (FFS) or participatory technology development (PTD). That means the provisions of information to farmers on agricultural production technologies is designed to increase production, protect natural resources and the environment, or achieve some other objective.

Farmer to Farmer (F2F) Extension Approach

Scarborough *et al.,* (1997) defines farmer-to-farmer (F2F) extension as the provision of training by farmers to farmers, oftenthrough the creation of a structure of farmer promoters and farmer trainers.According to Selener*et al.* (1997), farmer-to-farmer extension programs can be traced back at least to the 1950s, when the approach wasused in the Philippines by the International Institute of Rural Reconstruction (IIRR). Those farmers selected to become lead farmers in farmer-to-farmer extension efforts are often called *model*, *master* or *lead farmers*, and are chosen based on their agricultural expertise. In other initiatives, they are called *farmer promoters* or *trainers*, emphasizing their networking or training skills. F2F extension is considered a viable method of technologydissemination based on the conviction that farmers disseminate innovations among peersmore efficiently than external extension agents (Kiptot and Franzel, 2014). Other reasons for the adoption of the F2F approach include the ability to reach more farmers at less cost, the higher level of trust that farmers have in fellow farmers and the perceived enhanced sustainability of the approach. Bentley *et al*. (2013) and Hird-Younger and Simpson (2013) noted that farmers are more receptive to making changes/testing innovations when they are proposed by familiar and trusted sources. Kiptot*et al.* (2006) also note that the F2F approach can enable farmers to make better decisions, providefeedback to researchers and policymakers. Braun and Hocde (2000) even suggest that F2F approach can result in radicalchanges in farmers’ mental maps of their role in the process of technology generation anddiffusion.

METHODOLOGY

Study Area, Population and Sample

This study is based on survey data collected in March 2015 from the 6 districts that Deutsche Geselischaft fur

InternationaleZusammenarbeit GmbH (GIZ) is implementing the Agricultural Innovation Support Project (GIZ AISP). These are Nyanga, Mutasa and Mutare districts in Manicaland province; and Chiredzi, Zaka and Bikita districts in Masvingo province. The population in the six districts was 30,000 farming households. Using the Raosoft sample size calculator (www.raosoft.com/samplesize.html), the minimum sample size target for the household survey was set at 350 households. This target sample size was based on achieving a 5% margin of error and a 95% confidence level.
To arrive at the sample households, a multi-stage random sampling technique was employed. First, two wards were randomly selected in each of the district. This was then followed by randomly selecting 2 farmer groups from each of the selected wards. One group selected was for farmers who had benefitted from GIZ AISP support through improved extension services and the other group was for non-beneficiary farmers. Lastly, all available farmers in each selected group were interviewed. A total of 479 farmers were interviewed using a structured questionnaire and the sample distribution by district and agro-ecological region are presented in Tables 1 and 2 below.

Data Analysis

The study used both descriptive and inferential statistics. Descriptive statistics were used to analyze the socioeconomic characteristics of the respondents. The Binary Logistic model was used to identify the determinants of adoption of the F2F extension approach by the sample farmers.
In order to identify the determinants of adoption of the F2F extension approach, the study used a probability model in which the chancesof being in income poverty are linked to individual,socio-economic and demographic characteristics.

The functional form of the logistic model is given by:

$$\mathrm{F(zi)} = \frac{\exp(\mathrm{zi})}{1+\exp(\mathrm{zi})}$$
$$= \frac{1}{1+\exp(\mathrm{-zi})}$$

where, $Z_i = \frac{P_i}{1-P_i}$, which is the ratio of the probability of success to the probability of failure known as the odds ratio. In this study P_i is the probability of adopting F2F extension approach. In the case of smallholder farmers, Z may be interpreted as the farmer's propensity of adopting F2F extension approach as a source of extension support, with larger values of Z corresponding to greater probabilities of adopting F2F extension approach. Logit model coefficients can be used to estimate odds ratios for each of the independent variable in the model. The model also assumes that Z is linearly related to the predictors, thus we have

$$\log \frac{P_i}{1-Pi} = Z_i = \beta_0 + \sum_{\forall i} \beta_i X_i$$

Where X_i is the i^{th} predictor case andβ_i is the i^{th} coefficient. The model can be used to derive estimates of the odds ratios for each factor to explain how much more the independent variable is likely to adopt F2F extension approach than not. If Z is observable, one would simply fit a linear regression to Z and be done. However, Z is unobserved; hence one must relate the predictor to the probability of interest by substituting for Z as follows;

$$F(z) = \frac{1}{1+e^{-(\beta_0+\beta_1 X_{i1}+\ldots\ldots+\beta_P X_{ip})}}$$

There are a number of factors that might influence the adoption of F2F extension approach among the smallholder farmers.Thevariables used in the binary logistic model, their explanation and the a priori expectationsare provided in Table 3.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Sample Households

11% of the sample households have irrigation facilities on their farms and the mean livestock units per farmer are 3.17 (Table 4). The average distance of the farm to the nearest town is 93 kilometres. 45% of the farmers indicated that they have access to markets for their agricultural inputs and produce. Almost 82% of the farmers receive most of their extension support from the public extension services. On average each household receives 27 extension visits from the public extension staff per year.
.The mean household size is 5.87 members and the average cropping area per household is 1.76 hectares. 26% of the sampled farmers were located in agro-ecological zone V which is an extensive farming region, receives an average of less than 450 mm of rainfall per year and rainfall is highly erratic. The mean crop diversity index as measured by the herfindhal index is 0.54 indicating that the households are fairly diversified.81% of the farmers adopted improved farming practices which involve use of hybrid seed, organic fertilizers, chemicals and conservation farming practices.

Table 1: Sample distribution by gender by district

Gender	District Nyanga	Mutasa	Mutare	Chiredzi	Zaka	Bikita	Total
Female	33 40.7%	26 40.6%	23 38.3%	45 46.4%	26 34.2%	35 34.7%	188 39.2%
Male	48 59.3%	38 59.4%	37 61.7%	52 53.6%	50 65.8%	66 65.3%	291 60.8%
Total	81	64	60	97	76	101	479

Table 2: Sample distribution by Agro-ecological Region

Agro-Ecological Region (AER)	Frequency	Percent
AER_I	66	13.8
AER_III	59	12.3
AER_IV	228	47.6
AER_V	126	26.3
Total	479	100

Table 3. Definition of binary logistic Regression Variables

Variable	Description	Hypothesis
F2F	= 1 if farmer is using the farmer to farmer extension approach, 0 otherwise	
LIVESTOCK	Number of livestock units	+
IRRIG	= 1 if household has irrigation on the farm, 0 otherwise	+
Distance_Town_Km	Distance of farm homestead from nearest town (km)	+
MARKETS	= 1 if household has access to markets, 0 otherwise	-
EXTN_Public	= 1 if household has access to public extension service, 0 otherwise	+
Training_NonBlock	= 1 if household has been trained using the non-block training approach, 0 otherwise. Non-block training is where a farmer receives training at each stage of the production cycle.	+
Training_FarmerFS	= 1 if household has been trained using the farmer field school training approach, 0 otherwise	+
EXTN_Visits	Number of extension visits per year	+
HHSize	Household size	+
Area_Planted_Ha	Total area planted (hectares)	+
Herfindhal_Index	Herfindhal index measuring the degree of crop diversification. Ranges from 0-1	-
AER_V	= 1 if farm is located in agro-ecological zone V, 0 otherwise	+
Improved_Farming	= 1 if household uses improved agricultural practices, 0 otherwise	+

Extent of Farmer to Farmer Adoption

43% percent of the farmers indicated that they use the farmer to farmer extension approach as a source of extension support (Figure 1). The percentage of female headed farming households using the farmer to farmer extension approach was similar to that of male headed households at 42% and 43% respectively. This is because the extension services strive to ensure that there is gender balance in the selection of lead farmers.
In terms of distribution by district, Chiredzi had the highest number of farmers using the farmer to farmer extension approach with 47% followed by Zaka with 45% and Mutare had the lowest number with 38% (Figure 2).
44% of the sampled households in Masvingo province were using the farmer to farmer extension approach compared to 40% in Manicaland province. The use of the farmer to farmer extension approach was almost similar across Zimbabwe's agro-ecological farming zones with agro-ecological zone V having the highest number of farmers using the approach with 47% followed by agro-ecological zone III with 46% (Figure 3). Agro-ecological zone IV had the lowest number of farmers using the farmer to farmer extension approach with 40%.

Table 4. Summary Statistics of the Sample Households

Variable	Mean	Std. Deviation
LIVESTOCK	3.17	4.531
IRRIG	0.11	0.319
Distance_Town_Km	92.52	24.825
MARKETS	0.45	0.498
EXTN_Public	0.82	0.386
Training_NonBlock	0.10	0.30
Training_FarmerFS	0.19	0.39
EXTN_Visits	26.50	26.15
HHSize	5.87	2.390
Area_Planted_Ha	1.76	1.744
Herfindhal_Index	0.54	0.22
AER_V	0.26	0.441
Improved_Farming	0.81	0.396

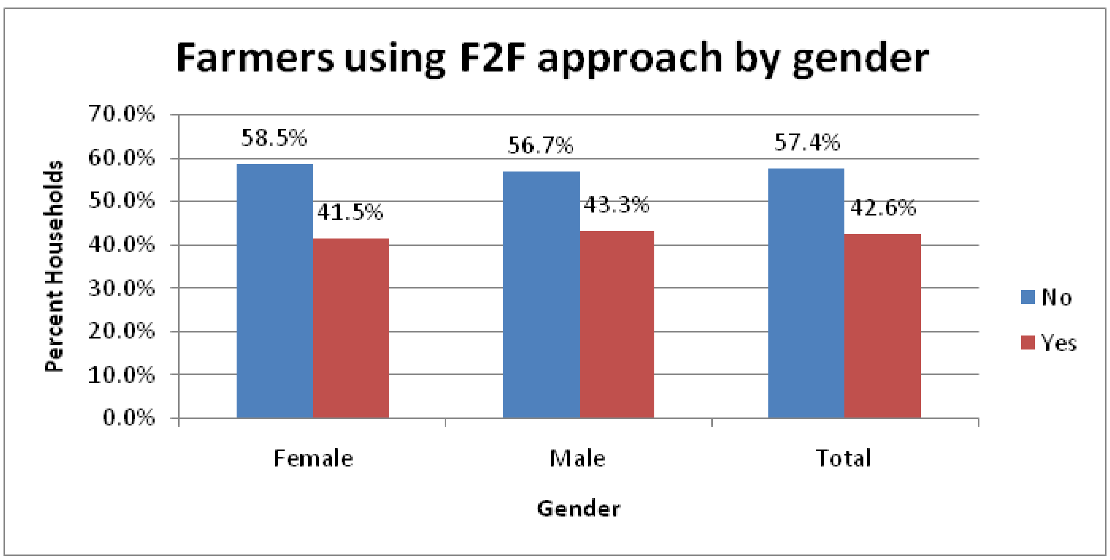

Figure 1. Farmers using F2F approach by gender

Determinants of Adoption of Farm to Farmer Extension Approach

The estimates of the logistic regression are shown in Table 5 below. The variables that did not significantly influence adoption of the farmer to farmer extension approach by the sample households were access to irrigation (IRRIG) and distance of farm from nearest town (Distance_Town_Km).
The variables that negatively and significantly influence the probability of a farmer adopting the farmer to farmer extension approach as a source of extension support were total number of livestock units (LIVESTOCK), access to markets (MARKETS), having been trained using the farmer field school approach (Training_FarmerFS), total household size (HHSize), and the degree of crop diversification (Herfindhal_index).
The variables that positively and significantly influence the probability of a farmers adopting the farmer to farmer extension approach as a source of extension support

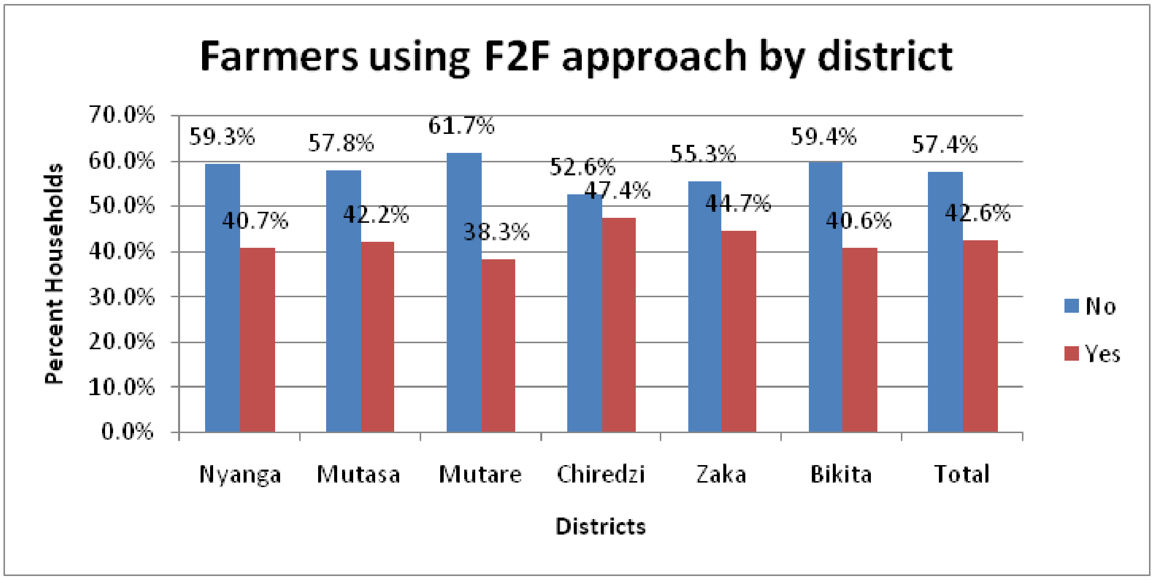

Figure 2. Farmers using F2F approach by district

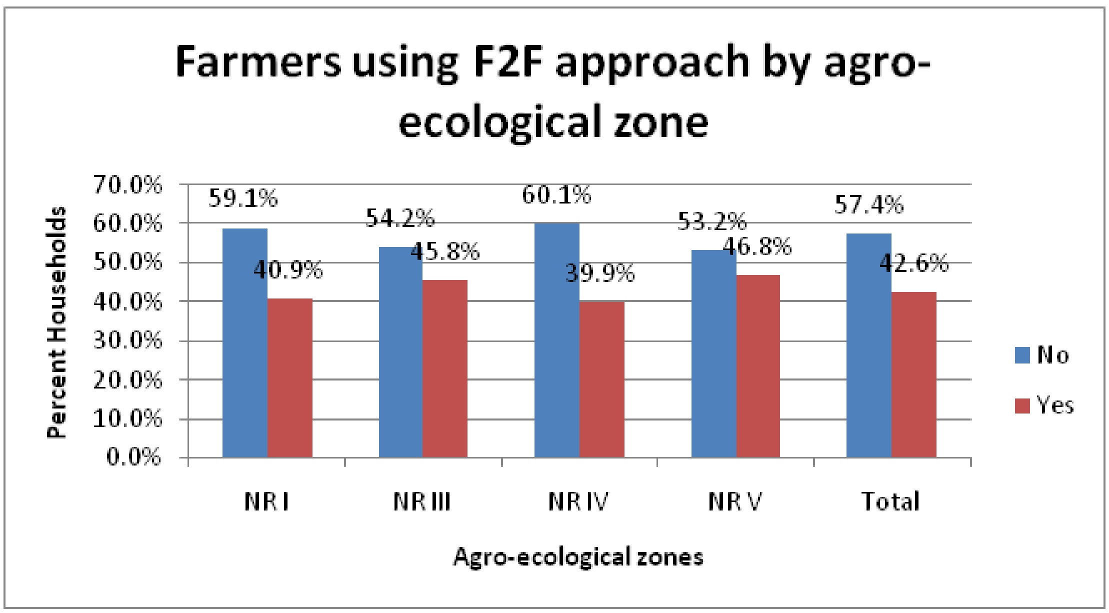

Figure 3. Farmers using F2F approach by district

were access to public extension services (EXTN_Public), having been trained using the non-block training approach (Training_NonBlock), number of extension visits received per year (EXTN_visits), total area cropped (Area_Planted_Ha), agro-ecological zone V, and adoption of improved farming practices.

The total number of livestock units was found to be a significant and negative determinant of adoption of the farmer to farmer extension approach at 5% level of significance. As the livestock unit increases by one unit, the odds of a household adopting farmer to farmer extension approach increases by a factor of 0.951. This implies that the possibility of adopting farmer to farmer extension approach is low for those households who had large livestock units. This could be explained by the fact that the farmer to farmer extension approach is mostly focused towards crop production extension and less towards livestock production.

Table 5. Binary logistic regression estimates of determinants of adoption of F2F extension approach

Independent Variables	B	S.E.	Wald	Sig.	Exp(B)
LIVESTOCK	-0.051	0.026	3.884	0.049**	0.951
IRRIG	0.237	0.308	0.593	0.441	1.267
Distance_Town_Km	0.003	0.006	0.297	0.586	1.004
MARKETS	-0.457	0.203	5.087	0.024**	0.633
EXTN_Public	0.698	0.295	5.602	0.018**	2.010
Training_NonBlock	0.642	0.335	3.665	0.056*	1.900
Training_FarmerFS	-0.886	0.271	10.701	0.001***	0.412
EXTN_visits	0.007	0.004	3.074	0.080*	1.007
HHSize	-0.087	0.045	3.784	0.052*	0.916
Area_Planted_Ha	0.116	0.066	3.099	0.078*	1.123
Herfindhal_Index	-1.046	0.480	4.747	0.029**	0.351
AER_V	0.624	0.373	2.800	0.094*	1.866
Improved_Farming	0.454	0.264	2.947	0.086*	1.574
Constant	-0.636	0.870	0.534	0.465	0.530

Note:
***indicates that the coefficient is statistically significant at 1% level.
**indicates that the coefficient is statistically significant at 5% level
*indicates that the coefficient is statistically significant at 10% level.

Farmers who had access to markets for their inputs and agricultural production are less likely to adopt the F2F extension approach and the coefficient is significant at 5% level. The probability of a farmer who had access to markets adopting the F2F extension approach is 0.367 lower than that of a farmer who had no access to markets. This may be attributed to the fact that farmers who have access to agricultural markets rely more on markets for their extension support as they produce to meet market requirements.

Farmers who had training using the farmer field school approach also had a lower probability of adopting the farmer to farmer extension approach and the coefficient is significant at 1% level. The odds indicates that the probability of a farmer trained using the farmer field school approach adopting the F2F extension approach is 0.588 lower when compared to that of a farmer trained using other training approaches.

Household size negatively influenced the probability of adopting the F2F extension approach and the coefficient is significant at 10% level. As the household size increases by one unit, the odds of the household adopting the F2F extension approach increases by a factor of 0.916. This implies that the probability of adopting the F2F extension approach is lower for those farmers who had large household sizes.

The level of crop diversification was also found to negatively influence the probability of a farmer adopting the F2F extension approach and the coefficient for the Herfindhal index is significant at 5% level. As the degree of crop specialization increases by one unit, the odds of a household adopting farmer to farmer extension approach increases by a factor of 0.351. This implies that the possibility of adopting farmer to farmer extension approach is low for those households who are specialized farmers. This could be explained by the fact that farmers who specialize in the production of specific crops do not face the same challenges as farmers whose production systems are more diversified and hence do not require the same level of extension support.

Access to public extension services positively influences the probability of a farmer adopting the F2F extension approach and the coefficient is significant at 5% level. The odds indicates that the probability of a farmer with access to public extension services adopting the F2F extension approach is 1.010 higher when compared to that of a farmer with no access to public extension services. This may be attributed to the fact that the F2F extension approach has been developed in Zimbabwe to compliment the public extension services as a cost effective way of increasing extension coverage. Farmers with access to public extension services are more knowledgeable of the F2F extension approach and this increases their willingness to use it (World Bank, 2008; Udry, 2010; Pan, *et al*. 2016)

Farmers who had training using the non-block training approach were also more likely to adopt the F2F extension approach and the coefficient is significant at 10% level. For a farmer trained using the non-block training approach, the odds of the household adopting the F2F extension approach increases by a factor of 1.9. This could be explained by the fact that the non-block training approach takes farmers through the whole production cycle and integrates both theory and practical training. Farmers then tend to validate their practices by consulting with lead farmers. This finding supports Ghadimi*et al.* (2015) who also found that training and participation increases adoption of new technologies.

Extension visits positively influenced the probability of a farmer adopting the farmer to farmer extension approach and the coefficient is significant at 10% level. With each additional extension visit to a farmer, the odds of a household adopting farmer to farmer extension approach increases by a factor of 1.007. This implies that farmers who have higher extension visits per year have higher probabilities of adopting the F2F extension approach when compared to farmers with low visits.

Total area planted to crops also positively influenced the probability of a farmer adopting the farmer to farmer extension approach and the coefficient is significant at 10% level. With each additional hectare planted to crops, the odds of a household adopting farmer to farmer extension approach increases by a factor of 1.123. This could be explained by the fact that farmers who have larger cropping areas tend to seek more extension support as a means of ensuring greater success and reducing risks of crop failure due to poor agronomic practices.

Farmers located in agro-ecological zone V had a higher probability of adopting the farmer to farmer extension approach and the coefficient is significant at 10% level. The odds indicates that the probability of a farmer located in agro-ecological zone V adopting the F2F extension approach is 0.866 higher when compared to that of a farmer located in other agro-ecological zones.

Adoption of improved farming practices by a farmer also positively influences the probability of adopting the F2F extension approach and the coefficient is significant at 10% level. The odds of the household adopting the F2F extension approach increases by a factor of 1.574for a farmer who had adopted improved farming practices when compared to a farmer who employed traditional farming practices.

CONCLUSION AND RECOMMENDATIONS

Despite the increased investments by both the government and the development community in the F2F extension approach as a key strategy of complementing the overburdened and severely underfunded public extension and advisory services in increasing its extension coverage, there has not been any study done to assess the level of adoption of the F2F extension approach in Zimbabwe. This study sought to ascertain the extent of adoption of the F2F extension approach as a major source of extension and advisory services and to examine the factors that determine the use of the farmer to farmer extension approach among 479 smallholder farmers from 6 districts in Manicaland and Masvingo provinces of Zimbabwe.

The study found that the adoption of the F2F extension approach was low with only 43% of the sampled farmers using the approach as a source of extension support. The study also found that adoption of the approach was similar across gender, districts and agro-ecological zones.

The variables that positively and significantly influenced the probability of a farmers adopting the farmer to farmer extension approach as a source of extension support were access to public extension services, training of farmers using the non-block training approach, number of extension visits received by a farmer per year, total area cropped, agro-ecological zone V, and adoption of improved farming practices.

The study suggests that two things, above all,are important in promoting the adoption of the F2F extension approach by smallholder farmers in Zimbabwe. These are:First, improving access to public extension services to backstop lead farmers andsecond, training farmers using the non-block training approach as it encourages more interaction amongst farmers as they validate each other in the application of new technologies.

ACKNOWLEDGEMENTS

The author is grateful to GIZ (Deutsche Geselischaft fur Internationale Zusammenarbeit GmbH) Zimbabwe for sponsoring the field data collection exercise, the smallholder farmers in the six study districts of Manicaland and Masvingo provinces for sparing their time during survey and questionnaire administration, and to the government extension service (Agritex) and GIZ AISP team for the logistical support during the field work.

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Accepted 6 February, 2017

Citation: Dube L (2017). Farmer to Farmer Extension Approach: Analysis of Extent of Adoption by Smallholder Farmers in Manicaland and Masvingo Provinces of Zimbabwe. Journal of Agricultural Economics and Rural Development, 3(1): 149-159.