

FARMERS' PERSPECTIVE ON THE TEACHING METHODS USED BY PUBLIC AND PRIVATE SECTORS EXTENSION IN THE PUNJAB, PAKISTAN

Safder Abbas¹*, Ghazanfar Ali Khan¹, Babar Shahbaz¹ and M. Tahir Siddiqui²

¹Institute of Agricultural Extension, Education and Rural Development, University of Agriculture Faisalabad, Pakistan;² Department of Forestry and Range Management, University of Agriculture Faisalabad, Pakistan

*Corresponding Author's e-mail: safderabbas1764@gmail.com

In Pakistan, the Extension Field Staff (EFS) of public and private sectors uses various methods and strategies to educate the farmers about agricultural technologies. This study was attempted to understand the perception of farmers about various teaching methods used by the EFS of public and private sectors for the dissemination of agricultural information. The study was conducted in purposively selected two tehsils (Multan Saddar and Shujabad) of district Multan. A sample of 400 farmers was selected randomly and data were collected through a pretested and validated interview schedule. A paired t-test was also used to compare the teaching methods of both sectors. The t-value (5.37) shows a strong significant difference in farm and home visits as well as mean value also shows that private sectors' EFS (Mean= 2.46) paid more farm visits as compared to public sectors' EFS (Mean= 1.95). There were various extension workers of the private sector working in the study area so, they frequently visit farmers' field or homes one after one. Similarly, the private sector made greater use of group contact methods especially farmers' meetings to educate farmers than did the public sector. The overall ranking of the private sector regarding the effectiveness of extension teaching methods was relatively higher than the public sector.

Keywords: Effectiveness, Agriculture education, Public sector extension, Agricultural services, Teaching methods.

INTRODUCTION

Extension teaching methods are the approaches or tools through which agricultural service providers communicates with farmers (Ali *et al.*, 2017). Knowledge and skills are transferred to the farmers with the help of these teaching methods (Okunade, 2007 and Lukkainen 2012). So, extension workers must be fully familiar with these teaching methods, because it helps them to pick the suitable one according to the situation (Nikitha *et al.*, 2019).

The technological innovations are of no use if they are not properly addressed and timely transferred to the farmers (Petray *et al.*, 2019). Nowadays, this situation is a key challenge for EFS due to their less access to farmers (Ahmad *et al.*, 2007; Chen and Wu, 2009). Usually, farmers prefer those sources of information that are easily accessible to them i.e. fellow farmers and EFS of public and private sectors (Mirani and Memon, 2011). Therefore, the role of the EFS, either from the public or private sector, cannot be neglected (Ahmad *et al.*, 2007; Anaeto *et al.*, 2012).

There are several extension methods by which an extension worker uses to educate farmers about new agricultural technology. Generally, these methods are grouped under three main categories: individual (farm or home visit, office call, telephone call, and informal contact, etc.), group (farmers' meeting, demonstrations (method and result), lecture meetings, field trip/tours, symposium, panel discussion, workshop, brainstorming, buzz group, and role-playing, etc.)

and mass contact (printed material, electronic media, poster, pamphlet, exhibition, campaign, and Burgees) methods (Fazal, 2005; Muzaffar, 2005, Muhammad *et al.*, 2005; Sher, 2005; Ray, 2011). The importance of these teaching methods and strategies cannot be ignored because these methods raise the credibility of EFS in front of farmers (Aremu *et al.*, 2015; Nikitha *et al.*, 2019). The reason behind the adoption of multiple teaching methods is to ensure that agricultural technology is disseminated to every member of the farming community (Ali *et al.*, 2017).

Usually, the farmers remember 10% of the technology they hear, 50% they see and 90% of the technology they practice. So, there is a need to upgrade the teaching methods and strategies used by extension workers for the effective dissemination of agricultural information to the farmers (Ali *et al.*, 2017; Cooreman *et al.*, 2018; Ingram *et al.*, 2018).

It is perceived that extension services are becoming less effective due to improper use of teaching methods (Umeh *et al.*, 2018). The effectiveness of teaching methods is also affected by the less contact of extension workers with farmers (Khan and Akram, 2012). An effective communication system between farmers and extension workers is, therefore, necessary for the proper delivery of farming/agricultural knowledge and skills (Okunade, 2007).

In Pakistan, there are two major service providers namely public and private sectors that are providing agricultural advisory services to the farming community through their EFS and other means. These extension workers used various

teaching methods to educate farmers. However, it is still vague whether the teaching methods used by EFS are effective or not. To answer this question, the study was designed to explore the farmers' perspective on the effectiveness of the teaching methods used by EFS of both sectors to transfer agricultural technology in the Multan district of the Punjab.

MATERIALS AND METHODS

The study was conducted in purposively selected (having the maximum number of rural union councils) two tehsils i.e. Multan Saddar and Shujabad of district Multan. For the study, the cross-sectional survey research design was used because it is a commonly used research design in the field of social studies, as well as a wide range of problems can also be discussed in this design (Leedy, 2005; Gall *et al.*, 2006; Levin, 2006). A complete list of 7955 farmers was prepared with the help of Department of Agriculture (Extension) of the respective district. A sample size of 367 respondents was determined by using online computer software <https://www.surveysystem.com/sscalc.htm> with a confidence interval of 5 and confidence level 95% which was later extended up to 400 for more generalization. A validated and pretested interview schedule was developed for data collection as used by various researchers (Flick, 2014; Ata *et al.*, 2019; Raza *et al.*, 2020). The data were collected through simple random sampling technique. The collected data were further analyzed by the Statistical Package for Social Sciences (SPSS) to calculate frequency, means, and standard deviation. A paired t-test was also made to compare teaching methods of both sectors as various researchers (Kolawole, 2001; Adeyemi 2002; Adeyemi, 2009) adopted this test for comparison.

RESULTS AND DISCUSSION

Through individual contact methods, the extension worker concentrates on individual farmers for the transfer of agricultural information (Muhammad, 2005). These methods are powerful tools in the hand of extension workers and help them to create and maintain credibility in front of farmers. The information concerning the use of this method by extension personnel of both agencies were collected and is presented in Table 1.

Table 1 depicts the comparison of individual contact methods used by EFS of public and private sectors to educate farmers. The t-value (5.377) shows a significant difference in farm and home visits by EFS. The mean value (1.95) of public sector fell between very low to low but highly tended towards low while in contrast, the mean value (2.46) of private sector lies between low to medium but towards low, showing that private sector EFS paid more farm visits as compared to public sector EFS. It might be the reason that there was more than one representative of private sectors so, they frequently visit farmers one after one. Amir *et al.* (2020) also found in their study that the farm and home visits were gradually decreasing by public sector extension. None of the respondents reported office calls by the private sector. The reason could be that none of the frontline extension workers up to the technical sales officer level has their own office. They were provided vehicles (car or bikes) to personally visits the farmers' fields or their homes. Similarly, the t-value (5.416) also shows a significant difference in the use of the telephones/cell phones by EFS. The mean value (2.23) of private sectors that fell between low and medium shows that they made greater use of cell phones for communication. They were more inclined towards the use of cell phones because they could use their personal or payphone to contact the farmers and the credit was reimbursed to them from the company. This shows that the private sector was rich in sources and prefer to contact farmers via cell phones. Similar findings were also reported by Jayakumar *et al.* (2015) and Khan *et al.* (2019) who reported that most of the farmers preferred telephone calls to interact with EFS. Whereas t-values (1.251) show a non-significant difference in informal contact with farmers.

During informal discussions, it was found that some of the officials of private sector meet with farmers on the shops of pesticide dealers which also act as a sub-office for them where the pesticide dealer force farmers to purchase products from their shops.

Group contact methods involve face to face interaction of EFS with a group of farmers (Fazal, 2005). The frontline extension workers usually prefer group contact methods because these methods are especially suitable for overcoming time and staff limitations. The data regarding the use of group contact methods as a teaching strategy are presented in Table 2.

Table 2 elaborates that the t-values (.002) show a significant difference in farmers' meetings. The mean value (1.94) show that the private sectors concentrate on arranging farmers

Table 1. Comparison of individual contact methods used by EFS of both sectors to educate farmers.

Extension methods	Public sector		Private sector		t-value	p-value
	Mean	S.D.	Mean	S.D.		
Farm and home visits	1.95	1.74	2.46	1.79	-5.38	0.000**
Office calls	1.74	1.63	-	-	-	-
Telephone calls	2.01	1.71	2.23	1.69	-5.42	0.000**
Informal contact	1.74	1.76	1.86	1.66	-1.25	0.212 ^{NS}

Scale: 1= V. Low 2= Low 3= Medium 4= High 5= V. High

meeting because it is cost effective and time-saving method of teaching as compared to individual teaching methods. On the other hand, there was a strong significant difference in field trips and tours (t-value= .001). The mean value (1.96) of private sector indicated that they pay special attention to arranging the field trips for the farmers. A non-significant difference in method demonstration (t-value= .966), result demonstration (t-value= .000), lecture techniques (t-value= 1.511) and farmers' day (t-value= 0.481) was observed.

It is concluded from data that private sector made comparatively better use of group contact methods to reach farmers than public sector as reported by Yaseen *et al.* (2016). This was due to private sector tends towards profit making so, it designed its extension strategy to reach a maximum number of farmers by employing such extension methods that were best suited to convince and persuade the farmers to use its products.

Mass contact methods are aimed at reaching the largest number of people in the shortest possible time. These methods are useful for reaching a large number of farmers quickly and creating initial awareness of innovation among them (Surudhi *et al.*, 2017). The data regarding the use of mass contact methods by the EFS of both sectors are presented in Table 3. Table 3 represents that public sector extension comparatively made greater use of mass contact methods than the private sector. There was a significant difference reported between radio programs (t-value 0.008), Burgees (0.001) and agricultural exhibitions (0.010). In the case of the private sector, most of the respondents reported the use of printed material only for the delivery of agricultural information.

There were few respondents who reported that private sector also broadcasting a few agricultural programs on television for the delivery of agricultural information. On the other hand, the respondent's views were more favorable towards the public sector in the use of mass media. For example, the use of all the mass media sources, especially the use of television by the public sector was greater than that of the private sector. The reason could be that the private sector uses this mass medium only for the advertisement of their products and not for getting across the extension messages among the farming community.

The data explore that private sector is not making the excessive use of mass media sources because these methods are specially used for creating awareness among large masses. This method of information delivery is cost effective, but it is partially effective in changing the behavior of farmers. Consequently, the private sector could not sell its products by using this medium as compared to other methods. The public sector outbreaks the agricultural technologies by the mass media sources and then the private sector reaps the benefit according to the principle of the *free rider* by selling its products to the farmers by individual and group contact methods. It implies that the interest of the private sector is towards selling its products. That is why it makes extensive use of individual and group contact methods which are suitable for convincing farmers to buy its products. Considering the use of extension methods by both agencies, the private sector was rated comparatively better than public sector extension.

Table 2. Comparison of group contact methods used by EFS of public and private sectors to educate farmers.

Extension methods	Public sector		Private sector		t-value	p-value
	Mean	S.D.	Mean	S.D.		
Farmers' meetings	1.64	1.68	1.94	1.54	-3.10	0.002**
Lecture meetings	1.78	1.58	1.92	1.60	-1.51	0.132 ^{NS}
Method demonstration	1.59	1.45	1.51	1.53	-0.97	0.335 ^{NS}
Result demonstration	1.56	1.65	1.57	1.49	0.00	1.000 ^{NS}
Field tours/trips	1.69	1.59	1.96	1.60	-3.29	0.001**
Farmers' day	1.61	1.56	1.57	1.41	0.48	0.631 ^{NS}

Scale: 1= V. Low 2= Low 3= Medium 4= High 5= V. High

Table 3. Comparison of mass contact methods used by EFS of both agencies as reported by farmers

Extension methods	Public sector		Private sector		t-value	p-value
	Mean	S.D.	Mean	S.D.		
Radio programs	1.60	1.58	1.40	1.49	-2.681	0.008**
Television	1.60	1.66	1.49	1.40	1.198	0.232 ^{NS}
Printed material	1.84	1.69	1.56	1.49	3.100	0.002**
Burgees	1.84	1.87	1.50	1.45	3.501	0.001**
Social media	1.36	1.64	1.45	1.44	-1.182	0.238 ^{NS}
Text messages	1.58	1.61	1.47	1.38	1.621	0.106 ^{NS}
Agri. exhibitions	1.52	1.65	1.33	1.26	2.586	0.010*
Agri. campaigns	1.02	1.24	1.03	1.25	-1.304	0.193 ^{NS}

Scale: 1= V. Low 2= Low 3= Medium 4= High 5= V. High

Perceived effectiveness of both sectors with respect to extension methods: The effectiveness of teaching methods and strategies depends upon the perceptions of the farmers about the quality of services they received from EFS of both sectors through these methods (Sylla *et al.*, 2019). The respondents were asked to rate the effectiveness of extension teaching methods used by both agencies. It should be noted that the results are based on the perceptions of farmers. The required data are presented in Table 4.

Table 4. Rating of both sectors on the basis of effective use of extension methods as perceived by farmers (n=400)

Agency	Mean	S. D
Public sector	2.28	1.23
Private sector	3.48	1.28

Scale: 1= V. Low 2= Low 3= Medium 4= High 5= V. High

It is depicted from Table 4 that the teaching methods and strategies used by EFS of private sectors are comparatively effective than public sector. The mean value (3.48) of private sector fell between medium to high but inclined towards the medium. On the other hand, mean value (2.28) of public sector lies between low to medium but greatly tended towards the medium. So, the data made a clear picture that the teaching methods used by private sector were perceived as effective than the public sector. This might be the reason that the EFS of public had lack of technical knowledge as well as there is a shortage of staff in the department. As a result, they cannot reach farmers in time. It is concluded from the above table that the performance of both sectors in delivering agricultural information was not up to the mark. However, the teaching strategies adopted by private sector were comparatively effective than public sector. The result of the study is supported by various researchers (Rana *et al.*, 2013; Ali, 2013; Naeem and Hassan 2014) who found that the quality of services provided by private sector was comparatively effective than public sector.

Conclusion: The effectively dissemination of latest agricultural information to the farmers is the need of time to meet the global standards. Like other developing countries, Pakistan is also struggling for the effective information dissemination through its service providers. For this purpose, the EFS of these sectors used different methods and strategies to educate farmers. According to this study, the EFS of private sector was making greater use of cell phones to contact their clientele. Whereas the public sector was not making the effective use of cell phones because they were not provided any allowances for this method of communication. Additionally, the private EFS was also focused on farmers' meetings due to its cost effectiveness. It was found that private sector was partially interested in the use of mass media. The public sector outbreaks the agricultural

technologies through mass media and then the private sector reaps the benefit according to the principle of the *free rider* by selling its products to the farmers. It is therefore suggested that the private sector should make judicious use of mass media to create awareness among farmers about the latest technologies.

REFERENCES

- Adeyemi, T. O. 2002. Introductory Statistics for Educational Research Ado-Ekiti. 1st Ed. Green Line Publishers. New York.
- Adeyemi, T.O. 2009. Inferential statistics for social and behavioural research. Res. J. Math. and Stat. 1:47-54.
- Ahmad, M., M. Akram, R. Rauf, I. A. Khan and U. Pervez. 2007. Interaction of extension workers with farmers and role of radio and television as a source of information in technology transfer: A case study of four villages of district Peshawar and Charsadda. Sarhad J. Agri. 23:515-518.
- Ali, J. 2013. Farmers' perspectives on quality of agricultural information delivery: A comparison between public and private sources. J. Agri. Sci. Tech.15:685-696.
- Ali, L. J., Al-Mshhadani, Z. H. Magd, Abd El-Halim, A. Keshta. 2017. Levels of use and importance of extension methods and aids in the process of dissemination of agricultural technologies in the Republic of Iraq. J. Agri. Vet. Sci. 10:1-6.
- Amir, S., Z. Saqib, M. Khan, M. A. Khan, S. A. Bokhari, M. Zaman-ul-Haq and A. Majid.2020. Farmers' perceptions and adaptation practices to climate change in rain-fed area: A case study from district Chakwal, Pakistan. Pak. J. Agri. Sci. 57:465-475.
- Anaeto, F.C., C. C. Asiabaka, F. N. Nnadi, J.O. Ajaero, O. O. Aja, F. O. Ugwoke, M. U. Ukpongson and A.E. Onweagba. 2012. The role of extension officers and extension services in the development of agriculture in Nigeria. W. J. Agri. Res. 1:180-185.
- Aremu, P.A., I. N. Kolo, A. K. Gana, F. A. Adelere. 2015. The crucial role of extension workers in agricultural technologies transfer and adoption. Global Adv. Res. J. Food Sci. Tech. 2: 14-18.
- Ata, S., B. Shahbaz, M. A. Watto and M. T. Siddiqui. 2019. Short-term land acquisition, Long-term impacts: The case of Houbara Bustard hunting in South Punjab, Pakistan. J. Asian and Afr. Studies. 1:1-19.
- Chen, H. K. and Y.C. Wu. 2009. Investigation and analysis of farmers' information service: Take Yingshan county of Hubei province as an example. China Pop. Res. Envi. 19:169-172.
- Cooreman, H. J. Vandenabeele, L. Debruyne, J. Ingram, H. Chiswell, A. Koutsouris, E. Pappa and F. Marchand. 2018. A conceptual framework to investigate the role of peer learning processes at on-farm demonstrations in the

- light of sustainable agriculture. *Int. J. Agri. Ext.* 3:91-103.
- Fazal, K. R. 2005. Group contact methods. In: E. Bashir (ed.), *Extension Methods*. Neelab Printers Rawalpindi, Pak. pp. 179-208.
- Flick, U. 2014. *An Introduction to Qualitative Research*. 4th Ed. Vivek Mehra, SAGE Publications. India.
- Gall, M. D., J. P. Gall and W. R. Borg. 2006. *Educational Research: An introduction*. 6th Ed. Longman Publishers. USA.
- Ingram, J., H. Chiswell, J. Mills, L. Debruyne, H. Cooreman, A. Koutsouris, E. Pappa and F. Marchand. 2018. Enabling learning in demonstration farms: A literature review. *Int. J. Agri. Ext.* 3:29-42.
- Jayakumar, N., M. Sundaramari and D. Sindhu. 2015. Usage of mobile phones by farmer convenors for agricultural information gathering. Paper presented at the Global Social Science Conference on Management of sustainable livelihood systems, Orissa University of Agriculture and Technology, 14-17 Feb, 2015.
- Khan, A. and M. Akram. 2012. Farmers perception of extension methods used by extension personnel for dissemination of new agricultural technologies in Khyber Pakhtunkhwa: Pakistan. *Sarhad J. Agri.* 28:511-520.
- Khan, N. A., S. Ali, B. Shahbaz and A. A. Shah. 2019. Farmers' use of mobile phone for accessing agricultural information in Pakistan. *Ciência Rural, Santa Maria* 49:1-12.
- Kolawole, E. B. 2001. *Tests and Measurement*, Ado- Ekiti: Yemi Printing Services. Lagos, Nigeria.
- Leedy, P. D. 2005. *Practical Research*. Prentice-Hall Career and Technology, USA
- Levin, K. A. 2006. *Study Design III: Cross-sectional studies. Evidence-Based Dentistry*. 7: 24-5.
- Lukkainen, J. 2012. A comparison of extension methods used by different agricultural extension service providers in Nyandarua county, Kenya. Bachelors' thesis, HAMK Univ. of Applied Sci. Kenya.
- Mirani, Z. and A. Memon. 2011. Farmers' assessment of the farm advisory services of public and private agricultural extension in Hyderabad district. *Sindh. Pak. J. Agri. Res.* 24:56-64.
- Muhammad, S. 2005. *Agricultural Extension: Strategies and skills*. 2nd Ed. Unitech Communications, Faisalabad. Pakistan.
- Muhammad, S., M. A. Latif and I. Ashraf. 2005. Role of demonstrations in the dissemination of rice production technology. *Pak. J. Agri. Sci.* 42:93-97.
- Muzaffar, H. 2005. Mass media. In: E. Bashir (ed.), *Extension Methods*. 3rd Ed. Neelab printers Gawalmandi Rawalpindi, Pakistan. pp. 209-221.
- Naeem, M. R. and M. Z. Y. Hassan. 2014. Comparative analysis of public and NGO sector's role in improving rural livelihoods in the Punjab, Pakistan. *Int. J. Agri. Ext.* 02:01-04.
- Nikitha, P. V. S. Rani, G. Samuel and A. Madhavilata. 2019. Perception of farmers about suitability of extension teaching methods used by extension personnel in relation to the learning styles. *J. Sci., Agri. Engr.* 8: 64-66.
- Okunade, E.O. 2007. Effectiveness of extension teaching methods in acquiring knowledge, skill and attitude by women farmers in Osun state. *J. A. Sci. Res.* 3:282-286.
- Petray, J. F., S. A. Sebastião, E. G. Martins and P. B. de Azevedo Barros. 2019. Innovation and the diffusion of technology in agriculture in floodplains in the state of Amazonas. *J. Contemp. Admin.* 23:619-635.
- Rana, A. S., G. P. Reddy and B. S. Sontakki. 2013. Perceived service quality of agricultural organizations comparative analysis of public & private sector. *Int. J. Adv. Res. In Mgmt. Soc. Sci.* 2:286-295.
- Ray, G. L. 2011. *Communication methods*. In: *Communication and management*. Kalyani Publisher. New Delhi, India. pp. 82-112.
- Raza, M. H., G. A. Khan, B. Shahbaz and M. F. Saleem. 2020. Effectiveness of information and communication technologies as information source among farmers in Pakistan. *Pak. J. Agri. Sci.* 57: 281-288.
- Sher, M. C. 2005. Individual Contact Methods. In: E. Bashir (ed.), *Extension Methods*. 3rd Ed. Neelab printers Rawalpindi, Pakistan. pp. 155-178.
- Surudhi, M., M. Asokhan and R. Arunachalam. 2017. Utilization pattern of extension tools and methods by agricultural extension agents. *J. Ext. Edu.* 29: 5838-5849.
- Sylla, A. Y., R. M. Al-Hassan, I. S. Egyir and H. Anim-Somuah. 2019. Perceptions about quality of public and private agricultural extension in Africa: Evidence from farmers in Burkina Faso. *Cogent Food and agriculture*.5:168-176
- Umeh, O.J., D. N. Aghale and A. Anyim. 2018. Assessment of influence of extension teaching methods on the level of adoption of agricultural innovation in Akwa-Ibom State, Nigeria. *Int. J. Adv. Res. in Bot.* 4:1-6.
- Yaseen, M., S. Xu, W. Yu and S. Hassan. 2016. Farmers' access to agricultural information sources: Evidence from rural Pakistan. *Int. J. Agri. Chem. Env.* 5:12-19.