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Perceived competency level and effectiveness of public and private extension field staff (EFS) in Balochistan, Pakistan

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Abstract

Current research sought to examine the competency level and sources of information as used by public and private sector extension as perceived by farmers in Balochistan, province of Pakistan. Five districts, one from each ecological zone, were selected purposively, i.e. Kech, Lasbela, Mastung, Sibi and Loralai. A sample of 375 farmer respondents were taken by using systematic sampling procedure. However, the response rate was 82.67%. The results reveal that public Extension Field Staff (EFS) positive attitude (3.61) and sound communication skill (3.43) were ranked 1st and 2nd respectively as perceived by farmers. Whereas private EFS positive attitude (3.84) and ability to mobilize farming community (3.73) were ranked 1st and 2nd respectively. Further, segregated data based upon sources of information revealed that neighboring farmers was highest weightage score (Score=1278) and mean score (4.12), private extension field staff (3.73) and public extension field staff (3.37) were ranked 1st, 2nd and 3rd respectively. The study recommended that a real problem-oriented and genuine systematic interaction between system actors is recommended in order to make extension services more efficient, need-based and result-oriented. The participatory approach plays main role in diffusion of any agricultural practices, therefore, it is recommended that Agricultural Extension Wing should promote and encourage the joint venture programs between public and private extension services and other stakeholders at community and farm level in order to accelerate and encourage farmers to adopt new technologies. Private extension services should arrange seminar and exhibition for farmers at union council and district level.

Keywords: public, private, Balochistan, competency level, sources of information

1. Introduction

Competency has been defined as joint set of related knowledge, skills and attitudes that activated and encouraged performance of individual in effective way for effective presentation (Cooper and Graham, 2001; Herringer, 2002; Langdon & Whiteside, 2004;

Teodorescu, 2006). It is also defined as to enhance the greater exposure for recently appointed newly extension workers and indispensable for institutional improvement (Owen, 2004). Various areas of competency level as important for the extension field staff to perform their job and duty in efficient manner have been reported by Oakley & Garforth (1985).

Extension field staff is always co-related with the competency level (Oakley and Garforth, 1985). Stone & Bieber (1997), Langdon and Whiteside (2004), and Lakai (2010) described competency as comprehensive and combined set of skills, knowledge, attitude and attributes that assist collective performance of the actions. The competency level is considered as ability to involve and lead farmers to adopt innovation and act accordingly (Linders, 2001; Armstrong, 2006 and Ali *et al.*, 2008). Four domains i.e., knowledge, attitude, skill and quality contribute to develop competency level of extension workers (Cooper & Graham, 2001 and Ali *et al.*, 2009). A number of factors such as time management, quantity, quality, effectiveness of work, knowledge, skill in work, effectiveness of communication, ability to manage and discipline has influence on competency level of extension workers (Tiraieyari, 2009).

1.1 Problem statement

As in other provinces of Pakistan, the Department of Agriculture and Livestock of Balochistan has provided advisory services to its stakeholders, the rural farmers, however as yet the outcome of these activities are not on a par with the success seen in other provinces. As a result, socio-economic condition of the farming community has not improved, which implies that there is a gap between information dissemination and adoption process (Mengal. *et al.*, 2014). Beside public and private extension services are also involved in extension activities. However, limited research was carried out to find out the success or failure of the delivery system of these public and private extension services. Balochistan province was selected for this study due to the need to address the issues of uncertainty in public and private extension services felt by the stakeholders. It is also important to provide relevant information to agriculture sector about competency level and sources of information in Balochistan province of Pakistan.

1.2 Objectives

The general objective of present research was to determine the perceived competency level/effectiveness of extension field staff as perceived by farmers. The specific objectives of the present research were to:

1. To determine the perceived competency level of extension field staff (EFS) in study areas.

2. To study the farmer's perception about public and private agricultural extension services regarding sources of information.

3. To develop firm recommendations for the future policy for reciprocally to dynamic sectors.

1.3. Review of related literature

1.3.1 Empirical studies at national level

Khan (2003) identified the training needs of Agriculture Officers (AOs) regarding professional and technical competencies in the Punjab province of Pakistan. The results revealed that the discrepancy value between importance level and possessed level of competencies were positive in all professional competence categories ranging from lowest 0.16 value to highest 2.18 value. In addition, discrepancy values between importance level and possessed level of competencies of AOs (training needs) were negative in all professional competence categories. However, technical competencies (AOs training need areas) were identified as: crop protection, crop production and utilization of farm machinery. Hussain (2004) analyzed the professional competency level of extension administrators in Punjab. The results showed that discrepancy value between importance and possessed level competencies of Extension Administrators was positive. Researcher concluded that Extension Administrations need training about computer skill, management, leadership and audio visual aids. Ali *et al.* (2011) assessed the competency level employed by private extension field staff in Punjab Pakistan. They reported that three hundred twenty multinational and local companies (pesticide, insecticide) were keenly engaged in agriculture extension activities in Punjab province. In this regard private extension services were mainly bound to deliver extension services to the farmers in order to sell their commodities. The results revealed that professional competencies of private extension field staff regarding knowledge; attitude, skills and attributes of mean values were 3.68, 3.82, 3.84 and 3.73 along with standard deviation of 0.47, 0.39, 0.38 and 0.49 respectively. Study concluded that competencies possessed by private extension field staff (Syngenta) were between the range of strength and great strength.

1.3.2 Empirical studies at international level

Stoller (1971) identified the professional competencies of agricultural educators. There were seventy-four

professional competencies identified and studied. He reported similarities in the core competencies in all groups. A significant difference was observed between professional competencies of instructors and county extension agents. The study suggested that pre-service, in-service, induction and experience-types of training program should be arranged. Volanty (1977) identified the competencies needed for successful job performance of county extension agents. The results of this study showed that significant differences were recorded among respondent's perceptions regarding competency items. It was concluded that in-depth research should be conducted for the county extension agents about trainings related to the competencies. Al-Zahrani (1992) analyzed the competencies needed by extension workers in the Southern province of Saudi Arabia. The results of the study showed that majority of the extension agents were young and unspecialized in extension discipline. Author observed that extension agents needed training in the following areas such as: research/ evaluation, teaching and learning process. Significant differences were found between the extension agent's characteristics and their need for training. The researcher recommended that Kingdom of Saudi Arabia should establish agricultural extension collages and organize training (competency) courses for extension agents so as to enhance their competency level. Radhakrishna and Edgar (1996) identified the technology transfer constraints on the basis of the perception of three groups of extension personnel in state of Karnataka India. The results showed that lack of funds to conduct timely research; limited resources of farmers, inadequate transportation and high cost of inputs were the most important constraints of technology transfer as perceived the extension personnel in dry land agriculture. One-way ANOVA were used to find out if any difference exists between perceptions of the three groups of extension field staff regarding constraints of technology transfer. The results also revealed that significant differences were observed between the perceptions of three groups regarding technology transfer constraints, research constraints and extension constraints. Abankwa (2004) conducted a study in order to determine competency levels and training needed by extension agents regarding agricultural communication methods and teaching aids in the greater Accra Ghana. The results of the study revealed that competency level in planning, implementing and evaluating extension teaching aids was found to be good. The researcher recommended that competency level of extension agents regarding communication method and extension teaching aids should be improved through

training. Adesiji (2006) examined the competency needed by Village Extension Agents (VEAs) of Osun State Agricultural Development Programme in Nigeria. Results of the study indicated that all eight competency included in the questionnaire were perceived by VEAs as important to their job performance. However, research methodology, teaching and program evaluation were two competency areas for which VEAs felt need for training. The researcher recommended that Nigerian Government should be organizes training courses and allocate funds for training of Village Extension Agents in order to increase their competency level. Shaffrilet *al.* (2009) examined the socio-demography factors for level of competency among rural administrators in three zones of Peninsular Malaysia. Authors reported that village development and security committee members had high level of competency. They further found that village grade had significant difference with competency level while age had positive correlation with level of respondent's competency. The study suggested that the agency should create programs whereby respondents can share and teach useful experience to the younger members so as to strengthen the quality of their communication skills. Tiraieyari (2009) determined the relationships between cultural competency and performance among extension workers at department of agriculture, Malaysia. The results of the study showed that positive relationship existed between cultural competency and performance of extension agents. It was concluded that extension agents needed training in order to scale up their efficiency. Lakai (2010) identified the current competency level of extension agents in North Carolina Cooperative Extension however the response rate was 66%. The results of the study revealed that current level of competency for EAs moderate to high in all forty-two statements. Researcher also reported that the experience and age were major determinants of extension overall competency level. Researcher found that experienced workers were more knowledgeable and capable as compared to those with less experience. Tiraieyari *et al.* (2010) analyzed the competencies of agricultural extension agents regarding program development through process of technology transfer. Researchers found that extension agents perceived themselves competent in developing program planning, program implementation and program evaluation. The study concluded that continuous assessment of extension agents' competencies and performance was recommended. Lopokoiyitet *al.* (2013) examined the current extension management competencies of public and

private extension agents in Kenya. The results of the study revealed that extension agents needed competencies and training in the areas of: motivating employees, stress management, managing conflict, strategic planning, coaching employees, employee appraisal and counseling. They further, reported that there were no significant differences were observed between the perceptions of public and private extension field staff regarding training needs and only managing finances was significantly different between frontline extension workers (FEW) and subject matter specialists (SMS). Study concluded that there was need for holistic training in non-technical areas in order to achieve the objectives of vision 2030. Wasihunet *al.* (2013) examined technical competencies of agricultural extension agents from the perspectives of male/ female farmers, and extension agents (EAs) themselves in Soddo district of Southern Ethiopia. The findings of the study revealed that farmers and extension agents assigned overall mean value (2.26 and 2.99) for the competencies. Female farmers perceived the two competency levels (professional 2.11, technical 2.65) significantly lower ($p < 0.05$) than that of the male farmers (professional 2.30, technical 2.80). The authors recommended that the professional competency of extension agents should be developed.

2. Methodology

The research design of this study was to utilize a descriptive survey method. This type of survey plays a prime role in educational research (Knupfer *et al.*, 2001) and is considered most suitable for gaining people's perception on socio-economic actualities of existing condition (Cohen *et al.*, 2007; Mark, 2003; Trochim, 2000; Jonassen, 2001). The list of farmers was obtained from the Executive District Offices (EDO) Extension Wing of respective districts. The study covered five purposively selected districts namely Kech, Lasbela, Mastung, Sibi and Loralai of Balochistan province for being the enormous potential for agriculture productions and agricultural important districts. A sample of 375 farmers; seventy-five (75) farmers from each district were selected because the farmer's population of these districts was about similar in size and shape. The sample was selected using systematic sampling procedure whereby every K^{th} number is randomly selected (Gay & Mills, 2006). The sample size of populations was determined by using Wunsch (1986) table of "Selecting Sample Sizes". In this study Likert scaling was used for rating of attitude on five point scales in order to find out the

perception of the respondents regarding competency level within agricultural extension system (Chizariet *al.*, 1999; Lindner *et al.*, 2003). Total score was obtained after summing all these weight-age. A 1-5 Likert type scale was used to measure the responses on the individual statement (Trochim & William, 2006). The scale used by Annor-Fremponget *al.*, (n.d), Khan (2000), Asiabaka & Owens (2002), Idrees (2003), Lodhi (2003), Mincemoyer *et al.*, (2004), Ricketts & Place (2005), Dromgoole & Boleman (2006), Sadafet *al.*, (2006), Boone *et al.*, (2007), Allahyariet *al.*, (2008), Harder & Lindner (2008), Hassan (2008), Iqbal (2008), Afzal (2009), Iftikhar (2010), Akhtar (2011), Ayansina (2011) and Riaz (2012) were adopted for this study. The data coding sheet was administrated for the questionnaire used in collection of data for this study. The Cronbach's Alpha program was used to test the reliability for the questionnaire (Aryet *al.*, 1996). The reliability coefficients ranged from .80 to .94, indicating that the interval consistency of the instrument was excellent Nunnally (1967), Nunnally (1978), Bentler & Bonett (1980), Nunnally & Bernstein (1994), Kline (2000), George & Mallery (2003), Schilling (2002), Spector *et al.*, (2002) and Rothbard & Edwards (2003). The minimum reliability coefficient was 0.7 as suggested by (Nunnally & Bernstein, 1994). A data-coding sheet was developed to record the captured data as collected. Researchers personally conducted interviews during the data collection few farmers were absent due to migration and their domestic problems. However, the response rate was 82.67 (310 farmer respondents out of 375) which is sufficient for data analysis procedure (Wunsch, 1986). The data collected by the researcher was tabulated and analyzed by applying quantitative approaches and standard statistical techniques. SPSS (PC) program was used to analysis the data (Boone *et al.*, 2002; Davis *et al.*, 2004). The rank order, mean efficient score, standard deviation (SD) was calculated to know the perception of farmers. In this connection the rank orders were assigned to all the categories on the basis of the mean scores. The category with highest mean scores as the 1st and lowest mean scores as the last rank the same procedure was used by (Lodhi, 2003).

3. Results and Discussion

It has been considered very important to judge the validity of professional value and competency level statements according to the job distributions of public and private extension field staff. In this regard, farmers were asked about the perceived competency

level possessed by public extension field staff and their responses in this regard are presented in table 1.

Table-1: Relative ranking regarding competency level as possessed by public extension field staff.

Competency level items	Weighted Score	Ranked Order	Mean	SD
EFS positive attitude	1119	1st	3.61	1.16
Sound communication skill	1062	2nd	3.43	1.26
Ability to mobilize farming community	1051	3rd	3.39	1.24
Talent to use latest agriculture information	998	4th	3.19	1.28
Maintain relationship with clients	997	5th	3.22	1.24
Identify the need of farmers	972	6th	3.14	1.23
Pro-active and innovative in approach	896	7th	2.89	1.19
Knowledge and skill in work	866	8th	2.79	1.17
Utilize audio visual material	848	9th	2.74	1.16
Hegemony quality	820	10th	2.65	1.12
Ability of planning	768	11th	2.48	0.99
Meeting with clients frequently	753	12th	2.43	1.10
Manage the problem and issue	735	13th	2.37	1.06

The rank order was calculated on the basis of mean score in order to find out the relative importance of each competency level statements. The study used 13 statements which were relevant to competency level of public and private extension field staff. EFS positive attitude (3.61), sound communication skill (3.43) and ability to mobilize farming community (3.39) were ranked 1st, 2nd and 3rd respectively. Whereas meeting with clients frequently (2.43) and manage the problem and issue (2.37) were ranked least; 12th and 13th respectively. Similar results were found by Stoller (1971), Volanty (1977), Al-Zahrani (1992), Abankwa (2004), Adesiji (2006), Shaffrilet *al.*, (2009), Tiraieyari (2009), Tiraieyari *al.*, (2010), Lopokoiyitet *al.*, (2013) and Wasihunet *al.*, (2013) who also reported there was a significant difference between the extension agent's perceptions regarding competency or professional level. This similarity may be because the similar mode of data collection procedure. The main tool for the success of an extension field staff member is his/ her technical competency. Without having substantial technical competency, it is not possible to identify farmer's problems; neither is it possible to find out or evaluate solutions to their problems; nor is it possible to persuade farmers to adoption technical recommendations. Nobody has the talent to persuade farmers to adopt a technology solution without having

sufficient knowledge of the subject. Farmers were asked to judge the professional competency and its effectiveness as possessed by public and private Extension Field Staff (EFS). Possession of competency is considered an imperative tool for EFS. Various studies showed the importance of competencies. Masudet *al.* (2011) found that Agriculture Officers of public extension services possessed average levels of program planning competencies. Khan *et al.* (2008) observed that there were differences between possessed and required levels of professional competencies in participatory extension methods. Rivera & Qamar (2003) found that the main function of agriculture extension to diffuse the agricultural information along with the accelerating and promoting the knowledge, attitudes and skills of the rural masses. Khalil *et al.* (2008) found the competency levels regarded as one of the significant variables which enhance the performance of extension field staff. Certain qualities such as competency level, dedication, humility, honesty, reliability and commitment to work with people are very important for successful extension workers (Oakley and Garforth, 1985). Ali *et al.*, (2011) reported that the self-perceived competencies regarding knowledge, attitude, skills and attributes of extension field staff were considered as great strengths in agriculture extension.

Table-2: Relative ranking regarding competency level as possessed by private extension field staff

Competency level items	Weighted Score	Ranked Order	Mean	SD
EFS positive attitude	1190	1st	3.84	1.08
Ability to mobilize farming community	1157	2nd	3.73	0.84
Sound communication skill	1102	3rd	3.55	0.89
Pro-active and innovative in approach	1080	4th	3.48	0.99
Talent to use latest agriculture information	1070	5th	3.45	0.96
Mange the problem and issue	1067	6th	3.44	1.09
Identify the need of farmers	1045	7th	3.37	1.04
Maintain relationship with clients	1044	8th	3.37	1.06
Utilize audio visual material	962	9th	3.10	1.21
Knowledge and skill in work	889	10th	2.89	1.07
Hegemony quality	854	11th	2.75	1.08
Ability of planning	850	12th	2.74	1.04
Meeting with clients frequently	747	13th	2.41	0.96

The rank order was given on the basis of mean in order to find out the relative ranking of each category regarding sources of information and competency level. Extension field staff (EFS) positive attitude(3.84), ability to mobilize farming community (3.73) and sound communication skill (3.55) were ranked 1st, 2nd and 3rd respectively. While, ability of planning (2.74) and meeting with clients frequently (2.41) were ranked 12th and 13th respectively. Present research results showed that the extension agent positive attitude and mobilize farming communities in adoption of innovations were the foremost professional competency level of public and private extension field staff. The results are in somewhat in conformity with Hussain, (2004) who had observed that the extension administrators have professional competency regarding planning and

management categories. On the other hand, private input companies worked in a well-organized way, where every individual has a task ahead is bounded with some responsibilities. In several countries local people's organizations and private institution have been more successful than public extension units in facilitating appropriate and efficient resources management both in resource conservation and in transfer technology (FAO, 1991). Farmers in Pakistan are more contacted by the private agencies such as fertilizer companies for adoption of innovation (Ali, 1980; Chaudhary, 1980). Farmers gave high preferences to private extension field staff as compared to public extension field staff regarding competency level. On the basis of results, it was concluded that private EFS was comparatively more competent as compared to public EFS.

Table-3: Relative scores of farmer's perceptions regarding sources of information

Categories	Strongly disagree		Disagree		Undecided		Agree		Strongly agree		Total	
	F	Score	F	Score	F	Score	F	Score	F	Score	F	Score
Neighboring farmers	04	04	12	24	05	15	210	840	79	395	310	1278
Private EFS	09	09	40	80	11	33	216	864	34	170	310	1156
Public EFS	30	30	62	124	08	24	183	732	27	135	310	1045
Print media	39	39	126	252	07	21	133	532	05	25	310	869
Agriculture programs on radio	33	33	136	272	15	45	121	484	05	25	310	859
Agriculture literature	44	44	125	250	10	30	126	504	05	25	310	853
Agriculture programs on TV	38	38	143	286	18	54	108	432	03	15	310	825

Segregated data based upon sources of information revealed that neighboring farmers was highest weightage score (Score=1278), private extension field staff (Score=1156) and public extension field staff (Score=1045) respectively given by the farmers as shown in table-3. While agriculture programs on radio (Score=859), agriculture literature (Score=853), and agriculture programs on TV (Score=825) respectively were lowest weightage. Farmers perceived that neighboring farmers were more effective sources of information. Farmer respondents were also asked to identify the main sources of information they utilize. The results revealed that the neighboring farmers were the main source of information as perceived by the farmer respondents. These findings are in line with the findings of Muhammad and Garforth (1999), Asiabaka & Owens (2002), Agumagu & Adesope

(2006), Irfanet *et al.*, (2006), Lodhiet *et al.*, (2006), Sadafet *et al.*, (2006), Siddiqui (2006), Farooq *et al.*, (2007), Adinyaet *et al.*, (2008), Tajet *et al.*, (2009), Adebijet *et al.*, (2011), Rehmanet *et al.*, (2011), Kumbharet *et al.*, (2012), Bahalkani, (2013), Ali *et al.*, (2014) and Fatima *et al.*, (2014) who reported that the neighboring farmers served as main sources of agricultural information. This might be due to the fact that neighboring farmers are easily in contact with each other due to short distance between their houses, same background, origin, tradition and culture. Therefore, they easily share their views regarding domestic problems and exchange their views regarding farming issues. Neighboring farmers learning broadly from one another provides an argument about traditional farming methods that views farmers as passive receptions of knowledge and skills.

Table-4: Relative ranking of farmer's perception regarding sources of information.

Source of information	Weighted Score	Ranked Order	Mean	SD
Neighboring farmers	1278	1st	4.12	0.72
Private EFS	1156	2nd	3.73	0.92
Public EFS	1045	3rd	3.37	1.18
Print media	869	4th	2.80	1.17
Agriculture programs on radio	859	5th	2.77	1.12
Agriculture literature	853	6th	2.75	1.17
Agriculture programs on TV	825	7th	2.66	1.10

Information is an indispensable innovation aspect in agriculture and rural development (Garforth *et al.*, 2003). Information coming from outside the area can carry new ideas and awareness of new opportunities. Seven (7) statements regarding sources of agricultural information were used in this study. Farmers were asked to perceive sources of information. Table-4 depicts the results. The rank order was given on the basis of mean in order to find out the relative ranking of each category regarding effectiveness of various sources of information. Five point Likert scale was used where 1 stands for "strongly disagree", 2 for "disagree", 3 stands for "undecided", 4 for "agree", and 5 stands for "strongly agree". Neighboring farmers (4.12), private extension field staff (3.73) and public extension field staff (3.37) were ranked 1st, 2nd and 3rd respectively. While, agriculture literature (2.75) and agriculture programs on television (2.66) were ranked 6th and 7th respectively.

4. Conclusions and policy implications

The rank orders, means and standard deviation (SD) were calculated for the perception of public and

private extension field staff in order to find out the relative ranking of each category. There were 13 (thirteen) statements of competency level and likewise 7 (seven) statements about agricultural sources of information as used by public and private extension field staff as perceived by farmers. Farmers were also asked to give their suggestions for making competency level and sources of information more effective. In response, majority of the farmers suggested that: diffusion of new improved practices should be continued with realistic approach. For this, there should be collaboration and effective linkage between public and private extension services. Service delivery of public extension field staff should be regularized through trainings. Further, it is suggested that a real problem-oriented and genuine systematic interaction between system actors is recommended in order to make extension services more efficient, need-based and result-oriented. The participatory approach plays main role in diffusion of any agricultural practices, therefore, it is recommended that Agricultural Extension Wing should promote and encourage the joint venture programs between public and private extension services and other stakeholders

at community and farm level in order to accelerate and encourage farmers to adopt new technologies. Promote group-based extension programs and strategies should be accelerated, it is therefore suggested that field-level trainings should be arranged for farmers in order to enhance the capacity building of the rural farmers. Arrange seminar and exhibition are the key success tools of extension field staff (EFS) in this connection, private extension services should arrange seminar and exhibition for farmers at union council and district level.

References

- Abankwa, P. 2004. Perceived competency levels and training needs of agricultural extension agents in communication methods and teaching aids in the greater Accra region of Ghana. M. Sc. Ho. Edu. Ex., Thesis, Univ. Cape Coast, Ghana (Unpublished dissertation).
- Adebiyi, S., E. O. Uwagboe, E.A. Agbongiarhuoyi, I. Ndagi & E.O. Aigbekaen. 2011. Assessment of agronomic practices among Kola farmers in Osun State, Nigeria: *World J. Agric. Sci.*, 7(4): 400-403.
- Adesiji, G. B. 2006. Competency needed by village extension agents of Osun State Agricultural Development Programme Nigeria. *J. Agric. Res.*, 8 (1/2): 93-101.
- Adinya, I. B., A. D. Idio, & O. O. Kuye. 2008. Farmer's awareness of sources of credit for improved farm practices in Cross River State, Nigeria. *Glo. J. Soc. Sci.*, 7(1): 5-8.
- Afzal, A. 2009. Identification and analysis of factors hampering women empowerment in agricultural decision making and extension work in the Punjab, Pakistan: a case study of district Okara. Ph. D. Agric. Ext. Thesis, Univ. Agric. Faisalabad, Pakistan (Unpublished dissertation).
- Agumagu, A. C., & O. M. Adesope. 2006. Evaluation of farmers' extension education needs in Ohaji/Egbema local Government area of Imo State, Nigeria. *J. Agric. Forest. Soc. Sci.*, 4(1): 60-68.
- Akhtar, A. 2011. An analysis of knowledge, skills and attitude of vegetable growers regarding pesticide use for sustainable environmental health in the Punjab, Pakistan. Ph. D. Agric. Ext. Thesis, Univ. Agric. Faisalabad, Pakistan (Unpublished dissertation).
- Ali, M. Saddiqui, B.N. & Naeem, K. 2014. Attitude of small farmers toward the use of ICTs to ensure food security in district Rawalpindi. A paper presented at the International Conference "Emerging Horizons of Agricultural Extension for Sustainable Rural Development". Faisalabad, Pakistan.
- Ali, S., M. Ahmad, T. Ahmad, & S. Muhammad. 2011. An assessment of professional competencies possessed by extension field staff of private agriculture extension system in Punjab, Pakistan: *Pak. J. Agri. Sci.*, 48(3): 217-220.
- Ali, S., M. Ahmad, T. Ali, & I. Z. Muhamad. 2009. Analysis of competencies possessed by field staff of private agricultural extension system in Punjab. *Pak. J. Agric. Res.* 47(1): 101-106.
- Ali, S., M. Ahmad, T. Ali, I. Din, & M. Z. Iqbal. 2008. Farmers' willingness to pay for advisory services by private sector extension: The case of the Punjab. *Pak. J. Agric. Sci.*, 45(3): 107-111.
- Ali, T. 1980. An Appraisal of Zari University Magazine Broadcast by Radio Pakistan. Univ. Agric. Faisalabad.
- Allahyari, M.S., M. Chizari. & M. Homae, 2008. Perceptions of Iranian agricultural extension professionals toward sustainable agriculture concepts. *J. Agri. Soc. Sci.*, 4: 101-6.
- Al-Zahrani, K. H. 1992. An analysis of the competencies needed by extension workers in the Southern province of Saudi Arabia. *J. Kin. Sau. Univ. Agri. Sci.*, 4 (2): 159-171.
- Annor-Frempong, F., J. Kwarteng. R. Agunga. & M. M. Zinnah (n.d.) Challenges and prospects of infusing information communication technologies (ICTS) in extension for agricultural and rural development in Ghana. 22nd Annual Conference Proceedings: Clearwater Beach, Florida. 36-46.
- Armstrong, M. 2006. A Hand Book of Human Resource Management Practices. (2nded.). Kogan Page Ltd: London.
- Ary, D., Jacobs, L. C. & Razaveieh, A. 1996. Introduction to Research Education. (5th Ed.). New York: Holt, Rinehart and Winston, Inc.
- Asiabaka, C.C. & Owens, M. 2002. Determinants of Adoptive Behaviors of Rural Farmers in Nigeria. AIAEE 2002 Proceedings of the 18th Annual Conference Durban, South Africa. Pp 13-20.

- Ayansina, S. O. 2011. Farmers' perception of public and private extension services in South Western Nigeria. Ph. D. Agric. Ext. Thesis, Univ. Ilorin, Nigeria.
- Bahalkani, N.A. 2013. Study of the diffusion and adoption of production practices of hybrid rice in TalukaTangwani, District Kashmore, Sindh. M. Sc. Agric. Ext., Sindh Agric. Univ., Tandojam Sindh, Pakistan.
- Bentler, P. M., & Bonett, D. G. 1980. Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*. (88):588-606.
- Boone, H. N., Hersman, E. M., Boone, D. A. Gartin, S. A. 2007. Knowledge of Sustainable Agriculture Practices by Extension Agents in Ohio, Pennsylvania, and West Virginia. *J. Ex.*, (45):5.
- Boone, H.N., S.A. Gartin, & C.B. Wright, L.D. Lawrence, K.S. Odell, 2002. Adult education philosophies practiced by agricultural education teachers in Pennsylvania, Virginia, and West Virginia. *J. Agric. Educ.*, 43: 37-48.
- Chaudhary, M. A. 1980. A study into radio of ZariNama in the dissemination of information on improved agricultural technology among farmers in district Sheihupura. Univ. Agric., Faisalabad.
- Chizari, M. Lindner, J.R. & Zoghie, M. 1999. Perceptions of Extension Agents' Educational Needs Regarding Sustainable Agriculture in the Khorasan Province, Iran. *J. Agric. Educ.*, 40: 20-7.
- Cohen, L. Manion, L. & Morrison, K. 2007. *Research Methods in Education* (sixth edition). London: Routledge.
- Cooper, A. W. & D. L. Graham. 2001. Competencies needed to be successful county agents and county superiors: *J. Ext.* 39(1): Article 1RIB3.
- Davis, K., S. Franzel, P. Hildebrand, N. & Place, 2004. Extending technologies among small-scale farmers in Meru: Ingredients for success in farmer groups. *Proceedings of the 20th Annual Conference of Association for International Agricultural and Extension Education (AIAEE)*, Pp: 902-13. Dublin, Ireland.
- Dromgoole D. A., & C.T. Boleman. 2006. Distance Education: Perceived Barriers and Opportunities Related to Extension Program Delivery. *J. Ex.*, 44(5).
- FAO, 1991. The den Bosch declaration and agenda for action on sustainable agricultural and rural development: Report of the Conference: Ministry of Agriculture, Natural Management and Fisheries of the Netherlands and FAO, Rome Italy.
- Farooq, S., S. Muhammad. K. M. Choudhry & A. Ijaz. 2007. Role of print media in the dissemination of agricultural information among farmers: *Pak. J. Agri. Sci.*, 44(2): 378-380.
- Fatima, I. Siddiqui, B.N. Ali, M. & Naseem, K. 2014. Self-perceived role of rural youth in ensuring food security in tehsil Rawalpindi, Pakistan. A paper presented at the International Conference "Emerging Horizons of Agricultural Extension for Sustainable Rural Development". Faisalabad, Pakistan.
- Garforth, C., Y. Khatiwada & D. Campbell, 2003. *Communication Research to Support Knowledge Interventions in Agricultural Development: Case Studies from Eritrea and Uganda*. Development Studies Association Conference, Glasgow, Pp 10-12.
- Gay, L. R. & G. E. Mills, 2006. *Educational Research: Competencies for Analysis and Applications* (8th ed.). Upper Saddle River, N.J.: Merrill/Prentice Hall.
- George, D. & Mallery, P. 2003. *SPSS for Windows step by step: A simple guide and reference: 11.0 update* (4th Ed.). Boston: Allyn & Bacon.
- Harder, A. & Lindner, J. R. 2008. County Extension Agents' Perceptions of eXtension. *J. Ex.*, (46):3.
- Hassan, M., Z. Y. 2008. Analysis of the obstacles to gender mainstreaming in agricultural extension in the Punjab, Pakistan: a case study of district Muzaffargarh. Ph. D. Agric. Ext. Thesis, Univ. Agric. Faisalabad, Pakistan (Unpublished dissertation).
- Herringer, J. M. 2002. Once isn't enough when measuring staff competence. *Nursing Management*: 33(2): 22.
http://www.pta.gov.pk/index.php?option=com_content&view=article&id=269:telecomindicators&catid=124:industry-report&Itemid=599.
- Hussain, N. 2004. Analysis of the competency levels of extension administration in the Punjab, Pakistan: Doctoral Dissertation. Ph. D. Thesis, Agric. Ext., Univ. Agric. Faisalabad, Pakistan (Unpublished dissertation).

- Idrees, M. 2003. Developing a strategy for mobilizing rural youth for the development of agriculture in NWFP, Pakistan. Ph. D. Agric. Ext. Thesis, Univ. Agric. Faisalabad, Pakistan (Unpublished dissertation).
- Iftikhar, N. 2010. The role of rural women in agriculture and training needs: a case study of district Bahawalpur, Pakistan. Ph. D. Agric. Ext. Thesis, Univ. Agric. Faisalabad, Pakistan (Unpublished dissertation).
- Iqbal, M. Z. 2008. An evaluate on in-service agricultural training institute in the Punjab, Pakistan. Ph. D. Agric. Ext. Thesis, Univ. Agric. Faisalabad, Pakistan (Unpublished dissertation).
- Irfan, M., S. Muhammad, G. A. Khan & A. Muhammad. 2006. Role of mass media in the dissemination of agricultural technologies among farmers: *Int. J. Agric. Biol.*, 8(3): 417-419.
- Jonassen, H. D. 2001. *Handbook of Research on Educational Communications and Technology: AECT 1800 Blomington IN 47404.*
- Khalil, A. H., O. Maimunah, I. S. Turiman & D. S. Abu. 2008. Extension worker as a leader to farmers: Influence of extension leadership competencies and organisational commitment on extension workers' performance in Yemen: *Uluslararası Sosyal Araştırmalar Dergisi: J. Int. Soc. Res.* 1(4): 369-387.
- Khan, A. A. 2006. Strengthening education-research-extension linkages for effective agricultural extension services: Experience of Pakistan. In: V. P. Sharma. (ed.). *Enhancement of Extension system in Agriculture.* APO, Tokyo, Japan. pp:145-150.
- Khan, M. A. J. 2003. Identification and rank order development of self-perceived competencies possessed by agriculture extension agents in the Punjab Pakistan. Ph. D. Thesis, Agric. Ext., Univ. Agric. Faisalabad, Pakistan (Unpublished dissertation).
- Khan, M., Z. Khalid., N. A. Shahid & H. Mubashir. 2008. Assessment of the professional competencies of agriculture officers in NWFP, Pakistan: *Sarhad J. Agric.* 24 (2): 383-390.
- Kline, P. 2000. *The handbook of psychological testing* (2nd Ed.). London: Routledge, p. 13.
- Knupfer, N. N. & McLellan, H. 2001. *An Outline of Chapter 41: "Descriptive Research Methodologies"* EME 7939.
- Kumbhar, M., I. S. A. Sheikh, S. Mughal & M. J., Channa. 2012. Perception of the extension agents regarding information sources of sustainable agriculture in Sindh province of Pakistan: *J. Bas. App. Sci.*, (8) 334-338.
- Lakai, D., 2010. Identification of Competencies Needed by the Extension Agents in North Carolina. Master of Science in Extension Education North Carolina State University (Unpublished).
- Langdon, D., & Whiteside, K. 2004. Bringing sense to competency definition and attainment: Performance improvement (On-line), 43(7): 10-15.
- Likert, R. 1932. A technique for the measurement of attitudes: *Archives of psychology.* 22 (140): 1-55.
- Linders, J., R. 2001. Competency Assessment and Human Resource Management Performance of County Extension Chairs in Ohio. *J. Agric: Edu.*, (24) pp: 21-31.
- Lindner, J., R. Dooley, K.E. & G.J. Wingenbach, 2003. A cross-national study of agricultural extension education competencies: *J. Int. Agric. Ext. Edu.* pp: 51-9.
- Lodhi, T. E. 2003. Need for Paradigm shift from top-down to participatory extension in the Punjab, Pakistan: Perceptions of farmers, change agents and their supervisory staff: Ph. D. Thesis, Agric. Ext., Univ. Agric. Faisalabad, Pakistan (Unpublished dissertation).
- Lodhi, T., E. Muhammad, L. & A. K. Ghazanfer. 2006. Perceived effectiveness of public sector extension under decentralized agricultural extension system in the Punjab, Pakistan: *J. Agri. Soc. Sci.*, 2 (3). 195-200.
- Lopokoiyit, M. Onyango, C. & Kibett, J. K. 2013. Extension Management Competency Needs of Agricultural Extension Agents in Kenya. *Medi. J. Soci. Sci.*, 4 (6): 11-20.
- Mark, L. R. 2003. *Introduction to Behavioral Research Methods* (4thed.) Allyn & Bacon Pearson Education, Inc., Upper Saddle River, New Jersey, USA.
- Masud, K., H. Naimatullah & A. Tanvir, 2011. An analysis of extension workers perceptions concerning their professional competencies: The case of rural Punjab, Pakistan: *J. Agric. Res.*, 2011, 49(2): 23-28.

- Mengal, A., A., Mirani, Z. and Magsi, H. 2014. Historical overview of agricultural extension services in Pakistan. *The Macrotheme Review: A multidisciplinary journal of global macro trends*. 3(8): 23-36.
- Mincemoyer, C. Perkins, D. & Lillehoj, C. 2004. Perceptions of the Cooperative Extension Service: A Community Resource for Youth and Family Programs. *J. Ex.*, (42): 5.
- Muhammad, S., & C., Garforth. 1999. Farmers' information source and their relative effectiveness. *Int. J. Agric. Biol.* 4(1): 222-226.
- Nunnally, J. C. 1967. *Psychometric theory*. New York: McGraw-Hill.
- Nunnally, J. C. 1978. *Psychometric Theory (2nd Ed.)*. New York: McGraw-Hill Book Company.
- Nunnally, J.C., & Bernstein, I. H. 1994. *Psychometric theory (3rd Ed.)* New York: McGraw-Hill.
- Oakley, P. & C. Garforth. 1985. *Guide to Extension Training: FAO Training Series No. 11*. Rome.
- Owen, M. B. 2004. Defining key sub-competencies for administrative county leaders. *J. Exten.*, 42(2).
- Radhakrishna, R., & Y. Edgar. 1996. Constraints in transfer of technology as perceived by extension personnel: *J. Int. Agric. Ext. Edu.* Pp. 37-46.
- Rehman, F., S. Muhammad, A. Ijaz & H. Sarfraz. 2011. Factors affecting the effectiveness of print media in the dissemination of agricultural information: *Sarhad J. Agric.* 27(1): 119-124.
- Riaz, A. 2012. The role of Punjab rural support programme in catalyzing the process of empowerment of rural women: a case study of district Faisalabad, Pakistan. Ph. D. Agric. Ext. Thesis, Univ. Agric. Faisalabad, Pakistan (Unpublished dissertation).
- Ricketts, K. G. N. & T., Place. 2005. Cooperation between secondary agricultural educators and extension agents. *J. Ex.*, 43(6).
- Rivera, W., & M. K. Qamar. 2003. *Agricultural extension rural development and the food security challenge*. Rome: FAO.
- Rothbard, N. P., & Edwards, J. R. 2003. Investment in work and family roles: A test of identity and utilitarian motives. *Personnel Psychology*: (56):699-729.
- Sadaf, S. Asif, J. & Muhammad, L. 2006. Preferences of Rural Women for Agricultural Information Sources: A Case Study of District Faisalabad–Pakistan: *J. Agri. Soc. Sci.*, 2 (3): 145–149.
- Schilling, M. A. 2002. Technology success and failure in winner-take-all markets: The impact of learning orientation, timing, and network externalities. *A. Mana. J.*, (45): 87-398.
- Shaffril, H. A. M., Samah. B. A., & D' Silva, J. L. 2009. Socio-demography factors for level of competency among rural administrators: The case of Peninsular Malaysia. *Eur. J. Soci. Sci.*, (1): 339-348.
- Siddiqui, B. N. 2006. Analysis of communication interventions of extension field staff in apple growing areas of Balochistan (Pakistan). Ph. D. Agric. Ext. Thesis, Univ. Agric. Faisalabad, Pakistan (Unpublished dissertation).
- Spector, P. E., Cooper, C. L., Sanchez, J. I., O'Driscoll, M., Sparks, K., & Bernin, P. 2002. Locus of control and well-being at work: How generalizable are Western findings? *A. Mana. J.*, (45): 453-470.
- Stoller, R. E. 1971. The identification and differentiation of selected professional competencies for agricultural educators. Ph.D. Adu. Edu. Are., Thesis, Univ. University of Nebraska-Lincoln, USA (Unpublished dissertation).
- Stone, B., B. & S. Bieber. 1997. Competencies: A new language for our work. *J. Ex.*, 35(1).
- Taj, S., A. Nadeem, S. Muhammad & M. Athar. 2009. Diffusion process of innovation learning system in the rice wheat production system of the Punjab: *Pak. J. Agri. Sci.*, 46(2): 130-137.
- Teodorescu, T. 2006. Competence versus competency: What is the difference? *Performance Improvement*. 45(10): 27-30.
- Tiraieyari, N. 2009. The importance of cultural competency for agricultural extension worker in Malaysia. *Uluslararası Sosyal Araştırmalar Dergisi*, *J. Int. Soci. Rea.*, 2 (8): 412-421.
- Tiraieyari, N. Idris, K. Hamzah, A & Uli, J. 2010. Importance of program development competencies for agricultural extension agents' performance in process of technology transfer. *Am. J. Agri. Biol. Sci.*, 5 (3): 376-379.
- Trochim, & William. 2006. <http://www.socialresearchmethods.net/kb/scallik.php>.
- Trochim, W. M. 2000. *The Research Methods Knowledge Base*, 2nd Edition. Atomic Dog Publishing, Cincinnati, OH.

- Volanty, M K. H. 1977. Identification of competencies needed by Texas county extension agents (Home Economics). M. Sc. Ho. Econ. Edu., Thesis, Univ. Texas Tech, USA (Unpublished dissertation).
- Wasihun, B. N. Kwarteng J. A., & Okorley, E.L. 2013. Professional and technical competencies of extension agents as perceived by male and female farmers and the extension agents themselves: The need for data source triangulation. J. A. & Bio. Res., 2 (1): 11-16.
- Wunsch, D.R. 1986. Forum Feature: Action Research in Business Education. Business Education Forum, 5, 31-34.

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