Research Article

An Assessment of Training Needs of Agricultural Extension Agents: A Study of Three Selected Districts of Khyber Pakhtunkhwa (KP), Pakistan

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Abstract | The main purpose of the present study was to assess the training needs of the extension agents, to identify weaknesses in training programs and find obstacles in the use of computer technology which hamper the proper execution of extension services in three selected districts of Khyber Pakhtunkhwa (KP). Purposive sampling technique (sample taken on certain judgments about the population or researcher chooses who would be appropriate for the study) was employed to select three districts *i.e.* Peshawar, Mardan and Swabi from Agro-ecological Zone C of KP. The population of the study comprised of all extension agents of the selected district. Data was collected through a well-developed interview schedule from all Agriculture Officers and 41% of the Field Assistants (randomly selected) of the three districts. Thus, the total number of respondents for the study was 81. The interview schedule was quantitative containing closed-ended questions restricting the respondents to choose from the given options. The majority (90%) of extension agents needed training and the most demanded areas for training were Integrated Pest Management (IPM), computer skills and technology dissemination techniques. A small number (32%) of the extension agents reported weaknesses in the training courses attended and the predominant weaknesses reported were lack of incentive to attend the trainings, lack of management and improper time. Data regarding use of computer technology showed that 65% faced obstacles and mentioned that lack of computer knowledge, lack of training programs and lack of availability of computer were the major obstacles faced by them in use of computer technology. Chi-square results showed a non-significant association between literacy level and training needs while a significant association existed between literacy level and obstacles in use of computer technology. The study concludes that there is need for training in different areas and most face obstacles in computer usage. It is recommended that relevant training courses be arranged and needed equipment and facilities should be provided to minimize the obstacles faced.

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Introduction

Agricultural extension is considered a major media for transfer of technology to farmers which ultimately enhance agricultural production and development (Gholiniya *et al.*, 2004; Rehman *et al.*, 2013). Especially in Pakistan, the role of agriculture extension department cannot be ignored because a major portion of population depends directly or indirectly on agriculture (Inayatullah *et al.*, 2008). The application of agricultural technology can help develop useful and practical knowledge in agriculture, motivate and change the behavior of farming community (Singh, 2000). Sail (2010) stressed that effectiveness of extension services is enhanced by a well-qualified and well aware extension worker who can better facilitate the farmers to get information.

The extension agents play an important role of disseminating information, providing assistance and advice to farmers in order to increase their agricultural output. Extension agents try their best to provide comprehensive information on different aspects of farming to the farmers to fulfill their particular needs in Nigeria (Gwary *et al.*, 2013).

Development of human capital and availability of resources are pre-requisite conditions for prosperity and development of any society. Human resource development can be achieved through training (Bouyle, 2004). Training can lead a society to progress and development (Zamanipour, 2008) as it increases the productivity power of individuals and enables them to better utilize the scientific technology to increase production and income (Nazarzadehzare and Dorrani, 2012). Training is imperative and considered as a main pillar for extension agents throughout the world.

There are remarkable deficiencies in knowledge, skills, and ability among extension personnel, particularly in developing countries. About 40 per cent of the extension personnel worldwide have secondary-level and 33 per cent have an intermediate-level education (Rasmina *et al.*, 2018). For a successful extension system to function, an adequate number of well-trained extension agents is required. An insufficient number of well-trained staff will lead to an inability of extension to plan and execute different activities properly and efficiently (Chizari *et al.*, 1998). In developing countries agriculture extension face a number of problems and one of them is lack of appropriate training opportunities for extension agents (Adams, 2007). Training is a basic requirement for knowledge and skill development of extension agents to perform their assigned duties properly. The extension agent must possess adequate technical knowledge to solve farmers' problems or have the opportunity to obtain this knowledge when required through training (Khan, 2012). The extension agent influences the farmers'behavior to adopt new technologies and to use environment friendly practices to enhance farm management and problem solving skills of the Pakistani farmers (Khan and Akram, 2012; Aziz *et al.*, 2018). For effective delivery of extension programs, regular training of extension agents is a fundamental step to upgrade their knowledge and skills. For agricultural and rural development, agriculture extension services deliver new information to develop the knowledge of the farmers to meet the challenges of new era which compels the farmers to adopt modern techniques and production systems (Prager *et al.*, 2017).

The training of extension personnel contributes directly to the development of human resources within extension organizations and training is the only option for the development of human capital (Bouyle, 2004) which brings prosperity and development in any society and help push forward the engine of development (Zamanipour, 2008). Agwu *et al.* (2008) stressed that extension agents' main responsibility is to transfer technology to farmers so as to increase agricultural production and development. Therefore, capacity building of the extension agents through trainings would put them in a better position to create awareness and provide knowledge to farmers for enhancing production (Aziz, 2020).

Training is an effective tool for transferring of new technological information and has a significant role in acquiring specific knowledge and skills to perform a job better and are one of the vital components for agriculture development (Al-Sharafat, 2012; Sanaullah and Pervaiz, 2019). Khan (2018) emphasized the importance of skill development of extension agents to increase their knowledge, to know about modern technologies and development for effective extension programs. To achieve these objectives, appropriate training programs are needed for extension agents to learn new skills to help them fulfill the expectations of the present era.

Training is part and parcel of the learning process and

for any innovation to have impact, quick diffusion and adoption is positively associated with effective training (Rogers, 1983). It is a basic requirement of extension agents to continuously learn and update their knowledge and skills to maintain their efficiency and provide new information to the farming community (Buford *et al*., 1995). To ensure that extension agents are well-trained, there is a need to organize effective training programs for extension agents. Therefore, the present study was initiated with the objective to assess the training needs of the extension staff and to increase their capabilities.

Objectives

The study objectives were;

1. To determine the training needs of extension agents in the study area.
2. To pinpoint the weaknesses in the training courses.
3. To provide suggestion for future improvement.

Materials and Methods

The present study was conducted in Zone C of KP which was randomly selected from five agro-ecological zones of Khyber Pakhtunkhwa (KP). Three districts of zone C, *i.e*. Peshawar, Mardan and Swabi were purposively selected on the basis that agricultural activities are more refined when compared to other districts. Purposive sample is a sample taken on certain judgments about the population or researcher chooses who would be appropriate for the study. The population of this study was all of the extension agents working in the selected districts. All the Agriculture Officers (AO) working in the selected districts were sample respondents while on the basis of availability 41% of the Field Assistants (FA) randomly selected was considered for data collection making a total of 81 extension agents (*i.e*. 10 Agriculture Officers and 71 Field Assistants out of a total of 173 FA in the selected districts). All AOs were selected for the study as they are less in number and FAs are at the lower hierarchy who carry out all field level extension activities and are also in direct contact with the farming communities. FAs are like front line soldiers who have a greater role in the capacity building of the farmers (Nawaz *et al*., 2020). A well-structured and pre-tested interview schedule was used to collect primary data from AOs and FAs in the study area. The interview schedule was quantitative containing closed-ended questions restricting the respondents to choose from the given options and it contains a 5-point Likert scale (1- strongly disagree, 2- disagree, 3- uncertain, 4- agree and 5- strongly agree) which was used to assess the needs and weaknesses in the training courses (Ajayi and Gunn, 2009; Khan, 2012). Only the responses of agree and strongly agree are included for analysis because strongly disagree, disagree and uncertain means that they do not have any need and pointed out no weakness in training courses (Chizari *et al*., 1998). Statistical Package for Social Sciences (SPSS) V-20 was used to analyze the data and results were presented in frequencies and percentages in frequency distribution tables while rank order was used to prioritize different variables on the basis of their respective percentages. Rank order is a procedure employed to sort study variable from highest to lowest on a dimension of interest and numerical values are replaced by their rank to sort the data. Chi-square test was used to find association of literacy level with training needed and obstacles in the use of computer technology. Literacy level is the total number of years of getting formal education of an individual. It is assumed that as literacy level increases the respondents are in a better position to understand and identify their needs and the obstacles faced in use of computer technology will be decreased.

Results and Discussion

Training need

Skill development of extension agents is essential to increase their knowledge and awareness regarding modern techniques for the extension organization to be effective (Darkenwald and Merriam, 1982). This can be achieved through trainings which will help them learn and acquire new skills to fulfill the present and future expectations (Khan, 2018). Training of extension agents plays a vital role in agricultural development. Data regarding training needs of extension agents is given in Table 1. Data shows that out of the total 81 (AO and FA) respondents, 73(90%) reported the need for training programs to enhance skills regarding agricultural improvements while 10% stated that there is no need to them for training. Farooq *et al*. (2010) mentioned that 85% of the respondents' main source of information was extension publications followed by research institutes (8%) and only 2% mentioned trainings as a source of information. This also highlights the fact that there is need of trainings of extension agents so that they can obtain new information for better performance.

Table 1: *Distribution of extension agents on the basis of their training needs.*

Location	Training needs				Total
	Yes		No		
	Freq.	%	Freq.	%	
Peshawar	25	93	2	7	27
Swabi	26	96	1	4	27
Mardan	22	81	5	19	27
Total	73	90	8	10	81

Type of training required

Training of extension agents is necessary for current knowledge and skill improvement. The distribution of respondents regarding types of training required shows that out of total 81 respondents, 73 respondents who reported the need for training and responded with agree or strongly agree (Chizari *et al.*, 1998), 38% reported need for IPM training (rank 1) ordering is done by replacing the numerical values by ranks on the basis of highest to lowest frequencies, 34% needed training in computer skills (rank 2), 31% needed training in technology dissemination techniques (rank 3) while 27% wanted training in crop management. This result is similar to the study of Chizari *et al.* (1998) where need of training in various teaching methods was ranked as 2nd. The least wanted areas for training were need analysis by 20% of the respondents, followed by planning techniques (14%) and evaluation techniques (10%). Nawaz *et al.* (2020) identified 17 areas in which training of Pakistani extension agents is needed, among these use of ICTs for communication was ranked '1' while identify and prioritize farmers needs was ranked at '10'. Farooq *et al.* (2010) stated that 58% extension agents (in Pakistan) needed training in improved crop management followed by 15 in computer, 12 in IPM (integrated pest management). It is noteworthy that the majority of extension agents regarded trainings in IPM, computer skills and technology dissemination techniques as necessary areas for them to up-grade their skills and knowledge and to enhance their efficiency.

Table 2: *Frequency, rank and percentage of type of training required by extension agents.*

Rank	Type of training required	Frequency	%
2	Computer skills	25	34
1	IPM	28	38
4	Crop management	20	27
6	Planning techniques	10	14
5	Need analysis	15	20
7	Evaluation techniques	7	10
3	Technology dissemination techniques	23	31

Note: *Totals may not tally due to multiple answers.*

Weaknesses felt in training courses

Nothing is perfect in the world and weaknesses are possible in everything. Similarly, sometimes there are weaknesses in the training courses and it is the responsibility of the concerned department to minimize the chances of weaknesses. The extension agents were also asked about the weaknesses they experienced in the training programs which they attended. The data shown in Table 3 indicates that 32% of the extension agents reported weaknesses in the training course while the majority (68%) claimed no weaknesses in training courses. It is clear from the results that in district Swabi the majority reported no weaknesses which show that trainings organized by extension department in Swabi were well organized as compared to other districts and that extension agents are satisfied. It is therefore, need of the hour to redesign agriculture extension services according to the changing circumstances and rural situation with the accessible, qualified and skilled human resource (Malik and Khan, 2020; Khushk and Memon, 2004; Khan, 2006).

Table 3: *Distribution of extension agents regarding weaknesses felt in training courses.*

Location	Weaknesses in training course				Total
	Yes		No		
	Freq.	%	Freq.	%	
Peshawar	9	33	18	67	27
Swabi	8	30	19	70	27
Mardan	9	33	18	67	27
Total	26	32	55	68	81

Nature of weakness

In order to learn about the nature of weaknesses in extension training courses, out of 26 extension agents who felt weaknesses in training courses (rest of 55 extension agents did not felt any weaknesses in training courses), 69% reported a lack of incentives after attending trainings as a weakness in the training program (rank 1). Lack of incentives" means that extension agents expect some type of reward or recognition, also these trainings will increase their chances of getting promoted to higher job scales as compared to others. Lack of proper management (during the training courses) was reported by 38% (ranked 2), improper time (at the time of training they were busy in other activities and were not informed about the training in advance) by 35% and 31% choose weak contents of training program as a weakness felt in the training program. It is strange to note that 23% respondents claimed that they were not notified in advance to be timely aware of holding a training program, so they were unable to attend it and get benefit.

In future these weaknesses should be overcome when organizing the training courses to make them more effective and fruitful.

Table 4: *Frequency, Rank and Percentage of nature of weakness felt in training course by extension agents.*

Rank	Nature of weakness	Freq.	%
3	Lack of time fitness/ improper time	9	35
5	Lack of timely awareness of holding a course	6	23
1	Lack of incentive	18	69
2	Lack of management	10	38
4	Weak contents of training program	8	31

Note: *Totals may not tally due to multiple answers.*

Obstacles in use of computer technology

Nowadays computer technology is used in every field and is also considered to play a vital role in extension work (Alfaifi, 2006). Computer technologies help to increase the effectiveness of education and extension work by providing a variety of methods to access information speedily (Khan, 2018). Table 5 presents the obstacles faced by extension agents in the use of computer technology. The majority of the extension agents (65%) reported that they face obstacles in the use of computer technology while 35% reported no obstacles faced. In district Mardan, the majority *i.e.* 70% faced problems while 30% did not face any obstacles in the use of computer technology. The situation in Peshawar shows that 67% faced obstacles while in Swabi 59% reported problems being faced in use of computer. A study by Khan *et al.* (2008) identified that job experience, age, field of specialization and domicile of the extension agents have affect on their professional competencies regarding use of computer technology.

Table 5: *Distribution of extension agents regarding obstacles in use of computer technology.*

Location	Obstacles in use of computer technology				Total
	Yes		No		
	Freq.	%	Freq.	%	
Peshawar	18	67	9	33	27
Swabi	16	59	11	41	27
Mardan	19	70	8	30	27
Total	53	65	28	35	81

Major obstacles in use of computer technology

Data represented in Table 6 indicates that out of 53 extension agents who had obstacles in use of computer technology (the rest of 28 extension workers did not faced any obstacles), 87% reported lack of computer knowledge as an obstacle, 79% stated lack of training programs while 75% extension agents claimed having no computer as a major hurdle in use of computer technology. The least mentioned obstacle is low level of knowledge of the trainer by 17% and lack of interest in learning computer by 53%. It is evident from the data that majority of extension agents viewed lack of: computer knowledge and training program as a problem in learning and use of computer technology. Findings of research are supported by Ovwigho *et al.* (2009), who reported high cost and inadequate availability, internet connectivity and lack of on job trainings as some of the problems faced by extension workers in efficient working. While Agha *et al.* (2018) mentioned that lack of specialized trainings on ICTs and Lack of ICT trainers were some of the constraints faced by extension agent.

Table 6: *Frequency, Rank and Percentage of major obstacles in use of computer technology as viewed by extension agents.*

Rank	Major obstacles	Freq.	%
5	Lack of interest in learning computer	28	53
1	Lack of computer knowledge	46	87
6	Low level of trainer	9	17
2	Lack of training programs	42	79
4	Lack of required skills to use	38	72
3	Unavailability of computer	40	75

Note: *Totals may not tally due to multiple answers.*

Table 7: *Association of literacy level of respondent with training needs and obstacles in use of computer.*

Literacy level	Training needs		Total	Chi-Square	P-value
	Yes	No			
Matric	5	0	5	1.266	0.737^{NS}
Agriculture diploma	56	7	63		
BSc (Hons) Agriculture	5	0	5		
MSc (Hons) Agriculture	7	1	8		
Total	73	8	81		
Obstacles in use of computer technology					
Matric	4	1	5	11.446	0.01**
Agriculture diploma	45	18	63		
BSc (Hons) Agriculture	3	2	5		
MSc (Hons) Agriculture	1	7	8		
Total	53	28	81		

Calculated by Author

Association of literacy level with training needs and obstacles in use of computer technology

Table 7 shows the results of Chi-square test between literacy level and training needs of the extension agents. It is observed that there is non-significant association (P>0.05) between literacy level and training needs which indicates that majority extension agents need training in different areas irrespective of the education/literacy level of extension agents. The study concludes that all extension agents had training needs. It was found that there is significant (P<0.05) association between literacy level and obstacles in use of computer technology which indicates that as the literacy level increases obstacles decreases. It is clear from the data that higher the literacy rate less will be the obstacles faced in use of computer.

Conclusions and Recommendations

On the basis of the findings of study, it is concluded that the majority of extension agents needed training and the most demanded areas were IPM, computer skills and technology dissemination techniques. Extension workers also identified different weaknesses including the lack of incentive on attending trainings and lack of proper management in training programs. Lack of computer knowledge and training programs are some of the main obstacles in use of computer technology by extension staff.

The study recommends that various in-service training programs should be organized on need basis for the extension staff and stress should be given to increase enrollment and to offer incentives to those who attend the training courses. The training courses should be arranged in the areas identified by the study respondents for acquiring adequate knowledge and skills. The Department of Agriculture Extension Khyber Pakhtunkhwa, need to include trainings on computer use to overcome the identified obstacles along with the inclusion of computer education in the syllabus of Field Assistant's Diploma courses. To improve the development and delivery of different services to the farming community needed equipment, facilities and skills should be provided to enhance the professional competencies of the extension agents to perform their assigned duties properly. Study results can help government/ department to properly allocate resources to train extension agents in the identified areas and be included in the curriculum, especially their competency related to use of ICTs for communication, to increase farmer production and income.

Novelty Statement

There is a need for skill development of extension agents and increase their knowledge about modern technologies to improve their capabilities. This study identified the need for training in different areas especially in computer usage by extension workers and provision of required equipments and facilities to perform their duties properly.

Author's Contribution

Ayesha Khan: Principal author who wrote the manuscript.
Zubair Ahmad Khan: Collected the field data and performed the analysis.
Urooba Pervaiz: Helped in data analysis.

Conflict of interest

The authors have declared no conflict of interest.

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