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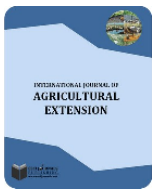

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PRE-SERVICE COMPETENCE OF AGRICULTURAL OFFICERS (EXTENSION) IN THE PUNJAB, PAKISTAN: POLICY IMPLICATIONS FOR ELIGIBILITY CRITERIA

[a]Shoukat Ali*, [b]Umair Safdar
[a] *Institute of Agri. Extension, Education and Rural Development, University of Agriculture, Faisalabad, Pakistan.*
[b] *Center for Agriculture and Bioscience International (CABI), Islamabad, Pakistan.*

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ABSTRACT

Agriculture Officers working in Agriculture Department (Extension) are perceived lacking in professional competencies. One of the root causes of this problem lies in the mismatched eligibility criteria for the post of Agriculture Officer (Extension). The purpose of this paper was to discuss the relevancy of the Extension Agents' competencies with their job responsibilities for policy implications. The universe of the study was Punjab Province of Pakistan. The cross-sectional design was used for the study. All Agriculture Officers (public extension agents) work in the Agriculture Department (Extension), Government of Punjab were the population of the study. Multistage simple random sampling technique was used for drawing the sample. A sample of 60 respondents was drawn from sampling frame by using simple random sampling technique. A desktop study was also conducted to analyze the contents offered to the currently eligible agricultural graduates during their pre-service training at the university level. Results showed that only 3.3% of the respondents had relevant pre-service training. About 58% of the Agriculture Officers (Extension) were not satisfied with their jobs and most of them were thinking to change their jobs. This study has practical implications for Punjab Public Service Commission, Lahore and Agriculture Department (Extension) Government of Punjab, Pakistan in particular. The research theorized that the duties of extension work should only be entrusted to the professionals having per-service training in agricultural extension. Otherwise, the efficiency of the agricultural extension system would be compromised. This is the first study of its kind in which the eligibility criteria of the Agriculture Officers (Extension) have been questioned in the Punjab, Pakistan. The finding and discourse of the study would initiate the debate among stakeholders to place right person for the right job. The materialization of study findings would enhance the efficiency of Agricultural Extension system.

Corresponding Author: Shoukat Ali
Email: shoukat78pk@yahoo.com
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INTRODUCTION

Agriculture is the lifeline of Pakistan's economy. It accounts for 19.2% towards GDP, absorbs 38.5% of the labor force and provides raw material to agro-based value-added sector. This sector supports 65-70% country's rural population for their livelihood (Government of Pakistan, 2018). It is believed that for national development, food security, poverty alleviation, and substantial economic growth, vibrant agriculture sector is inevitable (ibid). In spite of having rich agricultural resource base of Pakistan (Irfan, 2007), the growth of agriculture sector is hovering around 2%

since 2000 generally ranging from -2.2 % to 6.7 %, average being 2.26% for the last 20 years (Table 1).

Technology development and technology utilization are two pillars which contribute significantly towards agricultural development. Many researchers have identified that underutilization of available agricultural technologies is one of the major contributors toward low farm productivity in Pakistan (Masood *et al.*, 2012) (Aslam, 2016). For instance, the potential yield of wheat crop obtained at the field of Ayub Agriculture Research Institute, Faisalabad, Punjab Pakistan was 7900kg per hectare (AARI, 2019) while national average yield of the country never crossed 2973 kg per hectare (AMIS, 2019). More or less, same situation prevailed for other crops. There is three folds potential of improvement in crop production.

Table 1. Agriculture growth rate percentages.

Sr.#	Year	Agriculture Growth (%)	Sr.#	Year	Agriculture Growth (%)
1	2000-2001	-2.2	11	2010-2011	2.00
2	2001-2002	-0.1	12	2011-2012	3.62
3	2002-2003	4.1	13	2012-2013	2.68
4	2003-2004	2.3	14	2013-2014	2.50
5	2004-2005	6.7	15	2014-2015	2.13
6	2005-2006	1.6	16	2015-2016	0.15
7	2006-2007	4.1	17	2016-2017	2.18
8	2007-2008	1.8	18	2017-2018	4.00
9	2008-2009	3.5	19	2018-2019	0.56
10	2009-2010	0.2	20	2019-2020	3.31

Source: Pakistan Bureau of statistics

This situation reflects the importance of an institutional reforms to push farmers for the adoption of modern agricultural technologies. The institution i.e., Agricultural Extension Wing of the Department of Agriculture is working in the country to stimulate technology utilization since its inception, but its performance remained under question. Many researchers identified that performance of the public agri. extension system in Pakistan was not satisfactory in the past (Muhammad, 1981; Khan *et al.*, 1984; Humayun, 1990; Khan, 1992; Malik, 1993; NRSP, 1999; Davidson *et al.*, 2001; Anonymous, 2003; Farooq and Ishaq., 2005; Jan *et al.*, 2008; Bajwa *et al.*, 2010). The present performance of agri. extension system is not different from the past. As, in his research study, Yasin (2016) found that farmers were less satisfied with the technical information delivered by the agents of public extension system. Talib (2017) in his research work, concluded that regarding capacity building of the rice farmers, the working of public extension agents was not satisfactory. He added that the extension agents possessed poor communication abilities (ibid). He emphasized on inclusion of more courses regarding human resource development and communication skills in the curriculum of their pre-service training (ibid). The success of agricultural extension system is dependent on the competencies of agri. extension workers to transfer innovative agricultural practices to farmers and to convince them for adoption of these practices (Lakai *et al.*, 2014). Various researchers highlighted two types of competencies needed by agri. extension workers i.e. i) Professional competencies ii) technical competencies (Graham, 2009; Stone and Coppernoll, 2004; Lakai *et al.*, 2014). Professional competencies refer to communication skills, program planning skills, task execution skills, adults teaching skills and adult behaviour analysis skills. Technical competencies mean the knowledge and skills regarding subject matter i.e., soil fertility, sowing methods, weed, insect and disease control, harvest and post-harvest techniques etc.

Khan (2000) noted that most of the extension agents possessed technical competencies however great majority lacked communication skills. He highlighted the need for extension agents' education regarding psychology of farmers, needs assessment, problem solving and communication (ibid). Other researchers in the discipline of extension education have also highlighted the importance of professional competencies for extension work. For instance, Khan (2003) found that public extension agents rated four (4) professional

competencies as highly important for their job performance. These competencies included: supervision/ administration, program planning, extension teaching methods, and human behaviour/public relations. Easter (1985) claimed that in developing countries, ignoring the professional competencies for agri. extension personnel remained one of the major weaknesses. Similarly, Pezeshki-Raad *et al.* (1994) argued that the extension agents in developing countries should possess professional competence in the areas of communications, program planning and execution, teaching and extension methods and understanding adult behaviour etc. Issahaku (2014) stated that professional competencies are pre-requisite to convince farmers to adopt the new technologies and the same researcher claimed that most of the extension workers were lacking the desired competencies.

This paper theorized that in Pakistan poor and inadequate pre-service training in professional competence of the extension workers contributes toward their poor performance. The undergraduate degree programs in agriculture at the agricultural universities in Pakistan are mainly considered as pre-service training programs for future professionals in agriculture including extension workers. The eligibility and selection criteria for extension workers are determined by the provincial departments of agriculture. The minimum degree required for the job of an agricultural extension worker is B.Sc. (Hons) Agriculture irrespective of any specialization. This aspect needs to be explored for the consideration in the future extension policy regarding eligibility criteria in the Punjab, Pakistan. This study was therefore, planned and conducted with the financial grant of the Higher Education Commission (HEC), Government of Pakistan.

The importance of the technical competencies for extension workers could not be undermined as these are equally important. Khan (2003) found that public extension agents considered that technical knowledge and skill regarding agronomic practices, plant protection measures, horticultural practices and farm machinery are highly important for their jobs.

Tshering *et al.* (2007) stated that lack of technical competencies by agri. extension workers is one of the reasons resulted in the inefficient information dissemination. Boyd (2003) endorsed that a successful extension worker should bear good technical knowledge. Belay and Abebaw (2004) found that adequate technical knowledge accelerates the diffusion of innovation process.

Researchers stressed that a competent extension worker should have a proper balance of both competencies. Imbalance between professional and technical competencies is a common problem in the extension services of developing countries (Bradfield, 1966; Maunder, 1972; Easter, 1985; Khan *et al.*, 2004).

For successful extension work, an extension worker must be competent not only in technical subject matter, but also in professional areas such as communication, extension methods, interpersonal relations, management, program planning, and leadership (Gonzalez, 1982; Reynolds, 1993; Graham, 2009; Stone and Coppernoll, 2004; Lakai *et al.*, 2014).

Other researchers underpinned that extension worker require competencies related to technical, extension service delivery, and social phenomena (Azadvary and Pezeshki-Raad, 1997; Karbasioun *et al.*, 2007; Swanson, 2008; Traoré, 2008; Tiraieyari *et al.*, 2010). Oakley and Garforth (1997) highlighted various technical and professional skills required for extension workers. In addition to technical skills, the professional skills they stressed upon included communication skills, planning skills, adult education skills, leadership skills etc. They emphasized that these areas should form the basis for extension training.

According to the Government of Republic of Kenya (2017) the technical and functional (professional) competencies must be required for the extension workers. It was categorically mentioned that the technical skills relating to soil fertility, pest and disease management, animal health, aquaculture, apiculture, agribusiness etc. and professional skills i.e., communication, planning, management, monitoring, evaluation, extension methods etc. are pre-requisite for the job of an extension worker (ibid).

Although various researchers assessed the competencies of extension workers however few empirical studies measured the relationship (as per authors' knowledge) However, worldwide, researchers in developing countries established the relation between competencies (technical/professional) and job performance of extension workers which is being reflected in the next lines. Relationship between competencies (technical & professional) and job performance of extension workers

Tiraieyari *et al.* (2010) conducted a study to determine the influence of various competencies on job

performance of extension workers in Malaysia. They studied the 9 sets of competencies i.e., i) Leadership development competency ii) Decision making/Problem solving development competencies iii) SALM program (technical) competency iv) Social competency v) Cultural competency vi) Program planning competency vii) Program implementation competency viii) Program evaluation competency and ix) Extension teaching methods competency. They found that four competencies i.e., cultural competency, program evaluation competency, SALM certificate competency (a certificate regarding good agriculture practices) and social competency influenced the job performance of extension workers in agriculture department of Malaysia. It is important to note that the third competency i.e., SALM certificate competency was technical competency while other three competencies were professional competencies. Moreover, the researchers recommended that to improve the performance of agriculture department, these four competencies must be considered and upgraded (ibid).

Tiraieyari *et al.* (2010) established the statistical correlation between cultural (professional) competencies and the performance of extension workers. Similarly, Motolani *et al.* (2017) run a correlation between various competencies (one technical and five professional) and work performance of extension workers. They found that three competencies (one technical and 2 professional) had strong positive correlation with job performance. These competencies include i) leadership skills (r=0.742), social skills (r=0.731) and technical skills (r=0.703). However, in this study decision making support skills, technology delivery skills and evaluation technology skills showed a moderate correlation.

Keeping in view the importance of both professional and technical competencies for the performance of extension agents, it is need of the hour to look into the pre-service competencies acquired by the extension workers which have to be inducted in the public extension system of the Punjab province, Pakistan.

METHODOLOGY

The study was conducted in the Punjab province of Pakistan. There are five agro-ecological zones in the Punjab. These include i) cotton zone ii) rice zone iii) mixed zone iv) semi-irrigated zone v) barani zone (ALi, 2009). A multistage sampling technique was used for data collection. At the first stage five districts were randomly selected from each zone, as follow: 1) District Rahim-Yar-Khan from cotton zone 2) District Sheikhupura from rice zone 3) District Faisalabad from mixed zone 4) District Layyah from Semi irrigated zone 4) District Chakwal from barani zone. All (60) agricultural officers of the above mentioned five districts were selected for the study. The respondents were asked questions through structured, pre-tested and validated interview schedule. The data were thus analyzed and presented in the tables. Furthermore, second part of this paper was based on the desktop study which was undertaken to analyze the contents offered to the currently working Agricultural Officers (Extension) during their pre-service trainings at university level. For this purpose, contents of B.Sc. (Hons) Agri. Extension degree were compared with the contents of B.Sc. (Hons) Agronomy degree. The reason behind the selection of B.Sc. (Hons) Agronomy degree contents was that the maximum number of Agriculture Officers working in Agriculture Department (Extension) had their specialization in Agronomy. The purpose of this comparison was to pinpoint the pre-service competencies acquired by the extensionist and non-extensionist graduates.

RESULTS AND DISCUSSION

Public Extension workers (Agricultural officers) were asked about their education level (pre-service competencies area) and data regarding this aspect were collected and are presented in Table 2. The data presented in above table reflect that only 3.3% of AOs, working in Agriculture Department (Extension), possessed both technical & professional competencies as they had been specialized in the area of agricultural extension education. These results are in line with the findings of Ali *et al.* (1997) as they noted that only 6.7% of the Agriculture Officers (extension) had specialization in agri. extension. Khan (2003) also reported the similar results that only 9% of Agriculture Officers (extension) had specialization in agricultural extension. It is important to note that among all specializations listed in the table above, only agri. extension specialization deals with the development of both professional and technical competencies of agriculture graduates needed to perform the job of extension work. This information clearly reflects that the overwhelming majority of Agriculture Officers currently working in public sector

extension do not have pre-service training in the areas of professional competencies.

This situation arises the question mark on the abilities of Agriculture Officers to perform their extension duties. It also reflects the need to review the selection criteria for the job of Agriculture Officers. Furthermore, it is important to look at the pre-service training structure for agriculture graduates in agricultural universities/colleges of Pakistan.

Generally, agricultural universities in Pakistan are offering four years undergraduate degree programs with the nomenclature of B.Sc. (Hons) Agri. Sciences after earning 12 years of schooling in science subjects. The curriculum of this degree program has been distinctly divided into two equal halves. The courses related to applied agriculture, dominate the first two years of the degree program. The detail of the first 2-year courses is given in Table 3.

Table 2. Distribution of the respondents according to their pre-service competencies and type of competencies they have acquired at university level.

Respondents' Specialization/ Pre-service competencies	Type of competencies	Response	
		f	%
Agronomy	Only technical competence	22	36.6
Soil science	Only technical competence	10	16.6
Agricultural entomology	Only technical competence	8	13.3
Plant breeding and genetics	Only technical competence	6	10.0
Plant pathology	Only technical competence	6	10.0
Agricultural economics	Only technical competence	4	6.6
Horticulture	Only technical competence	2	3.3
Agricultural extension	Both technical & professional competence	2	3.3

Table 3. List of courses undertaken by B.Sc. (Hons) Agri. Sciences graduates during first two years.

Sr. No	Course title	Credit hours	Serial No	Course title	Credit hours
1	Mathematics	3(3-0)	15	Food Technology	3 (2-1)
2	Biology	3(2-1)	16	Horticulture	3 (2-1)
3	Statistics 1	3(3-0)	17	Soil Sciences	3 (2-1)
4	Statistics 2	3(3-0)	18	Agri. Economics	3 (2-1)
5	Computers	3(2-1)	19	Agri. Extension	3 (2-1)
6	Pakistan Studies	2 (2-0)	20	Forestry & Range Management	3 (2-1)
7	Islamic Studies	2 (2-0)	21	Animal Science	3 (2-1)
8	Communications Skills	3 (3-0)	22	Marketing &Agri Business	3 (2-1)
9	English	3 (3-0)	23	Rural Development	3 (2-1)
10	Basic Agriculture	3 (2-1)	24	Human Nutrition	3 (2-1)
11	Agronomy	3 (2-1)	25	Agriculture Chemistry	3 (2-1)
12	Plant Breeding & Genetics	3 (2-1)	26	Agriculture Engineering	3 (2-1)
13	Entomology	3 (2-1)	27	Water Management	3 (2-1)
14	Plant Pathology	3 (2-1)	28	Any other recommended by the university	

Source: Curriculum of Agriculture Extension (Revised 2010), Higher Education Commission of Pakistan, Islamabad

Table 4. List of courses undertaken by B.Sc. (Hons) Agri. Sciences graduates with agri. extension specialization during last two years.

Serial No	Course title	Credit hours
1	Introduction to Agricultural Extension Education	3(3-0)
2	Communication Skills in Agricultural Extension	3(2-1)

3	Extension Program Development	3(2-1)
4	Agricultural Extension Methods	4(3-1
5	History and Philosophy of Agri. Extension Education	4(4-0)
6	Computer Application in Agricultural Extension	3(1-2)
7	Rural Development Programs in Pakistan	4(3-1)
8	Psychology of Adult Learning	4(4-0)
9	Rural Youth in Agricultural Development	3(2-1)
10	Human Resource Management	4(3-1)
11	Dyadic Communication	3(2-1)
12	Introduction to Research Methods	4(3-1)
13	Emerging Issues in Agriculture and Technology Transfer	4(3-1)
14	Introduction to Program Evaluation	4(3-1)
15	Fundamentals of Agricultural Journalism	4(2-2)
16	Rural Development Through Agricultural Extension	3(3-0)
17	Internship	4(0-4)

Source: Curriculum of Agriculture Extension (Revised 2010), Higher Education Commission of Pakistan, Islamabad

It is clear from the above table that the pre-service training of the agri. extension undergraduate students is relevant with the job of extension worker (Agriculture Officer). The courses mentioned in the table specifically designed for the development of students' professional competencies. They are taught the various methods and skills necessary to communicate latest agricultural technologies and to influence farmers to adopt these technologies. However, the students who do not opt agri. extension as their specialized subject did not find opportunity to learn how to transfer agri. technologies and how to influence farmers to adopt latest technologies. For instance, the courses undertaken by the students with agronomy specialization (Table 5).

Table 5. List of courses undertaken by B.Sc. (Hons) Agri. Sciences graduates with Agronomy specialization during last two years

Serial No	Course title	Credit hours
1	Basic Agriculture	3(2-1)
2	Principles of Agronomy	3(2-1)
3	Field Crop Production-I	3(2-1)
4	General Crop Production-II	3(2-1)
5	Arid and Rainfed Agriculture	3(2-1)
6	Farm Record Maintenance	3(2-1)
7	Agro-technology of Major Crops	3(2-1)
8	Principles of Weed Science	3(2-1)
9	Field Crop Physiology	3(2-1)
10	Plant Nutrients and Growth Regulators	3(2-1)
11	Water Management in Rainfed Area	3(2-1)
12	Biological Nitrogen Fixation	3(2-1)
13	Seed Production Technology	3(2-1)
14	Research and Scientific Writing	3(2-1)
15	Conservation Agronomy	3(2-1)
16	Agro Ecology	3(3-0)
17	Irrigation Agronomy	3(2-1)
18	Environment and Crop Production	3(2-1)
19	Forage and Fodder Production	3(2-1)

20	Organic Farming	3(3-0)
21	Coastal Agriculture	3(2-1)
22	Introduction to Weed Science	3(2-1)
23	Introduction to Crop Modelling	3(2-1)
24	Crop Management under Stressful Environments	3(2-1)
25	Medicinal and Special Crops	3(2-1)
26	Plant and Soil Analysis	3(2-1)
27	Production Technology of Condiments and spices	3(2-1)
28	Project Studies4(0-4)/ Internship	4(0-4)

Source: Curriculum of Agronomy (Revised 2010), Higher Education Commission of Pakistan, Islamabad

The courses depicted in the above table revealed that it's all about technical competencies (limited to agronomy of the crops side only) and do not address the professional competencies of the students at all. It can be concluded that the pre-service training acquired by the agronomist is inadequate for the job of extension worker and same is the case with all other specializations listed in table 2 except agri. extension. Ali *et al.* (1997) argued that this might be one of the factors for poor performance of Agriculture Officers because the pre-service training of the overwhelming majority of Agriculture Officers is not relevant to the extension delivery services. They further reported that about 20% of the Agriculture Officers admitted that they were not fully competent to handle the venture of extension work (ibid).

Hence, it is the best time to decide that whether the work of agri. extension should be entrusted to extensionist or non-extensionist too. Ali *et al.* (1997) recommended that the students who intend to serve as Agriculture Officer in Extension wing should opt for Agri. Extension as their specialization. Consequently, the candidates bearing B.Sc. (Hons) Degree with Agri. Extension specialization should only be eligible for the job of Agriculture Officer (Ext.)

Satisfaction with current job

Employee's job satisfaction is a significant factor which shows one's commitment and performance. As Table 2 revealed that 96.7% Agriculture Officers of Agriculture Department (Extension wing) did not bear Extension specific degree. Therefore, it was thought that while performing the extension tasks for which they had not been trained, Agriculture Officers might feel discomfort with their jobs. Keeping this in view, Agriculture Officers were asked about their job satisfaction and data regarding this was presented in Table 6.

Table 6. Satisfaction of the current Agriculture Officers with their jobs.

Are you satisfied with your job?	Response	
	f	%
Happy	6	10.0
Satisfied	19	31.7
Not satisfied	35	58.3
Total	60	100.0
Are you trying to quit this job?		
Yes	5	8.3
May be	21	35.0
No	34	56.6
Total	60	100.0

The data presented in Table 4 show that only 10% of the respondents were happy with their job. About 32% of the respondents reported that they are just satisfied with current job however 58.3% of the respondents reported that they are not satisfied with their current job. It is revealed from the data that more than half of the agricultural officers were not satisfied with current job. Moreover, 44% (35+8.3) Agriculture Officer admitted that they are looking for another job opportunity and may leave this job in future. There

could be many factors for this dissatisfaction but its roots can be traced back in their decision regarding selection of major subject for their specialization after first two years of their B.Sc. (Hons.) Agri. Sciences degree program at university. A student who does not select agricultural extension as a field of specialization at undergraduate degree program may not be very much willing to perform job related to extension.

At the university, taking decision for specialization, students wilfully opt for their specialization keeping in view their aptitude and interest. It was noted that students with extrovert personality select agri. extension and with introvert personality choose subject having more laboratory or research work.

However, after completion their degrees, students seek the job opportunities desperately under the social and financial pressure irrespective of their interests in the subject and compatibility with their aptitude and the nature of the Job. It means, the current system offers jobs to those candidates who never preferred for agri. extension work during their study times. In a research study conducted by Khan (2003), 33.3% of Agriculture Officer working in Agriculture Department (Extension) admitted that during their study time they never aspired to be an Agriculture Officer (Extension). On further inquiry 25% (of 33%) Agriculture Officers reported that they wanted to join research organization rather than extension service (ibid). Ali *et al.* (1997) reported in his research study that about 20% of the Agriculture Officers were in search of other job either in a research organization or in a university.

It appears that under the current recruiting criteria, the candidates with least extension work aptitude succeed to hunt the job of Agriculture Officer and became a part of public extension organization. To avoid this predicament, the best solution is to offer extension jobs only to agri. extension degree holders.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings and discussion, it is concluded that job of Agriculture Officer (Extension) needs specific attitude, motivation, knowledge, skills and philosophical foundations. Currently, overwhelming majority of Agriculture Officers working in Agriculture Department (Extension) do not have relevant pre-service training for agri. extension service delivery. Great majority of them are not satisfied with their current job and a simple majority intend to even quit job. It's a high time to revisit the selection criteria for Agriculture Officer which should be restricted to the Agri. Extension degree holders i.e., Only extension graduates bear both technical and professional competencies. It is expected that the Agriculture Officers with relevant skills would better perform their extension duties which ultimately improve the working efficiency of agri. extension system in the province.

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