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## UNDERSTANDING INSTITUTIONAL BARRIERS TO CONTINUING PROFESSIONAL DEVELOPMENT AMONG AGRICULTURAL OFFICERS (EXTENSION) IN PUNJAB, PAKISTAN

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### ABSTRACT

In the context of rapidly changing technological and socio-economic conditions, Continuing Professional Development (CPD) is essential for Agricultural Officers (Extension) to perform their roles effectively and deliver responsive Agricultural Extension and Advisory Services (AEAS) to farmers. This study aimed to identify the institutional barriers that hinder Agricultural Officers in acquiring, maintaining, and developing the core competencies required for CPD. A descriptive cross-sectional design was employed using a mixed-methods approach. Quantitative data were collected through a survey questionnaire administered to 213 respondents selected by simple random sampling from a population of 477 Agricultural Officers (Extension), with the sample size determined at a 95% confidence level and 5% confidence interval. Qualitative data were generated through key informant interviews and focus group discussions, with participants selected purposively until data saturation was reached. Quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS) through descriptive statistics, including means, standard deviations, and weighted scores, while qualitative data were analyzed using deductive content analysis. The findings revealed that increased workload from non-extension tasks assigned by the district administration and financial constraints were the most severe institutional barriers. In contrast, inadequate facilities at training institutes and insufficient transportation were ranked comparatively lower, though they remained important constraints. Overall, all ten identified institutional barriers hindered the CPD of Agricultural Officers to a moderate-to-high extent. The study concludes that organizational-level reforms are necessary to reduce these barriers and strengthen the professional capacity of extension officers for more effective, demand-driven AEAS delivery in Punjab, Pakistan.

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### INTRODUCTION

Rapid population growth, diminishing agricultural land resources, and the escalating effects of climate change have intensified the challenges of hunger, poverty, malnutrition, and food insecurity. These pressures have increased the need to improve agricultural productivity

and strengthen the performance of agricultural systems. In this regard, agricultural extension and outreach services, together with agricultural education and research, play a vital role in supporting sustainable agricultural development and resilient food systems (Dwyer and Maredia, 2021). In an era marked by rapid

technological change and evolving farmer needs, the Continuous Professional Development (CPD) of extension personnel has become increasingly important for effective Agricultural Extension and Advisory Services (AEAS) delivery (Davis et al., 2021).

In Pakistan, Agricultural Officers (Extension) (AOs) serve as frontline public extension agents and are central to the transfer of knowledge, technologies, and advisory support to farmers (Ashraf and Hassan, 2021). Their performance depends on both technical subject-matter knowledge and broader professional competencies, including communication, facilitation, problem-solving, and programme implementation. These competencies, collectively described as core competencies, must be continuously acquired, maintained, and strengthened through CPD if AOs are to respond effectively to the growing complexity of agricultural extension work (Suvedi and Sasidhar, 2020).

However, the development of these competencies is often constrained by institutional barriers. In the context of this study, institutional barriers refer to the policies, procedures, organizational practices, and operational conditions within the Directorate General Agriculture (Extension and Adaptive Research), Punjab, that hinder AOs from acquiring and developing the competencies necessary for effective professional performance. Previous studies have identified a range of such barriers, including excessive workload, inadequate organizational support, limited funding, infrequent training opportunities, weak training needs assessment, ineffective training delivery methods, bureaucratic delays, poor transport facilities, and limited incentives for professional growth (Lakai et al., 2012; Uzoechi, 2017; Rohit et al., 2020; Mehta et al., 2021; Nair and Jahagirdar, 2022). Research has also highlighted institutional weaknesses within training systems, such as poor infrastructure, inadequate instructional resources, weak monitoring and evaluation, and insufficient practical exposure, all of which undermine competency development among extension personnel (Aiswarya et al., 2019; Yaseen et al., 2020; Agwu et al., 2023; Anshuman et al., 2023).

Evidence from Pakistan reflects similar concerns. Studies have reported that frontline extension staff in Punjab face non-professional duties, fiscal constraints, bureaucratic hurdles, inadequate transport facilities, weak soft skills, and limited behavioural competency development, all of which negatively affect their professional effectiveness

(Butt et al., 2024). Likewise, Ashraf and Hassan (2021) observed that Agricultural Officers in Pakistan operate under unclear role structures, poor career advancement systems, weak organizational capacity, insufficient government support, and weak linkages with allied institutions. These institutional shortcomings not only restrict CPD but also reduce the effectiveness of AEAS delivered to farmers.

Despite growing recognition of these challenges, the specific institutional barriers affecting the CPD of Agricultural Officers (Extension) in Punjab remain insufficiently examined. Existing studies largely discuss extension constraints in broad terms, with limited empirical attention to how institutional arrangements shape competency acquisition and professional development among frontline AOs in the public sector. This study addresses that gap by examining the institutional barriers that hinder CPD among Agricultural Officers (Extension) in Punjab, Pakistan. The objective is to generate context-specific evidence that can inform policy and organizational reforms aimed at strengthening professional competencies and improving the effectiveness of public agricultural extension services.

## **METHODOLOGY**

### **Study area**

This study was conducted in 2024 in Punjab, the most populous province of Pakistan and a major agricultural region of the country. The study focused on the Directorate General Agriculture (Extension and Adaptive Research), Punjab Agriculture Department, where Agricultural Officers (Extension) serve as frontline public extension agents responsible for delivering extension and advisory services to farmers. Given the central role of these officers in public agricultural extension, Punjab provided an appropriate setting for examining institutional barriers affecting their Continuing Professional Development (CPD).

### **Population and sampling**

The study adopted a descriptive cross-sectional survey design and employed a mixed-methods approach to collect and analyze both quantitative and qualitative data. The use of mixed methods enabled the researcher to complement numerical evidence with in-depth insights into the experiences and perceptions of the respondents, thereby strengthening interpretation through triangulation.

The target population comprised all 477 Agricultural Officers (Extension) working in the Directorate General Agriculture (Extension and Adaptive Research), Punjab Agriculture Department. This population served as the sampling frame for the quantitative component of the study. A sample size of 213 respondents was determined using an online sample size calculator at a 95% confidence level and 5% confidence interval, following the procedure reported by Hussain et al. (2024). Respondents for the survey were selected through simple random sampling to ensure that each Agricultural Officer had an equal chance of inclusion.

### Data collection and analysis

Quantitative data were collected through a structured survey questionnaire, while qualitative data were obtained through open ended questions. Before the main data collection, the questionnaire was pre-tested to assess its clarity, relevance, and internal consistency. The Cronbach's alpha coefficient for the overall pre-tested questionnaire was 0.841, while the reliability coefficient for the final questionnaire was 0.857, indicating acceptable to high internal consistency.

The quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistical techniques, including frequencies, percentages, means, standard deviations, and weighted scores, were used to summarize and interpret the survey findings. The qualitative data were analyzed through deductive content analysis and quotations were used for triangulation. The integration of quantitative and qualitative findings enabled a more comprehensive understanding of the issue under investigation.

### Ethical considerations

Ethical principles were observed throughout the study. Participation in both the survey and qualitative interviews was voluntary, and respondents were informed about the purpose of the study prior to data collection. Informed consent was obtained from all participants, and they were assured that their responses would be used solely for academic research purposes. Confidentiality and anonymity were maintained by not disclosing the identities of the respondents in the analysis and reporting of findings. Participants were also informed of their right to decline participation or withdraw from the study at any stage without any consequence.

## RESULTS

### Demographic attributes of the respondents

Table 1 presents the demographic profile of the 213 Agricultural Officers (Extension) included in the study. The findings show that 76.5% of the respondents were aged 31–40 years, while 12.2% were aged 30 years or below and 11.3% were aged 41 years or above. Thus, the large majority of respondents (88.7%) were 40 years of age or younger. With regard to gender, 76.1% of the respondents were male and 23.9% were female. In terms of professional education, 68.1% held an M.Sc. (Hons.) Agriculture degree, 24.4% held a B.Sc. (Hons.) Agriculture degree, and 7.5% possessed a Ph.D. degree. Regarding field of specialization, Agronomy represented the largest share (36.2%), followed by Plant Breeding and Genetics (16.4%), Soil Science (13.6%), and Horticulture (10.3%). In terms of service length, 57.3% of the respondents had 6–10 years of experience, 23.0% had 11–15 years, 11.7% had up to 5 years, and 8.0% had 16 years or more. Overall, the respondents were predominantly young, male, academically qualified, and relatively early- to mid-career officers.

Table 1. Demographic Attributes of the Respondents.

Demographic	Frequency	Percentage
<b>Age</b>		
<30	26	12.2
31-40	163	76.5
>41	24	11.3
<b>Gender</b>		
Male	162	76.1
Female	51	23.9
<b>Professional Education</b>		
B.Sc. (Hons.) Agriculture	52	24.4
B.Sc. (Hons.) Agriculture	145	68.1
Ph.D.	16	7.5
<b>Field of Specialization</b>		
Agronomy	77	36.2
Agri. Extension	12	5.6
Food Science & Technology	8	3.8
Horticulture	22	10.3
Soil Science	29	13.6
PBG	35	16.4
Plant Pathology	12	5.6
Agri. Entomology	18	8.5
<b>Length of Service (in years)</b>		
Up to 5	25	11.7
6-10	122	57.3
11-15	49	23
>16	17	8

### Institutional barriers faced by Agricultural Officers (Extension)

The study identified ten institutional barriers affecting the acquisition, maintenance, and development of core competencies among Agricultural Officers (Extension). These barriers were rated on a five-point continuum ranging from very low extent to very high extent. The overall grand mean for institutional barriers was 3.96, indicating a moderate extent leaning toward a high extent, and all individual barriers recorded mean scores above 3.00, suggesting that each was perceived as a considerable barrier.

Among the identified barriers, increased workload due to non-extension tasks assigned by district administration ranked first with a mean score of 4.85 and weighted score of 1034, followed by financial constraints with a mean score of 4.78 and weighted score of 1018. Inadequate training need assessment ranked third (Mean = 4.23; WS = 901), insufficient evaluation of in-service trainings ranked fourth (Mean = 4.15; WS = 883), and insufficient follow-up of in-service trainings ranked fifth (Mean = 4.11; WS = 876). Ineffective training delivery methods (Mean = 3.98; WS = 847) and bureaucratic constraints (Mean = 3.94; WS =

840) were ranked sixth and seventh, respectively. The comparatively lower-ranked barriers were inadequacy of training institutes and trainers in required competency areas (Mean = 3.27; WS = 696), inadequate facilities at training institutes (Mean = 3.25; WS = 692), and insufficient transportation facilities (Mean = 3.07; WS = 653).

The qualitative findings supported the quantitative results. One key informant explained that Agricultural Officers are often required to attend training without advance travelling allowance, which creates reluctance and reduces motivation to participate in professional development activities. Another informant stated that district authorities assign such extensive non-extension duties that frontline officers are compelled to suspend or postpone core extension activities, including farmer training programmes, field visits, and large farmer gatherings. A further key informant observed that some training areas require follow-up, yet follow-up training is not formally linked with earlier training and may be delayed for several years. These accounts reinforce the finding that administrative, financial, and training-related barriers constrain competency development among Agricultural Officers (Extension).

Table 2. Ranking of Institutional Barriers.

Institutional Barriers	Mean	SD	Weighted Score	Rank Order
Increased workload due to non-extension tasks assigned by district administration	4.85	0.415	1034	1
Financial constraints	4.78	0.469	1018	2
Inadequate training need assessment	4.23	0.474	901	3
Insufficient evaluation of in-service trainings	4.15	0.414	883	4
Insufficient follow-up of in-service trainings	4.11	0.384	876	5
Ineffective training delivery methods	3.98	0.428	847	6
Bureaucratic constraints	3.94	0.462	840	7
Inadequacy of training institutes and trainers in the required core competencies areas	3.27	0.598	696	8
Inadequate facilities at training institutes	3.25	0.590	692	9
Insufficient transportation facilities	3.07	0.648	653	10
Grand Mean	3.96	0.488		

Level of Extent Scale: 1= Very Low Extent, 2 = Low Extent, 3 = Medium Extent, 4 = High Extent, and 5 = Very High Extent

### DISCUSSION

The findings indicate that institutional barriers to continuing professional development among Agricultural Officers (Extension) in Punjab are substantial and systemic. The grand mean of 3.96 suggests that respondents perceived these barriers not as isolated problems but as persistent organizational

constraints affecting their professional effectiveness. In particular, the very high ranking of non-extension workload and financial constraints shows that the institutional environment places competing demands on officers and limits their capacity to engage meaningfully in competency development (Ashraf and Hassan, 2021; Davis et al., 2019; Antwi-Agyei and Stringer, 2021).

The dominance of workload arising from non-extension duties is especially significant because it directly diverts Agricultural Officers from their core extension mandate. When officers are heavily engaged in administrative and non-extension assignments, their capacity to deliver farmer training, field-level advisory services, and other extension functions is reduced. This interpretation is consistent with evidence from Pakistan showing that Agricultural Officers operate within a confused working environment marked by weak organizational capacity, professional growth constraints, and heavy performance pressures, all of which undermine effective service delivery (Ashraf and Hassan, 2021). The qualitative evidence in the present study strengthens this interpretation by showing that such workload pressures interrupt essential extension activities and reduce opportunities for professional learning.

Financial constraints emerged as the second most important barrier, indicating that resource limitations continue to undermine CPD. The key informant evidence suggests that even participation in training may become difficult when officers are expected to attend without timely financial support such as travelling allowance. This implies that institutional financing mechanisms are not sufficiently aligned with the professional development needs of frontline staff. Comparable studies have likewise shown that inadequate funding, limited operational budgets, and weak financial support for travel, communication, and training reduce extension workers' ability to build competencies and perform effectively (Nwaogu and Akinbile, 2019; Davis et al., 2019; Antwi-Agyei and Stringer, 2021).

The results also highlight important weaknesses in the design and management of in-service training. Inadequate training need assessment, insufficient evaluation, and weak follow-up were all ranked among the top five barriers. This pattern suggests that the problem lies not only in the availability of training, but also in the absence of a coherent training management cycle that links needs assessment, delivery, evaluation, and follow-up. Previous research similarly emphasizes that regular assessment of extension agents' capacity-building needs is essential for effective professional development, while evaluation and monitoring competencies are critical for improving training relevance and organizational learning (Antwi-Agyei and Stringer, 2021; McClure et al., 2012). Evidence from Pakistan also shows that irregular training exposure,

limited training opportunities, and weaknesses in training programmes constrain extension agents' ability to maintain and update required competencies (Khan et al., 2011; Khan et al., 2022).

Although barriers such as inadequate training institutes, poor facilities, and insufficient transportation were ranked lower than other constraints, their mean scores remained above 3.00, indicating that they are still meaningful obstacles rather than negligible concerns. Their relatively lower rank suggests that respondents viewed administrative burden, financing issues, and weak training systems as more immediate constraints; however, the institutional environment for learning remains important. This reading is supported by earlier studies showing that training institutes in Punjab face bottlenecks related to instructional methods and teaching resources, while broader extension systems continue to struggle with transport limitations, inadequate extension materials, and weak operational support (Iqbal et al., 2007; Davis et al., 2019; Antwi-Agyei and Stringer, 2021).

Overall, the findings suggest that improving the continuing professional development of Agricultural Officers (Extension) in Punjab requires more than simply increasing the number of trainings. Institutional reforms are needed to reduce non-extension workload, strengthen financial support mechanisms, improve needs assessment, ensure regular evaluation and follow-up of training, and enhance the organizational environment in which professional learning occurs. Earlier scholarship likewise indicates that extension effectiveness depends not only on individual competence, but also on organizational capacity, continuing education, incentives, coordination, and operational budgets (Ashraf and Hassan, 2021; Davis et al., 2019; Antwi-Agyei and Stringer, 2021). Without addressing these institutional barriers, the acquisition and development of core competencies among frontline extension officers is likely to remain constrained, with negative implications for the effectiveness of Agricultural Extension and Advisory Services.

## CONCLUSION

This study concludes that institutional barriers substantially constrain the Continuing Professional Development (CPD) of Agricultural Officers (Extension) in Punjab, Pakistan. Among the identified barriers, increased workload due to non-extension assignments

and financial constraints emerged as the most critical, followed by inadequate training need assessment, insufficient evaluation of in-service training, and weak follow-up of training programmes. Ineffective training delivery methods and bureaucratic constraints also hindered competency development, while inadequate training facilities and insufficient transportation, though ranked lower, remained relevant obstacles. Overall, the grand mean of 3.96 indicates that these barriers collectively impede the acquisition, maintenance, and development of core competencies to a moderate-to-high extent. The findings suggest that the constraints to CPD are embedded less in individual deficiency and more in the institutional environment within which Agricultural Officers operate. Therefore, strengthening CPD requires organizational reform rather than isolated training interventions alone. Priority should be given to reducing non-extension workload, improving financial support for training participation, strengthening training needs assessment, and institutionalizing systematic evaluation and follow-up mechanisms.

The Directorate General Agriculture (Extension and Adaptive Research), Punjab should establish a more structured institutional framework for CPD by periodically assessing barriers faced by Agricultural Officers, creating a dedicated Human Resource Development unit, ensuring timely provision of advance Travelling Allowance for trainees, and coordinating with district administration to minimize non-extension duties.

Addressing these institutional barriers is essential not only for improving the professional competence of Agricultural Officers, but also for strengthening the overall effectiveness of Agricultural Extension and Advisory Services. In practical terms, a more enabling institutional environment for CPD can translate into better-informed extension personnel, more responsive advisory support, and ultimately more site-specific, knowledge-based solutions for farmers in Punjab.

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