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Enhancing Evaluation Expertise: A Study on Training Needs in Punjab's Agricultural and Extension Sectors

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Abstract

The purpose of this study was to determine the skills necessary for agricultural and extension assessment specialists in two areas of Punjab, Pakistan. Using a descriptive and correlational study approach, data was obtained from 120 out of 500 managers and professional staff involved in agricultural and extension assessment programs via a valid and reliable self-administered questionnaire. The study found that professionals preferred in-service training programs to improve their abilities, notably situational analysis, reflective practice, project management, professional practice, and systematic inquiry. These training sessions are critical in promoting their ongoing professional growth. However, when it comes to interpersonal abilities, respondents preferred pre-service training courses and curriculum-based learning.

Key words: Evaluation, Training Needs, Agriculture, Professional Development, Punjab Pakistan

Introduction

Rapid population growth is driving up worldwide food consumption. Da Silva [2012] predicts that the global population will reach 9.7 billion by 2050, necessitating a 60% increase in food production to fulfil future demand. Adopting new agricultural technology is crucial to fulfil global food demand (Koohafkan *et al.,*2012). The green revolution encouraged smallholder farmers in developing nations to utilize high-yielding crops, mineral fertilizers, and tractors, addressing previous concerns (Pingali,2012). Agricultural extension faces difficulty in utilizing the ingenuity of front-line workers to effectively transfer new technologies and techniques to smallholder farmers and agribusiness operators globally (Anandajayasekeram *et al.,* 2008). Assessing the

capability gaps of extension workers is crucial for effective change implementation. Researchers have focused on non-academic aspects of agricultural extension, such as insufficient links between players, inadequate infrastructure, outdated equipment, and a top-down approach. Extension agents require training, motivation, and competence to provide high-quality services (ATA (2017), Anaeto,(2012), Awang, (1992), Issahaku, 2014). Defining extension workers' talents, knowledge, motivation, and attitudes, as well as analyzing extension education programs and building a job analysis system, are crucial, but lacking in many developing nations (Caffarella, (2002), Maddy *et al.,* (2002), Mulder (2014) and Qamar, (2008). The dynamic nature of the globe presents new problems for human resource operations (Ramlall, 2006). One such example is the rise of governmental demands. Evaluation is crucial for educational initiatives to provide accountability (Lee *et al.,*2008). According to Vijayaragavan *et al.,* (2005), agricultural extension has undergone significant changes in the past few decades. According to Lyles and Warmbrod (1994) and Khan (2024) managing extension resources and staff maximizes efficiency and effectiveness. According to Swanson and Phillips (1997), certain extension systems may lack professional competence and enthusiasm among their workers. To improve the skills and capacities of extension workers including specialists, a competency-based programs and in-service training can be implemented. Research indicates that the in-service training requirements for agricultural extension professionals evolve throughout time (Roberts and Dyer, 2004) and Khan *et al.,* Identifying skills helps define behavioral norms and particular duties for people in an organization (Williams, 2003). Defining skills can aid extension organizations in developing human resource strategies (Gonzales and Nelson, 2005). To perform successful evaluations in public organisations, there is a growing emphasis on developing evaluation capability. This can result in social, educational, and health activities for communities (Naccarella *et al.,* 2007). According to DeLuca et al. (2009), there is an urgent requirement for more study on integrating evaluator reflection with learning methodologies. In order to support learning for adults, efficient career advancement takes into account the method, written material, as well as environment of the development endeavor (Brandt, 1998). To plan, carry out, and assess extension initiatives, extension agents and experts require certain abilities (Pezeshki *et al.,* 1994), professional competencies required by Extension employees in different countries have been established by multiple fields of research. Nevertheless, little is known concerning the in-service requirements of alternatively credentialed agricultural instructors in the literature background. According to Darling-Hammond (1999), agriculture education instructors' performance and efficacy depend on promptly providing suitable in-service training programs. Studies by Mayers and Dyer (2004) demonstrated that, in order to meet the goals of in-service training, which include improving time performance to ensure optimal task implementation, it is crucial to look into educational needs in order to ascertain whether the current program is still the best way to carry out expanding and varied responsibilities and duties. Program design and management of professional competencies had been the areas with the greatest requirement for in-service teacher education, according to Joerger's (2002) study, and this aimed to determine the common and distinct in-service training requirements of agricultural science instructors. In the research they conducted, Roberts and Dyer (2003) found that three factors—geography, academic background, and time—have an impact on the in-service requirements of agricultural instructors. According to Pezeshki et al. (1994), Iranian extension staff do not believe that pre-service training is necessary for many professional extension capabilities. The competencies of extension agents and their training requirements both prior to and following employment have received particular focus in the current investigation. The development of human resources was not given sufficient attention to the country's extension system, according to Karbasioun and Chizari (2004). As a result, extension staff lack the qualifications and advancement that the government demands. The researchers devised a paradigm for non-formal education that incorporates evaluating

competencies. It was first conceptualized as a diagram based on research by Cousins and Aubry (2006), King *et al.,* (1998), Stevahn *et al.,* (2005), Ghere *et al.,* (2006), and Gussman (2005). Employees of the agriculture sector also have to work as Program Evaluators of different activities performed and tasks assigned by themselves as well as by teammates, i.e. colleagues at peer level and seniority level. Hence the Essential Competencies for Program Evaluators (ECPE), a collection of competences they have labored to identify and define, was employed in this investigation. These can serve as the standards for instruction, assessment, training, and execution. Extension workers used it as both a checklist to assess their own proficiency and as a roadmap to find in-service training. These abilities served as the theoretical foundation for our investigation and were divided into six categories: analysis of situations, contemplative professional behavior, managing projects, interpersonal skills, and systematic investigation (Figure 1). Table 1 displays the definitions of each along with their Cronbach's alphas. The methodological examination concentrates on the technical facets of assessment, including construction, measurements, analyzing the data, interpretation, and result sharing, according to the research of King *et al.,* (2001) and Ghere *et al.,* (2006). Awareness of the need for professional development as well as comprehension of one's own practice and degree of evaluation competence are linked to reflective practice competencies. The tangible elements of carrying out an assessment process from the start to the finish are demonstrated by the project management. The analysis of situation places a strong emphasis on examining and considering the ideological and social circumstances associated with the assessment. The ideals and professional standards that form the basis of evaluation practice are reflected in the fifth category, professional practice competencies. Lastly, interpersonal competence highlights the abilities required to carry out a program assessment.

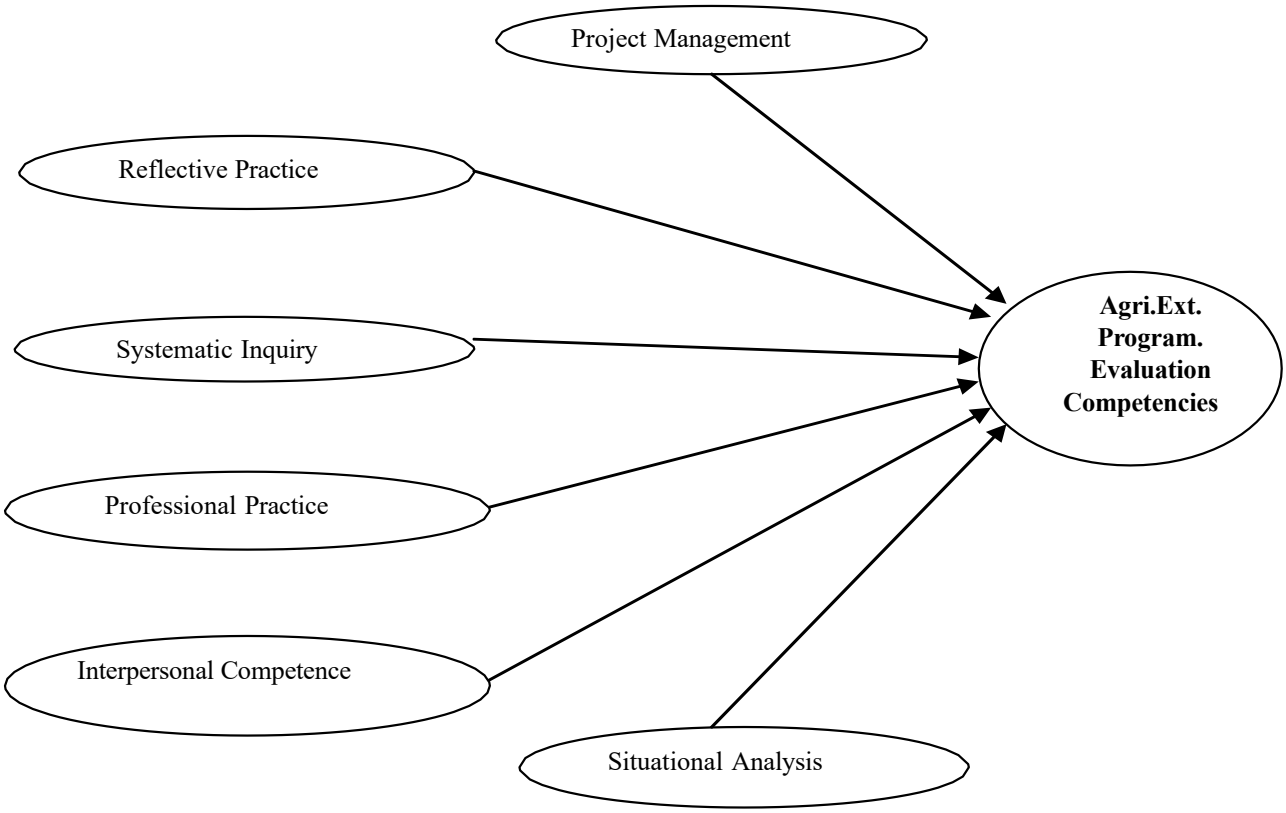

Figure 1. Theoretical framework.

Table No; 1. Professional Competence of Respondents related to key areas of Agricultural Program Evaluation

Professional competency related to key areas of Agricultural Program Evaluation	**Definition**	**Description**	**Cronbach's alpha (%)**
Professional practice	Competencies focus on the professional norms and values that are foundational for evaluation practice	The fundamental abilities, know-how, and dispositions that professionals require in order to carry out assessments in an efficient and morally sound manner are referred to as competencies in evaluation practice. In order to ensure that assessments are methodologically sound, socially responsible, and culturally sensitive, evaluators are guided by professional norms and principles that form the basis of these competences. **Professional Standards:** The defined professional standards that specify the requirements for evaluations are directly related to competencies. Recommendations for the integrity of evaluation design, data gathering methods, analysis, and reporting are a few examples of these criteria. By adhering to these guidelines, assessments are made more legitimate, trustworthy, and believable, which eventually results in more accurate findings and suggestions. **Ethical Considerations:** A strong commitment to ethical principles is essential for effective evaluation practice. Competencies encompass an understanding of ethical issues such as confidentiality, informed consent, and the respectful treatment of participants. Evaluators must navigate these ethical challenges while upholding integrity and transparency throughout the evaluation process. **Cultural Competence:** It is important for evaluators to be cognizant of and considerate of the many cultural settings in which they operate. Among the competencies are the capacity to interact with stakeholders from different backgrounds, comprehend their viewpoints, and integrate culturally	**78**

		appropriate approaches into the assessment. The inclusion of all stakeholders in assessments and the relevance and significance of the results are guaranteed by this cultural competency. **Communication Skills:** The capacity to thoroughly and convincingly explain evaluation results is a critical component of successful evaluation techniques. Writing thorough reports is only one aspect of competency; another is the ability to communicate findings in a way as a variety of groups can understand. This entails modifying communication methods to accommodate various clients' requirements.	
Systematic inquiry	Competencies focus on the technical aspects of evaluations, such as design, measurement, data analysis, interpretation.	Assessment-related competencies include the core abilities and know-how required to carry out and evaluate different assessment procedures in an efficient manner. The technical elements necessary to guarantee the validity and reliability of evaluation outcomes are the main emphasis of these capabilities. **Design:** This part deals with how the assessment process is organized and planned. It entails determining the target audience, establishing the assessment objectives, and choosing appropriate evaluation models. An assessment framework that is well-structured ensures that it is in line with its objectives and successfully responds to the issues raised. This may need developing a precise schedule and resource allocation plan in addition to selecting between qualitative, quantitative, or mixed-method techniques. **Measurement:** The devices and tools used for gathering information throughout the assessment are part of measurement. Creating or choosing accurate and trustworthy measuring instruments, including tests, questionnaires, or observing lists, is part of research. The measurement competencies also include knowledge of unit building, scalability concepts, and the importance of pilot testing tools to make sure they correctly acquire the desired structures. **Data Analysis:** The next stage after gathering data is analysis. Descriptive statistics, inferential statistics, and sophisticated analytical procedures like regression evaluation or factor evaluation are examples of statistical approaches and data analysis methods that are required for	**98**

		this. To analyze and understand data, examiners need to be skilled with statistical software and tools. This will help to ensure if the analysis is appropriate considering the sort of data gathered and the assessment issues are covered. **Interpretation:** Analyzing the data and forming inferences from the results constitute the last technical component. This calls for the capacity to think critically and properly contextualize the results. In conclusion, assessment competencies cover a variety of technical abilities necessary for planning, assessing, evaluating, and interpreting evaluation procedures. Gaining proficiency in these areas guarantees that assessments are carried out thoroughly and produce significant, trustworthy findings that may guide choices and enhance initiatives or programs.	
Situational analysis	Competencies focus on analyzing and attending to the contextual and political issues related to the evaluation.	Assessment competencies stress the significance of carefully analyzing and taking into account the different political and contextual elements that may have an impact on the assessment process. Recognizing that assessments are influenced by a wide range of outside factors, such as social, economic, cultural, and political dynamics, is necessary to achieve this. **Contextual Factors:** The particular setting in which the program or intervention is carried out, the traits of the target population, and the resources available for the assessment are examples of contextual variables. It is essential to comprehend these components in order to guarantee that the assessment is precise, pertinent, and representative of the facts that stakeholders experience. **Political Factors:** The power dynamics, objectives, and objectives of the various parties participating in or impacted by the evaluation, on the contrary hand, are referred to as political considerations. Understanding who may make choices based on the findings of the evaluation, who stands to gain or lose from the results, and exactly how all of these variables may impact the evaluation's conception, execution, and use are all parts of discussion. By placing a strong emphasis on these competences, reviewers are better able to handle the intricacies of the assessment environment	**94**

		and make sure that their work is not just politically and socially conscious but additionally in terms of methodology sound. The legitimacy and usefulness of assessment results are increased by this all-encompassing approach, which eventually results in better decision-making and improved outcomes for the people and activities under review.	
Project management	Competencies focus on the nuts and bolts of moving an evaluation from the initial stages through completion including negotiating contracts, budgeting, and conducting the evaluation in a timely manner.	For an assessment project to properly go from its inception to its conclusion, competencies are essential. These competences cover a variety of critical knowledge and skill sets that are necessary for negotiating the intricacies of the assessment procedure. First and foremost, clear expectations and obligations among all parties participating in the evaluation are established through successful contract discussions. This entails not just settling on terms and conditions but also making sure that everyone is in agreement with the objectives and results to be achieved and that the scope of the task is clearly defined. A seamless evaluation procedure depends on teamwork and trust, both of which may be fostered by having excellent negotiating skills. Furthermore, the allocated funds control is an additional essential ability that has an immediate effect on the achievement of an evaluation. It includes not solely the initial distribution of funds but additionally continuous monitoring and modification of the budget as the evaluation goes on. Evaluators need to become skilled at predicting expenses, spotting possible financial hazards, as well as being sure that assets are used effectively. By preventing overspending, budget management ensures that the evaluation can be finished within the initial financial constraints. Last but not least, completing the assessment before the deadline is an essential skill that calls for meticulous preparation and time management. To guarantee that all activities are finished on time, evaluators must create a thorough project timetable that includes important deadlines and milestones. To keep everyone updated on progress, this entails keeping lines of communication open with stakeholders, addressing any unanticipated	**91**

		obstacles that may come up, and working with other team members. Following the timetable is crucial to satisfying the expectations of the people who commissioned the assessment and providing results on time. In conclusion, the skills needed to move an assessment from the beginning to the end are diverse and include good time management, financial management, and negotiation of contracts. In addition to improving the evaluation's accuracy and dependability, the proficiency of each of these competences helps the project succeed overall by guaranteeing that it achieves its objectives and yields insightful information.	
Reflective practice	Competencies focus on understanding one's practice and level of evaluation expertise, including an awareness of the need for professional growth.	Competency provides an essential foundation for evaluating a person's understanding of their professional activity and their capacity for performance evaluation. They cover a variety of behaviors, abilities, and knowledge that are necessary for success in a certain sector. By emphasizing these abilities, we may learn more about a person's comprehension of the theoretical and practical facets of their profession as well as their ability to apply this knowledge in practical settings. Furthermore, the focus on assessment within competencies emphasizes the value of introspection and self-evaluation. Strong evaluators are more able to see their own advantages and disadvantages, which enables them to make well-informed judgements on their professional development. In addition to improving their performance right now, this reflective exercise advances their career path in general. Competencies acknowledge the importance of ongoing professional development (CPD) in addition to comprehension and assessment. Because of changes in social demands, technological improvements, and regulatory changes, the landscape of most occupations is always changing. Professionals must therefore pursue lifelong learning in order to remain current and productive in their positions. The goal of continuous professional development is to improve one's abilities and knowledge through a range of activities, such as formal	**95**

		education, workshops, seminars, and self-directed learning. We construct a comprehensive strategy for professional development by combining the ideas of skills, assessment, and ongoing professional development. Not only does this strategy encourage individual brilliance, but it also advances the profession generally. In the end, identifying and developing these competences enables people to take control of their careers, adjust to shifting conditions, and produce excellent results in their practice.	
Interpersonal competence	Competencies focus on the people skills needed to conduct a program evaluation.	The particular skills, knowledge, and abilities that evaluators need to have in order to properly assess and enhance programs are referred to as competencies in the context of program evaluation. Interpersonal skills are one of the most important of these talents as they promote cooperation, communication, and trust between all parties participating in the assessment process. A variety of talents are included under interpersonal skills, such as effective communication, empathy, active listening, and conflict resolution. By interacting with a variety of groups, including program staff, participants, funders, and community members, evaluators can make sure that everyone's opinions are heard and taken into account. Evaluators can collect more thorough and accurate data and promote a more inclusive review process by cultivating good connections with stakeholders. Furthermore, managing any possible conflicts that may emerge during the assessment and negotiating the intricacies of group dynamics requires strong interpersonal skills. Effective managers of these dynamics are better able to foster a cooperative atmosphere where participants feel free to express their opinions and experiences. Furthermore, an evaluator with good interpersonal skills is better able to communicate results and suggestions to stakeholders. Evaluators may make sure that their views are recognized and appreciated by utilizing clear, approachable language and audience-specific communication methods, which will eventually result in more successful	**81**

program enhancements.
All things considered, the program evaluation competencies' emphasis on interpersonal skills emphasizes how crucial human connection and teamwork are to producing significant and lasting assessment results. By giving these abilities top priority, evaluators may promote a more responsive and participatory assessment process that not only evaluates the efficacy of the program but also aids in its continued growth and success.

Purpose and objectives

This study's primary objective was to investigate the professional skills required by agricultural and extension assessment specialists in two areas chosen from the southern Punjab region of Pakistan. With an emphasis on pre-service and in-service settings, the study's goals were to thoroughly evaluate the training and development needs of agricultural extension workers.
Objectives of the research were to
1. Identify the self-evaluated pre-service needs of agricultural extension personnel
2. Identify the self-evaluated in-service needs of agricultural extension personnel

The first objective of the research was with the purpose to collect opinions from those who were getting ready to work in agricultural extension. The study aimed to identify the critical knowledge, abilities, and competences that these pre-service employees felt were required for successful performance in their future responsibilities by comprehending their self-assessed requirements. These covered topics including communication abilities, community involvement tactics, agricultural knowledge, and comprehension of extension procedures. The results would assist in developing training programs and curricula to better prepare next agricultural extension professionals. Regarding the second objective, which focused on existing agricultural extension workers who were actively doing their jobs. The purpose of the investigation was to investigate how they see the need for continuous training and growth, which might be brought on by modifications in farming methods, technological breakthroughs, or developments in demands from the community. The study attempted to identify such self-assessed in-service needs in order to pinpoint areas that could benefit from further assistance, materials, or training to improve their efficacy and flexibility in the workplace. Designing focused professional development programs that meet the changing problems experienced by Extension personnel in agriculture was likely to be greatly aided by this knowledge.

Materials and Methods

All the extension workers of the department of agriculture working in Punjab were the population of study. The research study used a descriptive survey approach, which is very helpful when gathering data on the traits, viewpoints, as well as actions of a certain group. In the present scenario, the emphasis was on agricultural evaluation managers, all extension wing staff members (in this case referring to the term "managers"), and agricultural extension staff members engaged in program assessment within the Punjab government's agriculture extension department. With a total of 120 members, this group provided a diverse spectrum of perspectives and experience relevant to agricultural evaluation methods. Using a stratified sampling technique, a representative sample was obtained. By using this method, the investigators successfully managed to separate the

population into discrete groupings, or strata, according to certain traits, such as the functions of extension evaluation workers and agricultural evaluation managers. A representative sample of 120 participants, extension department staff members from two selected districts of Bahawalpur division, namely Bahawalpur and Rahim Yar Khan, including 60 from each district, was chosen from the whole population. In addition to increasing the sample's representation, this stratification made it possible to analyze the data gathered from various groups of people in more depth. To gather information, the researchers developed a self-administered survey with Google Docs. From. This tool was made to collect efficiently both qualitative and quantitative data, allowing participants to contribute their experiences and thoughts in an organized way. A number of well-known researchers in the field, including King *et al.,* (1998, 2001), Stevahn *et al.,* (2005), and Ghere *et al.* (2006), constructed the questionnaire by carefully combining and modifying components of existing instruments. By utilizing these well-established frameworks, the researchers sought to guarantee the accuracy and consistency of the information gathered while tailoring the enquiries to the particular agricultural assessment setting in the research region.

Reliability and validity of research instrument

Senior faculty members from the education training, research, and evaluation departments of the education faculty at The Islamia University of Bahawalpur, Punjab, Pakistan, as well as the agricultural and extension education departments, formed a panel of experts to determine the instrument's face and content validity. Two components made up the instrument's final design. A total of 63 capabilities were covered by the six competency categories listed in Section 1: professional practice, reflective practice, situational analysis, project management, systematic investigation, and interpersonal competence. The items in this section were evaluated using a five-point Likert-type scale to determine how important extension personnel thought they were. Very low necessity was represented by a score of 1, while extremely high necessity was represented by a score of 5. Demographic data, including age, gender, job title, administrative duties, family background, number of training/refresher courses attended, current work experience, and the highest degree of education acquired, were requested from respondents in the second part of the questionnaire. Thirty assessment specialists who were not engaged in the main study participated in a pilot test to evaluate the instrument's dependability. With Cronbach's alpha values ranging from 0.78 for professional practice skill to 0.98 for systematic inquiry, the results showed that the instrument had adequate reliability. Questionnaires were used to collect the data. Within two weeks, 40 of the 125 surveys that were sent were returned. Three weeks later, there were 116 answers in all, which is a 92% response rate. In the end, 122 survey instruments—or 97% of the number distributed—were gathered. The statistical software SPSS was used to analyze the data, and descriptive statistics were utilized for interpreting the results.

Results

Background demographics

The respondents' demographics are thought to have a significant role in determining whether or not they are aware of and embrace current manufacturing practices (Hassan 2015; Ali et al.,2021; Jones, and Garcia (2021); Thompson and Smith (2016).Similarly, Rehman *et al.,* (2021) and Khan *et al.,* (2024) found a substantial correlation between farmers' socioeconomic characteristics and their ability to obtain agricultural knowledge in order to embrace new technologies. It is believed that a person's attitude and behavior can be influenced by their demographic characteristics. Given the significance of these variables, data has been supplied on the respondents' age, area of jurisdiction, professional education, duration of service, family history, agricultural experience, and attendance at in-service training courses and refresher courses.

Table 2: Demographics of Agricultural Extension Field Staff (N=300)

Category	Frequency (f)	Percentage (%)
Age (in years)		
20-30	78	26.00
31-40	84	28.00
41-50	120	40.00
50 and above	18	6.00
Education		
3 Years diploma	71	23.66
B.Sc. (Hons.) Agri	125	41.66
M.Sc. (Hons.) Agri	92	30.66
Ph.D. (Agri)	12	4.02
Service Length (No. of years spent in job)		
1-5	95	31.67
6-10	110	36.67
11-15	73	24.33
16 and above	22	7.33
	Family Background	
Farming	195	65
Non-Farming	105	35
	Training (Attended)	
On job training	227	75.67
Refresher course	191	63.67
No. of trainings		
No	11	3.67
1-5	171	57.00
6-10	86	28.67
11or above	32	10.66

Table 2, summarizes results of the information gathered from EFs, demonstrate that 26% respondents were primarily from the 20–30 age group, (28 %) from 31-40 years and just 6.0% were older than 50 years old. Regarding the education of respondents, 41.66% were B.Sc. (Hons) Agri 30.66% M.Sc. (Hons) Agri. whereas 23.66 % were with 3 years diploma and only 4.02% were those having Ph. D Agri. Above table also clarifies the distribution of respondents according to their period of service showing 36.67% with 6 to 10 years of service, 31.67% with 1-5 , 24.33% 11-15 years and only 22% of respondents fall in category 16 and above years length of service. Further, the table also shows 65 % of respondents had farming family background, 75.67% participated in on-the-job training programs, 63.67% attended refresher courses ,96.33% participants completed one or more training and refresher courses and only 3.67% respondents were who never attended such training or refresher courses. The demographic analysis of the agricultural extension field workers reveals an experienced workforce, with a significant percentage having completed professional training programs and come from farming backgrounds. These characteristics indicate that the field personnel are well-positioned to conduct effective agricultural extension services. However, there is still an opportunity to increase access to training opportunities, particularly for people with little or no prior training, in order to maintain continuous skill development across the workforce.

Training needs of Extension Managers in Agriculture Extension Program Evaluation Related Competencies and Practices

The extension managers were asked to perform a thorough evaluation of their training needs in a variety of areas where changes and additions are judged required. This examination seeks to discover particular deficiencies in skills and expertise within the teams they lead, as well as areas where extra training might result in greater efficiency, effectiveness, and overall performance. The assessment approach included gathering participant feedback, analyzing current training programs, and researching the most effective methods in the arena. Through doing so, extension workers will be more capable of establishing focused training efforts to satisfy the specific requirements of their staff and communities. Furthermore, this effort aims to promote a culture of continuous learning and professional development, ensuring that extension managers and their teams are up to speed on the most recent trends, technologies, and techniques relevant to their job. Ultimately, the objective is to increase the total capacity of extension services, allowing them to provide higher-quality assistance and resources to the people served. A summary of their responses given in tables, follows.

Table No;3: Rank order, Training Needs (In-Service) in Professional Practice Related Competencies (Percentage)

Professional Practice Related Area's Competencies	**Best time to Develop**		
	Pre-Service (%)	In-Service (%)	Rank
Consideration of the accustomed and open welfare in evaluation practice	26.9	73.1	1
Convey skills and personal evaluation approaches to potential clientele	36.1	63.9	2
Respect respondents, clients, program participants, and other sponsors	40.3	59.7	3
Conduction of evaluations and acting ethically, striving for integrity and honesty	43.1	56.9	4
Application of evaluation standards professionally	53.2	46.8	5
Mean	**29.68**	**70.32**	—

Table 3 shows that 47 to 73% of the respondents stated that they need to receive an in- service training course in a subject related to professional practices. The most important areas of training needs identified in terms of a self-assessment measure were "Consideration of the accustomed and open welfare in evaluation practice" and "Convey skills and personal evaluation approaches to potential clientele" and "Respect respondents, clients, program participants, and other sponsors" and ranked 1st,2nd and 3rd respectively as in-service training need. Only 27 to 53% of the respondents reported that they needed a pre-service training course in these subjects.

Systematic Inquiry Related Competencies

Table No;4: Rank order, Training Needs (In-Service) in Systematic Inquiry Related Competencies (Percentage)

Systematic Inquiry Area's Related Competencies	**Best time to Develop**		
	Pre-Service (%)	In-Service (%)	Rank
Conducting meta-evaluations	16.3	83.7	1
Interpreting data	22.3	77.7	2
Analyzing data	24.5	75.5	3
Developing recommendations	31.1	68.9	4
Conducting literature reviews	31.2	68.8	5
Being knowledgeable about quantitative methods	34.0	66.0	6
Reporting evaluation procedures and results	35.4	64.6	7
Developing evaluation design	33.9	66.1	8
Collecting data	36.5	63.5	9
Understanding the knowledge base of evaluation	37.1	62.9	10
Framing evaluation questions	39.8	60.2	11
Providing rationales for decisions throughout evaluation	40.6	59.4	12
Noting the strengths and limitations of the evaluation	41.3	58.7	13
Being knowledgeable about mixed methods	43.3	56.7	14
Specifying program theory	44.4	55.6	15
Assessing reliability of data	47.2	52.8	16
Identifying data sources	55.5	44.5	17
Being knowledgeable about qualitative methods	58.7	41.3	18
Making judgments	59.7	40.3	19
Assessing validity of data	64.1	35.9	20
Mean	**39.85**	**60.15**	**—**

The highest ranked "systematic Inquiry" competencies needed by the respondents to receive in-service training courses were as follows (Table 4) "Conducting meta evaluations" (83.7%),"Interpreting data"(77.7%),"Analyzing data"(75.5%), "Developing recommendations" (68.9%), "Conducting literature reviews" (68.8%), "Being knowledgeable about quantitative methods" and "Reporting evaluation procedures and results" (66.0%) and (64.6%), respectively and ranked 1st to 7th accordingly . The areas needed to be provided by pre-service courses were mostly "Assessing validity of data" (64.1%), "Making judgments" (59.5%) and "Being knowledgeable about qualitative methods" (58.7.4%). Results presented in table 3 also indicate that over three-fourths of the respondents selected all the situational analysis competencies to be provided through in- service training.

Situational Analysis Related Competencies

Table No;5: Rank order, Training Needs (In-Service) in Situational Analysis Related Competencies (Percentage)

Situational Analysis related Area's Competencies	**Best Time for Development**		
	Pre-Service (%)	In-Service (%)	Rank
Addressing conflicts	6.8	93.2	1
Modifying the study as needed	11.2	88.8	2
Respecting the uniqueness of the evaluation site and client	13.2	86.8	3
Analyzing the political considerations relevant to the evaluation	19.1	80.9	4
Serving the information needs of intended users	21.6	78.4	5
Identifying the interests of relevant stakeholders	26.6	73.4	6
Describing the program	27.4	72.6	7
Determining program evaluability	29.1	70.9	8
Remaining open to input from others	31.8	68.2	9
Attending to issues of organizational change	32.6	67.4	10
Examining the organizational context of the evaluation	36.2	63.8	11
Attending to issues of evaluation use	43.9	56.1	12
Mean	**25.13**	**74.87**	—

Result presented in table 5show that the highest ranked situational analysis competencies needed by the respondents to be received through in- service training courses were as follows: "Addressing conflicts" (93.2%), "Modifying the study as needed" (88.8%), "Respecting the uniqueness of the evaluation site and client" (86.8%), "Analyzing the political considerations relevant to the evaluation" (80.9%), "Serving the information needs of intended users" (78.4%), and "Identifying the interests of relevant stakeholders" (73.4%) ranked 1st to 6th accordingly. Only a few or some of the respondents selected pre-service training courses to address their "situational analysis competencies" needs. Over 60% of the respondents reported that they need to learn all the areas of reflective practice competencies through service training courses (Table 5).

Table No;6: Rank order, Training Needs (In-Service) in Reflective Practice Related Competencies (Percentage)

Reflective Practice related Area's competencies	**Best time for Development**		
	Pre-Service (%)	In-Service (%)	Rank
Pursuing professional development in relevant content areas	19.8	80.2	1
Reflecting on personal evaluation practice (competencies and areas for growth)	21.7	78.3	2
Building professional relationships to enhance evaluation practice	27.9	72.1	3
Being aware of self as an evaluator (knowledge, skills, dispositions)	33.3	66.7	4
Pursuing professional development in evaluation	33.5	66.5	5
Mean	**27.24**	**72.76**	—

Three highest ranked reflective practice competencies needed by the respondents to be received through in- service training Accor- ding to Table 6 courses were: "Pursuing professional development in relevant content areas" (78.8%), "Building professional relationships to enhance evaluation practice" (77.8%) and "Reflecting on personal evaluation practice (competencies and areas for growth)" (73.7%). Table 6 shows that the respondents mostly chose pre-service training for the areas of interpersonal competence, but majority preferred in-service training for improving competencies such as "Using conflict resolution skills (67.3%), "Facilitating constructive interpersonal interaction" (57.3%), and "Demonstrating cross-cultural competence" (55.8%). According to Table 7, the respondents mostly selected in-service training courses as the way for improving different areas of project management competencies (60 to 76.7%). Their highest preference for in-service training was supervising others involved in conducting the evaluation (77%), budgeting an evaluation (75%), using appropriate technology (73.3%), and training others involved in conducting the evaluation (72.8%).

Table No;7: Rank order, Training Needs (In-Service) in Interpersonal Competence Related Competencies (Percentage)

Interpersonal Competence related	**Best time for the Development**		
Area's Competencies	Pre-Service (%)	In-Service (%)	Rank
Using conflict resolution skills	26.4	73.6	1
Facilitating constructive interpersonal interaction	39.8	60.2	2
Demonstrating cross-cultural competence	51.6	48.4	3
Using negotiation skills	59.8	40.2	4
Teamwork, group facilitation, processing competencies	72.1	27.9	5
Using written communication skills	71.1	28.9	6
Using verbal/listening communication skills	81.6	18.4	7
Mean	**57.48**	**42.52**	—

Table No;8: Rank order, Training Needs (In-Service) in Project Management Related Competencies (Percentage)

Project Management related	**Best time for the Development**		
Area's Competencies	Pre-Service (%)	In-Service (%)	Rank
Budgeting an evaluation	19.7	80.3	1
Using appropriate technology	21.1	78.9	2
Supervising others involved in conducting the evaluation	28.1	71.9	3
Writing formal agreements	28.9	71.1	4
Identifying resources needed for evaluation (e.g., expertise, personnel)	29.6	70.4	5
Communicating with clients throughout the evaluation process	31.1	68.9	6
Responding to requests for proposals	33.6	66.4	7
Negotiating with clients before the evaluation begins	34.8	65.2	8
Training others involved in conducting the evaluation	37.3	62.7	9
Presenting work in a timely manner	39.9	60.1	10
Justifying the cost given information needs	41.4	58.9	11
Conducting the evaluation in a non-disruptive manner	46.1	53.9	12
Mean	**32.63**	**67.36**	—

Table No; 9; Summary of the Rank Order, Overall Means (Percentage) of Responses Regarding Best Time for Development of Agriculture Extension Program Evaluation Related Competencies and Practices

The analysis of Agriculture Extension Program Evaluation Related Competencies and Practices highlights that the majority of competencies are primarily developed through in-service training rather than pre-service education. The calculated overall mean values are:

- Pre-Service Training: 32.63%
- In-Service Training: 67.36%

This confirms that on-the-job learning, field experience, and continuous professional development play a crucial role in shaping competencies in agricultural extension.

Revised Rank Ordering Based on In-Service Training Percentage

Agriculture Extension Program Evaluation Related Competencies and Practices	**Best Time for the Development**		
	Pre-Service (%)	**In-Service (%)**	**Rank**
Situation Analysis Practice	25.13	74.87	**1**
Reflective Practice	27.24	72.76	**2**
Professional Practice	29.68	70.32	**3**
Project Management	32.63	67.36	**4**
Systematic Inquiry	39.85	60.15	**5**
Interpersonal Competence	57.48	42.52	**6**
Overall Mean	**32.63**	**67.36**	**—**

Table 9 highlights the findings, which suggest that department workers rely heavily on in-service training to build agricultural Extension Program Evaluation abilities and practices. The total mean value (67.36%) indicates that agricultural extension abilities are mainly acquired through in-service training, highlighting the need of field exposure, ongoing education, and skill development programs. Table further shows that Situational Analysis Practice (74.87%) and Reflective Practice (72.76%) are the most developed during in-service training, demonstrating that problem-solving and flexibility increase with real-world experience. Professional Practice (70.32%) and Project Management (67.36%) both benefit greatly from field experience. Whereas Interpersonal Competence (42.52% in in-service, 57.48% in pre-service) is the only competency where pre-service training had a greater impact, indicating that communication skills and teamwork are better developed in formal schooling settings. The main conclusions from the above table include the importance of field experience in agricultural extension and the need for additional practical components in pre-service training to better prepare professionals for the field and structured in-service training programs can improve professional development and effectiveness in agricultural extension services.

Discussion

Today's corporate climate, which is marked by quick changes in technology and changing market conditions, demands that professional staff members in an organization be more flexible and efficient than ever before. This change calls for a proactive approach to knowledge acquisition and skill development since standard training approaches might not be enough to provide professionals with the resources they need to succeed. According to Namdar et al. (2010), this situation presents a significant obstacle for those in charge of creating and carrying out training initiatives. Determining when training activities would be most effective is crucial to overcoming this

obstacle. Since training must be tailored to the specific learning requirements of the professionals engaged as well as the objectives of the organization, timing may have a big impact on how effective it is. Regarding Pakistan, there is a discernible pattern among those working in agricultural and extension assessment programs who mostly indicate a preference for in-service training. These classes are intended to improve their professional competences while giving them the opportunity to immediately utilize newly acquired information and abilities in their workplaces. Research results, like those reported by Pezeshki et al. (1994), support the preference for in-service training; it is not only anecdotal. Their work emphasizes the value of ongoing professional development and the part that focused training plays in helping professionals in the agriculture industry acquire critical skills. These people may increase their effectiveness and help their organizations succeed overall by taking part in in-service training, which keeps them up to date on the most recent advancements in their profession. In conclusion, the necessity for professionals to adjust to a quickly evolving environment emphasizes the significance of efficient training initiatives. Choosing the appropriate time for these programs is essential for improving professional abilities, especially when it comes to in-service training. The observations made by Namdar et al. (2010) and Pezeshki et al. (1994) both emphasize how important it is for businesses to continue investing in their employees' training so they are prepared to handle both present and future issues. According to experts, professional competences such as situational analysis, reflective practice, project management, professional practice, and systematic inquiry are among those that require training. However, they prefer pre-service training classes for many interpersonal competencies. The situational analysis competencies were the area in which these professionals needed the most in-ser- vice training. This study emphasises how crucial it is to build and improve professional abilities following the hiring and involvement of managers and employees through focused in-service training initiatives. It is clear that there is a significant demand for continuing education programs that particularly target the abilities mentioned by the study's respondents, even while pre-service training provides a fundamental knowledge. The findings of Joerger (2002) and Roberts and Dyer (2003), who stress the need of lifelong learning in professional contexts, underscore this requirement for ongoing professional growth. Wide-ranging and very advantageous are the consequences of this study for a number of stakeholders, including decision-makers, trainers, researchers, and evaluators. These organisations may successfully create, carry out, and evaluate training programs that are pertinent and in line with the skills found in the study by applying the knowledge gained from this research. More successful professional development plans that satisfy the changing demands of the workforce may result from this methodical approach to assessing training. Furthermore, the results of this study may be easily incorporated into the university curriculum, guaranteeing that aspiring practitioners, instructors, and assessors have the skills they need right from the start. Educational institutions may play a crucial role in educating graduates to fulfil the demands of their professions and make significant contributions to their disciplines by integrating these competences into their curricula. In the end, the study's findings can be used as a useful checklist by administrators who want to assess their present capabilities. In order to determine what kinds of in-service training, opportunities would be most advantageous for their employees, administrators might evaluate their strengths and weaknesses in respect to the specified skills. This proactive strategy promotes a culture of ongoing development and professional advancement inside the company in addition to improving individual and organizational performance. In conclusion, this study offers a useful framework for improving professional abilities via continued learning and training, which will eventually result in more competent and successful professionals in the sector.

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