

Methodology: Training Requirement of Agriculture Extension Officers in Iraq

¹Jasim Mohammed Saleh, ¹Norsida Binti Man
and ²Majeed Hadi Saleh Al-Hamdany

¹University Putra Malaysia, Department of Agriculture Technology, 43300 Serdang, Malaysia

²University of Baghdad, Department of Agriculture Extension, Hassan University Putra Malaysia

Abstract: Identifying training needs of structural and component in the training industry is an important process that needs to be given a high consideration. It seems difficult to identify training requirements, because of differences in the levels of the trainer experience, skills and efficiency. In-service training of the Extension Agents is the call of the time. Training needs were assessed using the Borich Needs Assessment Model, This Model is designed around the skills individuals and groups need to be effective in the future and are used for making human resources decisions. Will be modified this model with suitable in my country to achieve goal my study. Also I design conceptual framework to explain the dependent and independent variables of the study. The data collection after completed my questionnaire, validity and reliability of the instrument and doing T-test, when collect a data, the data analysis to get result and discussion. Training should not be conducted at the time of sowing and harvesting time and lectures should be carried out during the training sessions and choose time suitable for agricultural extension workers. Thus, necessary steps should be taken to identify the unfelt needs of the agricultural extension workers and strengthen their knowledge, skills and attitudes required for performing their job efficiently.

Key words: Training Requirement • Agriculture Officers & Agricultural Extension Officer • Iraq

INTRODUCTION

Agriculture Officers (AOs) of Agricultural Extension Department were the universe of the study. This study is to identify the training needs in agricultural extension worker for extension workers in Iraqi provinces, in some areas of agricultural extension work. The study will base on both primary and secondary data. Primary data will be obtained through a carefully prepared and pre- tested questionnaire in 2016. Secondary data will obtain through published sources. A copy of the questionnaire along with instructions/explanatory sheet will mailed to all respondents through the Agricultural Extension and Training Office, Agriculture Directorate in the Province, Agricultural Training Extension Center in the Province, Agricultural Division outside Provinces and Agricultural Extension Farms (who is the overall in charge of agricultural extension service). Training programs have to meet the espoused high training needs found in the training needs assessment. Iraq is basically an agricultural

country. It has the land, the water, the know-how and the climate that allows for the cultivation of a large number of field and horticultural crops and domestic animals. The training needs to be agreed on by both supervisors and intended beneficiaries should be implemented before other needs [1]. Hemanga [2] found most of the respondents had a favorable attitude towards their profession and majority of them were satisfied with their jobs. A senior officer and progressive farmers were most frequently used as a source of information. The VLEWs identified 61 training need items from 8 disciplines of which 34 were most important and 26 were important, [2]. Findings from a study by Christine, *et. al.* [3] show that free recall questions may provide a less inflated measure of accessible knowledge learned from school-based suicide prevention curricula. Moreover, the study reveals that opium growers required more training needs in some of crucial training area: "Plant protection measures", "Method of lancing", "New techniques for latex collection", "Opium storage", "Quantity and method of

Corresponding Author: Jasim Mohammed Saleh, University Putra Malaysia, Department of Agriculture Technology, 43300 Serdang, Malaysia. Tel: +60182690595.

manure and fertilizer application” and “Time of lancing”, the “Processing”, “Weed control management” and “Post-harvest technology”, [4]. Some studies showed that the training requirement for indicative planning as a major weakness in the planning and the need for training in other areas Salman, *et al.* [5] find that the existence of a large proportion of workers in the field of gardening did not receive training in pest, diseases and machines [6]. The preference of members regarding type, method, duration, season, frequency, place and language of training was: peripatetic, group discussion, three to six days, winter, once in a year, FTC’s and Afaan, Oromoo respectively [7]. Inducted the study of [8] the highest percentage was (94.6%) and (87) for workers who have studied courses in agricultural extension and the lowest was (5.4%) and (5) of the workers who did not study courses in agricultural extension of the total workers, this indicates that the majority of extensions is considered courses in agricultural extension. Staffing at ward and village levels was destitute and largely inadequate for the sustainable execution of extension services, University of Agriculture, [9]. Personnel indicated overwhelmingly (90%) that they would be willing to participate in in-service education via distance education, yet few coordinators (22%) are currently using distance formats for delivery. Incentives are needed for coordinators to use a wider variety of methods. Training for coordinators and startup funds could be used as incentives to support creative and futuristic delivery of in-services, [10].

MATERIALS AND METHODS

Data Analysis Techniques: The data were analyzed statistically using the computer software statistical package for ANOVA Two-way analysis and social sciences (SPSS), Microsoft Excel, Percentage means, median, standard deviations and correlation analysis of variance and multivariate was calculated [11] will verify the data collected from the survey and verification in order to brief them. Data cleaning and check will be conducted on descriptive statistics and frequency, as well as data entry and coding them. Survey data were cleaned of errors and inconsistencies and modify data and missing. The data were analyzed cleaned, as well as using reliability test and descriptive analysis, factor analysis and logistic regression analysis. The data will be collected were quantify, categorized and tabulated by using statistical tools including frequency counts and percentages to draw conclusions. The effect of independent variables on the dependent variable was studied by using the chi square test of significance.

Descriptive Analysis: Descriptive analysis is a summary of a given set of data, which can either be a representation of the entire population or a sample. To analyze the demographic characteristics of the respondents, it was also be used to describe the characteristics of the variables, in terms of their frequencies, mean, modes, median and percentages. This statistics provides an understanding and natural to interpret the raw data. In this study, descriptive analysis was used to analyze the results of the survey by converting all numerical data into pictorial form. Frequency distribution was drawn to observe the frequency of each category in the demographic profile of respondents such as Age, Education Level, Gender, Social Status, Years of work, Years of work in agricultural extension, Training courses attended. Furthermore, the distributions were also displayed by using the percentage. This analysis was also used to compare the variables and discuss the respondents’ socio-demographic profiles.

Factor Analysis: To analyze the critical factors affecting the outlet choice decisions of Training needs. Factor analysis is used to uncover the latent structure (dimensions) of a set of variables. The analysis reduces attribute space from a larger number of variables to a smaller number of factors and as such is a “non-dependent” produce (the analysis does not assume a dependent variable is specified). With factor analysis, a small number of factors from a large number of variables are capable of explaining the observed variance in the high number of variables.

In this study, factor analysis will use to reduce the number of variables to a controllable set of items so that the latent and underlying factors were extracted. This type of procedure groups the variables into independent factors, where the factor represents a scale measure of some dimensions. Four steps are involved in conducting factor analysis. First, the correlation matrix is generated for all the variables. Variables that do not appear to be related to other variables can be identified from the model and associated statistics.

Correlation matrix is a rectangular array of the correlation coefficients of the variables with each other. The second step is to extract a set of initial factors from the correlation matrix that has been developed in the first stage. Principle component analysis will be used to obtain elements and then produce one component for each variable. Although the analysis will yield as many factors as variables, the smaller factors, in terms of accounting variable variance, are dropped if the value is less than or equal to 0.5. Thus, a set of factors is formed as a linear

combination of the variables in a correlation matrix. The first factor would be the best linear combination of variables that would be counted for more variation in the data as a whole [12].

The third step is rotated in order to maximize the relationship between the variables and some of the factors. Finally, the score for each factor will be computed and then used in various others analyzes. The factors are inferred from the observed variables and estimated as linear combinations.

Logistic Regression Analysis: The data collected from the survey will check and verification for their conciseness. Data cleaning was carried out by monitoring the frequency and descriptive statistics, as well as coding and data entry. The survey data will clean for possible inconsistencies and errors and adjusted for missing data and outlier. The cleaned data were analyzed by using reliability test, descriptive analysis, factor analysis and logistic regression analysis.

A logistic regression model was developed for studying how much can be explained by the position of the respondents towards the implementation of the practice after training in socio-economic characteristics and other variables such as infrastructure and knowledge. For this study, the HR training modules, where the dependent variable was coded "responders and personal variables position towards the implementation of practices after training" two categories including "the particular variables respondents more likely to implement training practices" as one (1) or zero (0).

Logit models were employed to perform the regression analysis because of the ability to represent the complex aspects of the decisions made by individuals and to incorporate important demographic and policy sensitive explanatory variables. The model does not assume linearity of the relationship between the dependent and independent variables and does not require normally distributed variables. It is assumed that the decision-maker chooses the alternative with the highest utility among two sets of alternatives; 0 and 1. The event $X=1$ is considered a success and the event $X=0$ is considered a failure. The utility of an alternative is determined by a utility function, which consists of independent attributes of the alternative concerned and irrelevant parameters.

T-Test and Chi-Square Tests: To analyze the significance of differences between the means the samples. Student T and Chi-Square tests will be performed to test the differences between the means against the Null

Hypothesis ($M_1=M_2$). Null Hypothesis is presented in order to be rejected. If the null hypothesis is rejected (i.e., there are significant differences between the samples means), in such a case we are going to commit Type 1 error (1% or 5%), otherwise we will accept the null hypothesis i.e., the difference between the means are not significant and real) in this case we are going to commit type 2 error, [13].

Correlation and Repression Coefficients: To measure the relationships between the independent and dependent variables, correlation and repression coefficients will be calculated and tested for significances whenever needed.

The correlation between two variables implies a relationship between them so that if a change in the direction of us money to change in the same direction or the opposite direction. It refers to the way the two are associated with a group of members in case of measurement in each of two variables expressed in a digital image. The link is divided into terms of the number of variables in the following sections.

- Simple correlation: link refers to the relationship between the two variables only.
- Multiple correlations; examine the relationship between more than two variables.
- Partial correlation: link and looking at the relationship between two variables only from among the variables with other variables impact insulation. The idea of partial correlation on universal meaning to link to Synodic succumb change phenomena or two, for example: If our (R_{ab}) is the correlation between the performance of a group of individuals on the test and performance test it can calculate pure link between tests a, b after isolating the impact of performance on the third test c isolation inhibits its effect in the original link. Depending on the outcome of this pure link. And depending on the results of this link called link partial illustrated the contribution a third variable c in the original relationship, if the value of the partial correlation is equal to the total link value by insulating it means that c has no effect on the relationship.

If the partial correlation value is greater than the value of the original link the factor c is an influential element in the relationship and had appeared in the original relationship appeared low. If the partial link less than the original link it means I am a contributing factor in the original relationship we have emerged more partial relationship. And so can continue to isolate the various

factors one by one to see the effects of this isolation on the numerical value of the correlation coefficients of different variables.

There are several ways to calculate correlation coefficients:

- The correlation coefficient of Pearson
- Account link to the standard grades; Previously it was mentioned that comparing degrees of a group of individuals in a variable, x and y variable classes cannot be compared unless converted score in both variables to the standard categories in the beginning one, the average (zero) and equal units (standard deviation equal to one is correct) and that when you compare the inherent variability in variable degrees of the change in y to be convert degrees into degrees of standard variables and correlation coefficient equals the product of the average grades standard variables. The average has been calculated by a total sum Multiplication to get rid of a correlation coefficient on the number of individuals in the Group, [13].
- Calculate link to standard deviations: is trying to simplify the calculations to get rid of z-score calculation.
- Account link to distractions.
- Calculation of the correlation of raw scores in the General method (correlation coefficient of Pearson): with accuracy and speed because it is based on the computation of the correlation between raw scores and their bounding boxes without any approximation, which computes the correlation coefficient between variables.

Correlation coefficient Lsberman Level: This link represents the relationship between the orders of individuals for the variable (S) and arranges them for another variable (y), which is the changing nature of doing. (Charles Lsberman) reached between now and the same English for this type of link.

Borich Needs Assessment: To analyze the training needs of responders Borich will be used for training needs. Borich defined a training need as "a discrepancy between an educational goal and trainee performance in relation to this goal. Borich Needs Assessment Model is designed around the skills individuals and groups need to be effective in the future and are used for making human resources decisions." He further suggested that training programs could utilize his model by employing the two extreme positions: what are (the measured behaviors, skills and competencies of trainees) and what should be

(the goals of the training program). Note the concept of competency implied by the needs assessment model: Competencies are the application of knowledge, technical skills and personal characteristics leading to outstanding. The modified Borich Model described in this article was used in the needs assessment in an effort to more validly measure perceived educational needs of extension field faculty. Based upon analysis of data, the Borich needs assessment model is developed to assess the beginning teachers' perceived level of importance and perceived level of competence regarding professional competencies.

According to Borich, a need is described as a discrepancy or gap between "what is", or the present state of affairs in regard to the group and situation of interest and "what should be", or desired state of affairs [14]. The instrument was assessed for content and face validity by graduate associates, teacher educators and state supervisors in Agricultural Education. Reliability of the instrument will be .95 (Cornbrash's alpha coefficient). Includes the following Knowledge. [15]. Teaching Methods: How to utilize distance or remote teaching methodologies in order to reach sparsely populated clientele groups. How to write and publish quality extension fact sheets. Program Planning, Implementation and Evaluation: How to conduct impact studies which determine long-range effectiveness and accountability. Developing program evaluation instruments, altitudinal scales and other surveys. Group Process Skills: Effectively managing volunteers. Learning group facilitating techniques its contain (Plant Technical Skills, Skills of Irrigation and Drainage, Skills of Fertilization, Management Skills, Animal husbandry skills, Skills of machines and equipment, Protected agriculture Skills. Marketing Extension: How to "package" and market extension educational programs. How to create the "proper" image for the Cooperative Extension System. Technical Training in Horticulture and Plant Science: Identification of horticultural insect damage problems. Identification of horticultural plant diseases. Technical Training in Use of Computers and ICT: Selecting hardware and software. Training in basic micro-computer, use (word processing data management, etc.) Basic. Extension Philosophy: Discussion of the role of each extension professional as he/she fits in any area of governance, administrative Model. Understanding the extension philosophy and mission. In addition I will add another factor that is very important for any employee (Special Skills) to ask all respondent about special skills for him to do his work efficiency and effective because if these employees have skills in agricultural extension maybe can't give this information or knowledge to farmers or

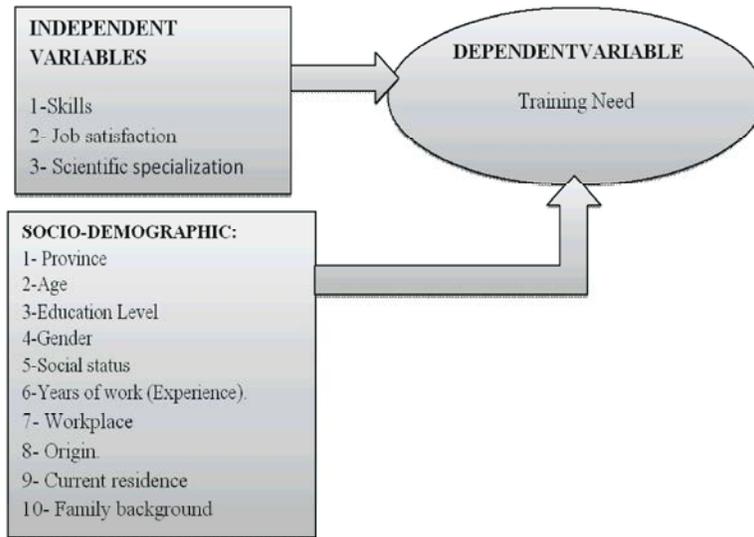


Fig. 1: Shows the Conceptual Framework in this study.

Table 1: The number of agricultural workers involved in research according to the provinces, central of Iraq.

Provinces	The total number of agriculture officers	No. of Respondents
Baghdad	500	175
Wasit	250	75
Babylon	250	75
Total	1000	325

Source: Department of Agriculture [23]

your job service, these skills will be include many ways to know efficiency in (Work Skills, Communication Skills, People Skills (Organization-Office), Leader Skills).

Also I will use theory for training (Theories of Trainers Attitudes, behavior, relationship), if we have negative attitudes toward our work organization, we will surely perform less effectively than if our attitudes are positive. Creating a positive atmosphere in the workplace is an important aspect of attitude training. To related with model Borich, because training affect for job satisfaction for this theory will add job satisfaction, this model and this theory related together to get good result.

Conceptual Framework: Figure 1 shows the leading framework that has been proposed to explain the dependent and independent variables of the study. In this study, conceptual-based model with the most common factors that influence respondents’ attitude towards implementation of agricultural extension workers, for their guidance as appropriate without difficulties and have the necessary knowledge and skills to add to their capacity to deal with farmers to transfer all agricultural techniques in a way that meets the aspirations of the Ministry.

Besides, there are some external factors affecting respondents’ attitude towards implementing practices, including independent variables: Skills, Knowledge, Job satisfaction, Scientific specialization, work location, age, gender, social status, origin, current residence, education, specialization, years of work in agricultural extension, Training courses attended and find out how moral differences in the training needs of the respondents according to the variables of the Major, the Skills, Job satisfaction, Scientific specialization.

Location of Study: This study will be conduct in Baghdad, Wasit and Babylon (Table1). The number of agricultural workers involved in research according to the provinces, Iraq discussed. In the states that have been selected for this study in middle of Iraq, Iraq. Baghdad is the largest provincial agricultural extension staff due to the guidance department at indicative and center in Baghdad. Workers in Baghdad are (500 people). (Agricultural extension worker), where the Iraq had workers about 1000, with the workers with anther workers in agriculture. Although Central and southern Iraq, where there are in the Central and southern governorates of Iraq and guiding centers add to, extension services in these provinces follow the guidance center (extension farms) in addition to the agriculture community, where there is a particular section, as shown in Table (1) which illustrates the provinces in Iraq.

Focusing on areas where there are agricultural circles and agricultural extension training centers and pilot farms that follow administrative extension centers. Figure 2 shows the Map of Iraq, which is one of the most modern

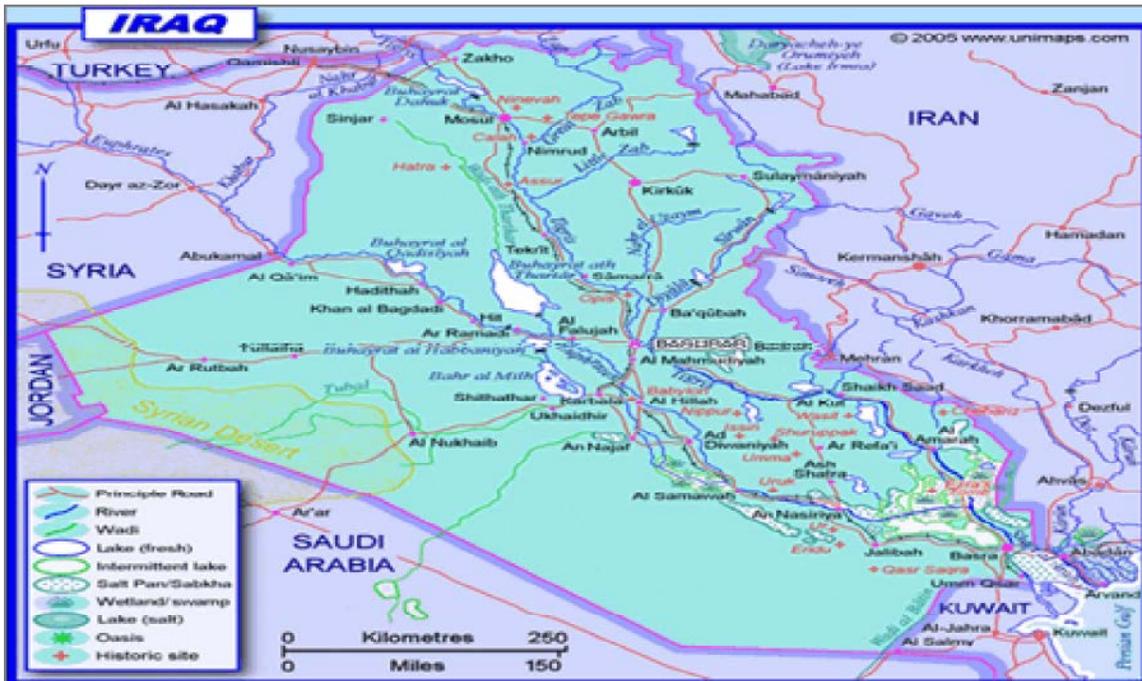


Fig. 2: A Map of Iraq and Location of the study.

Source: Ministry of Planning, Department of Agricultural statistics. /Iraq [24].

and beautiful landscapes in Asia. A map of Iraq and the provincial research, Babylon, Baghdad, Wasit, in Central of Iraq.

Sampling Techniques: Around 325 of respondents will be collected, which are including 175 person from Baghdad province and 75 persons from Babylon and 75 employees of Wasit area. Table 1 has shown a distribution of workers that will contribute to this study.

Respondents Selection: The agriculture officers (AOs) will ask regarding their age, job experience and Academic achievement, province, work location, gender, social status, origin, current residence, education, specialization, years of work, years of work in agricultural extension, Training courses attended and all respondents to the study objectives. The data concerning these aspects will collect from ministry of agriculture.

Hypothesis: To achieve the research objectives, hypotheses were formulated following the research to know the response of respondents according to the following three hypotheses.

- There is a high need for training respondents in the total contained in the study areas.

- There is no correlation between respondents need for training and all of the independent variables included in the study.
- There are no significant differences in the training needs of respondents, depending on the variables of the Skills, Knowledge, Job satisfaction, scientific specialization. To achieve the objectives of research uses descriptive being suitable for precise and detailed information on training needs and cognitive needs, Milhem [11]. Deals with the search for the method of research used in this study, which included a comprehensive description and identifying jobs (agricultural workers), data collection forms wad at questionnaire and quantitative treatment of variables the study and research hypotheses that meet the objectives of the study, with the most important statistical methods used to analyze the data for research.

Questionnaire Design: Data will be collect using a well-structured questionnaire via face-to-face survey. In order to achieve the objectives of this study, designed two types of studies systematically different for all groups of respondents, all agricultural workers in the provinces discussed. The questionnaire was developed based on the previous relevant study. The questionnaire will be

designed in Iraq and will include several sections as follows: Part A: profile of respondents the questions in part a, in response to a question about the demographic characteristics of the staff extension, including age, Specialization, gender, level of education, marital status, years of work in the agricultural sector and experience in the area of extension work, family background, current residences, Work location. Part B: designed for specialization, for Training Courses Attended and what is useful in your job. Part C: Skills of Group Process, agricultural workers-issue in this section to understand the personal respondents of extension work. This section consists of several questions to assess the level of need for training and the use of previous training courses, for many grope skills, Plant Technical Skills, Skills of Irrigation and Drainage, Skills of Fertilization, Management Skills, Animal husbandry skills, Skills of machines and equipment, Protected agriculture Skills, Skills of Horticultural Crops, Skills of Insects and Diseases, IPM/ Integrated Pest Management, Skills in Extension Philosophy, skill in Technical of Computers And ICT, skill in Program Planning, Implementation and Evaluation. Part D: designed this section to identify the importance of the training methods for providing you in-service training in the designated areas, the exposure of you toward the sources of Agricultural Information and skills will be content four elements (work skills, communication skills, people skills (office), leader skills). And second part about marketing extension). Part E: Will be used your job satisfaction than will content four elements of branches, first, relationship with officers and colleagues, second about financial, third for attitude and last elements its behavior. Part F: will add the constraints and problems encountered in the extensive cooperate in General and their work and the need for training courses and time and supplies required to be implemented and sources of information on which the agricultural counselor in his work and obtaining training and type training courses earned by the employee in the course of its work and future proposals for the possible courses held. It also includes and some suggestions for guides to improve training courses, skill.

RESULT AND DISCUSSION

This study will help the policymakers to execute successful planning for the improvement of agricultural extension for the development of agricultural production and observe the extension work constraints and problems of the extension work. This study will assist in the

development of appropriate training programs to improve the efficiency of agricultural workers, find out how much we need extension workers for training and develop appropriate plans to provide ongoing training for mentors during work to develop in the agricultural sector in the transfer of technology required for the development of the agricultural sector. Moreover, the results of this study will come out with the appropriate and adequate solutions to the training needs assessment. It will also help to develop successful policy and plan for future training needs assessment to avoid all errors that occurred previously. In addition, the study will help to put the training resources to good use, the decision maker of the training that should be conducted and with or not there is a performance gap.

Training needs hinder employees in the fulfillment of their job responsibilities or prevent an organization from achieving its objectives. There are significant relationship between the training needs of respondents in agricultural extension work areas and social demographic factors (province, work location, age, gender, social status, origin, current residence, education, specialization, years of work, years in agricultural extension, Training courses attended).The existence of significant differences in the training requirements of the respondents, according to the variables (Province, workplace, gender, education, specialization and years of work in agricultural extension). Most studies indicated that there is training need in many areas. This study finds, that most (72.3%) of the respondents had working experience as extension staff for between 6 and 7 years. Some of them had put in 4-5 years while very few of them had been in the service for 2-3years. The length of service is probably an indicator of a person's commitment to the chosen career [16]. Furthermore, [17] states that frequent training and re-training programmes are needed to be put in place by an organization to strengthen this commitment. The deficiency in extension methodology observed could be a result of inadequate pre-service training of the respondents. According to Van Crowder [18], extension methodology is often by-passed in many intermediate levels whose primary function is to train students to work as field extension agents in an effort to insert specialized technical agriculture in the curriculum [17].

In addition, a study [7] on the positive and significant relationship between experience and knowledge in dairy marketing, revealed that, the higher the experience of members in transacting with the dairy cooperatives, the higher will be their knowledge in dairy marketing. The prime reason for this is that knowledge is the sum of

experience that a farmer gets throughout life. Conversely, there was negative and significant relationship between the age of the members and their training needs in dairy marketing. In other words, as the age of the members increase its training need decreases. The major reason for such relationship might be due to the fact that, members do not seek new idea and knowledge as their age increases in which they tend to conform to their previous practices performed for long period of time in their life. The study found that the respondents have a medium need for training, the field of fish diseases and their causes were most in need of training. There's a positive relation between the level of training needs and ponds area and negative with years of experience, training courses and net profit [19]. According to the extension agents these were the major blockage that the adoption and disseminations of improved technology is unhurried among the farmers. Majority (46%) of the extension agents demanded provision of resources such as (funds, mobility, staff, equipment's, offices), while the remaining respondents demanded provision of inputs (28%), training (18%) and demonstration plots (8%) to make agricultural extension services farmers friendly. Majority (85%) of the extension agents mentioned that the extension publication is a main source of information regarding improved agricultural technologies.

While a minor proportion received updated information from other sources such as agricultural research institutes (8%), TV/Radio (3%), training and agricultural officers (2%) as demonstrated. Regular training is the basis for effective extension agents due to rapid changes occurring in the extension environment because in-service training will help extension to develop the knowledge, skills and attitudes, which is necessary to meet an increasing set of diverse demands for the present days. Majority (58%) of the extension agents stated that they need training in improved crop management followed by (15%) in computer, (12%) in integrated pest management (IPM), (9%) in orchard management and (3%) in extension education, office management and planning respectively. Twenty nine percent of the extension agents reported that they suffered from lack of resources, followed by poor knowledge (24%), illiteracy (16%) among the farmers/resist to adopt improved technologies, communication problem (11%), lack of literatures (8%), lack of in-service training (5%) on improved technologies, farmers cooperation regarding training/field days (5%) and poverty (3%) respectively as indicated [20]. A study [21] indicated that there is a need to attend training

courses to increasing skills, knowledge and information in many areas in the field of agricultural extension. A previous study [22] showed that the professionals mostly preferred to participate in in-service training courses to develop their competences including situational analysis, reflective practice, project management, professional practice and systematic inquiry, respectively. Therefore, these courses can ensure their continuous professional development. Another study [5], concluded that the training needs for extension agents in the axis of work extension preparation was immense and that the priorities of training needs for extension agents were at the center of "knowledge of the different types of plan extension work compared with the time," as it was ranked first in terms of the need for training of the respondents, while the other axis " evaluation of extension work plan " ranked last in terms of respondents needs.

CONCLUSIONS

Based on findings training programmes have to be planned well by the training institutes and governments should take into consideration of the training needs of the AOs and AEOs so that they may acquire the relevant Knowledge and skill in the new techniques and the same may be imparted to the farmers and they can also upgrade the existing knowledge in better manner. Moreover farmers are not fully aware of appropriate farming techniques, management skills and relevant programmes available by services. Extension officer needs to guide the farmers to acquire new problem solving techniques and knowledge. And work to meet their needs in this area through the preparation and implementation of specialized training programs dealing with their responsibilities and the Ministry of Agriculture and the General Authority for guidance and coordination of agricultural cooperation with universities. So training needs plays a very important role in the lives of agricultural personnel as well as farmers. You should take into account that there is a continuing need for training because of the ongoing agricultural developments in modern technology and new sophisticated research information.

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