Training Needs Identification of Agricultural Extension Agents in Wadi Zabid of Tihama Region, Yemen

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Abstract

This study explored and described the in-service training needs of agricultural extension agents in Wadi Zabid of Yemen. Using a structured questionnaire, data were collected from forty one (n=41) randomly selected extension agents. Based on the Borich Needs Assessment Model, a survey of 40 competencies from previous research was developed to identify training needs of extension agents (n=41). Mean and standard deviation were calculated to report extension agents' perceived level of performance and ability to practice for each professional competency, while mean weighted discrepancy scores (MWDS) were calculated to indicate in-service training needs.

Findings revealed that the mean age of the respondents was 42.3 years. 31.7 per cent of them have a Bachelor's degree in agriculture and more than half (51.2 %) of the respondents had been working in extension services for 18 years. In addition, 73.2 per cent of the extension agents were male and 26.8 per cent were female. Furthermore, the findings of this study reported that the most important competencies for extension agents were understanding the farming and production system(M=4.78);communicating farmers' problems to researchers (M=4.73); understanding the duties and responsibilities at district and village level (M=4.70); understanding rural culture(M=4.70) and understanding the educational learning process of extension education (M=4.65). However, the findings showed that the highly rated in-service training needs were,producing print-based products (MWDS= 16.38); searching information on the internet(MWDS=15.7); preparing power point slides (MWDS=15.43); using e-mail (MWDS=14.88); using word processing software (MWDS=14.01); using flip chart flash cards(MWDS=12.56); operating film projector (MWDS= 12.25) and evaluating the effectiveness of extension visual-aids respectively(MWDS= 11.95).

Key words: training needs, competencies, agricultural extension agents, Yemen

Introduction

Agricultural extension has an important function worldwide in assisting rural people through informal education and technical procedures in order to increase their production efficiency, income and standard of living. (Roling, 1988; Van den Ban and Hawkins, 1996; Garforth, 1997).

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Article Received on: 15-02-2018 Accepted on: 04-03-2019

Furthermore, agricultural extension as an organization established for non-formal educational purposes depends on the extension agents in promoting and implementing its educational programs.

Chizari, Karbasioun and Lindner (1998) stated that well-trained extension agents are the basic resource for a successful extension organization. Without that extension service will be seriously limited in its ability to plan and execute effective extension programs and other technology transfer activities.

In addition, the effectiveness of an extension agent is an important indicator to determine the success or failure of agricultural extension programs (Oakley and Garforth, 1985). However, to be effective, they need competencies in the agricultural extension education process (Gibson and Hillison, 1994). Accordingly, providing regular training for extension agents can be considered as a key tool that effectively helps to keep them qualified and capable to do their duties and responsibilities to meet community and farmers' needs.

Moreover, Gibson and Brown (2003) argued that agricultural extension agents must have competencies comprising knowledge, attitude and skills that are critical to their successful performance. However, the specific competencies needed by extension agents relate to the mission of their organization and the nature of their job. Training is the tool that can help by providing the extension agents with necessary competencies to make them capable of delivering better extension services to farmers.The crucial issue is who will provide the training and in which areas. The training programs in order to be effective, must be conducted based upon training needs identification.

Al-Zahrani et al. (2017) stated that keeping in mind the important role of extension agents in technology transfer, it is important to assess their competencies and training needs to enhance their performance. Therefore, identifying training needs is the first step in the training and educational strategy of an organization and is important to meet the continuing professional development needs of the agricultural extension services.

A study by Lyles and Warmbord (1995) to assess the training needs of the Mississippi Cooperative Extension Service as perceived by 232 extension agents, outlines that four competency areas namely administrative roles, program administration, financial management, and office management were assigned higher mean training need scores.

A study was carried out by Alzahrani and Sorour (1993) to identify the training, knowledge and skills needed by Saudi extension workers in different topics of agricultural technology. The researchers found that there were nine desired competency areas in which respondents wanted to be trained. The priority was given to plant protection competencies with a mean of 4.23. Additionally, the researchers asserted that most of training programs for agricultural extension agents were designed without determining their real training needs scientifically.However, extension agents not only need agricultural technical competencies, but they must also be knowledgeable about the specific culture and social norms of the people with whom they work. They need extension management skills,communication methods that help

them to convey agricultural technical information. In other words, agricultural agents need to possess relevant educational and managerial competencies.

As we have seen, the previous mentioned studies have only focused on technical aspects rather than extension educational competency such as extension principles and philosophy, management, communication and preparation of visual materials and computer operating skills.As Robert S. and Harder A.(2011) stated, a problem with extension services in developing countries is the lack of an adequate balance between the technical and professional competencies of personnel. Moreover, there is a limited number of empirical studies conducted in Yemen regarding training needs identification. This study, therefore, would increase the broad knowledge of the field. Furthermore, this additional information will provide a foundation for fine-tuningthe training programs in the future.

Theoretical Framework of the Study

In agriculture and extension, Roling (1988) argued that there is a considerable emphasis on the use of extension for developing the human being, on forming or enhancing his or her capacities to make decisions to learn, to manage and to communicate with others. This is actually what is called human resource development which focuses on rural people themselves and the social systems in which they function, and deals with such processes as community and leadership development, building institutions and farmer mobilization and organization. He emphasized that:

> *"the objective of HRD is not to develop farms through people but to develop people themselves, so as to make them better leaders, entrepreneurs and decision makers, and to help them organize themselves into effective associations, institutions and, of course, constituencies (Roling, 1988p. 149)".*

Therefore, optimizing Human Resource Development (HRD) must be a priority for agricultural extension services in Yemen and worldwide. Consequently, training is a process of acquiring specific skills, rules, concepts or attitudes to perform tasks better (Goldstein, 1993). It helps the professional to learn and obtain relevant and new information.

Kaufman and English (1979) argued that need assessment is a vital tool to HRD and organizational development for problem identification and justification, a tool that requires the consensus of partners in planning and setting priorities on needs.

Continuous upgrading of extension personnel through in-service training is also necessary to ensure coping with changing in job tasks and the varied needs of the rural community. In order to make the in-service training effective and efficient for extension agents, training needs assessment, is an important step to be implemented because it provides critical information into the development of training programs.This study was guided by a definition of training needs proposed by Borich (1980). According to Borich, a need is described as a discrepancy or gap between what is, or the current situation and what should be. The methodology section provides more details regarding Borich needs assessment model.

Objectives

The general objective of the study was to identify the training needs regarding selected extension education competence as perceived by agricultural extension agents in Wadi Zabid of Yemen. More specifically, the objectives of the study were:

1. To describe the demographic characteristics of extension agents
2. To determine the respondents' perceived importance of the competencies needed
3. To determine the current level of competencies applied by extension agents
4. To identify the training needs of extension agents in specific competencies

Methodology

The design of the study was a descriptive survey. The respondents for the study were 41 agricultural extension agents selected from Wadi Zabid extension department. A questionnaire consisting of two parts was distributed to the respondents. The first part of the questionnaire gathered socio-demographic information on the sample. The second part included a list of competencies which was developed. The list is based on selected 40 competencies identified by the researcher through a literature review and resources such as Baker and Villalobos (1997); Martin and Sajilan (1989); Gamon and Mohammed (1992); Radhakrishna and Smith(2002); Khin Mar Cho (2002). The list consisted of 40 different competencies covering four competency areas namely, principle of extension education, extension administration, preparation /use of audio visual materials and computer application/skills.

A panel of professional and academic extension education experts was asked to review the instrument for content validity. In addition, the reliability test (Cronbach's alpha) was (0.932) and for ability part was (0.853). Each area was measured by restructuring statements of indicators or items to be answered by the respondent according to five point Likert-type scale of measurement. Furthermore, the extension agents were asked to rate the level of importance and ability for the selected competencies as perceived by extension agents.

Descriptive statistics mean and standard deviation were calculated to determine the competencies that extension agents perceived to be important. In addition, mean and standard deviation were employed to determine the competencies in which extension agents perceived themselves to be competent.

The Mean Weighted Discrepancy Score (MWDS) was calculated to describe the overall rankings for each of the competency based on Borich needs assessment model (1980). According to Waters and Haskell (1989) the Borich model weighted discrepancy score is used to determine needs of learners that usually provides results that are different from those that would be obtained by more traditional means of needs assessment or from those identified by using the importance ratings.

Furthermore, the MWDS score was calculated, first by determining the Discrepancy Score (DS) through subtracting the ability score from the importance score, then calculating Weighted Discrepancy Score

(WDS) through multiplying the Discrepancy Score (DS) by the mean importance rating for each competency. Finally the MWDS was calculated for each competency as a sum of WDSs divided by the number of observations for each competency.

Data were collected by distributing the questionnaire among the respondents, and then the statistical data were coded and analyzed using the Statistical Package for Social Sciences (SPSS 22).

Results and Discussion

Socio-demographic Characteristics of the respondents

Table 1 reveals that 73.2 per cent of the extension agents were male and 26.8 per cent were female. The respondents' age ranged from 32 to 55 years with mean of 42.3 years and standard deviation of 5.91 indicating a moderate variation in age among the respondents.

More than half of the extension agents (51.2 %)had more than 18 years of experience. Approximately 31.7 per cent had a bachelor's degree;24.4 per cent of them had a high school certificate; 22 per cent had a high school agriculture technical certificate. In addition, 22 per cent had an elementary school certificate.This level of education, coupled with lack of in-service training would affect the technical knowledge of extension agents.

Table 1. Socio-Demographic Characteristics

(n=41)

Demographic Characteristics	Frequency	%
Gender		
Male	30	73.2
Female	11	26.8
Age (Years)		
less than 32	2	4.9
32-37	8	19.5
38-43	10	24.4
44-48	17	41.5
More than 48	4	9.8
Marital Status		
Single	2	4.9
Married	37	90.2
Divorced	1	2.4
Widow	1	2.4
Educational Qualification		
Elementary School certificate	9	22.0
High School certificate	10	24.4
High School Agriculture Technical	9	22.0
B.Sc., Agriculture	13	31.7

Demographic Characteristics	Frequency	%
Years of experience		
less than 2	1	2.4
3-10	3	7.3
11-18	16	39.0
more than 18	21	51.2

Level of competency

Agricultural extension agents considered all of the competencies needed for realizing the agriculture extension services programs. According to these extension agents, the most important competency was, understanding the farming and production system (*M*= 4.83, *SD*= 0.38), followed by ability to communicate farmers problems to researchers (*M*= 4.80, *SD*= 0.45), understanding the duties and responsibilities of extension workers at the district and village level (*M*= 4.80, *SD*= 0.46), ability to understand rural culture (*M*= 4.78, *SD*=0.41), understanding educational learning process of extension education (*M*= 4.78, *SD*= 0.52) and understanding the objectives of agricultural extension services (*M*=4.73, *SD*=0.59). Table 2 lists extension agents' perceived level of importance for each competency.

Murphy and Bruening (2006) carried out an elaborate study to identify the educational needs of extension agents in Limpopo Province, South Africa. The results of the study showed that the extension administration skills, administrative record-keeping, development of archives, project management, human resource and development skills, and financial management and computer skills are essential to the effectiveness of extension agents.

Table 2. Extension agents' Perceived level of importance on selected competencies

(n=41)

Importance Ranked by Mean Score & Standard Deviation	M	SD
Understanding the farming and production system	4.83	0.38
Ability to communicate farmers problems to researchers	4.80	0.45
Understanding of the duties and responsibilities of extension workers at the district and village level	4.80	0.46
Ability to understand rural cultures (such as customs, dialects etc,) when dealing with rural public	4.78	0.41
Understanding educational learning process of extension education	4.78	0.52
Understanding the objectives of agricultural extension services	4.73	0.59
Ability to keep and maintain necessary department records	4.70	0.51
Understanding contribution of agriculture to community	4.70	0.46
Ability to use e-mail	4.65	0.65
Ability to communicate effectively with extension staff	4.65	0.57

Importance Ranked by Mean Score & Standard Deviation	**M**	**SD**
Ability to use word processing software	4.63	0.66
Ability to participate in forming policy (serves on committees, etc.)	4.63	0.62
Understanding the purpose of extension services	4.63	0.83
Ability to produce print-based products (eg. newsletters, brochures, posters)	4.63	0.79
Ability to search information on the internet	4.63	0.76
Ability to operate a computer	4.63	0.53
Understanding organizational structure, vision, mission, history	4.63	0.53
Ability to manage use of time	4.60	0.62
Ability to produce electronic power point slides	4.58	0.74
Understanding the mechanisms of extension-research linkages	4.58	0.97
Ability to develop cooperative relationship with other agencies at regional level (e.g. farmer's cooperation association, local council, NGOs)	4.56	0.63
Ability to evaluate the effectiveness of Audio Visual Aids	4.53	0.63
Ability to select appropriate audio visual aids for presentation	4.53	0.63
Knowledge of professional improvement opportunities	4.48	0.77
Understanding of basic policies and procedures of extension	4.48	0.59
Ability to operate slide projector	4.46	0.67
Understanding the agricultural extension approaches	4.46	0.74
Ability to use different types of cameras and other photographic equipment	4.44	0.63
A knowledge of existing policies in extension services and other rural development policies	4.44	0.74
Understanding the adult learning theory	4.44	0.80
Ability to use flip chart flash cards	4.36	0.76
Ability to identify the partners and stakeholders with extension organizations	4.31	0.87
Ability to practice the adult learning theory	4.31	0.85
Ability to operate Over Head projector (OHP)	4.29	0.83
Ability to operate film projector	4.29	0.83
Ability to operate video player	4.26	0.77
Understanding the emphasis the interdependence of agriculture with other segments of economy	4.26	0.97
Understanding the importance of democratic principles in extension work	4.24	0.88
Knowing the history of extension in Yemen	4.24	1.06
Understanding the unique partnerships in extension organization (stakeholders, partners volunteers)	4.07	1.10

Level of competency ability

Table 3 indicates that extension agents perceived that they were competent in only five of the 40 competencies listed. These competencies were, understanding the farming and production system (*M*= 4.17, *SD*=0.67), ability to understand rural culture (*M*= 3.95, *SD*=0.89), understanding of the duties and responsibilities of extension workers at the district and village level (*M*= 3.92, *SD*=0.68), understanding the objectives of agricultural extension services (*M*= 3.70, *SD*=0.95) and understanding contribution of agriculture to community (*M*= 3.51, SD=0.96).

Table 3. Extension agents' perceived level of ability on selected competencies (n=41)

Ability Ranked by Mean Score & Standard Deviation	M	SD
Understanding the farming and production system	4.17	0.67
Ability to understand rural cultures (such as customs, dialects etc,) when dealing with rural public	3.95	0.89
Understanding the duties and responsibilities of extension workers at the district and village level.	3.92	0.68
Understanding the objectives of agricultural extension services	3.70	0.95
Understanding contribution of agriculture to community	3.51	0.92
Understanding the purpose of extension services	3.36	0.66
Understanding organizational structure, vision, mission, history	3.34	0.96
Ability to communicate effectively with extension staff	3.34	1.03
Understanding educational learning process of extension education	3.29	1.07
Ability to keep and maintain necessary department records	3.21	0.98
Understanding the importance of democratic principles in extension work	3.07	1.05
Understanding the agricultural extension approaches	2.95	0.86
Ability to manage use of time	2.90	0.96
Ability to develop cooperative relationship with other agencies at regional level (e.g. farmer's cooperation association, local council, NGOs).	2.85	1.19
Understanding the unique partnerships in extension organizations (stakeholders, partners, volunteers)	2.80	1.20
Ability to select appropriate audio visual aids for presentation	2.75	0.94
Knowing the history of extension in Yemen	2.75	0.76
Ability to identify the partners and stakeholders with extension organizations	2.60	1.39
Knowledge of professional improvement opportunities	2.58	1.20
Understanding of basic policies and procedures of extension	2.56	1.04
Understanding the adult learning theory	2.51	0.92
A knowledge of existing policies in extension services and other rural development policies	2.51	0.92

Ability Ranked by Mean Score & Standard Deviation	M	SD
Ability to Participate in forming policy (serves on committees, etc.)	2.46	1.05
Understanding the mechanisms of extension-research linkages	2.46	1.20
Ability to communicate farmers problems to researchers	2.43	1.32
Understanding the emphasis the interdependence of agriculture with other segments of economy	2.43	1.14
Ability to use different types of cameras and other photographic equipment	2.17	1.11
Ability to operate video player	2.14	1.19
Ability to operate a computer	2.12	1.20
Ability to practice adult learning theory	2.07	0.87
Ability to evaluate the effectiveness of AVA	1.90	0.91
Ability to operate slide projector	1.82	1.02
Ability to operate Over Head Projector (OHP)	1.80	1.03
Ability to use word processing software	1.60	1.02
Ability to use e-mail	1.53	0.95
Ability to use flip chart flash cards	1.51	0.89
Ability to operate film projector	1.46	0.83
Ability to search information on the internet	1.31	0.64
Ability to produce electronic power point slides	1.21	0.61
Ability to produce print-based products (eg. newsletters, brochures, posters.)	1.12	0.33

Training Needs as identified by extension agents

Table 4 shows the highest MWDS indicating the highest in-service training need. The findings show that the extension agents need training in the following competencies: ability to produce print-based products (eg. newsletters, brochures, posters) (*MWDS*= 16.38), ability to search information on the internet (*MWDS*= 15.71), ability to prepare electronic power point slides (*MWDS* = 15.43), ability to use e-mail (*MWDS*= 14.88), ability to use word processing software (*MWDS*= 14.01), ability to use flip chart flash cards (*MWDS*= 12.56), ability to operate film projector (*MWDS*= 12.25), ability to evaluate the effectiveness of Extension Visual Aids (MWDS= 11.95), ability to operate slide projector (MWDS= 11.64), ability to operate a computer (MWDS=11.64) and ability to communicate farmers problems to researchers (MWDS=11.48). Table 4 lists thecompetencies in descending order from the most needed to least needed. The findings are in the line with Ovwigho (2011) who reported that the extension agents agreed that they needed training in computer application, preparation and use of audio-visual instructional materials.

Table 4. Training Needs of Agriculture Extension Agents by calculating Mean Weighted Discrepancy Scores (MWDS)

(n=41)

Rank order	In-Service Training Needs Ranked by MWDS	MWDS
1	Ability to produce print-based products (eg. newsletters, brochures, posters)	16.38
2	Ability to search information on the internet	15.71
3	Ability to produce electronic power point slides	15.43
4	Ability to use e-mail	14.88
5	Ability to use word processing software	14.01
6	Ability to use flip chart flash cards	12.56
7	Ability to operate film projector	12.25
8	Ability to evaluate the effectiveness of Extension Visual Aids	11.95
9	Ability to operate slide projector	11.64
9	Ability to operate a computer	11.64
10	Ability to communicate farmers problems to researchers	11.48
11	Ability to operate Over Head projector (OHP)	10.78
12	Understanding the mechanisms of extension-research linkages	10.17
13	Ability to use different types of camera and other photographic equipment	10.06
14	Ability to participate in forming policy	10.05
15	Ability to practice the adult learning theory	9.58
16	Ability to operate video player	9.05
17	Understanding the adult learning theory	8.55
17	A knowledge of existing policies in extension services and other rural development policies	8.55
18	Understanding of basic policies and procedures of extension	8.53
18	Knowledge of professional improvement opportunities	8.53
19	Ability to select appropriate audio visual aids for presentation	8.07
20	Ability to manage use of time	7.87
21	Understanding the emphasis of the interdependence of agriculture with other segments of economy	7.80
22	Ability to develop cooperative relationship with other agencies at regional level	7.78
23	Ability to identify the partners and stakeholders with extension organization	7.37
24	Understanding educational learning process of extension education	7.11
25	Ability to keep and maintain necessary department records	7.00
26	Understanding the agricultural extension approaches	6.74
27	Extension administration Knowing the history of extension in Yemen	6.52

Rank order	In-Service Training Needs Ranked by MWDS	MWDS
28	Understanding organizational structure, vision, mission, history	5.99
29	Understanding the purpose of extension services	5.87
30	Ability to communicate effectively with extension staff	5.79
31	Understanding contribution of agriculture to community	5.62
32	Understanding the importance of democratic principles in extension	4.96
33	Understanding the objectives of agricultural extension services	4.84
34	Understanding the unique partnerships in extension organizations (stakeholders, partners, volunteers)	4.67
35	Ability to understand rural cultures (such as customs, etc.) when dealing with rural public	4.31
36	Understanding the duties and responsibilities of extension workers at the district and village level	4.22
37	Understanding the farming and production system	3.18

Conclusion and Recommendations

Given the important role of agricultural extension services in overall agricultural development, need for competent agricultural professionals in Yemen is ever high.The researcher believes that well-trained extension agents can influence the economic setting within the country. In addition, good extension agents can help farmers to make their decisions and can provide them with information, guidance, encouragement, motivation and skills in making their livelihoods better and sustainable.

The findings of this study will assist the department of agricultural extension of the Tihama Region to strengthen its in-service training programs by taking into account the importance of identifying training needs before conducting in-service training programs.This study also reveals that there is a need for improving the knowledge and abilities of agriculture extension agents in identified areas of extension education. The findings are crucial to extension agents'development in establishing priorities to design and to implement in-service training programs coupled with practical demonstrations on important identified areas.

Based on the findings of the study, the following recommendations could be drawn:

1. Training programs should address the match between an organization's needs and extension agents'available knowledge and skills.

2. Training needs analysis should be carried out periodically to determine the training needs of extension agents.

3. Designing training programs with more focus on strengthening the various competencies that would help the extension agents to perform their duties effectively.

4. Agriculture extension agents' in-service training programs should be planned and designed in extension administration, computer skills and communication skills.

5. There is a need for collaboration between departments of agricultural extension within Ministry of Agriculture and agricultural colleges and institutions in reviewing agricultural extension curriculum that will assist the agricultural extension graduates in facing new challenges so as to perform effectively and efficiently as extension agents.

6. More research needs to be carried out in different regions of Yemen in order to determine the extension educational needs of agriculture extension agents.

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