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Investigation of Effective Factors on Educational Needs of Rice Supervising Engineers in Agricultural Engineering and Technical Consulting Services Companies in Mazandaran Province, Iran

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Abstract

One of the most important factors in the development of societies, consider to traning. Identification and training needs analysis, is a prerequisite for a successful educational system and determine the training needs is considered the first step of educational planning. The purpose of this study was to investigate Educational needs of engineers, rice supervisors Engineering agricultural engineering and technical consulting services companies in Mazandaran. The methodological approach of this study was descriptive- correlational. Statistical population of this research consisted of 186 rice supervisor engineers of Mazandaran province, and based on Cochran formula 113 people were selected randomly through proportional stratified sampling. Data collection tool was a questionnaire , whose validity was confirmed by a panel of experts, and its reliability was measured through Cronbach's alpha. Cronbach's alpha ranged from 0.75 to 0.96. for educational-professional needs assessment of agricultural extension agents was used from Burich model and according to the mean weight discrepancy score (MWDS) were rated. The results achieved from path analysis method indicate that the highest effect on educational needs was related to economic factors with the path coefficient of 0.231. In addition, information resources was also effective on the educational needs with the path coefficient of 0.171.

Keywords: Training needs assessment, Burich model, Rice supervising engineers, Mazandaran.

Introduction

Nowadays, education has changed to be a primary human requirement and is one of the most important factors in the development of societies which merits attention and as a result it can be the source of social variations and changes and can serve as the main cause in developing human resources (Hajihosseinnejad, 2008). The existence of any organization is overwhelmingly influenced by the staff's skills and knowledge (Tavassoli et al, 2007). Organizations, which invest a lot of effort and resources in training (educating) and developing their own employees' skills prepare the grounds for constant skills progression, increased motivation, improved knowledge transfer and positive psychological and

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organizational dynamism and enhance their competitive opportunities (pate and martin, 2000). The crucial point in the training and educational planning rests on the realistic and precise training plan to attain the best outcomes (Hajimirrahimi, 2003). Identifying and analyzing the educational needs is a prerequisite for a successful educational system and determining the individuals' educational needs is considered as the first step in educational planning (Mirzamohammadi, 2005). The clear-cut and detailed educational needs assessment can be the principal foundation for planning and implementing an educational program (Zarafshani, et al, 2011). Assessment in consort with identifying the critical needs can serve as the basis for the goals and naturally provide a suitable ground for organizing other important elements centered around the prioritized needs, therefore, all the decisions concerning the specific objectives, proper educational content and operative use of limited (human, financial and material) resources are affected by needs assessment studies (Khavari, 2004). One of the engaged measures in the agricultural sector is retaining and recruiting the agricultural experts and experienced graduates of higher education institutions in terms of carriers or entities as expert observers to enhance production efficiency, improve productivity and develop agriculture in increasing production projects. These experts' duty is to provide consulting and educational services to farmers in all phases of agriculture as enclosed in the plan (Feli and Ahmadi, 2008). On the other hand, these consultants and extension agents can play an important role in transferring their technical knowledge and new skills to farmers to improve the effectiveness of extension services in farm management (Rivera and et al, 2004). These supervising observers and experts will succeed in their mission provided that they meet their training needs. Nevertheless, the existing educational and training courses in these companies are insufficient and sometimes irrelevant to develop and improve the members' knowledge and expertise and keep them updated because these supervising observers and experts' lack of information and failing to be updated has raised an issue in these companies despite maintaining educational and training classes. Based on a categorization and zoning paradigm, Mazandaran Engineering Organization in collaboration with the Agricultural Jihad Organization have established more than 102 agricultural engineering and technical consulting services companies (with 186 rice supervising engineers) since 2007 which are settled in the municipalities of the province and are active in their respective area on the basis of the operating companies ranking obtained from the engineering organization. Since companies' members are not technically strong, therefore, it is inevitably necessary to provide them with training needs. Correspondingly, studies show that there is not a comprehensive study on the educational needs of rice supervising engineers in agricultural engineering and technical consulting services companies in Mazandaran. As a result, besides analyzing the current rice supervising engineers' educational status, the identification of the educational needs will be addressed and sought as well. There are some studies aligned with the title of this research the result of which will be given as follows. Pezeshkirad (2008) in a research on "assessing the vocational and educational needs of agricultural trainers in Mazandaran and Golestan provinces agricultural centers" indicated that there was a significant relationship between variables of age, years of teaching agriculture and the number of attended in-service courses with the amount of educational needs. Chizari etal (2006) conducted a study on "evaluating the educational needs of experts in agricultural product insurance centers" and showed that the education level, work experience and insurance-based monthly income had a significant negative relationship with educational needs while a positive and significant relationship was found between the participation in training and extension classes and educational needs and there was not a significant relationship between educational needs and age, marital status, insurance experts' gender and experience in extension activities. The independent variable of fields of study had a positive impact on the educational needs as the dependent variable. Ghimire and martin (2011) in a study on" the importance of needs assessment" revealed that there was a significant relationship between gender and level of education with educational needs. Ango etal (2011) conducted a study on "the educational needs assessment and its impact on business performance of agricultural extension agents" demonstrated that there was a significant difference between literacy level, training type and respondents' educational needs. Chawang (2010) in a study entitled as "the educational needs of rice farmers in Nagaland" revealed that a significant relationship exists between the rice farmers' personal, social and economic characteristics and their educational needs. Padaria eatal (2009) in a study

on "evaluating the educational needs of cotton growers in Karnta" indicated that there is a significant relationship between the variable of source of information and educational need. Rastgu etal (2013) conducted a study on "modeling the educational needs of warm-water fish farmers in Sari" and concluded that 54/9% of the educational-extension needs variance is explained and determined by variables including the social characteristics, age, income, experience, application of funding facilities and economic factors importance. Schwarz & Gibson (2010) in a study on assessing the needs of the aquatic programs extension agents, professionals and managers engaged in extension programs. They identified the application of continuous education and practical training as an important factor. The general objective of the present study was to investigate the educational needs of rice supervising engineers in agricultural engineering and technical consulting services companies in Mazandaran and its specific objectives include the following:

Identifying and determining various characteristics,
Ranking the educational needs of rice supervising engineers using Borich's model.
Evaluating the effect of various factors in educational needs of rice supervising engineers and designing a model

Materials and Methods

The study is an applied research which adopts the descriptive-correlational method. The area for the study comprised 19 cities in Mazandaran province having 186 rice supervising engineers. The population of the study consisted of all rice supervising engineers with bachelor degrees and above. Cochran formula was used to determine the sample size with which 113 subjects were randomly selected. The number of samples for each category (city) was calculated by the proportionate probability method. The main data gathering tool used in this study was a questionnaire. Questions were developed using theoretical concepts, conducted researches and research hypotheses, and were appropriately corrected by considering the validity and reliability and the field study was used to complete the questionnaires. The questionnaires validity was approved by the experts and professors of Agriculture department at Islamic Azad University of Sari. The reliability of the questionnaire was determined by conducting a pre-test out of the selected samples of which the Cronbach's Alpha coefficient in different parts of the questionnaire ranged from 0.75 to 0.96, respectively.

Table 1. Cronbach's alpha values for the variables

Variable		Number of items	Alpha coefficient
Training needs	Importance	24	0.94
	capability	24	0.96
Economic factors	Importance	5	0.90
	Extent of the problem	5	0.87
Information Resources	Usage	10	0.80
	Suitability	10	0.80
Job characteristics		13	0.75

Results and Discussion

Demographic features of rice supervising engineers

Age group status: Based on Table 2, the average age range of the engineers was 34 years and the highest frequency (31%) was in the age group of 35 to 37 years.

Rice supervising engineers' agricultural activities record: Table 2 shows that 19.5% of supervising engineers had an experience of 1 to 2 years, 41.6% had 3 to 4 years and 38.9% had 5 to 7 years working experience.

The area of land covered in the study: Based on Table 2, the highest frequency (28.3%) of the land was between 80 to 89 hectares and the average land covered by individuals was 102.22 hectares.

The number of farmers under supervision: As Table 2 reveals, the highest frequency (28.3%) of the number of farmers under the supervision fluctuates between 118 to 123 people and the average was 115.1 people.

Participation in the educational and training courses: from all individuals in the study, 81 patients (71.7%) have participated in training courses. And 32 subjects (28.3%) did not participate in the program.

Table 2. Frequency distribution of personal characteristics of respondents

Variable	Variable levels	Frequency	Percent	Mean	Sd
Age (year)	23-25	6	5.3	34	4.25
	26-28	10	8.8		
	29-31	9	8		
	32-34	27	23.9		
	35-37	35	31		
	38-40	26	23		
work record (years)	1-2	22	19.5	4.08	1.79
	3-4	47	41.6		
	5-7	44	38.9		
The area of land covered by rice supervising engineers (acres)	80-89	32	28.3	102.22	17.14
	90-99	23	20.4		
	100-109	12	10.6		
	110-119	16	14.2		
	120-130	30	26/5		
The number of farmers under supervision	100-105	19	16.8	115.1	9.2
	106-111	25	22.1		
	112-117	19	16.8		
	118-123	27	23.9		
	124-130	23	20.4		
Participation in the educational and training courses	Yes	81	71.7		
	No	32	28.3		

Ranking educational needs of rice observers

For educational-professional needs assessment of rice supervising engineers, was used from Burich model, a list of 24 educational-professional needs based on the literature review, the nature of the job and the organization's objectives provided And according to the mean weight discrepancy score (MWDS) were rated (Table 3). For this purpose, initially discrepancy score in as individual (equation 1) and then weight discrepancy score for competence in individual will be calculated (equation 2) at the end with sum discrepancy score divided by the number of individuals mean weight discrepancy score will be calculated (equation 3). As it can be seen in Table 3, regarding the supervising rice engineers' perspective, the type and amount of chemical fertilizers, animal and plants pesticides, with a weighted score of 5.48, fighting with pests and diseases of rice with a weighted score of 3.84 and identifying and fighting the weeds with weighted score of 3.65 had the highest priority, respectively.

$$1 - \text{discrepancy score} = I - C$$

$$2 - \text{weight discrepancy score} = I(I - C)$$

$$3 - \text{Mean weight discrepancy score} = \sum \frac{I(I - C)}{n}$$

(I = Importance. C = capability. n = number of rice supervising engineers)

Table 3. Ranking educational needs of rice observers

training needs	Mean (Importance)	Mean (Capability)	MWDS	Rank
The type and amount of chemical fertilizers, animal and plants pesticides	4.13	2.89	5.48	1
Fighting with pests and diseases of rice	3.64	2.91	3.84	2
Identifying and fighting the weeds	3.52	2.92	3.65	3
Seed transmission in seed bed	3.58	3.02	3.54	4
Irrigation Management	3.63	2.95	3.29	5
Knowledge of warehousing practices	3.61	3.53	1.58	6
Knowledge of seed bed Management	3.53	3.32	1.47	7
Tillering in seed bed and main ground	2.97	2.95	1.25	8
Selection of appropriate crop rotation	2.99	3.03	1.19	9
Disinfection and germination of seed	3.07	2.97	1.11	10
Knowledge of soil nutrient elements	3.22	3.30	1.02	11
Workshop	3.31	3.25	1	12
Familiar with importance and necessity of rice cultivation in Iran	3.43	3.51	0.89	13
Select the time of rice harvest	3	2.83	0.80	14
Select the timing of planting	3.01	3.04	0.78	15
How Work With Agricultural Machinery	3.77	4.06	0.50	16
Familiar with Planting and Care of rice transplant in tray	2.98	3.09	0.44	17
Familiar with Quality Management	3.46	3.49	0.44	18
Postharvest operations	3.27	3.39	0.42	14
Dentification of suitable varieties of rice	3	3.61	-0.78	20
Preparing the ground for rice planting	2.92	3.59	-0.62	21
Familiar with stages of preparation and selection of appropriate seed	3.29	3.75	-0.35	22

Prepare transplanting for transition to main ground	2.91	3.14	-0.33	23
According to the discussion of soil salinity	2.91	3.45	-0.22	24

Correlation Analysis

Correlation analysis of the research variables with educational needs

According to table 4 between the variables provide the required input(importance of Economic factors), timeliness signing contracts from agricultural organization with observer engineers (importance of Economic factors), Preparing Preliminary by the government for Provide the input (amount of Economic factors problems), timeliness signing contracts from agricultural organization with observer engineers (amount of Economic factors problems)and provide the required input (amount of Economic factors problems)with the extent of educational needs there are a significant relationship.

Table 4. The relations between variables Economic factors with educational needs

Amount of economic factors problems	P	Importance of economic factors	P
Commitments to do from the government	-0.035	Commitments to do from the government	-0.024
Preparing Preliminary by the government for Provide the input	0.189 *	Preparing Preliminary by the government for Provide the input	-0.031
Review of Financial problems	-0.131	Review of Financial problems	-0.034
Provide the required input	0.251 **	Provide the required input	-0.187 *
Timeliness signing contracts from agricultural organization with observer engineers	-0.198 *	Timeliness signing contracts from agricultural organization with observer engineers	-0.221 *

* Significant at level 5% ** Significant at level 1%

According to table 5 between the variables communicate with the department of agriculture Jahad (Suitability of information resources), the use of public media(Radio, TV, etc) (Suitability of information resources), communication with experts of research centers(Suitability of information resources), communicate with friends and other observers(usage of Information resource), talk with each other and with experts(usage of Information resource) and the use of educational films and slides(usage of Information resource) with the extent of educational needs there are a significant relationship.

Table 5. The relations between variables of information resource with educational needs

Suitability of information resource	P	Usage of Information resource	P
Communicate with the Department of jahad Agriculture	-0.112	Communicate with the Department of jahad Agriculture	-0.210 *
The use of public media(Radio, TV, etc)	0.080	The use of public media(Radio, TV, etc)	0.018
Communicate with friends and other observers	-0.195*	Communicate with friends and other observers	-0.150

Talk with each other and with experts	-0.195*	Talk with each other and with experts	-0.014
Use of computers, internet	-0.087	Use of computers, internet	0.109
Contact and communicate with innovators	-0.037	Contact and communicate with innovators	0.013
Implementing the recommendations of local leaders	-0.105	Implementing the recommendations of local leaders	-0.045
Use of Recommendations of the Islamic Council of area	-0.116	Use of Recommendations of the Islamic Council of area	-0.077
The use of educational films and slides	-0.195*	The use of educational films and slides	0.195*
Communication with experts of research centers	-0.001	Communication with experts of research centers	0.186*

* Significant at level 5% ** Significant at level 1%

According to table 6 between the variables nature of work, monotonous and repetitive tasks, the number of hits on rice lands covered by supervisors per week, wages and benefits fit and proper and the lack of freedom of action and autonomy in work with the extent of educational needs there are a significant relationship.

Table 6. the relations between variables of Job characteristics with educational needs

(Job characteristics)	P
Wages and benefits fit and proper	-0.249**
Nature of Work	-0.215*
There are good partners	-0.211 *
Sufficient authority	-0.014
Mental and physical fatigue	0.081
Individual commitment to work with farmer	-0.139
High workload and low runtime	-0.043
Monotonous and repetitive tasks	0.211*
The lack of freedom of action and autonomy in work	0.271**
High speed of work	0.153
Lack of interest and lack of interest in its	0.148

work	
Job Security	-0.029
uncertainty of the job Next of Supervisors	0.087
Experience	0.054
The amount of rice land covered by Supervisors	0.064
The number of beneficiaries under the supervision	0.007
The number of hits on rice lands covered by Supervisors per week	0.198*

* Significant at level 5% ** Significant at level 1%

path analysis of training needs rice supervisors engineers

Educational needs of rice supervising engineers in agricultural engineering and technical consulting services companies modeling in Mazandaran province are shown in Figure 1. Based on table 7, the highest effect on educational needs was related to economic factors with the path coefficient of 0.231. In addition, information resources was also effective on the educational needs of rice supervising engineers with the path coefficient of 0.171.

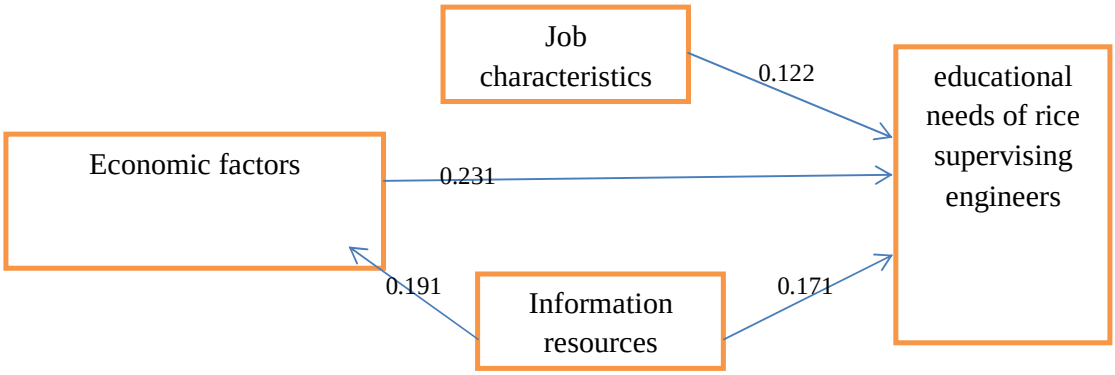

Figure 1. The educational needs of rice supervising engineers modeling in Mazandaran province

Table 7. The direct, indirect and total effects of educational needs path analysis of rice supervising engineers in Mazandaran province

path	Direct	Indirect	Total
From Economic factors to educational needs	0.231	-	0.231
From Information resources to educational needs	0.171	0.044	0.215
From Job characteristics to educational needs	0.122	-	0.122

Recommendation

- Regarding the supervising rice engineers' educational needs in the province, it is recommended that factors such as the type and amount of chemical fertilizers, animal and plants pesticides, fighting with rice pests and diseases and identifying and fighting the weeds be considered.
- When conducting the training classes, more training videos and slides should be used to enhance better understanding because they not only serve as a conducive tool in faster learning of the material, but also they can provide the opportunity for participants to practically watch the working process.
- Along with other methods in the educational and training courses and to improve the effectiveness of teaching methods to meet the educational needs, it is better to apply videos and practical training to a greater extent because it leads to encountering problems thereby increasing individuals' concentration, helping for a better understanding of the issue, increasing confidence in dealing with farmers and their problems, reducing shyness and embarrassment felt by some observers which will eventually diminish the educational needs of individuals.
- Considering the economic factors, it is better that the government take the necessary measures to ensure the timely delivery of inputs, correspondingly, to ease the supervising engineers' problems and also to establish better relationships between supervisors and farmers, and the responsibilities should rest on engineering and technical consulting services companies shoulder.
- Regarding the educational problems and obstacles, it is recommended that teaching materials be updated, the classes and meetings to make it possible for the most people to attend should be in agricultural organization, educators should be provided with a comprehensive lesson plan and new and updated content should be presented to avoid repetitive materials.
- Considering the estimated employment (vocational) challenges, it is suggested that farmers' trust to the supervising engineers, promoting privatization and creating and enhancing communication between supervising engineers, universities and research centers be considered.

Resources

1- Ango, A. Yakuba, A and smaila, T. 2011. Training needs assessment and their impact on business Performance of agricultural extension workers. Journal of Agricultural Science, Vol. 1 (1) pp. 5 to 15 September, 2011.

2- Chawang, J. 2010. Need assessment of rice farmers in Nagaland, Research. Researcher, 2. Father Coach (Agril. EXT), Deptt Development and Rural Planning, Faculty of Agriculture Science and Rural Development (SASRD), Medziphema, Nagaland.

3- Chizari, M. Sadeghi, L. Noroozi, O. 2006. An Investigation of Educational Needs of Agricultural Crop Insurance Specialists, JOURNAL OF AGRICULTURAL SCIENCES Islamic Azad University, No. 2, , pp 501-511

4- Feli, C. Ahmadi, C. 2008. The impact of Wheat Project supervisory experts on knowledge agricultural mechanization in the city Dehgalan. Journal of Agricultural Extension and Economics, Year 1, Issue 3

5- Ghimire R, and Martin, A. 2011. The need for skills assessment: Do they matter Format for teachers, International Journal of Agricultural Management & Development(IJAMAD) Available online at: www.ijamad.com

6- Hajihosseinnejad, H. 2008. Effectiveness of Training courses Ranchers regional ashtian. Journal of Agricultural Extension and Economics, 3 (1).

7- Hajimirrahimi, C, D. zamani, G 2001. Develop a model for assessing training needs - professional agricultural extension agents in the province, Journal of Iran Agricultural Extension and Education, No. 2, Vol 33, pp 241-254

8- Khavari, A. 2004.Investigating Employment status of graduates technical & professional training organization during the Third Development Plan. Journal of Economics, University Publishing of Mazandaran, Babolsar

9- Mirzamohammadi, M, H. 2005. Assessing educational needs of Professional and technical centers staff in Tehran, bimonthly science - Research shahed, No. 12.

10- Padaria, R.N. Baldeo Singh, N. Sivaramane, Yaswant K.Naik, Ravi Modi and S.Surya, 2009. A Logit Analysis of Bt Cotton Adoption and Assessment of Farmers' Training Need.

11- pate, J. and Martin, G. 2000. Company based life long learning. Journal of high technology mangmant research. 11(2), 259-319

12- Pzshkyrad, Gh. 2008. Assessing the vocational and educational needs of agricultural trainers in Mazandaran and Golestan provinces agricultural centers, Journal of Iranian Agricultural Economics and Development, Volume 39, Issue 1, pp. 55-62.

13- Rastgu, C. 2013. Modeling educational needs of fish farmers hydrothermal city of Sari, MSc thesis, Agricultural Extension and Education, Islamic Azad University, Sari.

14- Rivera, M. W. & Alex. G. 2004. The continuing role of government in pluralistic extension system. *Journal of International Agricultural and Extension Education*, 11 (3)

15- Schwarz, M.H. & Gibson, J. 2010**.** A Needs Assessment of Aquaculture Extension Agents, Specialists, and Program Administrators in Extension Programming. . *Journal of Extension,* V.48.

16- Tavasoli, B. Pzshkyrad, Gh. Chizari,M. 2007 Effectiveness In service courses Agricultural Bank in increasing the technical experts of the Agricultural Bank, Journal of Iran Agricultural Extension and Education, No. 2, Vol 3, pp 97-104

17- Zarafshani, K. Agahi, KH. 2011. Training needs assessment for rural women ghamam sangher city. Women in Development and Policy Journal, Volume 9, Number 1, pp. 183-165