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Evaluating Rice Supervisor Extensionists' Performance: The Case Study of Mazandaran Province, Iran

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Abstract: The main purpose of this research is to evaluate rice supervisors' performance in increasing crop yield in Mazandran province from farmers' point of view. The method used in this research is descriptive-correlation and comparative, which is done by survey. The research population included rice producers (N=2856). Using the Krejcie and Morgan's sampling table and random cluster sampling technique, 340 farmers were surveyed. A questionnaire was developed and distributed and data collected and analyzed by SPSS software on 323 returned questionnaire. The results showed increasing costs, difficulty of job, rice supervisors' low and imperfect knowledge and their improper advices, respectively resulted in not using their technical advices. Results of coefficient test show that there is a positive and significant relation between independent variables, (supervisors' on-time presence on farms, using supervisors' consultations and on-time services) and rice yield. Results of t-test showed significant difference between the amount of rice yield by supervisors' presence on farms and their absence. The results of multiple linear regression showed that independent variables includes; supervisors' on-time presence on farms and on-time services to farmers determine 69.8 percent of the ability in explaining rice supervisors' performance.

Key words: Performance assessment · Rice supervisors · Agricultural advisory service

INTRODUCTION

Rice is one of the major cereals and staple food for more than half of the world's population that has been known as one of human's main food since ancient times[1], that at least 225 million of rural families with the population of 1.125 billion people are dependent on rice as a main agricultural product. Therefore, rice is considered as one of the most important food sources. The area of land under cultivation of this product is 144 Hectares among 110 countries in the world that the most producing regions of this crop include: more than 90 percent in Asia, about 4.2% in Africa, 5.2% in Latin America and other countries produce only about 1.1 percent of the rest [1]. In Iran, rice after wheat (regardless of the northern provinces of the country) is the staple food of Iranian people [2] and in the province of Mazandaran with the area of 239000 Hectares in the year 2009 about 30 percent under cultivation and with the production 1381396 tons has dedicated more than 42 percent of country's production to itself [3].

However, one of the country's common problems is that farmers working in this part are making money out of it; although, they are often equipped with native knowledge, they are fallen apart from the updated science in scientific agriculture. As there are 80 percent of the capacity of agriculture of the country in the villages and 48 percent of farmers are illiterate and their age average is more than 50 years [4]; therefore, it seems that the presence of manpower in order to teach them is necessary. But, on the other hand, Government's financial restriction [5], unstructured population growth, daily increasing community's general requirements, rapid growth and development of developing and industrial communities, growing gap between these countries and developing countries, it is impossible for the government to achieve all the affairs due to the above consideration, problems and restrictions and capacities existing in state sector. It is obvious that by increasing the size of organizations and government departments their problems and inefficiencies are becoming more and deeper specially in providing public welfare, growing and booming

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economy, that one of these problems is lack of experts and efficient people in the country. This issue comes up in a more serious way in agricultural activities which means things are done by people and the government has just the role of guiding, supporting and supervising [6]. Without enough well trained staff, extension will face serious restrictions from the view of the ability in designing and performing effective educational programs and other activities in transferring technologies [6]. Therefore, private extension along with the stat one can be a problem solver [7]. As it has been in the objectives of Engineering Association Organization and natural resources, extending country`s agriculture requires the presence of experts and utilizing scientific princples in producing products in practice and agricultural expert`s guiding in the form of organizations under the supervision of Engineering Association can help us in this way.Increasing the capabilities in agricultural sector can be done by different ways like: educating farmers by specialist in private sector and consultants [4]. Private extension in farming is a kind of process in which educational, extension and advisory activities are provided out of the governmental system by private sector and the cost of services are provided in a way by farmers [8]. Also, it is considered as a compliment in state extension [9]. In this direction, Garforth and Kisauzi [10] have announced the mission of advisory services is scientific and permanent from increasing farmers' accessibility to information, knowledge and new technologies by an extension decentralized efficient system. They, also, believe that providing these services is usually done by interference of private sector in governmental policies [10] if the process of extension planning is considered systematic, the process can be investigated in the form of a system. There are four basic components in each system: Input, process, output and feedback. The act of feedback in the extension planning system involves evaluating the designed program [11]. In addition; we felt it is necessary to evaluate the performance of the supervisors to see how effective their activities are in giving advices to rice farmers. Therefore, investigating the quality and content of the so-called programs can be influential in correcting and deepening the future movements and plans.

Evaluation is a mean to learn the amount of success in achieving goals [12]. In fact, it is an act of investigating changes resulted from a program or an activity. For example, in the expansion of agriculture, evaluation is consisted of finding and planning cases such as change in the status of planning and working, or farm animal and agricultural production performance [13].

The role of training in production process have emphasized [14]. agricultural consultants -as trainers- can play key role in improving the effectiveness of extension services by transferring technical knowledge and modern skills of farm management to farmers [10,15,16].

Many studies have done that evaluated the performance of these advisory services on different crops. Some of them survey variables that influencing on consultants performance.

Ghorbani [17] in his research with the topic of 'Evaluation of Agricultural Advisory Services Effects on Sugar Beet in the province of Razavi Khorasan' showed that agricultural advisory services have a positive and significant impact on producing sugar beet. In addition to that, consultative results of agricultural engineering in comparison to the farmers who didn't take advice have positive and significant impact on using herbicides, the area of planted land, the number of workforces, watering and agricultural machinery.

Kalantari *et al*., [18] have reported positive and significant relationship in their studies among variables of the level of literacy and education, times of getting loan, times of getting in touch with extension agents and experts, the instances of attending extension classes, the number of extension visit during a year, the amount of knowing the extension projects and the variable of crop yield. However, there was no significant interrelationship between the crop yield and land size and the distance from farm to service centers. It is mentioned in Davidson *et al*., [19] that the nearness of farm to the service centers is as an effective cause in the amount of effectiveness of extension projects.

The main goal of this research is evaluating rice supervisors' performance in raising crop production in Mazandran, the minor goals are:

- Investigating farmers' agricultural, professional and individual quality.
- Prioritizing farmers benefiting rice supervisors' advice in different stages of rice production.
- Prioritizing on time offering of services and inputs to farmers.
- Prioritizing the impact of rice supervisors' technical advices on reducing costs
- Prioritizing effective factors in not using rice supervisors' technical advices.
- Relationship between the dependant and independent variables of research.

MATERIALS AND METHODS

This is a quantitative research with applied goal. As far as controlling variables is a descriptive and correlation research that was done by survey. A questionnaire was developed based on interviews with some experts and previous literature. To ensure its validity the questionnaire was given to some of the experts in research centers and masters in the realm of agricultural extension and training; and then, reforming ideas were done on the questionnaire. To determine the reliability of the questionnaire, a pilot study was conducted with 30 rice producers that were not included in the sample population. Computed Cronabch's Alpha was 94% which indicated high reliability of the questionnaire. The statistics population of this research includes rice producers under the support and supervision of rice supervisor (N=2856) that according to Krejcie and Morgan's [20] sampling table the sample size was determined (n=340) and selected by random cluster sampling. Data analysis was done on 323 returned questionnaires by SPSS software and using the some techniques includes: correlation coefficient, T-test and multiple liner regression.

RESULTS

Farmers` Individual, Technical and Agricultural Qualities: According to the table (1) the results of descriptive statistics showed that the average age of farmers is 48.71 years and most of the farmers (62.4%) are middle age (between 35 and 55). Considering the gender 4.2% of farmers are women and the rest is man (95.8%). From the view of the level of education, 29.5% illiterate, 21.7% read and write, 28.6% in high school, 13.4% diploma and 6.9% have higher education degree. The distance from rice supervisor's office to rice field is 1.3 kilometers on average. On average the experience of rice farmers is 25.16 years. The average rice field of farmers is 1.9 hectare that the least and the most is 0.3 and 8 hectare respectively. 41.9% of rice cultivations are not a member of any rural groups and the rests (58.1%) are the members of different rural groups. The result showed in Table (1) briefly.

Prioritizing Farmers` Benefiting Rice Supervisors' Advice in Different Stages of Rice Production: Producing rice involves there stages of planting, protection and harvesting. It is important for the farmers how to act in

Table 1: Farmer's individual, technical and agricultural qualities

Variable	Ave.	Sd.	Min.	Max.
Age	48.71	11.967	16.0	90.0
Distance from rice inspector's office to farmer's farm (km)	1.324	0.9296	0.1	7.0
Rice cultivation Experience (year)	25.16	16.033	1.0	80.0
Farmland size (Hectare)	1.904	1.2700	0.3	8.0
Amount of monthly income (Iranian Tomans; 1100 tomans =1$)	457402.60	521933.378	40000.0	5000000.0
Amount of Low yielding rice (Hectare/Tone)	2.713	1.2271	0.5	5.5
Amount of High yielding rice (Hectare/Tone)	5.252	1.8986	1.0	10.0

Source: Research findings

Table 2: Prioritizing farmers` benefiting rice supervisors` advice in different stages of rice Production

Variable	Ave.	Sd.	Cv.	Pri.
Protection Stage	11.3250	6.63547	0.5859	1
Planting Stage	8.3249	5.66010	0.6799	2
Harvesting Stage	2.9563	2.13976	0.7237	3

Source: Research findings

Table 3: Prioritizing on time offering of farmers' necessary services and input by rice supervisors

Variable	Ave.	Sd.	Cv.	Pri.
chemical Fertilizers	1.86	1.278	0.6870	1
chemical pesticides	1.92	1.286	0.6997	2
Soil Experiment	1.95	1.413	0.7246	3
Seed	1.64	1.360	0.8292	4
Agricultural Machineries	1.35	1.209	0.8955	5

The least =0 less=1 Mid=2 more=3 The most=4

Source: Research findings

Table 4: Prioritizing the impact of rice supervisors' technical advices on reducing costs during Different stages of rice protection

Variable	Ave.	Sd.	Min.	Max.	Cv.	Pri.
Using chemical pesticides	1.92	1.288	0	4	0.670	1
Using chemical Fertilizers	1.93	1.326	0	4	0.687	2
Growing grain in Nursery	1.71	1.279	0	4	0.747	3
Preparing the land	1.58	1.274	0	4	0.806	4
Replanting operation	1.58	1.267	0	4	0.807	5
Crop Harvest	1.58	1.309	0	4	0.828	6

The least=0 Less=1 mid=2 More=3 The most=4

Source: Research findings

Table 5: Prioritizing effective factors in not using rice supervisors' advices

Variables	Ave.	Sd.	Min.	Max.	Cv.	Pri.
Rise Costs	1.69	1.252	0	4	0.7408	1
Job Difficulties	1.55	1.291	0	4	0.8329	2
supervisor's low and insufficient knowledge	1.39	1.220	0	4	0.8776	3
supervisor's improper advices	1.418	1.2638	0	4	0.8912	4

The least =0 less=1 Mid=2 more=3 The most=4

Source: Research findings

each stage in order to produce a good and high quality crop. In this part, as it has been focused, rice supervisors' advice in three steps of planting, protection, harvesting, according to table (2), farmers, have benefitted the most from rice supervisors' advices in the stage of protection which includes variables like, how to use chemical fertilizers and pesticides and how to fight against pests and disease, how to kill weeds in the farm, how to water well in the farm. Also, benefiting advices in the stage of planting includes variables like: how to prepare land, selecting a proper grain and disinfecting it, how to prepare the nursery, how to fight against weeds in the nursery, haw to replant. In addition, the rice supervisors' advices in the stage of harvesting include variables like: reducing the losses of crop when harvesting and decreasing the losses of crop when threshing, are in other ranks, respectively.

Prioritizing on Time Offering of Farmers' Necessary Services and Inputs by Rice Supervisors: Using proper technologies and innovations has significant effect on producing more crops and reducing the expenses. Using farm machinery, chemical fertilizers, pesticides, grain and also, to determine the amount of needed fertilizers and soil experiment are necessary and can have more effect on decreasing the costs in producing rice. According to table (3), from the view of farmers, offering services from supervisors are as follow: chemical fertilizers, pesticides, services for soil experiment, healthy grain and farm machinery.

Prioritizing the Impact of Rice Supervisors' Technical Advices on Reducing Costs During Different Stages of Rice Production: According to the table (4), rice supervisors' technical advices have the most effect on decreasing the costs in using chemical pesticides and using supervisors' technical advices in decreasing the costs of using chemical fertilizers, growing grain seed in the nursery, preparing the land, activities of replanting and harvesting the crop are in other priorities, respectively.

Prioritizing Effective Factors in Not Using Rice Supervisors' Advices: According to table (5), each of the factors of rising costs, the burden of the job, inspectors, insufficient and imperfect knowledge, rice supervisors' improper advices, respectively, have been the causes of not using rice supervisors' advices by the farmers.

The Impact of Supervisors' Presence on Farmer's Farm on Rising Rice Production: The t-test was used in order to compare the average rice production between two groups of farmers that supervisors appeared on their farms and the farmers that they didn`t appear on their farms. According to the table (6), the results of the test by emphasizing the existence of meaningful difference between the two above-mentioned groups show that in the group of farmers, that supervisors used to appear on their farms, the amount of rice production was more compared to the group of farmers that supervisors didn't use to appear on their farms.

Table 6: T-test about the difference of rice production

	T	Mean.	Sd.	Sig.
Supervisors' presence on farm	13.382	yes=9.6625	1.96122	0.017
		no=4.7564	1.41269	

Source: Research findings

Table 7: Basic influential factors of performance evaluation for rice supervisors

Variable	Index used	Correlation coefficient	Sig.
Distance from supervisor's office to farm	Pearson	-0.285**	0.005
Supervisors on-time presence on farm	Spearman	0.842**	0.000
Using supervisors' advices	pearson	0.663**	0.000
On-time offering of services and inputs	pearson	0.498**	0.000

**p= 0.01, *p= 0.05

Source: Research findings

Table 8: influential factors on rice supervisors' performance

Variable	R	R^2	B	Beta	T	Sig.
Supervisor's on-time presence on farm (x_1	0.818	0.668	4.346	0.725	10.365	0.000
On-time receiving of services and inputs (x_2)	0.835	0.698	0.096	0.195	2.782	0.007
Constant			4.344			

Source: Research findings

Basic Influential Factors of Performance Evaluation for Rice Supervisors: In order to survey rice supervisors' performances in increasing rice production, the two variables of high and low yielding crops (as a result of rice supervisors' advise) were combined by compute, as a dependent variable.

According to the table (7), There is a strong correlation between following the supervisor's advice (dep. variable) and other indep. variables except distance of office from farm.

Determining Influential Factors on Rice Supervisors' Performance: In order to determine the influential factors on the variable of evaluating rice supervisors' performance, multiple linear regression analysis (Step-wise Regression method) was used. The results in table (8) shows the on-time presence of rice supervisors on farm and on-time offering of agricultural services and inputs to farmers are prognosticating about 69.8% of changes in dependent variables.

According to the above table, regression linear equation is:

$$Y=4.344+4.346x_1+0.096x_2$$

DISCUSSION

The research finding showed that farmers have benefited more advices in the stage of protection. In this case, it seems that rice supervisors' should spend more time on other stages specially harvesting. Each of the factors of increasing costs, difficulty of job, rice supervisors' low and imperfect knowledge and their improper advices, respectively have resulted in not using rice inspectors` advices. The mentioned factors seem like some problems that have caused inappropriate use of inspectors` advices. The correlations between the variables showed that there is a negative and meaningful relation between the distance from rice supervisors' office to the farm and the amount of product, In other words, the more the distance from supervisors' office to farm the less the rice yield will be. It is similar to the research done by Davidson *et al.* [19]. Between the use of rice supervisors' advices and the rice yield there is a positive and significant relationship. In other words, the more the supervisors' advices are used, the more rice yield there will be, which is similar to the researches of Owens *et al.*, [21], C.Wu [14] and Ghorbani [17]. The results of correlation coefficient between two variable of on-time offering of advices and inputs and rice yield, from the view of farmers, showed that there is a positive and meaningful relation between them. In other words, the more the offering of services and inputs is on-time, the more rice yield there will be.

The finding showed that, 21.3% of farmers have stated that rice supervisors had no physical presence on their farmland and the rest (78.7%) have stated they had presence on farmland. In order to compare the average rice production between two groups of farmers that

supervisors appeared on their farms and those that supervisors didn't appear on their farms, the T-test was used. the results of the t-test showed that those farmers that rice supervisors appeared on their farms had more yield than those that supervisors didn`t appear on their farms. Therefore, it is suggested that supervisors become more present to provide farmers with necessary advices effectively and, on the other hand, farmers make use of them to increase their production. After entering all the above-mentioned independent significant variables in the multiple linear regression test with the method of step by step, inspectors' on-time presence on the farm and on-time offering of services and inputs have come in the second stage of equation that show the ability of explaining 69.8% of rice supervisors' performance. Therefore, it is recommended that rice supervisors should pay more attention to these most important factors to raising their effectiveness.

CONCLUSION

Since the low level of farmers' education and that, they often don't have scientific knowledge, governments, have put the use of agricultural graduates in private sector on their agenda to train farmers in private sector in order to increase production and improve farmers' livelihood. In the form of rice supervisors' project, in fact, these experts are the agents of transferring technical and scientific knowledge to farmers, the majority of whom are without scientific knowledge. This study aimed to evaluate rice supervisors' performance in increasing rice yield. The finding of this research showed that rice supervisors' has a positive effect on increasing rice production in overall, but more attention is needed to some cases such as on-time offering of services and inputs and on-time presence on the farmers farm to increase their performance. With looking the result of the rice supervisors' project, one can expected more investment in agricultural advisory services

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