Full Length Research Paper

Factors influencing the effectiveness of rice supervisor's technical advice: The case of Mazandaran Province, Iran

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The current research involves the factors influencing the effectiveness of rice supervisor's technical advice (RSTA) in Mazandaran province from the farmers' point of view. The method used in this research is descriptive-correlation and comparative, which has been done by survey. A quantitative approach is applied to identify the most important factors. In this regard, 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 among the subject and the collected data analyzed through SPSS software. The finding showed that, there was a positive and significant relationship between independent variables of the distance from supervisor's office to farmers' farm, the average performance of low yielding crop (Tarom) and high yielding crop (Neda), reducing costs, the on time offering of services and inputs, and supervisor's on time presence on farms with effectiveness of RSTA. The result obtained through the application of t-test formula confirms that there was a significant difference between the presence and absence of rice supervisors on farm in the amount of technical advices used by farmers. The results of multiple linear regression showed the independent variables of supervisor's on time presence on farm, on-time offering of services and inputs, and the distance between rice supervisor's office and farmers' farm have 72% of the ability in determining the effectiveness of RSTA. The empirical result of this research revealed that rice supervisors' project has a positive effect on increasing agricultural knowledge and product of rice producers. These result calls for more investment in agricultural advisory services.

Key words: Effectiveness, agricultural advisory services, rice supervisor's service, Mazandaran.

INTRODUCTION

Paying attention to agricultural sector is known as one of the backbones of the economy development. Agricultural sector's role in creating job, helping national income, producing food, and mutual cooperation with other sectors as well are the factors that clearly show the importance and necessity of attention to this sector (Akbari et al., 2009). According to the announcement of the research centers news agency in Iran, in the report of infrastructural studies office of that center which is published with a title of 'Agricultural Developmental projects' it is said that: Agricultural sector is providing 13.7% of Gross Domestic Product, one fifth of country's

employment, non petroleum export value 23%, and 82% of country's consuming food, 90% of the basic ingredients of country's agricultural convertible industry (Iranian Majlis researches center, 2010). Despite the changing policies in recent decades, this sector, while strengthening economical sector, could continue its presence and even in worse conditions could provide new opportunities. Therefore, paying attention to expanding of the agricultural sector as a prerequisite for expanding economy is necessary (Iranian Majlis researches center, 2010).

According to the fact that human force is one of the most important and basic elements in the process of agricultural extension, and at the moment, because agricultural sectors are facing the challenge of optimal employment of the human force, the government should not employ all the needed forces for managing the

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farmland, but should instead use the technical principle of work (Nouri, 2005) due to the existence of a noticeable group of specialists looking for job on the one hand and the compulsory need of experts group on the other hand (Feli and Ahmadi, 2008). As a result of the situation of agricultural exploiters, it was obtained from the view of the level of literacy (Golzari and Mirdamadi, 2009) that from a total of 3.5 million farmers, only 48% are literate, that is, they have knowledge of their elementary level of education (Ministry of Agricultural, 2004), while from the view of empirical knowledge, farmers mostly take advantage from the potential capabilities in the sector (Golzari and Mirdamadi, 2009). Due to the fact that agricultural development and the increasing productivity of production resources in the sector needs permanent increase in managers' skill level (Rasoli et al., 2008), trained manpower is known as the most important asset in the country's growth and development (Human asset includes skills, capabilities, abilities, that people achieve in the process of training and causes more productivity of their activities) (Tavassoli et al., 2007). It demands to do some necessary arrangements in other to develop human resources of the sector. One of these arrangements is employing experienced experts and educators of agricultural high education centers in the shape of natural and legal people as expert supervisors in order to increase productivity, utilization and extension of agriculture are in the project of increasing the production. The expert supervisor of this project is defined as a required expert who has a bachelor's certificate and higher in one of the agricultural fields, and is selected only from Agricultural Engineering Association and Natural Resources of the provinces. Feli and Ahmadi (2008) considered the extension advisors as specialists who have a wide collection of knowledge and information in order to solve the farmer's inquiries. The mission of these experts is giving advisory and educational services to the farmers under the project's support during all stages of cultivation (planting, protection and harvesting). Also, Garforth and Kisauzi (2002) have stated 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, and believe that giving these services will be usually done by the interference of private sectors in the governmental policies.

Rice advisory services have started in Iran recently. The importance of rice as a main food is clear. Rice is world's main cereal and the staple food of more than half of the world's population which has been considered as one of human's important foods since ancient times (Bahrami, 1998). Meanwhile, rice is known as a strategic cereal after wheat in Mazandaran province. It has assigned more than 42% of country's production to itself with 239,000 ha in 2009 about 39% of land under cultivation (Hadian and Ghorbannejad, 2010). Because of this condition, the ministry of agriculture has decided to apply advisory services for rice and employ agricultural

specialists and experts as consultants.

These consultants can play key role in improving the effectiveness of extension services by transferring technical knowledge and modern skills of farm management to farmers (Garforth and Kisauzi, 2002; Feli et al., 2007; Rivera and Alex, 2004). Many researchers like Feli et al. (2007) and Ghorbani (2008) have proved the effectiveness of these advisory services.

There are some researches that have studied factors influencing on effectiveness of advisory services. Analyzing of these studies showed that there are a positive and significant relationship between effectiveness of advisory services and some factors including: Farmers' income, farming experience, mechanization, area under cultivation, the amount of production , having contact with the supervisor, visiting farming land, using training methods and attending training classes (Feli et al., 2007; Kalantari et al., 2005); times of getting in touch with supervisors (Golzari and Mirdamadi, 2009; Kalantari et al., 2005; Ghisvand Ghiasi et al., 2007); nearness of farmland to the service centers (Davidson et al., 2001); the level of education(Feli et al., 2007; Kalantari et al., 2005); the amount of familiarity with extension projects (Kalantari et al., 2005).

In this study, we focus on the importance of the agricultural advisory services and particularly the program in Mazandaran province in Iran pertaining to rice producers. This study was implemented because of importance of rice cultivation as a strategic crop and the implementation of the advisory services program on rice in this province.

MATERIALS AND METHODS

This is a quantitative research with applied goal. Since controlling variables is a descriptive and correlational research, it was done by survey research. 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, some modifications were done on the questionnaire. To determine the reliability of the questionnaire, the researchers conducted a pilot study with 30 rice producers that were not included in the sample population. The obtained reliability by 94% through application Cronabch's Alpha signifies that questionnaire is highly reliable. The statistics population of this research includes rice producers under the support and supervision of rice supervisor (N = 2856). According to Krejcie and Morgan's (1970) sampling Table the sample size was determined (n = 340) and selected by random cluster sampling. Data analysis was done on 323 returned questionnaires through SPSS software and application of some techniques including: correlation coefficient, T-test, and multiple liner regression.

RESULTS AND DISCUSSION

Farmer's individual, technical and agricultural qualities

The results of descriptive statistics shows that the

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

Variable	Average	Standard deviation	Minimum	Maximum
Age	48.71	11.967	16	90
Distance from rice supervisor's office to farmer's farm (km)	1.324	0.9296	0.1	7
Rice cultivation experience (year)	25.16	16.033	1	80
Farmland size (ha)	1.904	1.27	0.3	8
Amount of monthly income (Iranian Tomans; 1100 tomans =1 US $)	457402.6	521933.4	40000	5000000
Amount of Low yielding rice (t/ha)	2.713	1.2271	0.5	5.5
Amount of High yielding rice (t/ha)	5.252	1.8986	1	10

Source: Research findings.

Table 2. Amount of receiving technical advices from supervisor in different stages of rice production.

Period	The least (%)	Less (%)	Mid (%)	More (%)	The most (%)
Planting stage					
Method of preparing land	27.0	18.5	23.2	28.5	2.8
Choosing proper seed and disinfecting it	20.0	19.0	25.2	31.0	4.8
Method of preparing nursery	32.8	17.7	17.2	28.9	3.4
Method of fighting against nursery's weeds	26.4	14.9	21.7	27.4	9.6
Method of replanting	7.6	26.7	16.7	26.7	7.6
Protection stage					
Method of using chemical fertilizers	17.3	23.4	21.5	26.6	11.2
Method of using chemical pesticides	18.3	19.7	18.3	31.5	12.2
Method of fighting against pests	16.0	23.5	12.2	34.7	13.6
Method of fighting against diseases	14.6	21.6	17.8	32.9	31.1
Method of deleting weeds in the farm	25.2	20.5	16.7	31.4	6.2
Best method of water consumption in rice field	23.2	22.3	24.6	23.7	6.2
Harvesting stage					
Reducing losses when harvesting	26/0	21.2	26.9	24.0	1.9
Reducing crop losses in threshing factories	29/7	23.4	23.9	21.1	1.9

Source: Research findings.

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 female and the rest is male (95.8%). From the view of the level of education, according to the results achieved from research, 29.5% illiterate, 21.7% literate degree, 28.6% at high school, 13.4% diploma, 6.9% Associate of Arts and higher with university education. The distance from rice supervisor's office to rice field is 1.3 km on average, the least and the most distance is 0.1 and 7 km, respectively. On average the experience of rice farmers is 25.16 years. The average rice field of farmers is 1.9 ha and the least and the most is 0.3 and 8 ha respectively. 41.9% of rice cultivations producers do not belong to any rural group but the rest (58.1%) are members of different rural groups. Table 1 indicates the result.

Receiving technical advices from supervisors in different stages of rice production

Rice production includes three stages of cultivation, protection and harvesting and it is very important for farmers to know how to act in each stage in order to produce a good and high quality crop. In this part where taking advice from rice supervisors in three stages of production has been studied, according to Table 2, in the cultivation stage, farmers stated that they didn't get proper advice about the way to prepare the nursery and to replant 32.8 and 29.0% respectively. But, about preparing the land, selecting proper seed and disinfecting it, fighting against weeds in the nursery 28.5, 31.0, and 27.4% of farmers respectively stated that they received good and proper advice. In the protection stage, about

Table 3. The result of Correlation coefficient between the independent variables and effectiveness of rice supervisors' technical advices.

Variable	Correlational test	Correlation coefficient	Sig.
Farmers age	Pearson	0.051	0.502
Distance from supervisor's office to farmland	Pearson	-0.669**	0.000
Rice farming experience	Pearson	-0.014	0.857
Farming land size	Pearson	-0.085	0.228
Monthly income	Pearson	0.037	0.679
Average low yielding crop (ha)	Pearson	0.659**	0.000
Average high yielding crop (ha)	Pearson	0.647**	0.000
Supervisor's impact on reducing costs	Pearson	0.941**	0.000
On-time receiving of inputs and services to farmers	Pearson	0.740**	0.000
Level of education	spearman	-0.118	0.116
Supervisor's presence on farm	spearman	0.677**	0.000

**p ≤ 0.01. Source: Research findings.

utilizing chemical fertilizers and pesticides, fighting against pests and diseases, and the way and how to eliminate the weeds in the farm, and finally, the best use of water in the rice field 26.6, 31.5, 34.7, 32.9, 31.4, and 23.7% of farmers respectively stated that they received good and desirable advice. In the harvesting stage, about reducing the losses when harvesting, 26.6% of farmers stated that they received somewhat desirable advice, but about reducing the losses at the threshing factories, 29.7% of farmers mentioned they didn't receive any desirable advice.

Overall, farmers have benefited the most from RSTA in the stage of protection. Planting stage and harvesting stage are in the next ranking in order.

Investigating correlation between the independent variables and the effectiveness of advisory service (rice supervisors' technical advices)

In order to investigate the rice supervisors' effectiveness, 13 independent variables of Table 2, which were brought up by Likert scale, computed along with the dependent variable as effectiveness of rice supervisors' technical advices or advisory services.

According to the Table 3, the results of correlation coefficient between the independents and dependent variables shows that there are a positive and significant relationship between average low yielding rice, average high-yielding rice, on-time offering of inputs and services, cutting costs, presence on farm with effectiveness of advisory service.

But, as result showed, there is a negative and significant relationship with 99% confidence between variable of the distance from rice supervisors' office to farmers' farm with dependent variable. In other word, the less the distances from the supervisors' office to the farm, the more their advices were used. The result of Davidson

et al. (2001) study proved the point. Hence, it is suggested that facilities should be provided for the supervisors to be able to completely cover their realm of activities.

The results of correlation coefficient between average low yielding rice and average high-yielding rice with effectiveness of rice supervisors' technical advices in producing rice is in accordance with the studies of Feli et al. (2008), Kalantari et al. (2005), and Ghorbani (2008).

As shown in Table 3, there is a positive and significant relationship between cutting costs in rice production and effectiveness of rice supervisors' technical advices; it means, the more the farmers used their advices, the more effective they were on reducing costs. This subject can confirm the effectiveness of advisory service as proved by Pezeshkirad et al. (2009).

The results of correlation coefficient shows that there was a positive and meaningful relationship between on-time offering of inputs and services, as well as number of supervisors' presence on farm with supervisors' technical advices in producing rice. This issue notes that the more their number of presence on farm and on-time services and inputs, the more the farmers used their advices. The findings are in accordance with Kalantari et al. (2005).

Comparing farmers' rice production based on presence and non-presence of supervisors on farms

The finding shows that 21.3% of farmers have stated that rice supervisors had no physical presence on 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. According to Table 4, the result of this test with emphases on the

Table 4. Results of independent T-test about the difference of farmer's average production.

	T	Average	Standard deviation	Significance
Supervisors presence in the farms	-12.213	Yes = 27.4331	10.84786	0.000
	-15.941	No = 6.1628	6.05896	

Source: Research findings.

Table 5. Indexes in multiple liner regression equation in the third step.

Variable	R	R2	B	Beta	T	Sig.
Supervisor's on-time presence on farm (x_1)	0.762	0.581	15.222	0.556	7.923	0.000
On-time receiving of services and inputs (x_2)	0.823	0.677	0.680	0.305	4.299	0.000
Distance from supervisor's office to farmland (x_3)	0.848	0.720	-1.349	-0.218	-3.393	0.001
Constant	-	-	10.588	-	-	-

Source: Research findings.

significant difference between the two afore-mentioned groups of farmers show that in the group of farmers that supervisors used to appear on their farmers they took more advantages of their technical advices in producing more and better rice. The findings are in accordance with Golzari and Mirdamadi (2009), Kalantari et al. (2005) and Ghisvand et al. (2007). Therefore, it is suggested that they should be more present on farmers' farms and give their necessary advices to them practically.   In other word, facilities should be provided for the supervisors to be able to completely cover their realm of activities.

Determining the influential variables in the effectiveness of rice supervisor's technical advice

The multiple linear regression analysis with the step by step method was used to determine the influential variables in the effectiveness of rice supervisors' technical advices. The result as of Table 5 shows on-time presence on farmers' farm, on-time offering of agricultural inputs and services to farmers and the distance from supervisors' office to farmers' land predicts about 72% of the variances of the dependent variable.

According to the Table 5, regression Equation is:

$$Y = 10.558 + 15.222(X_1) + 0.680(X_2) - 1.349(X_3)$$

Conclusion

Farmers' incomplete technical and scientific knowledge which is due to their low level of education, makes using agricultural expert advices inevitable. Since the governments are facing restrictions in financial resources, they are compensating this deficiency by employing graduated and subject specialists from private sectors, who are all member of advisory services corporation.

In the form of rice supervisors' project, in fact, these experts are the agents of transferring technical and scientific knowledge to experienced farmers, the majority of whom are without scientific knowledge. This study aimed to survey effectiveness of rice advisory service and factors influencing their effectiveness, too. The empirical result of this research shows that rice supervisors' project has a positive effect on increasing agricultural knowledge and product of rice producers. But for increasing the effectiveness rate, more attention is needed to some main factors such as supervisor's on-time presence on farmers' farm, on-time receiving of services and inputs and reducing or eliminating the physical distance between supervisors and farmers. These results call for more investment in agricultural advisory services. This can be a context of employment for many of agricultural graduates to help rural community in various dimensions.

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