

Analyzing of Agricultural Wheat Farmers Behavior Related to Agricultural Advisory Services

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Abstract: The main purpose of this study was analyzing of agricultural wheat behavior in related to wheat self sufficiency plan (WSP) by using of Theory of planned behavior. For assessing behavior, attitude and subjective norms it was used Theory of planned behavior. The survey research was descriptive-survey research. The population consisted of farmers who were members and no-member of Agricultural Advisory Services Project. Using simple random sampling procedure 113 include and 51 non-include in the wheat self sufficiency plan were selected for the study in Qazvin province. Researchers made structured questionnaire were used to collect data. The data collected through personal interview with experts and then was analyzed by using appropriate statistical procedures like descriptive statistic (mean, median, percent) and inferential statistic (mean comparison and regression) with SPSS_{win13} software. The result of mean comparing showed that there isn't meaningful relationship between the attitude, tendency, intellectual norms and efficiency of advisors dimensions. Also the result showed that efficiency of advisors and attitude of farmers were the best predictors' of intention. The result of stepwise regression analysis showed that Attitude and Efficiency of advisors have explained 59 percent of dependent variable "factor affecting on farmers intension in participation at WSP".

Key words: Agricultural Advisory Services • Agricultural Wheat Behavior • Plan • Theory of Planned Behavior

INTRODUCTION

Wheat is one of the main crops that have the highest amount of production among other agricultural commodities in the world. This crop has an important status in the food basket of people in Iran.

The majority of farmers in Iran are subsistence farmer and the main barrier to empower this group of farmers is low productivity and production in wheat farms. The latest statistics about the farmers shows less than half of farmers are illiterate and average age of them is more than 50 years old [1].

The availability of specialized human resources is one the most important factor for development process in every sector. The agricultural sector in Iran like many other developing countries is facing with the shortage of specialized human resource to help farmers to resolve their technical problems [2]. Therefore the Ministry of

Agriculture as a part of privatization of advisory and extension service program, has been hiring the university graduated students in field of agriculture to work in the wheat self sufficiency plan, this policy is beyond the human resource development.

The authorities in order to increase the production of wheat and to reach the self sufficiency have been taking several actions. Government of Iran in 1999 started the self sufficiency project for wheat to increase the production by using new methods and technologies such as local modified seeds, mechanization and to train farmers in production process. The project resulted in increasing the production to 10 million tons per year. It was estimated that the production would reach to a level of more than 16 million tons per year [3, 4].

One of the main characteristics of wheat self sufficiency project is to emphasize on the role of private sector advisors in providing services and educating the

farmers. Ministry of Agriculture has decided to downgrade its role in advisory services and with the cooperation of Natural Resource and Agriculture Engineering Organization (NRAEO) established a system in which university graduated was hired as advisors [2, 5]. The advisors can work independently or in private extension organizations to support public extension system and help farmers to be informed about public agricultural support policies and benefited from agricultural supports.

Extension services can be organized and delivered in a variety of forms, but their ultimate aim is to increase farmers' productivity and income. Agricultural extension and advisory services play an important role in agricultural development and can contribute to improving the welfare of farmers and other people living in rural areas [6]. *Anderson (2007)* defines the terms agricultural extension and advisory services as the entire set of organizations that support and facilitate people engaged in agricultural production to solve problems and to obtain information, skills and technologies to improve their livelihoods [7].

Agricultural Extension and Advisory Services was put into practice in order to provide farmers' needs regarding information, experience and technical methods adequately and timely at the field level [8]. This system will initially provide financial support to the farmers who receive private advisory services and then to private advisors. This will also contribute employment to certified advisors, because thousands of agricultural graduates are unemployed in Turkey [8, 9]. Also the object of advisory service is develop the private sector agricultural advisory delivery capacity and systems and assure quality of advises.

Adoption of innovations by farmers is inevitably affected by many factors. In general, farmers will adopt a particular idea if it usefully suits their socioeconomic and agro-ecological circumstances. The availability of improved idea, access to "modern" inputs and resources and profitability at an acceptable level of risk are among the critical factors in the adoption process [7, 10, 11].

The result of *Sattler and Nagel* survey (2008) and *Kuehne and Bjornlund* (2006) indicated that despite of general idea, although economic variables are main factor in decision making but effectiveness of activity, time and necessity efforts for activity and social- cultural factors have most important role than economic variables in farmer decisions [9,12]. In *Van der ploeg* (1994), view farmer decision making process is conducted with a set of complex behavior include imaginations, beliefs,

knowledge, norms and experiences in specific situation. Other researchers mention to importance of personality and intellectual norms [13, 14].

Adoption can be influenced by educating farmers about improved varieties, cropping techniques, optimal input use, prices and market conditions, more efficient methods of production management, storage, nutrition, etc [7].

Orhan Ozcatalbas et al. (2011) in their research suggested that, in addition to increasing effectiveness of public extension, steps must be taken to increase the effectiveness of farmers' organizations and the private sector in the field of extension. Because Turkey has many agricultural and related organizations that have made considerable contributions to agricultural development within the country without effective communication network [8].

A study conducted by *Bengesi et al.*, (2004) revealed that factors having potential to influence farmers' decisions and adoption innovation include age, gender, farm size, annual income, education and experience [15].

Tayeb Muneer (2008) research about factors affecting adoption of agroforestry Farming System in Suda showed that farmers' adoption of agroforestry farming system in Northern Kordofan state was significantly affected by the farmers' level of formal education, contact with extension agents and level of environmental awareness [16]. Other researches indicated that farmer adoption is affected by several factors such as the biophysical characteristics of the technology itself, the individual and household characteristics of the farmers, policies and the institutional context within which the technology is disseminated [17, 18, 19].

In this regard key point is the adoption of young advisors by farmers as specialists and the behavior of farmers about graduates are very important. There are many studies and theories about behavior that one of the famous theories is *Ajzen* Theory of Planned Behavior.

Ajzen and *Fishbein* formulated in 1980 the theory of reasoned action (TRA¹). This resulted from attitude research from the Expectancy Value Models. *Ajzen and Fishbein* formulated the TRA after trying to estimate the discrepancy between attitude and behavior. This TRA was related to voluntary behavior. Later on behavior appeared not to be 100% voluntary and under control, this resulted in the addition of perceived behavioral control. With this addition the theory was called the theory of planned behavior (TpB²). The theory of planned behavior is a theory which predicts deliberate behavior, because behavior can be deliberative and planned [20, 21].

¹Theory of Reasoned Action (TRA)

²Theory of Planned Behavior (TPB)

The main hypothesis of this theory is that behavior conducted directly with people tendency and attitudes (positive or negative) effects to behavior. In the case of attitudes toward a behavior, each belief links the behavior to a certain outcome, or to some other attribute such as the cost incurred by performing the behavior. Since the attributes that come to be linked to the behavior are already valued positively or negatively, we automatically and simultaneously acquire an attitude toward the behavior. In the other hand the tendency and intention are derived behavior predictors and depend on attitude to activities, individual evaluation response, intellectual norms, accessible social information and press perception [22].

In order to investigate the wheat farmers behavior related to agricultural advisory services we applied the *Ajzen* theory of planned behavior. This research try to analyze survey the farmer behavior about WSP plan advisors as a new idea in Qazvin province. Qazvin province with 158000 hectare of wheat cultivation encompasses 82 advisors in 15 agricultural cooperatives. On the other hand in agricultural advisory plan beside the high investment is a new option as employment that annually university graduate are employed in this plan that since the start of plan up to now about 4582 agricultural graduated are cooperate with this plan. Also this plan was done as a part of strategy to improve the efficiency and effectiveness of public services.

The main purpose of this research was to analyze of agricultural wheat farmer's behavior related to agricultural advisory services and Specific objectives of the study were:

- To identify the intellectual norms of famers related to wheat self sufficiency plan in Qazvin province;
- To study the attitude of farmers related to advisors;
- To study the efficiency of advisors from farmers viewpoint;
- To study the farmers tendency to employ advisors and
- To comparison of member and non – member farmers view about self sufficiency plan in Qazvin province.

With regard to apply the theory of planned behavior in action we faced with many problems to measurement abstraction concept in this model. Then we developed a simple theoretical framework based on *Ajzen* theory for our study (Figure2).

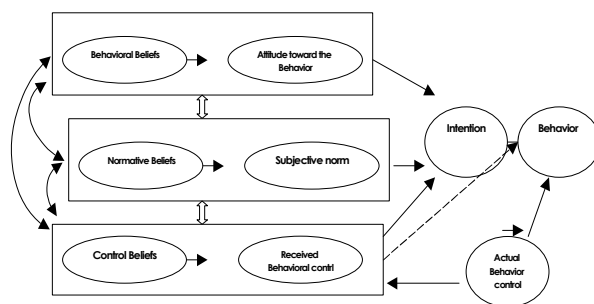


Fig. 1: The theory of planned behavior
Source: Ajzen, I. (2002). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, p. 179-211.

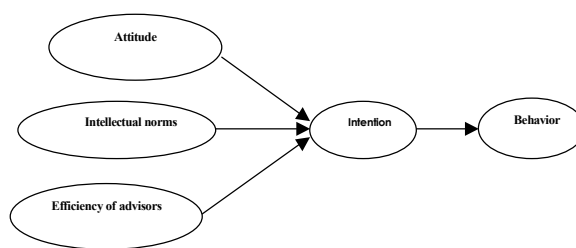


Fig. 2: Theoretical framework of the study

MATERIALS AND METHODS

To survey and measurement efficiency of advisors, behavior, attitude, intellectual norms and intention variables we applied the *Ajzen* theory of planned behavior [23]. TPB model is one of the prevalent models in social psychological domain and is suitable for behavior prediction in education, marketing, agriculture and natural resources fields [24]. The research design for this study was a descriptive and survey method. The researchers developed a survey instrument to collect the data and likert-types scale from 1 (at all) to 5 (to a very large extent) was used to quantify the efficiency of advisors, behavior, attitude, intellectual norms and intention. Other variables that studied here includes: Cultivation Experience, Wheat cultivation Experience, Experience of work with advisors, Distance from service center, Amount of Land, Wheat Yield after advisor attending, Number of plots, Wheat Yield before advisor attending and Amount of wheat farming. The target population (based on Cochran formula) for this study was 113 include³ farmers and 51 non- include farmers in wheat self sufficiency plan in Qazvin Province and Samples were selected by simple random sampling method. Content and face validity of instrument were established by a panel of experts.

³ The agricultural organization In Iran for employ the experts in WSP select low income farmers for contraction and eliminate the high income farmers. And in first years to introduce the advisor to farmers and to develop the advisory services agricultural organization pay the advisor wages. Then in this research include mean is the farmers that have contract with advisors and non-include mean is the farmers that don't have contract with advisors.

The reliability of the questionnaire was measured by using Cronbach Alpha method and the reliability for the overall instruments was estimated 0.93. The data collected through personal interview with experts and then was analyzed by using appropriate statistical procedures include descriptive statistic (mean, median and percent) and inferential statistic (mean comparison and regression) with SPSS_{win13} software.

RESULTS

The result of farmer frequency distribution showed that the mean of farmer's cultivation experiences was 19 years, the average of wheat cultivation experience was 17 years and the average wheat yield before advisor attending was 4.24 ton per hectare and the average wheat yield after advisor attending was increase to 4.57 ton per hectare (Table 1).

Research finding showed that the majority of farmers were diploma (34.7%) and only about 6 percent of respondent had bachelor degree. The result of payment situation showed that 48.1 percent of farmers paid the advisors wages and 51.9 percent of them don't believe to pay the advisors wages. Also the result indicated that 60.9 were able to pay advisors wages but 39.1 percent state that couldn't pay. Based on farmer view (44.4%) the wheat self sufficiency plan has average performance and 34.6 percent of farmers view about the plan was good performance. And 28 percent of farmers state that man

advisors are success than women advisor. Also the research finding showed that the majority of Non-include farmers were diploma (43.5%) and only about 1 percent of respondent had master degree.

The result of mean comparison between include and non- include farmer in the plan showed that there isn't any difference between these group about the attitude, intellectual norms, efficiency of advisors and intention dimensions (Table 2).

Table 3 illustrates the result of mean comparison between include and non- include farmer based on main variable of the research. This result showed that in attitude domain, there is meaningful difference in these measured component: "Advisors can help to improvement of farm performance", "WSP is successful plan", "Experts have necessity skill as an advisor in all farming process ", "Advisors presence are very effective in wheat production", "WSP can increase the knowledge of farmers" and " Farmer education basically is public affair and advisors can do it" between include and non- include farmers.

In intellectual norms domain meaningful component are "I listen to advisors because their information is higher than me". In intention domain in measurement component: " I am ready to employ advisors" there is significant different between respondent (Table 3). And in other measured component there isn't significant difference between respondent.

Table 1: Frequency Distribution of farmers based on farm variable

Variable	Mean	S. D	Minimum	Maximum
Cultivation Experience	19.13	8.96	3	45
Wheat cultivation Experience	17.19	9.05	2	45
Experience of work with advisors	3.67	1.61	1	10
Distance to service center	8.18	8.34	1	41
Amount of Land	17	33.99	3	300
Amount of wheat farming	9.25	11.47	2	100
Number of plots	3.85	2.59	1	15
Wheat Yield before advisor attending	4.24	1.28	0.5	8
Wheat Yield after advisor attending	4.57	1.25	0.9	9

Table 2: Mean comparison of include and non- include farmer in the plan

Variable	Include in WSP	Mean Rank	Mann-Whitney U	Sig
Attitude	Yes	22.25	234	0.886
	No	22.8		
Intellectual norms	Yes	25.09	294.5	.985
	No	24.89		
Efficiency of advisors	Yes	20.19	184.5	.284
	No	24.29		
Intention	Yes	24.37	263.5	.838
	No	23.55		

Table 3: Mean comparison between include and non-include farmer based on research variables

Domain	Measured Component	Include in WSP	Mean Rank	Mann-Whitney U	Sig
Attitude	Advisors can help to improvement of farm performance	Yes	84.92	**2479	0.006
		No	106.92		
	WSP is successful plan	Yes	84.34	** 2355	0.002
		No	110.4		
	Experts have necessity skill as an advisor in all farming process	Yes	82.71	*2189	0.00
		No	112.72		
	Advisors presence are very effective in wheat production	Yes	82.77	**2147	0.00
		No	114.55		
	WSP can increase the knowledge of farmers	Yes	86.34	*2631	0.025
		No	104.88		
Farmer education basically is public affair and advisors can do it	Yes	83.77	**3227	0.002	
	No	109.95			
WSP future is successful	Yes	87.92	2828	0.169	
	No	99.29			
With WSP farmers and experts relationship will developed	Yes	88.58	2914	0.196	
	No	99.21			
Timely and effective attending of advisors in all farming activities is main characteristic of them	Yes	94.13	2953	0.256	
	No	84.57			
Intellectual norms	I am satisfy with advisors advices	Yes	87.39	2757	0.068
		No	102.36		
	I listen to advisors because their information is higher than me	Yes	85.31	*2530	0.012
		No	105.9		
	Although advisor are young but they are the key of problem solving	Yes	90.21	3171	0.729
No		93.08			
Listen to advisors help us to increase production	Yes	88.42	2893	0.172	
	No	99.63			
Efficiency of advisors	The advisors power is reliable	Yes	94.73	2874	0.151
		No	82.98		
	Advisors can provide farmers essential needs in unexpected situations	Yes	87.71	2887	0.218
		No	97.76		
	The advisors existence can decrease production risks	Yes	86.13	2682	0.055
		No	101.86		
	Each advisor can manage a farm alone in cultivation process	Yes	93.85	2910	0.213
		No	83.53		
	Advisors have appropriate knowledge and skill in wheat harvest	Yes	91.25	3242	0.912
		No	90.35		
	We can rely on advisor in farm decisions	Yes	90.17	3207	0.884
		No	91.36		
	Advisors can identify needs and problems and solve them appropriately	Yes	90.49	3208	0.819
		No	92.34		
Advisors have appropriate knowledge and skill in wheat planting	Yes	91.48	3212	0.832	
	No	89.75			
Advisors have appropriate knowledge and skill in wheat cultivation and management	Yes	90.45	3203	0.808	
	No	92.44			
Intention	I am ready to employ advisors	Yes	86.08	*2631	0.033
		No	103.88		
	If my farm was bigger I could employ advisors and pay their wages	Yes	89.53	3082	0.519
		No	94.86		
	Advisors need to variety of general and special educations	Yes	92.67	2881	0.244
		No	83.12		
	The farmers satisfy with payment a part of production benefit as advisors wages	Yes	89.71	3106	0.58
		No	94.38		
	If farmer were sure that there production will increase they will pay the advisors wages	Yes	91.21	3247	0.926
		No	90.45		
I am ready to employ experts in technical affairs of my farm	Yes	85.74	2631	0.037	
	No	102.88			
Farmers can pay partial wages of advisors	Yes	86.51	2731	0.84	
	No	100.88			

Table 4: Multivariate Regression Analysis (factor affecting on farmers intension in participation at WSP)

Step	Dependent variable	B	Beta	T	Sig	R	R ²	F
1	Efficiency of advisors	0.426	0.751	11.69	0.00	0.75	0.56	136.74
	Constant	6.54	--	10.00	0.00	--	--	--
2	Efficiency of advisors	0.276	0.487	4.5	0.00	0.773	0.59	77.88
	Attitude	0.172	0.321	2.97	0.00	--	--	--
	Constant	7.31	--	9.45	0.00	--	--	--

0.00= (sig F 77.88=F 0.597= Adjusted R2 0.773=R

Also Table 3 indicated that both respondent groups believe that advisors can provide farmers essential needs in unexpected situations and they can decrease production risks, but advisors need to variety of general and special educations and advisors can identify needs and problems of problems and solve them appropriately. Independent variables with interval data were used for a multivariate linear regression analysis stepwise method (Table 4). The variables included in the equation Efficiency of advisors and attitude. The regression analysis shows variables that were statistically significant. The result indicates that 59% (R²=0.59) of the variance in factor affecting on farmers intension in participation at WSP could be explained by the above mentioned variables.

And the regression equation is:

$$Y = 7.31 + 0.276 (X_1) + 0.172 (X_2)$$

DISCUSSION

Public extension services play a key role in the implementation of rural development programs for the sustainable agriculture. However, the agriculture sector suffers from restricted financial and human resources [25, 26]. Privatization in extension needs o structural management in all the organizational levels. The world experiences showed that in unstable social-economic situation in developing countries we need to various method and approaches in farmer protection [27, 28]. The main purpose of this research was analyzing farmer behavior and intention with theory of planned behavior. The result showed that most of the farmers had primary education. Bengesi et al., (2004) and Tayeb Muneer (2008) and Bakhshi et al., (2008) studies revealed the education having potential to influence farmers decisions and adoption innovation [15, 16, 29]. Most of the farmers that included in the plan were member of agricultural cooperatives but most of the non-include farmers in the WSP were member of expert farmers. It cause of difference may be is because of the election of inclusion in the plan.

Then our suggestion in this regard is persuasion farmers to group working to develop advisory working to all of products.

It seems that planning for increasing the farmer's knowledge and increasing their information is necessary. Because well-educated, aware and well informed persons think and behave wisely and can increase their productivity.

The results of the study pointed out that experts have been effective in offering advisory services to the wheat farmers, a result that echoes the findings of Anderson (2007) and Ozcatalbas et al., (2011) but the heavy workloads confirmed this fact there is need to hire more experts to cover wheat producers.

Based on the findings, it is suggested that along employing more experts, there is need for practical training to meet the needs of farmers. This has been pointed out by several authors including Suda (2008), Bengesi et al., (2004) and Anderson (2007) regarding to research's results, it is suggested that design advisors apply group method to supervise the affairs. It is also suggested that experts in Iran such as Chili should be organized in the form of advisory firms.

Considering that the farmers pay for the private extension services and valuing the farmers idea is on of the main important character of private extension [27]. The main cause of non-payment of advisors wages was that devisor don't request for fees because of relative relationship of advisor with farmers while in most of cases (more than 60 percent of farmer) have ability of payment. Then it is suggested a team or group consisted of advisors and experts with farmer supervise the payment and determine the amount of this payment. Whereas based on respondent view group pressure is one of the principal reasons of wages payment.

The mean comparison between include and non- include farmers indicated that there is significant difference in attitude, intellectual norms and intention domain. These results are in accordance to Ziaemehr (2011) and Bakhshi Jahromi (2008) researches. Although in most of measured component the mean rank of non-member farmers in higher than include farmers but

there is positive viewpoint about success of WSP by farmers. Because the stated that, advisors can help to improvement of farm performance, experts have necessity skill as an advisor in all farming process, WSP can increase the knowledge of farmers and advisors existence are very effective in wheat production. And it is suggested to pay attention in As we know the orientation of modernizing of extension should focus on the importance of extension in bringing positive behavioral change among farmers for sustainable rural and agricultural development [30]. The result of stepwise regression analysis showed that Attitude and Efficiency of advisors have explained 59 percent of dependent variable (factor affecting on farmers intension in participation at WSP). The finding in this study is in accordance with studies by Willock *et al.*, (1999) and Austin *et al.*, (2001). As we know sustainability of advisory services in public sector and society depend on holistic support and guidance of experts, associations and increasing institutional relation between public and private sector. Also permanent employment of advisor increases their enthusiastic in doing their tasks.

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