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The Effective Management and Professional Factors on Farmers Satisfaction of Agricultural Engineering Services Companies (With the Service Marketing Approach)

Mojtaba Ziaeemehr[1], Fatemeh Panahi[2*], Shaghaeigh Kheiri[3]

1-Ph.D. Student, Agricultural Economics, Agricultural marketing. , Sari University of Agricultural Sciences and Food Industry
2-Assistance Professors, Islamic Azad University, Dezful Branch, Agriculture College, Dezful, Iran. fpanahi55@yahoo.com
3-Assistance Professors, Islamic Azad University, Abhar Branch, Agriculture College, Abhar, Iran

Abstract

In the current condition of the changing world, business corporations in competing with other competitors seek to reach a prominent position through achieving advantages. Marketing advice is one of the most important services these companies make. On the other hand, service consumers are constantly seeking suppliers who offer far better services, understanding this distinction would be of help in the selection process of the required services and will help customers choose better suppliers and pay more money in return to receive good services; for this reason, customers' satisfaction should constantly be measured and evaluated. The main objective of this study is investigation management and professional factors affecting farmers' satisfaction. The study adopts a descriptive method; inferential statistics were also used to analysis the data. 290 wheat-farmers were selected as the population of the study. The farmers were under the agricultural and engineering services companies in Islam abad gharb, a town with the population of 16900. Findings showed that was a significant relationship between independent variables of farming activities record, the amount of information from the organization chart of the agricultural and engineering companies, social contribution, activity level, as well as how company experts act and the dependent variable of the study (satisfaction). Furthermore, stepwise multiple regression test showed 23.5% of the dependent variable (satisfaction from agricultural and engineering companies) variation could be explained by variables such as: (the amount of information from organization chart of agricultural and engineering companies, the activity level, how company experts act as well as farming activities record); The rest 76.5% depend on other factors not investigated in this research.

Keywords: Satisfaction, Agricultural companies, Service marketing, public extension, Extension privatization.

Introduction

Duo to continues, sustainable growth and its vital role in providing food security and employment development, agriculture sector is considered as one of the platforms for sustainable development in every country. So, by understanding and knowing its infrastructure and factors, it would be essential to develop appropriate programs for qualitative and quantitative development of influencing factors on favorite production in this sector (Ghadarani *et al,* 2008)).

In todays' world, agriculture is changing with increasing speed; technological advances and economic considerations are considered the

main reasons for these changes. Development of information system and technology and changes in the social infrastructure of nations has made all economic and social sectors subject to change; therefore following this development, agriculture sector and its sub-sections such as technical, advisory and promotional services have also changed. Science technical knowledge and information as important factors in the production mechanism and agricultural marketing act side by side with other factors such as land, labor and capital, developments done in the construction and function of agricultural services, as the supporter and facilitator of optimal function of these factors, have been influential(Akbari *et al*, 2008).

Farmers' passivity to the market is one of their problems in the agricultural economy marketing operations can be thought of as an outsider process, or can be transformed into knowledgeable and controllable processes by gaining enough interest (Sabori *et al*, 2006).Increasing competition in the global market will be a force to confront and continue to challenge the extension in the coming decades, today, marketing is the beginning and end of every effort to produce products or provide services to the community (Badraghe *et al*, 2011). Marketing is a specialized activity, but agricultural extension can be very effective and effective, especially in relation to raising the level of knowledge and education of the farmer(Sabori *et al*, 2006).Extension its common concept and extension of marketing as an intervention tool in marketing can be a source of information and an appropriate function for farmers, the logic of intervention and the planning change in the extension of agriculture requests the assumption of a combined and complementary role for production and marketing from this organization(Yadavar, 2016). In this regard, agricultural services perspective has been the continuation of non-governmental and non-focused system and its mission is to provide technical-consulting and engineering services in order to achieve the objectives of the agriculture sector and providing the ground for increasing farmers' access to information, knowledge and technology required in order to secure the consent of the beneficiaries through an effective and stable private service system (Schneider and Berent, 2008). According to the above-mentioned reasons, the purpose of this study is to investigate factors affecting farmers' satisfaction with agricultural engineering services companies. Generally, most beneficiary units and other productive sectors especially the trade unions and agricultural cooperatives have no place for technical- engineering services in their organization (Eskardi *et al*, 2008). In the same vein, one of the key issues in accomplishing agricultural development is to achieve the required inputs in doing new and basic agriculture which according to the new planning approach of agriculture services should be available to the farmers in order to fulfill the beneficiaries' satisfaction. Today, services companies consider consumers' satisfaction as an important criterion for evaluating the quality of their work; Consumers' satisfaction is regarded the most important objective of organizations that is a sign of their orientation towards satisfying customers' demands and their tendency to promote the quality of their services (Johnson, 2001).

Reviewing the related literature, we'll come up with two perspectives to define satisfaction: the first approach says that satisfaction is the feeling that a customer will have after taking the product or using the services and; and in the second

approach satisfaction is defined as a process of understanding and evaluation of the customer from the experience of taking the product or using the service (Francesca and Gianluigi , 2006). Ling field psychologically defines customers' satisfaction as a feeling that is received as a result of a comparison between the specifications of the purchased product with the needs or demands of the customers and social expectations in relation to the goods or services (Espallardo *et al*, 2009). Companies learn the needs, wants and expectations of their customers by the results of the surveys they do for evaluating customers' satisfaction; then by fulfilling these needs they'll try satisfy that customers and guarantee their own maintenance and profitability.

Accordingly, information about customers' satisfaction and factors affecting it is justified for all the public and private organizations. So, involving farmers in agricultural development programs through evaluation of their attitudes and also to be aware of beneficiaries' satisfaction towards agricultural development programs through doing customer-based surveys and consequently the following results would be of great importance (Soltani and Zarifian,2008). Yazdanpanah *et al* (2009), in a study found that there is a meaningful relationship between awareness of the duties and options of insurance companies and farmers' satisfaction. Ghahdarijani *et al* (2008) in another study showed that factors such as individual and professional characteristics of the farmers, prices, how wages are paid and attitudes toward private companies in fluency farmers' satisfaction (Soltani and Zarifian,2008). Johnson also in his study on factors affecting satisfaction founds perceived quality and value of received services as the major variables and visual image, commitment, response to customers' objections and their expectations as the minor variables (Long and Swortzel, 2007). Due to the above, the aim of this study is to investigate effective management and professional factors on farmers' satisfaction.

Materials and methods

The present study-due to the impossibility of controlling the variables- is quasi-experimental; because full control of the variables is not plausible due to the post-intervention nature of the research. The study was done in two ways: documentary and field research. Date was analyzed by SPSS software, version15. The participants are wheat-farmers under the coverage of agricultural engineering service companies in Islam Abad Gharb County. For various reasons including economy, geographical, thematic and share sampling was adapted with a random selection of participants. The research population were 16900 farmers (N=16900) which by using Cochran's sample size formula, 290 of them were selected as the final sample.

First, some data were gathered from studies done in and out of the country, different articles and searching scientific sources from the internet. Then, according to the gathered data, a questionnaire was designed which was used as the main instrument for the study. Participants answered the questionnaire in the form of interview and personal presence. To test its validity, the questionnaire was distributed to a group of experts; after receiving their opinions, it was modified. The Cronbach's alpha value for the questionnaire was 85% to ensure its reliability. Dependent variable of this study was satisfaction with agricultural engineering service companies on the part of the farmers. Independent variables were personal, professional and social

characteristic of the farmers, their awareness of the organization charts of agricultural engineering service companies, the way and the amount of the activities of the experts of the companies.

Results and Discussion Personal (individual) and professional characteristic of the farmers

Descriptive findings showed that the average age of the studied beneficiaries was 45. Moreover, 32.5% of the beneficiaries had a high school diploma or higher educations. In addition, the average time period that the farmers were under the coverage of agricultural engineering service companies was three and a half years; the average years of their farming activities was 22 and their average experience in wheat planting was 21 years. Findings showed that according to the average rating and quarters (Q_1=1.5, Mean=2.6, Q_3=3.7),

Farmers' social participation

most of the farmers were at a mid-level of social participation. Besides, farmers' social contribution priorities showed that participation in promotional classes and consulting sessions the top priorities.

Farmers' satisfaction with agricultural engineering services companies

In order to assess the farmers' satisfaction with agricultural engineering services companies, 8 items of likret type (very low, low, medium, high, very high) were designed and the participants were asked to response to them. Average rating and the obtained quarters (Q_1=2.38, mean=3, Q_3=3.46) showed that the farmers' satisfaction with agricultural engineering services companies was medium [Table 1, Diagram1]. Moreover, by prioritizing farmers' satisfaction with the companies we found that the item "The number of promotional classes held by the companies during the planting season" was the top priority.

Table1. The frequency distribution of farmers' satisfaction with agricultural engineering services companies

Farmers' satisfaction level of technical-engineering services companies	Frequency	Percent	Cumulative percent
High	91	31.4	12.4
Medium	163	56.2	68.6
Low	36	12.4	100
Total	290	100	

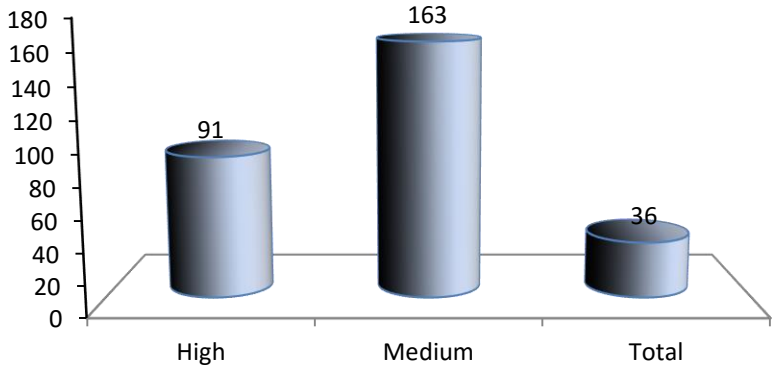


Diagram1. **The frequency distribution of farmers' satisfaction level of organization chart of technical-engineering services companies**

Farmers' awareness of the organization charts of agricultural engineering services companies

According to the findings as well as rating and the obtained quarters (Q_1=2, mean=2.6, Q_3=3.4) most farmers' awareness of the organization chart of agricultural engineering services companies was medium [Table 3, Diagram 2]. Findings also showed that according to Table 2, the item "farmers' awareness of the goals of agricultural engineering services companies" ranked first in the analysis of prioritizing the awareness of organization charts of the companies. On the other hand, frequencies the responses of all of the studied population are shown in case any, in the table 2.

Table 2. Prioritization the statements of farmers' awareness of organization chart of technical-engineering services companies (n:290)

Items	Very low	low	median	high	Very high	Medium	CV	SD	Rank
	F	F	F	F	F				
farmers' awareness of the objectives of agricultural engineering services companies	54	63	102	51	6	3	0.393	1.180	1
farmers' awareness of the authorities of companies	56	67	83	60	8	3	0.412	1.237	2
Conformity of abilities of the companies with their authorities	44	61	86	63	19	3	0.436	1.309	3
Conformity of authorities of the companies to fulfill technical needs the companies	41	51	88	70	16	3	0.450	1.352	4
farmers' awareness of the duties of companies	45	47	93	58	29	3	0.457	1.371	5

F: Frequency

Table 3. The frequency distribution of farmers' awareness level of organization chart of technical-engineering services companies

farmers' awareness level of the organization charts of technical-engineering services companies	Frequency	Percent	Cumulative percent
High	111	38.3	38.3
Medium	130	44.8	61.7
Low	49	16.9	100
Total	290	100	

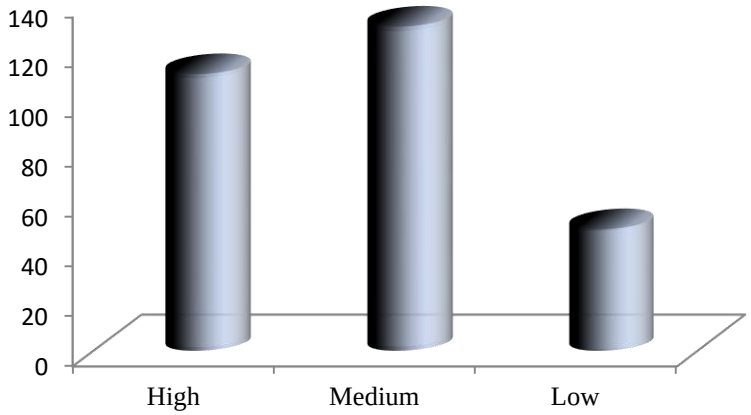


Diagram 2. The frequency distribution of farmers' awareness level of organization chart of technical-engineering services companies

The way and the amount of the activities of the experts of the companies

According to the average rating and the obtained quarters (Q_1=5.25, mean=3, Q_3=3.78), based on most of the farmers, the way and the amount of the activities of the experts of the companies was at a medium level [Table 5, Diagram 3]. According to Table 4, prioritization the way and the amount of experts' activities put the item "company experts' supervision in farmers during the time of harvest" as the top priority.

According to the obtained results, there is a meaningful relationship between independent variables of agricultural activity experience at 5% level and dependent variable of awareness of organization chart of agricultural engineering services companies and the way and the amount of activities of the experts at 1% level with dependent variable of satisfaction with the companies [Table 6].

Correlation

Table 4. Activity level and the function of the experts of agricultural engineering services companies

Items	Very low	low	median	high	Very high	Medium	CV	SD	Rank
	F	F	F	F	F				
Experts' supervision on farms during harvest	19	34	54	109	57	4	0.349	1.399	1
Experts' supervision on farms during planting	20	34	63	105	48	4	0.352	1.411	2
Experts' supervision on farms during crop storage	48	41	65	79	34	4	0.373	1.492	3

Experts' supervision on farms from planting to harvest in order to fulfill farmers' technical needs	39	62	82	71	29	3	0.422	1.268	4
Clarify of time-table of companies when experts supervise farms	40	58	82	71	28	3	0.435	1.307	5
Compatibility of companies with farmers in holding promotional-training programs	44	56	85	62	28	3	0.448	1.346	6
Experts' presence and punctuality when supervising farms	45	48	67	91	26	3	0.454	1.362	7
Experts' supervision on farms during the farm land preparation	34	57	62	77	37	3	0.487	1.463	8

Table 5. The frequency distribution of activity level and the function of the experts of agricultural engineering services companies

Activity level and the function of the experts	Frequency	Percent	Cumulative percent
High	113	39	39
Medium	144	49.7	61
Low	33	11.4	100
Total	290	100	

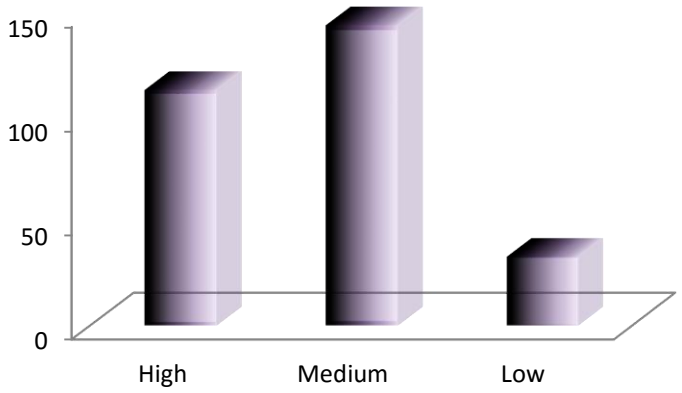


Diagram 3. The frequency distribution of activity level and the function of the experts of agricultural engineering services companies

Table 6. Correlation of research variables with variable of satisfaction with agricultural engineering services companies

Research variables	Spearman	Kendal	The significance level
Experience of agricultural activity	-0.166		0.005
Farmers' social participation		0.227	0.000
Awareness of organization charts of the companies		0.280	0.000
The way and the amount of experts' activities		0.293	0.000

Multi-variant regression to estimate the equation of factors influencing satisfaction

In order to study the effects of independent variables which had a meaningful engineering companies, stepwise multi-variant regression was used. According to the regression coefficient and the obtained constant (non-varying value) from stepwise regression analysis test, regression equation of the research gives this:

$Y= 12.918 + 0.320x_1 + 0.365 x_2 -0.077 x_3$

Findings showed that after inserting all independent variables which had meaningful correlation with the dependent variable (including awareness of organization charts of agricultural engineering service companies, social participation, the way and the amount of experts' activities and farming experience) only the variables "awareness of organization charts of the companies, the way and the amount of experts' activities and farming experience" maintained in the equation; In order words, the mentioned variables and internationally they demonstrate the most variations of the dependent variable of the study [Table 7]. According to Table 6, correlation coefficient value (R) was 0.458, and the value of "R^2 " were estimated 0.235. So the obtained R^2 indicates that 23.5% of the dependent variable changes (satisfaction with experts of agricultural engineering services companies is demonstrated by these three independent variables (awareness of organization charts of the companies, the way and the amount of experts' activities and farming experience).

Table 7. Stepwise multi-variant regression coefficient value for dependent variable of research (satisfaction)

	Independent variable	t	Beta	SEB	B	Sig
X_1	How experts functioned and the amount of their activities	5.945	0.327	0.054	0.320	0.000
X_2	Awareness of organization charts of agricultural engineering services companies	4.257	0.231	0.086	0.365	0.000
X_3	Farming experience	-2.155	-0.113	0.036	-0.077	0.032
	Constant	7.277		1.775	12.918	0.000
	R= 0.458		R^2=0.235			

The results of the path analysis in the field of effective management and professional factors on farmers' satisfaction with agricultural engineering services companies

To perform the analysis path analysis and calculating the direct and indirect effects of independent variables on the dependent variable, it must be traced the Path diagram that represents relations and direct and indirect effects of each variable on other variables.

To determine the path coefficient and calculating the direct and indirect effects of variables, by using of regression techniques, it should be separated paths based on the graphical diagram. To path separation will be done according to the arrow source, that represents the independent variable and

arrow end which is represents the dependent variable.

In this process, in each step, one of the variables as the dependent variable and related variables with the source of ended arrows to the aforementioned variable, are being used as the independent variables in regression analysis, through which to obtain the beta coefficients that is the represents the direct effects of independent variables on the dependent variable.

Based on mentioned points, according to the obtained quantities in the Table 7, it can be identified the direct effects of independent variables on the dependent variable in separate diagram [Diagram 4].

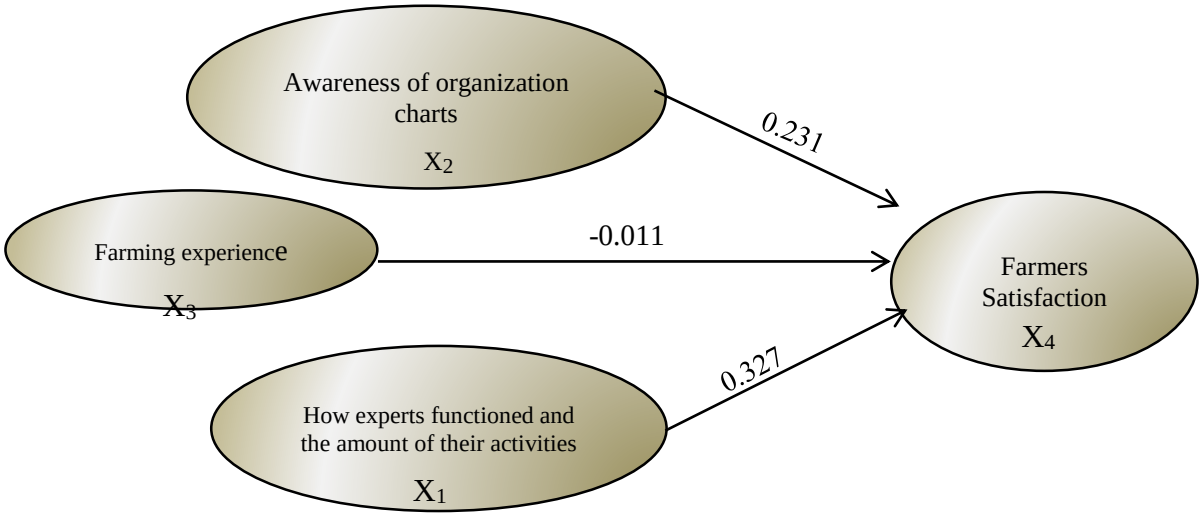


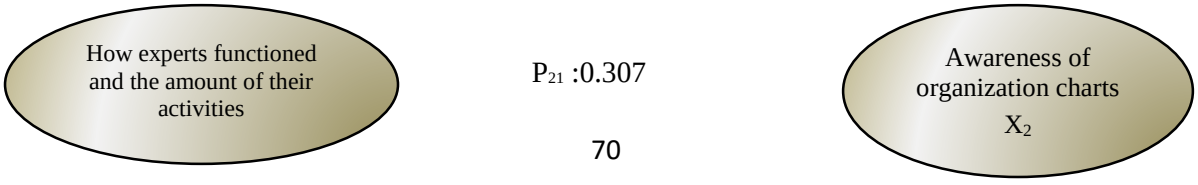
Diagram 4. Separation diagram the first step of path analysis

In the second step

variable named "Awareness of organization charts of agricultural engineering services companies" considered to be as the dependent variable, and variables named " Farming experience " and " How experts functioned and the amount of their activities " considered to be as the independent variables and Beta coefficients were calculated by using the regression analysis to the stepwise method and the results it has been shown in Tables 8 and Diagram 5.

Table 8. The results of the regression analysis to the stepwise method in the second step of path analysis

	Independent variable	t	Beta	SEB	B	Sig
X_1	How experts functioned and the amount of their activities	5.472	0.307	0.035	0.320	0.000
	Constant	9.793		0.871	12.918	0.000
	R= 0.307		R^2=0.094			



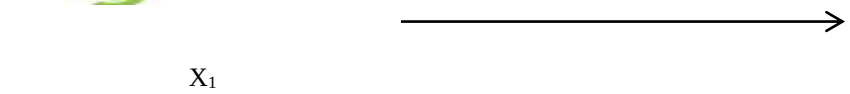


Diagram 5. Separation diagram the second step of path analysis

In the Third step, variable named " How experts functioned and the amount of their activities **"** considered to be as the dependent variable, and variables named " Farming experience " and " Awareness of organization charts of agricultural engineering services companies " considered to be as the independent variables and Beta coefficients were calculated by using the regression analysis to the stepwise method and the results it has been shown in Tables 9 and Diagram 6.

Table 9. The results of the regression analysis to the stepwise method in the third step of path analysis

	Independent variable	**t**	**Beta**	**SEB**	**B**	**Sig**
X_2	Awareness of organization charts of agricultural engineering services companies	5.226	0.289	0.089	0.467	0.000
X_3	Farming experience	-3.380	-0.187	0.040	-0.135	0.001
	Constant	13.0566		1.555	20.296	0.000
	R= 0.458		R^2=0.235			

In the Fourth step, variable named " Farming experience **"** considered to be as the dependent variable, and variable named " How experts functioned and the amount of their activities " considered to be as the independent variables and Beta coefficients were calculated by using the regression analysis to the stepwise method and the results it has been shown in Tables 10 and Diagram 7.

Table 10. The results of the regression analysis to the stepwise method in the Fourth step of path analysis

	Independent variable	**t**	**Beta**	**SEB**	**B**	**Sig**
X_1	How experts functioned and the amount of their activities	-3.725	-0.214	0.80	-0.298	0.000
	Constant	13.778		2.002	27.580	0.000
	R= 0.458		R^2=0.235			

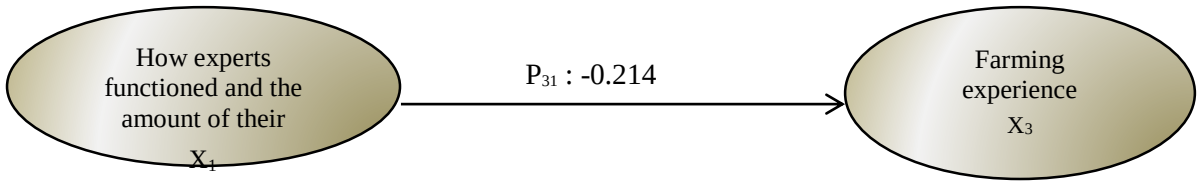


Diagram 7. Separation diagram the Fourth step of path analysis

After that achieving the path coefficients for kidney of separated paths, can be achieved the direct and indirect effects of independent variables on the dependent variable by combining of these diagrams. Coefficients obtained for all paths it has been shown in Diagram 8. Each variable has the two direct and indirect effects that of whole position of them obtained the overall effect of variable.

Through comparison data on beta coefficients for different paths, is determined the importance of each path. The direct and indirect effects of the variable to named "awareness of organization charts of agricultural engineering services companies" on the variable to named "farmers' satisfaction with agricultural engineering services companies" it shows in Table 11.

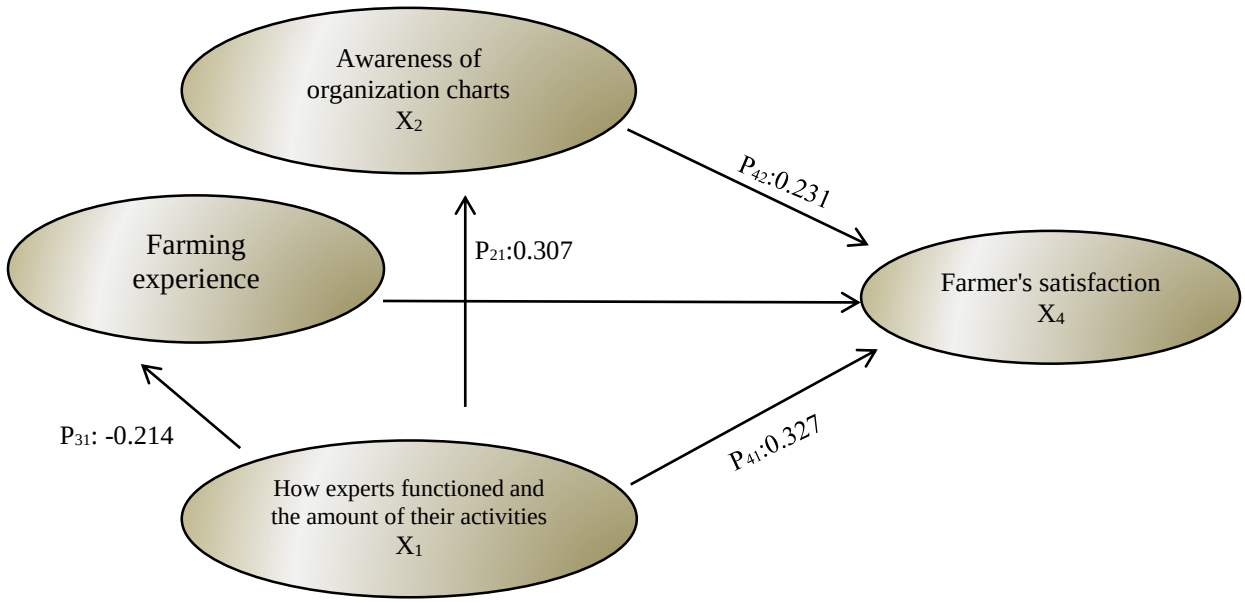


Diagram 8. Separation diagram the final step of path analysis

Table 11. Calculating the direct and indirect effects variable (X_2) on variable named "Farmers' satisfaction with agricultural engineering services companies"(X4)

Type of effect	path	The rate of effect based on beta coefficients
direct effects	$X_2 \longrightarrow X_4$	0.231

The direct and indirect effects of the variable to named "How experts functioned and the amount of their activities" on the variable to named "farmers' satisfaction with agricultural engineering services companies" it shows in Table 12. The direct and indirect effects of the variable to named "Farming experience" on the variable to named "farmers' satisfaction with agricultural engineering services companies" it shows in Table 13.

Table 12. Calculating the direct and indirect effects variable (X_1) on variable named "Farmers' satisfaction with agricultural engineering services companies"(X4)

Type of effect	path	The rate of effect based on beta coefficients
direct effects	$X_1 \longrightarrow X_4$	0.327
Indirect effects	$X_1 \longrightarrow X_3 \longrightarrow X_4$ $X_1 \longrightarrow X_2 \longrightarrow X_4$	(-0.214)×(-0.011)=0.0023 (0.307)×(0.231)=0.0709
Total of indirect effects		0.0732
Whole position of direct and indirect effects		0.4002

Table13. Calculating the direct and indirect effects variable (X_3) on variable named "Farmers' satisfaction with agricultural engineering services companies"(X4)

Type of effect	path	The rate of effect based on beta coefficients
direct effects	$X_3 \longrightarrow X_4$	-0.011

Table 14. The sum of variables effects in path analysis

Independent variable	Indirect effects	Direct effects	Whole position of direct and indirect effects for each variable
X_2 : Awareness of organization charts of agricultural engineering services companies	-	0.231	0.231
X_3 : Farming experience	-	-0.011	-0.011
X_1 : How experts functioned and the amount of their activities	0.0732	0.327	0.4002

After calculating the direct and indirect effects of all variables, are summarized the sum of these effects in Table 14. In Socio-economic research, usually is not possible for researcher to identify all the factors influencing on the dependent variable; so, path analysis variables can always explaining only a part of dependent variable variance. That's why in the path analysis, the something that will remain as a unknown effect or unknown factors, will be shown by "e" that is known to the error quantity. The amount of "e" is represents the variance of variables that previous independent variables of diagram, have not been able to explain it. With making

square of "error quantity" (e), can be obtained the unexplained variance.

Now, to achieve this topic that the causal model presented in path analysis diagram how much explains of the variance of dependent variable, it should get help of the determination coefficient (R^2). Determination coefficient obtained to stepwise method for all variables is presented in Table 7. As this table indicates, the amount of determination coefficient (R^2) is 0.235. That's mean, 23.5% of whole position of dependent variable changes explained by the above analysis model. On the other hand, through the determination coefficient (R^2) can be calculated the "error quantity" [Formula 1].

Formula 1. The calculation of error coefficient (e^2)

$$R^2 = 1 - e^2$$
$$0.235 = 1 - e^2$$
$$0.235 - 1 = -e^2$$
$$e^2 = 0.765$$

Therefore, we can say that obtained causal model it does not explain only 76.5% of the variance of dependent variable in this research.

Suggestion

To be aware of structures that could effect on farmers' satisfaction with the stated companies is an important issue. Since beneficiaries' needs and expectations are not always fixed and are changeable, their satisfaction should constantly be measured and evaluated so that by receiving feedback from the customers of these firms (farmers), it would be possible to direct the activities and resources of these companies in a way that the most important objective of these companies that the most important objective of these companies that is keeping the customers through getting their satisfaction be achieved. The final statements, according to the above would be some suggestions to improve the function of agricultural engineering services companies in order to acquire farmers' satisfaction: Due to the meaningful relationship between "awareness of quiets and authorities of the companies", it is suggested that some measures be taken in order to learn more about the services these companies deliver. Moreover, according to the meaningful relationship between the variables of "social participation" and " and "satisfaction", it's suggested that more attempt be done to institutionalize social participations of farmers in the service plans of the companies.

Science the farmers had average consent with regard to the services of agricultural engineering services companies, more efforts on the part of these companies in order to learn farmers' needs and expectations is suggested.

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