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## Studying Effective Inhibitors and Facilitators on Development of Sustainable Agriculture

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### Abstract

The purpose of present research is examining the role of effective social-economic inhibitors and facilitators on development of sustainable agriculture from viewpoint of experts of agricultural department of Tehran province. Statistical society of the present research consists of all experts of agricultural department of Tehran by having more than 210 persons; in which, total 132 simple random sampling method was selected as volume sample. The research tool is questionnaire; in which the validity of questionnaire by using comments of supervisor and advisor professor and reliability of questionnaire through Cronbach's alpha coefficient in range of 75% to 89% and using SPSS software, version 16 was confirmed. Results of research reveal that there is positive significant relationship at sig level of 99% between economic facilitators, economic inhibitors, social inhibitors with development of consistent agriculture and also there is positive significant relationship at sig level of 95% between social facilitators, level of education with development of sustainable agriculture. Results of research show that from viewpoint of experts; the variables of economic facilitators, social facilitators and economic inhibitors have positive influence on development of sustainable agriculture.

**Keywords:** social inhibitors, economic inhibitors, social facilitators, economic facilitators, development of sustainable agriculture

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### INTRODUCTION

Iran in compliance with geographical domain and diversity of population, climate condition and green fields, has appropriate opportunity for investment at agricultural sector. At the present time in Iran, there are more than 2 million farmer families and active productive units in the agricultural sector; which play key role on national economy, so that this sector produces nearly 51% domestic gross production, 22% employment, 25% non-oil export and 49% food requirements of Iran. According to the recent available statistics, one third of non-oil export of Iran is allocated to agricultural sector. According to the aforesaid statistics and in compliance with this fact that basic agriculture for stability of daily life is regarded as one of the vital sectors for supporting national and local economy, development of this sector is regarded as one of the most important priority for national development plans mainly among developing countries such as Iran. One of the most important criterions of sustainable agricultural development in Iran are including:

Establishing sustainable jobs, enough income for persons being active in the field of agricultural crops, maintaining and improving productive capacity of basic natural resources and recycling resources (Karimi et al. 2013). Sustainable agricultural development in Iran has created global and also other forms of challenge including: significant erosion of soil resources, lack of collecting weeds and suitable application of surface and underground waters, destruction of plant cover, incorrect application of natural resources, high amount of waste materials of agricultural crops, unemployment at rural areas, duality in the structure of urban and rural areas, rural development management and security of investment at productive sector (Ghanbari and Barghi 2008). The relationship between economic growth and aspects of social development shall be better understood; thus, specialists and economists believe that unilateral justification of economic growth, leads to non-sustainable agriculture (Soubotina 2014). Feizabadi and Maleki 2015 in their research with title of "Examining and comparing the level of development of

rural areas of different provinces of Iran” have concluded that level of imbalance between different rural areas of provinces of Iran is reduced upon one decade, so that percentage of imbalance changes is 0.017. Therefore, it is recommended that increasing production and growth of agricultural sector in addition to the topic of correct distribution of income and offering welfare services to rural areas, shall be followed up by the authorities. The problems of sustainable agriculture in Zagros central part of Iran are including: low level of productivity of agriculture at surface unit, low level of utilization of agricultural water, high level of consumption of industrial chemical materials, high level of damage of pests, low level of management of mechanization in agriculture (Sharifi Moghadam 2014). Development of sustainable agriculture, plays key role on supplying healthy food for all human and some solutions like sustainable agriculture shall be found for attracting attention of more number of farmers for prevention of application of chemical materials and direct them toward natural and healthy inputs, selecting suitable methods and alternate resistant inputs and correct management (Stonehouse et al. 2013). Shayan et al. (2011) through studying permanency of rural development of Komijan city has concluded that from viewpoint of level of sustainable development, the villages of this city from viewpoint of 3 indices including: environmental, social and economic indices are at level lower than medium and through applying methods of sustainable agriculture, it is possible to improve conditions at this village. Bos et al. (2012) has examined the sustainable agriculture from economic and social point of view and has referred that the first priority is economic factor especially sustainable affording life condition for the farmers. Kochaki et al. (2013) in his research with title of “Status of developing sustainable agriculture in Iran and offering sustainable strategies” for determining general potentials of development of sustainable agriculture, have offered following 5 support systems including: agricultural resources, level of agricultural progress, environment and ecosystem health, status of rural societies, quality of education and management.

#### General Objective

Studying Effective Inhibitors and Social-Economic Facilitators on Development of Sustainable Agriculture from Viewpoint of Experts of Agricultural Department of Tehran Province

#### Specific Objective

- Prioritizing viewpoint of experts of agricultural department in relation to effective social-economic facilitators on development of sustainable agriculture
- Prioritizing viewpoint of experts of agricultural department in relation to effective social-economic inhibitors on development of sustainable agriculture
- Effective Social-economic facilitators on development of sustainable agriculture
- Effective Social-economic inhibitors on development of sustainable agriculture

#### MATERIALS AND METHODS

Statistical society of the present research is all experts of agricultural department of Tehran province that are nearly 210 persons and the volume sample is 132 persons that were selected by using simple random sampling method. Cronbach's Alpha coefficient of questionnaire for examining the inhibitors and effective social-economic facilitators on development of sustainable agriculture from viewpoint of experts of agricultural department of Tehran was calculated as 89%. The independent variables by using findings of theoretical model are including: Individual properties, social-economic facilitators, social-economic inhibitors and the dependent variable is development of sustainable agriculture.

#### RESULTS

##### Prioritizing Viewpoint of Experts of Agricultural Department in Relation to Effective Economic Facilitators on Development of Sustainable Agriculture

As it is obvious in **Table 1**, prioritizing forms based on coefficient of changes show that the highest viewpoint of experts of agricultural department in relation effective economic facilitators on development of sustainable agriculture with coefficients of changes including: 0.175, 0.162 and 0.152 are including: pricing agricultural crops (guarantee purchase), development of exchange and small industries adjacent to the farms and development for export of products.

**Table 1.** Effective economic facilitators on development of sustainable agriculture

Priority	Forms	Average	Standard Deviation	Coefficient of Changes
1	Pricing agricultural crops (guarantee purchase)	4.454	0.680	0.152
2	development of exchange and small industries adjacent to the farms	4.204	0.685	0.162
3	Developing export of products	4.166	0.732	0.175
4	Accessible suitable markets	4.303	0.864	0.200
5	Improving productivity of factors for agricultural crops	4.447	0.910	0.204
6	Accessing to loan for productive activity	3.492	0.736	0.210
7	Creation of enough income in relation to low-income making people	3.909	0.833	0.213
8	Insurance of products	3.947	0.910	0.230
9	Ability of access to inputs	3.295	0.835	0.253

Evaluation criterion: 1: Very low 2: Low 3: Medium 4: High 5: Very high

**Table 2.** Prioritizing viewpoint of experts of agricultural department in relation to effective social facilitators on development of sustainable agriculture

Priority	Forms	Average	Standard Deviation	Coefficient of Changes
1	partnership for establishing local autonomous associations	4.424	0.782	0.176
2	partnership of farmers for decision making and planning related to sustainable agriculture	4.151	0.786	0.189
3	elimination of traditional believes for application of traditional agriculture	3.947	0.840	0.212
4	Level of familiarity and awareness of farmers with methods of sustainable agriculture	3.151	0.746	0.236
5	Attending farmers at educational course related to sustainable agriculture	3.697	0.915	0.247
6	Level of cooperation and partnership of farmers in the process of executing sustainable agriculture	3.447	0.927	0.268
7	Level of gap between social classes	3.212	1.011	0.314
8	Level of familiarity of farmers with local autonomous associations	2.916	0.924	0.316

Evaluation criterion: 1: Very low 2: Low 3: Medium 4: High 5: Very high

**Table 3.** Prioritizing viewpoint of experts of agricultural department in relation to effective economic inhibitors on development of sustainable agriculture

Priority	Forms	Average	Standard Deviation	Coefficient of Changes
1	Shortage of employment opportunities in villages	4.068	0.620	0.152
2	significant erosion of soil	4.053	0.702	0.173
3	Increasing production costs	3.901	0.760	0.194
4	Excess application of foreign inputs	3.863	0.769	0.199
5	Lack of increasing culture area	3.916	0.829	0.211
6	Consumed waste materials due to unsuitable consumption pattern	3.977	0.920	0.231
7	Reducing area of useful lands	3.409	0.800	0.234
8	Excess utilization of water and soil resources	3.575	1.078	0.301

Evaluation criterion: 1: Very low 2: Low 3: Medium 4: High 5: Very high

### Prioritizing Viewpoint of Experts of Agricultural Department in Relation to Effective Social Facilitators on Development of Sustainable Agriculture

As it is obvious in **Table 2**, prioritizing forms based on coefficient of changes show that the highest viewpoint of experts of agricultural department in relation effective social facilitators on development of sustainable agriculture with coefficients of changes including: 0.212, 0.189, 0.176 are including: partnership for establishing local autonomous associations, partnership of farmers for decision making and planning related to sustainable agriculture, elimination of traditional believes for application of traditional agriculture.

### Prioritizing Viewpoint of Experts of Agricultural Department in Relation to Effective Economic Inhibitors on Development of Sustainable Agriculture

As it is obvious in **Table 3**, prioritizing forms based on coefficient of changes show that the highest viewpoint of experts of agricultural department in relation effective economic inhibitors on development of sustainable agriculture with coefficients of changes including: 0.194, 0.173, 0.152 including: shortage of employment opportunities in villages, significant erosion of soil and increasing production costs.

### Prioritizing Viewpoint of Experts of Agricultural Department in Relation to Effective Social Inhibitors on Development of Sustainable Agriculture

As it is obvious in **Table 4**, prioritizing forms based on coefficient of changes show that the highest viewpoint of experts of agricultural department in

**Table 4.** Prioritizing viewpoint of experts of agricultural department in relation to effective social inhibitors on development of sustainable agriculture

Priority	Forms	Average	Standard Deviation	Coefficient of Changes
1	low level of knowledge and awareness of rural people toward sustainable agriculture	3.697	0.629	0.170
2	low partnership of rural people about plans related to sustainable agriculture	3.977	0.693	0.174
3	reluctance of juveniles for activity in the field of agriculture	4	0.761	0.190
4	Increasing process of immigration from villages	3.916	0.781	0.199
5	Poverty	3.598	0.780	0.216
6	Unemployment	3.787	0.847	0.218
7	Slow process for establishment of local rural association	3.909	0.903	0.231
8	Oldster utilization population	3.681	0.902	0.245
9	Population increase	2.511	1.350	0.537

Evaluation criterion: 1: Very low 2: Low 3: Medium 4: High 5: Very high

**Table 5.** Correlation between research variables with development of sustainable agriculture

Row	Independent Variable	Dependant Variable	r	P
1	Economic facilitators		0.297**	0.001
2	Social facilitators		0.206*	0.020
3	Economic inhibitors		-0.274**	0.002
4	Social inhibitors	Development of sustainable agriculture	-0.251**	0.004

\*: Sig at level of 0.95 \*\*: Sig at level of 0.99

relation effective social inhibitors on development of sustainable agriculture with coefficients of changes including: 0.190, 0.174, 0.170 including: low level of knowledge and awareness of rural people toward sustainable agriculture, low partnership of rural people about plans related to sustainable agriculture and reluctance of juveniles for activity in the field of agriculture.

#### Results of Correlation Test between Research Variables and Development of Sustainable Agriculture

As it is obvious in **Table 5**, the research data reveal that there is positive-significant relationship between economic facilitators and development of sustainable agriculture at sig level of 0.99 (sig= 0.001) and its amount is (r=0.297) i.e. if level of economic facilitators (ability of access to inputs, improving productivity of factor for agricultural crops, access to loan, establishing enough income specially for low income making persons, development of exchange and small industries adjacent to farms, insurance of crops, accessible suitable markets) is higher, the level of development of sustainable agriculture is higher and vice-versa.

- Research data reveal that there is positive-significant relationship between social facilitators and development of sustainable agriculture at sig level of 0.95 (sig=0.020) and its amount is (r=0.206) i.e. if the level of social facilitators (level of partnership of farmers for decision making and planning related to sustainable farmers, level of familiarity and awareness of farmers with sustainable agriculture, level of familiarity of farmers with local autonomous associations) is

increased, the development of sustainable agriculture is improved and vice-versa

- Research data reveal that there is negative-significant relationship between economic inhibitors and development of sustainable agriculture at sig level of 0.99 (sig=0.002) and its amount is (r=0.274) i.e. if the level of economic inhibitors (shortage of job opportunities in villages, increasing production costs, excess utilization of water and soil resources, excess application of foreign inputs, lack of increasing level of area under culture) is increased, the development of sustainable agriculture is reduced and vice-versa

- Research data reveal that there is negative-significant relationship between social inhibitors and development of sustainable agriculture at sig level of 0.99 (sig=0.004) and its amount is (r=0.251) i.e. if the level of social inhibitors (poverty, unemployment, process of increasing immigration from villages, low level of knowledge of rural people toward sustainable agriculture, reluctance of juveniles for activity in the field of agriculture, population increase, low partnership of rural people in the plans related to sustainable agriculture) is increased, the development of sustainable agriculture is reduced and vice-versa.

#### Determining Effective Factors on Development of Sustainable Agriculture:

By using stepwise method; 3 variables including: economic facilitator, social facilitator and economic inhibitor; are entered into multi-variable regression equation.

**Table 6.** Different step of entering independent variable at regression analysis

Step	Variable	R	R2	AdjR2	Std
1	Economic facilitator (x1)	0.697	0.486	0.482	0.687
2	Social facilitator (x2)	0.730	0.533	0.526	0.657
3	Economic inhibitor (x3)	0.751	0.565	0.555	0.643

**Table 7.** Coefficient of variables entered into regression equation

Variable	B	B Standard Mistake	Beta	T	Sig
Economic facilitator (x1)	0.169	0.015	0.643	11.159	0.000
Social facilitator (x2)	0.250	0.077	0.189	3.248	0.001
Economic inhibitor (x3)	0.141	0.045	0.182	3.135	0.002
Fixed number	1.341	0.416	-	-	-

1<sup>st</sup> Step: In the first step, the variable of economic facilitator (x1) is entered into equation i.e. the aforesaid variable has the highest influence on development of sustainable agriculture. In this stage, the correlation coefficient equals to  $R=0.697$  and determining coefficient equals to  $R^2=0.486$  and balanced determining coefficient  $R^2=0.482$  and sig level equals to  $p=0.000$  that is significant at level less than  $1/1000$ . Thus, through observing the determining coefficient, it is stated that aforesaid variable has created 48.2% changes of dependant variable that is visible in **Table 6**.

2<sup>nd</sup> Step: In the second step, the variable social facilitators (x2) is entered into equation. In this stage, the correlation coefficient equals to  $R=0.730$  and determining coefficient equals to  $R^2=0.533$  and balanced determining coefficient  $R^2=0.526$  and sig level equals to  $p=0.000$  that is significant at level less than  $1/1000$ . Thus, through available findings, the variable of economic facilitators with social facilitator has created 52.6% changes of dependent variable.

3<sup>rd</sup> Step: In the third step, the variable of economic inhibitor (x3) is entered into equation. In this stage, the correlation coefficient equals to  $R=0.751$  and determining coefficient equals to  $R^2=0.565$  and balanced determining coefficient  $R^2=0.555$  and sig level equals to  $p=0.000$  that is significant at level less than  $1/1000$ . Thus, through available findings, the variable of economic facilitator, social facilitator with economic inhibitor has created 55.5% changes of dependent variable.

According to the regression line equation of  $Y=a+b_1x_1+b_2x_2+000$  the following equation is offered that its description is offered in **Table 7**:

Based on B:  $Y=1.341 + 0.169x_1 + 0.250x_2 + 0.141x_3$

Based on  $\beta$ :  $Y= 0.643x_1 + 0.189x_2 + 0.182x_3$

## DISCUSSION

Research findings and prioritizing forms based on coefficient of changes reveal that the highest viewpoint of experts of agricultural department in relation to effective economic facilitators on development of sustainable agriculture are consisting of: Pricing agricultural crops (guarantee purchase), development of exchange and small industries adjacent to the farms and development of export products. Prioritizing forms based on coefficient of changes show that the highest viewpoint of experts of agricultural department in relation to effective social facilitators on development of sustainable agriculture are including: partnership for establishing local autonomous associations, level of partnership of farmers on decision making, plans related to sustainable agriculture, elimination of traditional believes. The effective economic inhibitors on development of sustainable agriculture are including: shortage of employment opportunity in villages, significant erosion of soil resources and increasing production costs. In relation to effective social inhibitors on developing sustainable agriculture are including: low level of knowledge of rural people toward sustainable agriculture, low partnership of rural people on plans related to sustainable agriculture, reluctance of juveniles for activity at agricultural department.

- Research data reveal that there is positive-significant relationship between economic facilitators and development of sustainable agriculture

- Research data reveal that there is positive-significant relationship between social facilitator and development of sustainable agriculture

- Research data reveal that there is negative-significant relationship between economic inhibitors and development of sustainable agriculture

- Research data reveal that there is negative-significant relationship between social inhibitors and development of sustainable agriculture

Ghanbari and Barghi (2008) and Kalantari et al. (2008) obtained similar results in their researches. In the first stage, the variable of economic facilitator is entered into equation that is able to create 48.2% changes of dependent variable, in the second stage, the variable of economic facilitator, social facilitator is entered into equation that is able to create 52.6% of changes of dependent variable and in the third stage, the variable of economic inhibitor is entered into equation that is able to create 55.5% of changes of dependent variable and the results of research is similar to the results of research by Wauters et al. (2010).

### RECOMMENDATIONS

- In order to prevent from unnecessary expenses for government, in compliance with coefficient of importance of producing each crop in Iran, the related guarantee price shall be increased

- Preparing suitable opportunities for attending farmers at consumed markets through reducing the process of supplying agricultural crops to the market

- Allocation of bank loans to the farmers
- Using mass media including: TV, radio and press for informing to the utilizer
- Improving productivity of factor for agricultural crops through benefiting from modern technology, changing pattern of culture, improving irrigation canals
- Rural industries according to the available raw materials in village shall be planned for prevention from immigration of rural people to other cities
- According to the ratio of modern irrigation methods, it is necessary for increasing methods of biologic control for reducing costs of production and also increasing income of farmers
- Increasing level of skill, technical knowledge and suitable application of potentials of agricultural department

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