

## Sustainability of Livelihoods among Farmers Community in Kermanshah Province, Iran: A Comparison of Farmers' Attitude Based on Their Characteristics

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### ABSTRACT

Sustainable livelihoods approach is one of the new analytical approaches in the arena of rural development, and is considered much in recent years in order to achieve rural development and poverty reduction. The purpose of this study was to assess the sustainability of livelihoods of rural households from the perspective of the householders whose main occupation and source of livelihoods was agriculture and to identify those factors that could predict the accuracy of the classification of farmers with different perspectives of their livelihoods sustainability. Survey technique was used to collect data. Statistical population of the study included the farmers of Kermanshah Province, Iran. By using two-stage stratified sampling and determining selected counties, 250 householder farmers were chosen as a sample. Face validity of the data collection means was approved by an expert panel, and through the implementation of a pilot study, its reliability was approved. The results indicate that the study group felt insecurity and instability: about three-quarters of them assessed their livelihoods as unsustainable, and only one-quarter of them assessed their livelihoods as sustained. Statistical analysis showed that environmental, individual, and socio-economic factors have relationship with farmers' perspective toward their livelihoods sustainability. According to discriminate analysis, six variables were able to predict farmers' attitude toward their livelihoods sustainability and that prediction would be accurate with a probability of 70 percent.

**Keywords:** Discriminate analysis, Sustainable rural livelihoods, Poverty reduction, Rural development.

### INTRODUCTION

Much of the world population live in rural areas, and their lives and livelihoods depend on their capitals (natural, human, financial, physical and social). Due to the ever growing world population, with the sharp increase in demand for food, extreme climate changes, reduction of natural resources, increasing pressure on land, rural households are ever more vulnerable

(Langeroodi *et al.*, 2011). Sustainable livelihoods approach is one of the new analytical approaches in the arena of rural development, and is considered much in recent years in the fields of rural development and poverty reduction. It is one of the approaches that try to solve the poverty and vulnerability of the households (Phillips and Potter, 2003). Over the years, sustainable livelihoods approach has been the best way to address the issues of poverty and empowerment of the poor

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(Dearden *et al.*, 2002), and has been introduced as an approach for reducing poverty in low-income countries (Allison and Ellis, 2001).

Sustainable livelihoods approach for rural poverty reduction has the following principles (Pensuk and Shrestha, 2007): Focus on what is important for people, detecting constraints and opportunities, protection of natural resources, and also stability in economic, social and environmental dimensions. Livelihoods sources includes five types (natural, financial, human, physical, and social) that can be directly or indirectly used for subsistence and livelihoods (Scoones, 1998); besides, access to these five resources has a major impact on sustainable livelihoods (Tan Quan and Van Toan, 2012). Mainly, assets are defined as the activities required to establish a standard life (Edward and Ellis, 2001). Thus, the villagers' access to diverse sources of livelihoods is a factor towards a better achievement of sustainable livelihoods. For example, the forest is a major source of income in rural areas, especially for low-income groups, and an opportunity to diversify their livelihoods (Tesfaye *et al.*, 2011). To diversify the rural economy means that attention must be given not only to the development of rural non-farm activities but also to increase and diversify agricultural and non-agricultural activities and supplementary sources of income in the livelihoods strategies of rural households (Asadi *et al.*, 2013; Namdar and Sadighi, 2013; Rocchi, 2009).

The results of studies conducted among communities in one of the watersheds of Nepal suggest that agricultural production alone is not a viable option for their livelihood; and inadequate agricultural lands, lack of manpower working in the family, and lack of access to agricultural services are the main causes of unsustainable livelihoods of the farming communities in that watershed. Therefore, it is necessary to develop long-term policies and programs to empower local farmers,

and to support the rural livelihoods with income-generation strategies, flexible resource management institutions, increase of knowledge, skills, and social capital (Bhandari and Grant, 2007). Another study in Morocco shows that irrigated agricultural terraces are an important part of the livelihood strategies in the area of study, and are a productive and stable potential. It is also reported that in some areas, ecosystem is endangered by social and economic changes and mountainous land erosion caused by frequent shift of cultivation, grazing and charcoal production (Barrow and Hicham, 2000).

Other related studies have attempted to investigate relationship between rural livelihoods sustainability and climate change (Osbahe *et al.*, 2008; Olufunso and Somorin, 2010); technology implication (Bouahom *et al.*, 2004); income diversity (Anderson, 2003; Doviea *et al.*, 2006; Tesfaye, *et al.*, 2011) and natural resources accessibility (Amaral Porsani, 2010; Rigg, 2005; Bradstock, 2006).

Given the extreme poverty of rural communities, the rural poor living in Kermanshah Province, reducing rural household income, food insecurity, the excessive use of natural resources has threatened their stability. Therefore, paying attention to the sustainability of rural livelihood is one of the pillars of sustainable rural development. As long as instability and tension associate the farmers' livelihoods, the rural householder thinks that agriculture is not suitable and goes for other living resources. Farms remain stagnant over time and the amount of production in agriculture decreases. Following this process, the country needs to increase imports and, thus, achieving sustainable development becomes impossible.

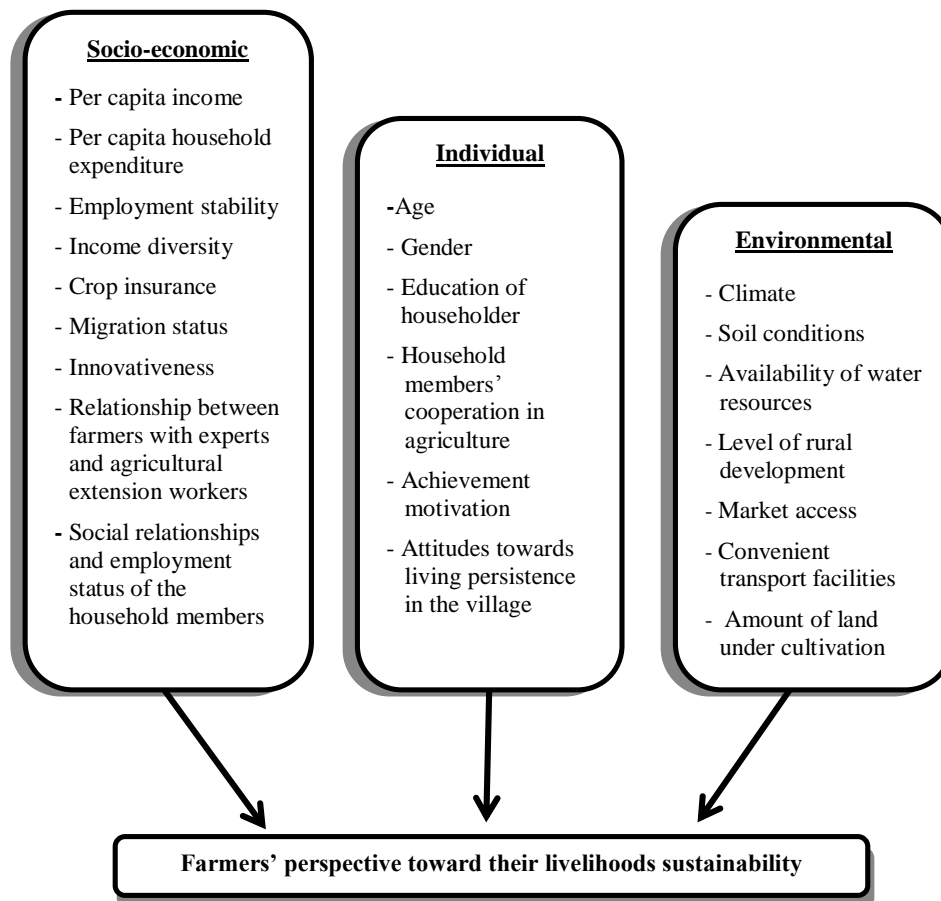
The purpose of this study was to assess the sustainability of livelihoods of rural households from the perspective of the householders whose main occupation and source of livelihoods is agriculture. Along with finding variables effective on the

sustainability of livelihoods, it was also tried to identify those factors that were able to predict the accuracy of the classification of farmers in groups with different perspectives of sustainability and unsustainability of their livelihoods.

## MATERIALS AND METHODS

After review of literature, researchers' thoughts and questions from farmers, those factors that could somehow measure the farmers' livelihoods from their own perspective were classified in three categories: environmental, socio-economic, and individual. Environmental factors included climate, soil conditions, the availability of water resources, the

level of rural development, market access, convenient transport facilities, and the amount of land under cultivation. The socio-economic factors included variables such as per capita income, per capita household expenditure, employment stability, income diversity, crop insurance, migration status, innovativeness, relationship of farmers with experts and agricultural extension workers, social relationships, and employment status of the household members. Finally, individual factors included age, gender and education of householder, household members' cooperation in agriculture, achievement motivation and attitudes towards living persistence in the village. Those variables and their assumed relationship are presented in Figure 1.



**Figure 1.** Conceptual framework of the study.

## Methodology

The present study was quantitative type and used the technique of survey to collect data. The research was carried out from October 2013 until March 2014. Statistical population of the study was the farmers' householders of Kermanshah Province (150,834 householders). Kermanshah Province is located in west part of Iran (Figure 2) and it is one of the main agricultural production provinces. It contains fourteen counties with four different climate types: (1) Semi-arid and Cold (Counties: *Kermanshah, Songhor, Harsin, Kangavar*); (2) Arid and Warm (Counties: *Gilanegharb, Sarpolezahab, Ghasreshirin*); (3) Cold Mediterranean (Counties: *Ravansar, Eslam Abad Gharb, Sahneh*), and (4) Mild and Humid (Counties: *Paveh, Javanrud, Salaas Babajani, Dalahoo*). To determine the sample size, the county which had greater diversity in rural farmers' livelihoods was

selected from each climate type. Also, in the selected counties, those parts were selected where inhabitants' activities had more economic diversity. From each climate type, six villages were chosen randomly; and from each village, ten farmer householders were randomly selected. Totally, 250 farmer householders were chosen as the sample group by using two-stage stratified sampling method. A questionnaire was used for data collection. The researchers personally went to the sample villages and randomly selected the householders. The required data was collected through direct interviews. Face validity of the questionnaire was approved by an expert panel, and based on their point of view, the reforms needed in the data collection instrument were applied. To assess the reliability of the questionnaire, its internal consistency was calculated. For this purpose, a pilot study was conducted with a group of 30 farmer householders who were selected from outside the sample areas and

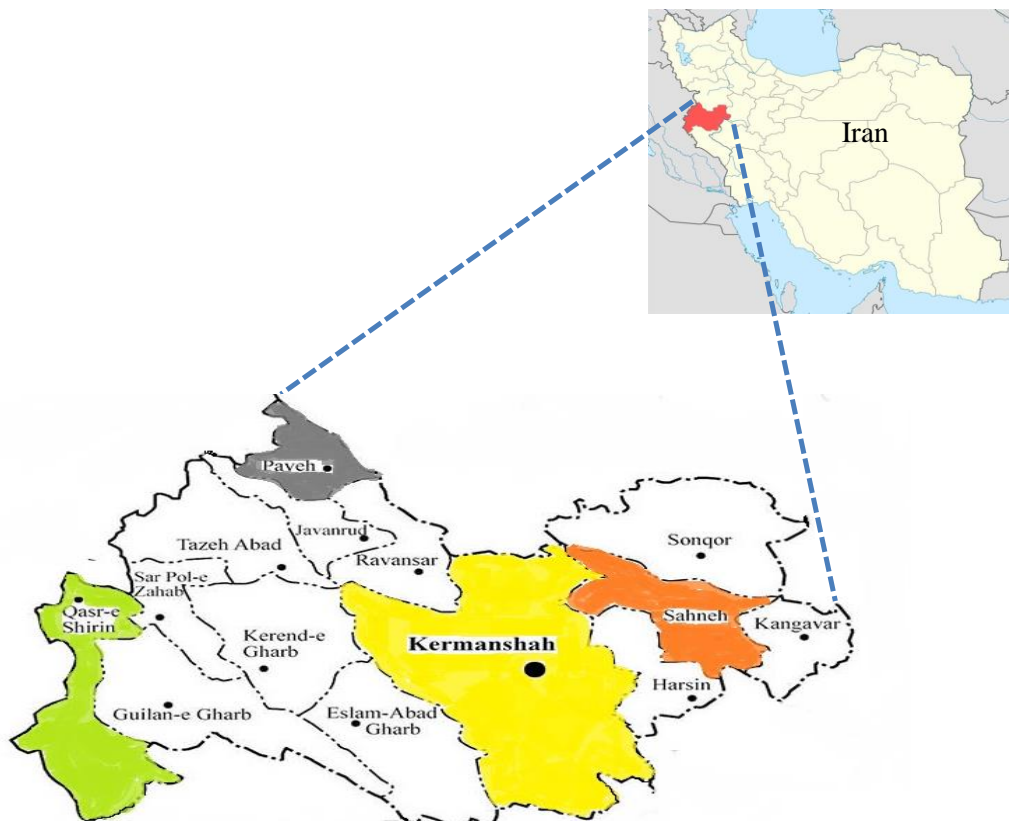


Figure 2. Situation of Kermanshah Province and the location of four sample counties in the province.

the data were collected from them. Then, using SPSS19 software, alpha coefficient of Cronbach's Alpha test for variables of the research was between 0.74 and 0.96, which indicated appropriate reliability of data collection equipment.

In order to measure some variables related to environmental factors of the farmer householders, their opinion was considered as reference. Therefore, their explanation toward those variables was coded and scored.

To determine the effect of the independent variables in the three categories of environmental, individual, and socio-economic, independent samples t-test, one way ANOVA, post hoc *LSD* test, Pearson's correlation coefficient, and discriminate analysis were used.

## RESULTS AND DISCUSSION

### Descriptive Results

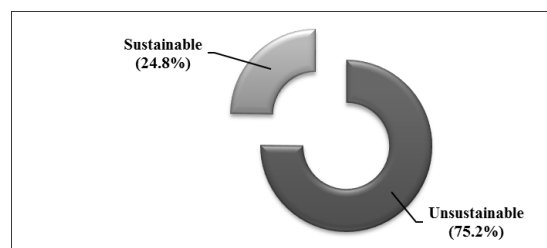
Most farmers in the sample were male and middle-aged, such that their average age was about 50 years. About 41 percent of them only passed elementary and secondary education of schooling. In each household, on average, three members of the family assisted householder as agricultural labor and the maximum number of people employed in the household were five people. Average per capita annual income of the sample households was estimated at almost 13 million Rials (equivalent of about 400 USA Dollars). About 49 percent of the farmers were engaged in non-agricultural activities. The average amount of land under cultivation of annual field crops, orchards, and vegetables was 4.5, 1.2 and 1.6 hectares, respectively. About 58 percent of the agricultural products were insured. Also, 43.5 percent of the respondents used bore holes for irrigation and their access to water resources was evaluated as appropriate. Over the past ten years, 74 percent of them had no non-permanent rural out-migration. During the previous year, 64 percent of

farmers were in contact with agricultural experts and extension agents. The findings show that 88 percent of the respondents lived in villages with medium and weak development condition.

As mentioned in the methodology section, farmers' households explanation of environmental variables was coded and scored. Accordingly, on average, descriptive results revealed that their soil condition was 13.8 (range 5-25), access to water resources was 4.7 (range 2-10), access to the market was 14.4 (range 5-25), and transportation facilities was 14.1 (range 4-20). Descriptive results in socio-economic factors revealed that social relationship variable had a mean of 20.8 (range 6-30) and in innovativeness the mean was 17.6 (range 6-30). In terms of individual factors, the mean achievement motivation was 27.5 (range 8-64), in attitude toward living persistence in the village, the mean was 30.6 (range 9-45) i.e. higher than the range of median (27).

### Sustainability of Livelihoods

To assess the sustainability of the livelihoods from farmers' perspective, questions were asked from respondents. The questions included their past and present financial situation, accessibility to natural resources, income from agriculture, non-agricultural employment, etc., which would enable us to evaluate farmers' perspective toward their livelihoods sustainability. As Figure 3 shows, 75.2 percent of the respondents believed that their livelihoods were unsustainable and only 24.8 percent of



**Figure 3.** Distribution of farmers' perspective toward their livelihoods sustainability.



them assessed it sustainable.

## RESULTS

### Farmers' Perspective toward Their Livelihoods Sustainability Based on their Migration Status

To compare the mean of sustainability of livelihoods from farmers' perspective on the basis of their migration status, independent samples *t*-test was used between two groups of farmers: Those who had no migration out of the village over the past 10 years and those who had. Test results showed a significant difference ( $P= 0.001$ ,  $t= -3.23$ ) in the viewpoint of the farmers in the two groups about sustainability of livelihoods (Table 1). In other words, those who migrated during the past 10 years had a better view about their livelihoods sustainability. Perhaps, the reason of that is their access to the various sources of livelihood and earning income from them. Earning income from various sources can be a factor in reduction of vulnerability to stresses, leading to farmers' evaluation of livelihoods sustainability as more desirable. These findings are consistent with the results of Goodrich (2001), Srivastava (2003), and Rigg (2005).

### Farmers' Perspective toward Their Livelihoods Sustainability Based on Their Relationship with Experts and Extension Workers

To compare the mean sustainable livelihoods from farmers' perspective on the basis of their relationship with experts and agricultural extension workers, independent samples *t*-test was used between the two groups of farmers: those with relationship and those without relationship. Test results showed a significant difference ( $P= 0.004$ ,  $t= -2.89$ ) between those who had relationship with experts and agricultural extension workers during the past year and those who had no such relation (Table 2). In other words, the viewpoint about sustainability of livelihoods of those farmers who had relationship with experts and agricultural extension workers was better. Perhaps, this is due to the updated information of the experts and agricultural extension workers, and farmers' exposure to information can make them aware of available sources of livelihoods. With greater farmers' awareness of the existing sources of livelihood, their vulnerability in stresses and unpleasant events decreases; and as a result, the farmers' point of view about their sustainability improves.

Correlation between Livelihoods

**Table 1.** Comparison of the mean of farmers' perspective toward their livelihoods sustainability with and without migration.

Feature	Migration status	Number	Mean	SD	t statistics	Significant level
Sustainability of livelihoods	no	158	43.03	11.86	-3.23	0.001
	yes	92	47.28	8.87		

**Table 2.** Comparison of farmers' perspective toward their livelihoods sustainability with and without relationship with experts and extension workers.

Feature	Relationship condition	number	Mean	SD	t statistics	Significant level
Sustainability of livelihoods	no	90	42.14	11.86	-2.89	0.001
	yes	160	45.98	8.87		

## Sustainability and Environmental Factors

Pearson correlation test shows a significant positive correlation between access to water resources and farmers' perspective toward their livelihoods sustainability ( $r= 0.216$ ), (Table 3). Therefore, in the farmers' opinion, more access to water resources causes greater sustainability of livelihoods. This result fits with Amaral's findings (2010). According to Table 3, Pearson correlation test shows a significant positive relationship between soil condition and the sustainability of the livelihoods in the opinion of the farmers ( $r= 0.187$ ). It means that farmers who believe their soil condition is appropriate and fertile have better perception toward their livelihoods sustainability because they may continue farming in their farms in the future. Accordingly, fertile soil can effectively increase the farmers' operation and, therefore, it is a factor in sustainability of their livelihoods. On the other hand, soil erosion factor can threaten the achievement of sustainable livelihoods. This finding corresponds with the findings of Barrow and

Hicham (2000) and Kangalawe and Liwenga (2005). Also, Pearson correlation test showed a positive and significant relationship between market access and sustainable livelihood in the farmer's perspective ( $r= 0.343$ ). Therefore, better market access for farmers causes sustainable livelihoods in their perspective as well. With increased access to markets, product sales increases and, consequently, financial burden and the growth of the agricultural economy of the farmers go higher; and their opinion about the sustainability of the livelihoods improves. This finding corresponds with the results found by Bouahom *et al.* (2004) and Tan Quan and Van Toan (2012) (Table 3).

Pearson correlation test showed a positive and significant relationship between convenient transportation facilities and sustainable livelihood in the farmers' perspective ( $r= 0.194$ ). With convenient transportation facilities, livelihood is considered more stable. If the households have better access to convenient transportation facilities for various purposes

**Table 3.** Correlation between sustainability of the livelihoods and the research variables

Variable	Correlation coefficient (r)	Significant level (P)
- Access to water resources	0.216	0.003
- Soil condition	0.187	0.003
- Access to market	0.343	0.000
- Convenient transportation facilities	0.194	0.002
- Level of development of the village	0.135	0.033
- Social relationship	0.245	0.001
- Employment stability	0.125	0.048
- Income diversity	0.155	0.014
- Crop insurance	0.180	0.001
- Per capita income	0.072	0.258
- Per capita household expenditure	0.009	0.886
- Land under cultivation of field crops	0.029	0.691
- Land under cultivation of orchard products	0.027	0.783
- Land under cultivation of vegetables	-0.145	0.367
- Innovativeness	0.021	0.735
- Household members' cooperation in agricultural activities	0.172	0.001
- Achievement motivation	0.150	0.018
- Attitude toward living persistence in the village	0.251	0.001
- Household members' employment status	0.078	0.219
- Householder's age	0.037	0.555



such as studying outside of the village, the farmer and his family's commuting to related offices and organizations, and have access to different sectors for diversifying income, etc., it could be considered a positive factor in contributing to sustainable livelihoods. As a result, the sustainability of the livelihoods increases in the farmers' perspective. This finding corresponds with the results found by Davis (2000) and Russell and Gilson (2006), (Table 3).

According to Table 3, Pearson correlation test showed a positive and significant relationship between the rural development and sustainable livelihood in the farmer's perspective ( $r= 0.135$ ). In other words, increase in rural development causes increase in sustainability of the livelihoods in the farmers' perspective. The variable of rural development index means assessing those infrastructures and facilities that are located in each village and are the main resources of livelihood in the village like electricity, sanitary water tube, medical clinic center, elementary and secondary school, and so on. Low farmers' access to subsistence resources creates problems and additional stresses that result in their inability to confront problems; their livelihood becomes less stable and, therefore, the sustainability of the livelihood in their perspectives decreases. This result corresponds with the findings of Bird and Shepherd (2003), Bebbington (1999), and Wallace (2007).

#### Correlation between Livelihoods Sustainability and Socio-Economic Factors

According to Table 3, Pearson correlation test shows positive and significant relationship between the social relations variable and livelihoods sustainability based on the farmer's perspective ( $r= 0.245$ ). Perhaps, with increase in farmers' social relationships and dealings with each other, they become informed about different ways of living and income besides farming, and this can lead to sustainable livelihoods, which cause an improvement in their view toward sustainability of livelihoods. Since the social relations is one of the dimensions

of social capital, this finding corresponds with the result of Bebbington's research (1999) which shows social capital as a means through which people can gain access to resources and other factors and improve livelihoods. Access to resources is an effective way to improve the livelihoods of rural households.

According to Table 3, Pearson correlation test shows a positive and significant relationship between livelihood sustainability and change in farmers' job during the past 5 years (stable employment) ( $r= 0.125$ ). In other words, frequent change in the main occupation (farming) to provide the necessities of life is a negative factor in livelihood sustainability. It seems that as long as the householders experience instability in the job and do not have a stable income, sustainable livelihoods in their view decreases. Because the continuation of one job is more likely to be succeeded than its frequent replacement. In many cases, the individual's employment instability faced him with many problems that are likely to make the family more vulnerable. Normally, with no steady job, tensions and stresses imposed on families increase and livelihoods of farmers face with greater vulnerability. Thus, for those who do not have a permanent job, access to stable livelihood resources becomes lower and, thus, sustainable livelihood falls in danger.

Pearson correlation test shows a positive and significant relationship between diversity of income variable and sustainable livelihoods ( $r= 0.155$ ) (Table 3). By increasing income in other ways besides farming and agricultural activity, livelihoods sustainability in farmers' perspective is enhanced. Since the increase in household income will lead to increased economic growth, the householder gets access to greater economic resources to provide the necessities of life; therefore, he will have a more sustainable livelihood. This finding corresponds with the findings by Allison and Ellis (2001), Bird and Shepherd (2003), Bouahom *et al.* (2004), Rigg (2005), and Tao and Wall in 2009.



Table 3 shows a positive and significant correlation between insurance of the products and livelihoods sustainability based on farmers' perspective ( $r= 0.180$ ). In other words, the more farmers embark on insurance products, the more they will acquire a positive view towards sustainability of their livelihoods. Basically, insurance is a factor to reduce the risk and stress in the probable problems. The insured crop makes the farmer stronger in inevitable problems that exist in the agricultural activities. The farmer has more access to the resources to deal with risks and, therefore, will have more positive attitude toward the sustainability of his/her livelihoods.

Pearson correlation test didn't show any significant relationship between per capita income and per capita household expenditure and livelihoods sustainability. This test also didn't show any relationship between the amount of the land under cultivation of annual field crops, orchards, and vegetables and livelihoods sustainability based on the farmer's perspective, a finding that corresponds with the findings by Ellis (2003).

#### Correlation between Livelihoods Sustainability and Individual Factors

The results of Pearson correlation test in Table 3 indicate that there is a significant and positive relationship between household members' cooperation in agricultural activities and their perspective toward their livelihoods sustainability ( $r= 0.172$ ). Due to the direct relationship between increase in the cooperation of the household members in agricultural labor and increase in sustainability of the livelihoods, it can be concluded that when more people in the family help the householder, they further realize livelihoods sustainability. Also, the need to use agricultural laborers and pay fees becomes lower and, therefore, the household loses fewer financial resources. Hence, the family can save the labor costs that could threaten their livelihoods. This result accords with the findings of Bhandari and Grant (2007).

Moreover, findings show a significant and positive correlation between farmers' achievement motivation and their perspective toward livelihoods sustainability ( $r= 0.150$ ) (Table 3). Achievement motivation is an important factor in the individual's success. The farmers that have more achievement motivation search for newer methods to deal with stresses, leading to increased income levels and more sustainable livelihoods. This finding agrees with the findings of Hayati (1995).

The results of Pearson correlation test in Table 3 indicate that there is a significant and positive relationship between the idea of staying in the village and livelihoods sustainability ( $r= 0.251$ ). A much more positive attitude towards living persistence in the village, will assess their livelihoods more sustainable. Naturally, the greater desire of the head and the members of the household for staying in the village leads to the identification of sources of livelihoods and access to these resources and, therefore, results in more livelihoods sustainability. This finding corresponds with the findings of McDowell and de Haan (1997).

Pearson correlation test didn't show any relationship between household members' employment status and their livelihoods sustainability. This result conflicts with the findings of the research by United Nations Development Program (UNDP), 1996, which shows a significant relationship between the promotion of employment and sustainable livelihoods and poverty reduction; and this relationship is so strong that promotion of employment and sustainable livelihoods can be considered as components of poverty reduction (Table 3).

Pearson correlation test didn't show any relationship between the age of the householder and the sustainability of the livelihoods. Moreover, there was no significant relationship between the variable of innovativeness and sustainability of the livelihoods (Table 3).

One- way ANOVA test was used to assess the sustainability of the livelihoods in the



perspective of the farmers with different levels of education. The results show that there is no significant difference between people with different levels of education. Besides, Independent Samples *t*-test was used to assess the mean sustainability of the livelihoods in farmers' perspective in two groups of householders' gender (male and female). The results show that there is no significant difference between these two groups.

### Discriminate Analysis

Discriminate analysis test is used to determine the ability of the independent variables to correctly discriminate the two groups of farmers with sustainable livelihoods inference and unsustainable livelihoods inference (farmers with different livelihood perspectives). Discriminate analysis is one of the separation methods that try to use some of the independent variables to separate the groups with nominal or ordinal data; and finally, to identify the variables that appropriately discriminate the groups (Kalantari, 2009). In this step by step method, in each step an independent variable enters the function on the basis of its discrimination. In the first step, the best variable enters the analysis. In the second step, the most suitable variable that in combination with the first variable can discriminate the function is selected to enter the analysis. The next variables are selected in the same manner. The variables selection for the analysis is done based on the minimum value of Wilks Lambda. This statistic represents the sum of squares within group to all the squares of the group. Parameter of "*F*" is also another statistic to interpret the possibility of discrimination of independent variables. Any variable that has greater value of "*F*" has greater possibility of discrimination. Multiple discriminate analysis is a good way where the variables are grouped in two or more categories, and the researcher studies its relationship with a

number of independent variables that are quantitative.

In the present study, the dependent variable (farmers' perspective toward their livelihoods sustainability) is a variable in two different category and independent variables entered are quantitative. In this analysis, 6 variables of social relations, income diversity, crop insurance, attitude toward living persistence in the village, employment stability, and access to market enter the discriminate analysis equation one by one. Tables 4 and 5 show the variables that enter the equation in different steps. Moreover, Wilks Lambda value, the value of *F*, as well as the significant variables are presented in the tables.

Table 6 shows the percentage of the variance that is estimated by each discrimination function and suggests their significance level, which shows that the presented discrimination function is significant. Squared canonical correlation values show the percentage of the variance in group that is explained by this model in which six independent variables entered.

Standardized and non-standardized coefficients of the canonical discrimination equation are presented in Tables 7 and 8. Standardized coefficients indicate the relative importance of each of the variables in discrimination between the groups in the grouping variable, and non-standardized coefficients are the values of coefficients to discriminate or distinguish the two groups with sustainable livelihoods and unsustainable livelihoods perspectives.

Based on the values of the non-standardized coefficients, diagnostic function equation of the farmers with sustainable livelihoods and unsustainable livelihoods can be written as follows:

$$Y=4.21+0.293(X_1)+0.278(X_2)+0.163(X_3)+0.136(X_4)+0.115(X_5)+0.058(X_6)$$

According to the above equation, crop insurance variable is the most important

**Table 4.** Variables based on the lowest Wilks Lambda value.

Wilks Lambda				Entered variable	
$df_3$	$df_2$	$df_1$	Statistical value		
187	1	1	0.945	Social relations	1
187	1	2	0.877	Income variety	2
187	1	3	0.831	Crop insurance	3
187	1	4	0.802	Attitude toward living persistence in the village	4
187	1	5	0.779	Employment stability	5
187	1	6	0.762	Access to market	6

Step

**Table 5.** Variables based on the lowest Wilks' Lambda to show the level of significance.

Wilks' Lambda					
Taking <i>F</i> test					
Significant level	$df_2$	$df_1$	Statistical value		
0.001	187	1	10.911		1
0.000	186	2	13.016		2
0.000	185	3	12.533		3
0.000	184	4	11.337		4
0.000	183	5	10.386		5
0.000	182	6	9.459		6

Step

**Table 6.** Eigenvalues and Wilks' Lambda of discrimination function.

Special values					
Function		Special value	Variance percentage	Cumulative percentage	Canonical correlation
Function	1	0.312	100	100	0.488
Wilks' Lambda					
Function test		Wilks' Lambda	<i>Chi</i> -square ( $\chi^2$ )	<i>df</i>	Significance level
Function test	1	0.762	49.941	6	0.000

**Table 7.** Standardized canonical coefficients of discrimination function.

Function	
1	
0.457	Social relationship
0.566	Income diversity
0.403	Crop insurance
0.457	Attitude toward living persistence in village
0.351	Employment stability
0.304	Access to market

**Table 8.** Non-standardized canonical coefficients of discrimination function ( $x_1$ ).

Function	
1	
0.115 ( $X_5$ )	Social relationship
0.163 ( $X_3$ )	Income diversity
0.293 ( $X_1$ )	Crop insurance
0.058 ( $X_6$ )	Attitude toward living persistence in village
0.278 ( $X_2$ )	Employment stability
0.136 ( $X_4$ )	Access to market
4.209	(Constant)



discriminating variable of the farmers that view their livelihoods sustainable and those who view their livelihoods unsustainable. The variables of employment stability, income diversity, access to market, social relationship, and attitude toward living persistence in the village are respectively placed in other levels.

In Table 9, the results of discriminate analysis are presented, and indicate that the total accuracy of separating farmers into two groups with different attitude in this research is acceptable. This means that the variables entered into the function can accurately divide the two groups of farmers with sustainable livelihoods and unsustainable livelihoods perspectives with a probability of 70 percent.

## CONCLUSIONS

The head of the household is the person who has the main responsibility in earning living for the family; so, he/she plays the most important role in sustainability of the rural household's livelihoods. This study tried to assess the sustainability of the livelihoods of rural households in the perspective of the householders whose main occupation and source of livelihoods was agriculture. The results indicate that the study group felt the insecurity and instability such that about three-quarters of them assessed their livelihoods as unsustainable, and only one-quarter of them assessed their livelihoods as sustained.

Results made in this study showed that all the three categories of environmental, individual and socio-economic factors of the farmers can have relationship with their assessment of livelihoods sustainability. Generally, those farmers that assess their livelihoods more sustainable have better social relationship, more diverse income, more stable employment, more contact with the agricultural experts and extension workers, more use of insurance, better attitude toward living persistence in the village, more achievement motivation, more households' member cooperation in agricultural activities, better soil condition, more access to water resources, more access to convenient transportation facilities and market, and live in more developed villages.

The results indicate that by having information of farmers' characteristics toward the six variables i.e. social relationship, income diversity, crop insurance, attitude toward living persistence in village, employment stability, and access to market, we can predict their attitude toward their livelihoods sustainability and that prediction will be accurate with a probability of 70 percent.

It can be concluded that it is an alarm for national and local planners and policymakers in agricultural sector. Naturally, the farmer head of the family who doesn't feel security and stability for livelihood, constantly feels to be exposed to a variety of stresses and threats, and waits for an opportunity to leave farming and go for other jobs to provide a sustainable

**Table 9.** Results of classification and discriminate analysis.

Final	Livelihood prediction		Unsustainable livelihoods	Sustainability of the livelihoods	Calculations	Main research variable
	Sustainable livelihoods	Unsustainable livelihoods				
140	42	98	Unsustainable livelihoods	Sustainability of the livelihoods	Percent	
110	76	34	Sustainable livelihoods	Sustainability of the livelihoods		
100	30	70	Unsustainable livelihoods	Sustainability of the livelihoods		
100	69.1	30.9	Sustainable livelihoods	Sustainability of the livelihoods		

livelihood for himself and his/her family.

Hopefully, the results of this research will enable the policymakers and implementers of rural and agricultural development programs to reach a sound understanding of the views of farmers and producers in the sector about the stability of their livelihoods. It can be helpful to guide them which factors could influence and moderate farmers' perception toward their livelihoods sustainability. Therefore, they should pay more attention in their plans to those variables that affect farmers' livelihoods, in the hope that by making the livelihoods of the farming community sustainable, a basic step can be taken towards the sustainable rural and agricultural development.

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## ارزیابی میزان پایداری معیشت در جامعه کشاورزی استان کرمانشاه: مقایسه دیدگاه‌های کشاورزان بر اساس ویژگی‌ها

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### چکیده

رهیافت معیشت پایدار یکی از رویکردهای تحلیلی جدید در زمینه توسعه روستایی است و در سال‌های اخیر به منظور توسعه روستایی و کاهش فقر مورد توجه قرار گرفته است و از جمله رویکردهایی است که سعی دارد مشکل فقر و آسیب‌پذیری خانوارها را بر محوریت انسان حل کند. هدف این پژوهش ارزیابی میزان پایداری معیشت از دیدگاه سرپرستان خانوارهای روستایی، که شغل اصلی و منبع امرار معاش آنان از راه کشاورزی است، بوده و در ادامه تلاش شده تا ضمن شناسایی متغیرهای تاثیرگذار بر آن، به شناسایی ویژگی‌هایی پرداخته شود که قادرند صحت دسته‌بندی کشاورزان در گروه‌های با نگرش‌های متفاوت در زمینه پایداری و عدم پایداری معیشت را پیش‌بینی نمایند. این تحقیق از لحاظ روش از نوع کمی بوده و از فن پیمایش برای گردآوری اطلاعات استفاده شده است. جامعه آماری این تحقیق شامل کشاورزان استان کرمانشاه بوده‌اند. با بهره‌گیری از روش نمونه‌گیری طبقه‌ای دو مرحله‌ای، از شهرستان‌های منتخب این استان، تعداد ۲۵۰ نفر کشاورز سرپرست خانوار به عنوان نمونه انتخاب گردیدند. روایی صوری ابزار سنجش توسط یک پانل تخصصی مورد تایید و از طریق اجرای یک مطالعه راهنما، پایایی آن اثبات گردید. یافته‌ها حاکی از وجود و احساس عدم امنیت و ناپایداری در گروه مورد مطالعه می‌باشد. به گونه‌ای که حدود سه چهارم از ایشان، معیشت خود را ناپایدار ارزیابی نموده‌اند و فقط یک چهارم از گروه مورد مطالعه، معیشت خود را پایدار دانسته‌اند. محاسبات صورت گرفته در این مطالعه نشان داد که هر سه دسته سازه‌های محیطی، فردی و اجتماعی - اقتصادی کشاورزان می‌تواند با میزان ارزیابی ایشان از پایداری معیشت‌شان، رابطه داشته باشد. با توجه به نتایج آزمون تحلیل تشخیصی، شش متغیر قادر بوده‌اند که صحت دسته‌بندی کشاورزان در دو گروه با نگرش‌های متفاوت در زمینه پایداری و عدم پایداری معیشت را با احتمال حدود ۷۰ درصد، پیش‌بینی نمایند.