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Investigating the effects of Agriculture Bank's Micro-Credits in Developing Animal Husbandry Production Units of Yazd County

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ABSTRACT

This study was conducted to assess the impact of micro-credits on the development of livestock production units. This research is a functional study and in the aspect of data collection is a non-experimental and generally is a surveying study. The population of the study includes all livestock farmers of Yazd County which their number according to the census was 4241 farmers. Sample size of 125 cases was estimated using Cochran formula which the random sampling method was applied to collect data from them. The main instrument of data collection was questionnaire. The validity of the study was verified using experts' panel and the reliability was determined by calculating Cronbach's alpha coefficients for the different parts of the questionnaire (0.79). The results showed there is a significant difference between the experience of livestock, costs relating to vaccination and the awareness levels of two groups. Results of investigating the difference between the number of animals before and after loan show that a significant difference is seen between the numbers of animals before and after receiving facility with a confidence level of 99 percent. The factors affect receiving facility are being aware about facilities, the cost of buying hay, farming experience, age, location and maintenance costs of livestock, the area of agricultural land, number of sold animals, livestock number and shepherd cost variable which explain 84.9 percent of the factors affecting receiving facilities.

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INTRODUCTION

Credits can play a key role in the production cycle as a capital and in the absence of necessary funds, farmers are forced to save a part of their income to finance their production costs that in this case their investment reduces and the power of their investment in infrastructure is reduced as well. Thus, the lack of capital as the most important factor of production is considered as one of the main problems of the rural population and agricultural sector in Iran. Since a large part of livestock production in Yazd region is obtained by the traditional method, lack of capital is one of the main factors limiting production, so that farmers such as traditional rural and tribal producers to provide production inputs such as feed, medication and transportation costs etc. are often forced to conduct some activities which led to a decline in income, unemployment rate, reduction in welfare, reduction in production, change jobs etc.

World Bank [31] defined the purpose of extending credit to the rural people as poverty reduction, employment, income, environmental sustainability and proving well-being of rural people [31]. International Fund for Agricultural Development knows the motivation of presenting credits to rural people as social mobilization, raising awareness, training and enhancing the poor, poor self-esteem enhancement, local potential building and providing the context for team work to build assets and local infrastructure [29].

UN Economic and Social Commission defined its goal for granting micro-credits as poverty alleviation, job creation, income generation, social development and agricultural extension, increase self-sufficiency and self-preservation [28].

Asia Development Bank (2000) also defined providing micro-credits as providing a wide range of financial services such as deposits, loans, payment services, money transfers and insurance for the poor and low income households and small businesses [3].

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In Iran's economy, micro-credits are paid through the banking system and formal and informal institutions. The results and findings of some studies indicate the success of this project and some of them refer to their failure [30].

Assessing the experiences of other countries shows the effectiveness of this type of credits and facilities on the reduction of inequalities and poverty through the creation of new job opportunities. While micro-credit can lead to poverty reduction that first, the different classes of poverty be recognized and then this credits just allocated for creating jobs. In other words, the reduction of poverty through micro-credit only is possible through creating employment and equality of employment opportunities [11]. Creating a strong sense of work, increased life management skills, increasing self-confidence, informing women about their potential and improve the status of women in the family are of women's micro-credit impact [20]. Participation in microfinance programs leads to improve the index of diversity of income sources [14].

The impact of micro-credit on food production farms in Nicaragua has been assessed positive [6]. Credit to women in rural Bangladesh by Grameen Bank showed that participation in accreditation programs enables a considerable number of borrowers to go above the poverty line and borrowers feel that the received funding has a positive effect on their life's standard [12].

Owners of larger farms are more likely to obtain loans and bad economic situation and rented land have negative effects on the credibility and credit can increase the production rate [10]. Micro-credit programs should target greater financial independence for poor borrowers, rather than increase dependence on credit that this situation may be dangerous, especially for those without capital [18].

Johnson and Rogaly state that microfinance programs reduce the vulnerability of low –income people and protect their livelihoods. Studies have shown that the availability of credit for small entities can have a positive effect. They cited studies show that micro- credit could lead to an increase in household income and give poor people a tool to protect their livelihoods against shocks [15].

Schreiner and Colombet show that the credit provisions that require collateral for loans can't be a relevant framework for credits and preventing the income gap in society and just ensure the security of capital and interest payments as credit. Microfinance is not considered as a powerful tool to help very poor people; in particular, if this tool emphasizes on loans instead of saving and investment [26].

Methodology:

The study in the aspect of paradigm is quantitative and due to the extensive range of research's area, applied surveying strategy. This study is functional in terms of direction and purpose. In terms of time, since the research was conducted in a specific and certain period, it is a Single Cross study. The population in this study is including all ranchers of Yazd County and their number is 4241 ranchers of small animals. The population includes both ranchers who received loans and facilities from Agriculture Bank in the last 4 years (n=250) and ranchers who have received no loans and facilities (3991 people). Sample size of 125 subjects was estimated using Cochran formula which using the Random Sampling, the required data was collected for them. The questionnaire was the main instrument for collecting and measuring variables, which for determining the validity, the panel of experts was applied which included Agriculture Bank experts and a group of faculties of Department of Agricultural Extension and Education of Tehran University. To determine the reliability, the Cronbach's alpha coefficient was used for the various sections of the questionnaire that in all cases, the reliability was higher than 0.75 which shows the reliability of the research's instrument. The obtained information was analyzed by Spss software in both descriptive and inferential sections and the logistic regression analysis was used to predict the factors affecting the demand for micro-credit.

Finding:

Demographic characteristics of the respondents:

Assessing results of surveying the individual characteristics of the respondents indicated that 39.3% of them used Agriculture Bank loans and 60.7 percent have not used it. Investigating the age of the respondents showed that the average age was 49.1 years, minimum age was 25 and maximum age was 80 years. The most frequent category was 40 to 50 years. 96.3% of the respondents were married and 37.4 percent were illiterate, 22.4 percent in only reading and writing level, 26.2 percent secondary level, and 13.1 percent have a high school diploma and among them 14 percent living in city and 86 percent live in rural areas. Animal husbandry is the main jobs of 98.1% of them and the second job of 63.6 percent of respondents was agriculture.

An average of 3.04 hectares was owned by the respondents. 33.6 percent of them were without land and 23.4 % of them owned 2 to 4 hectares of land. Surveying respondent's animal husbandry experience showed that its average is 31.61 years that the maximum and minimum were respectively 64 and 3 years. The most frequency is in the category of 30 to 40 years (28%). Assessing the number of family labor also showed that on average of 3.4 people for each family exists that that most frequency are in category of less than 3 people (56.1 percent). Other results are presented in Table 1.

Table 1: Distribution of respondents according to personal characteristics.

Variable	Mean	Median	Mode	Sd	Min	Max
Age	49.01	50	50	11.6	25	80
Agricultural area (h)	3.04	2.25	3	3.44	0	16
Animal husbandry experience (years)	31.61	30	40	13.69	3	64
labor (persons)	3.4	3	3	1.43	0	8

Characteristics of the production unit:

Checking the characteristics of the respondents' production units showed that the average number of livestock was 80.56 by the minimum number of 10 and a maximum of 300. Surveying the nominal capacity of the production unit shows that the average of nominal capacity is 147.56 livestock. Assessing the number of people employed in manufacturing units showed that an average of 3.25 people is working per unit. Reviewing job capacity indicates that the average capacity is 1.8 persons which is different with the number employed people, namely that manufacturing units have surplus labor. The results are presented in Table 2.

Table 2: Distribution of respondents according to the characteristics of the production unit.

Variable	Mean	Median	Mode	Sd	Min	Max
Livestock No	80.56	70	100	47.7	10	300
Nominal capacity of production unit	147.65	120	100	123.31	15	1000
Labor No	3.25	3	3	1.27	1	7
Working capacity	1.8	1	1	1.35	1	7
Livestock number before loan	69.5	55	40	59.2	0	300
Livestock number after loan	92.8	74.5	60	63.3	10	300
Loan amount ($)	2200	1718	1250	1389	375	6250
Investment rate ($)	9821	8750	5741	6224	9375	4312
Times of receiving facilities	1.21	1	2	0.519	1	3

Differences in demographic characteristics between the two groups:

Studying of individual differences between the borrower and non- borrower through t-test showed that there are no significant differences between age groups. Also there is no significant difference in the amount of agricultural land, but in term of job experience a significant difference is observed in the level of 95%. The group that received no loans have more experience. The number of family labor does not show a significant difference between the two groups as well. The results are shown in Table 3.

Table 3: Differences in individual characteristics between the two groups.

Variable	Group	Average	t	Sig
Age	Borrower	48.90	0.123	0.903
	Non- borrower	49.19		
Total agricultural area	Borrower	2.95	1.175	0.082
	Non- borrower	4.61		
Animal husbandry experience	Borrower	34.16	2.454	0.016
	Non- borrower	27.66		
Family labor number	Borrower	3.49	0.898	0.371
	Non- borrower	4.33		

Differences in productive characteristics of two groups:

Assessing the differences in the characteristics of the two borrowers and non-borrower groups using showed that the two groups did not show significant differences in the number of livestock namely livestock number is not a distinguishing feature.

Table 4: The differences in productive characteristics of the two groups.

Variable	Group	Mean	T-value	Sig
Livestock number	Borrower	74.49	1.65	0.102
	Non- borrower	89.95		
Nominal capacity of production unit	Borrower	151.61	0.412	0.681
	Non- borrower	141.52		
Employed people	Borrower	3.87	0.982	0.328
	Non- borrower	3.14		
Labor capacity	Borrower	1.75	0.730	0.467
	Non- borrower	1.95		
Total individual investment	Borrower	3206392	0.421	0.675
	Non- borrower	30416666		
Sold livestock	Borrower	58.66	2.095	0.042
	Non- borrower	45.40		
	Borrower	93.47		

The results showed that the two groups are not different in the employment capacity and individual investment. The results showed that these two groups have a significant difference in term of sold livestock with a 95 percent confidence. Investigating the mean number of sold animals shows that people who have not got the facilities sold a greater number of animals that this can be misleading, because it is emphasized that by the payment the number of animal husbandry products increases, but here it was observed that the number of sold animals became lower. For justifying this difference it could be said that due to the drought and rising prices of production inputs in the last few years, ranchers have not be able for livestock preparation and fattening and have been forced to present them to the market, while, borrowers were capable of breeding and fattening livestock. The results are presented in Table 4.

Investigating the factors affecting the credit:

In this study, because the dependent variable is receiving loan which was measured in yes or no form, logistic regression analysis was used. The results show that the variable of awareness about facilities with improved Chi square of 13.11 and significance level of P=0.00, in next step the variable of hay cost with improved Chi square of 20.18 and significance level of P=0.00, animal husbandry experience with improved Chi square of 30.97, location and maintenance costs with Chi square of 45.41, amount of agricultural land with improved Chi square of 51.30, the number of cattle sold with improved Chi square of 57.83, the variable of number of animals with improved Chi square of 67.56 and variable of shepherd cost with improved Chi square of 71.28 were entered into the model. Model Chi-square value indicates that how much the independent variables affected the dependent variable.

Table 5: The effect of independent variables on the variable of receiving facilities.

Step	Chi-square	Freedom degree	Significance level	Model			Explained percentage
				Chi-square	Freedom degree	Significance level	
1	13.11	1	0.00	13.11	1	0.00	61.3
2	7.075	1	0.008	20.18	2	0.00	65.1
3	10.78	1	0.001	30.97	3	0.00	74.5
4	8.93	1	0.003	39.90	4	0.00	75.5
5	5.50	1	0.019	45.41	5	0.00	76.4
6	5.88	1	0.015	51.30	6	0.00	79.2
7	6.52	1	0.011	57.83	7	0.00	80.2
8	9.73	1	0.002	67.56	8	0.00	83
9	5.67	1	0.017	71.28	8	0.00	84.9

If the obtained P value is less than 0.05, the effect of the independent variables and their relationship with the dependent variable was considered at the significance level of 95% and if its value is less than 0.01 the confidence level increases to 99%. The results show that 9 variables that are entered into the analysis affect receiving facilities from Agriculture Bank and explains about 84.9 % the variability. The results are presented in Table 5. Table (6) shows the classification of the dual dimensions of the dependent variables. The percentages in the table show the sensitivity of the model to determine the mentioned persons in a case. The total percentage of this table shows that how much the model can properly separate persons from each other. Therefore, the sensitivity of the model is 84.9 % for determining borrowers and non-borrowers and its sensitivity is 76.2% to determine people who didn't receive loans.

Table 6: Classification of dual dimensions of the dependent variables.

Observed item		Prediction		
		Receiving facilities		Percentage
		Yes	No	
Receiving facilities	Yes	6	58	90.6
	No	32	10	76.2
Sum				84.9

Table 7: Constant, regression coefficient, Odds ratio, Wald statistic.

Variable	B	S.E.	Wald statistic	Freedom degree	Significance level	Odds ratio
Familiarity with facilities	0.139	0.048	8.176	1	0.004	1.149
Hay cost	0.001	0.004	6.921	1	0.013	1
Animal husbandry experience	-0.152	0.045	11.30	1	0.001	0.859
Age	0.118	0.049	5.819	1	0.016	1.125
Agricultural area	0.180	0.093	3.771	1	0.032	1.198
Number of livestock sold	-0.097	0.028	12.146	1	0.00	0.908
Animals number	0.053	0.022	5.976	1	0.014	1.054
Shepherd cost	0.004	0.002	4.976	1	0.026	1
Constant coefficient	-8.942	2.840	13	1	0.00	0.00

Table (7) shows constant, the coefficient B, odds ratio and Wald statistics. In this part, the variable of animal husbandry experience and livestock sold have a negative coefficient that shows the negative impact of these variables, and indicates that by increasing animal husbandry experience and livestock sold, the probability for receiving facilities reduces. Odds ratio explains the proportion of the frequency of belonging to a class to the frequency of no belonging to a class. Wald statistics also shows the significant of variables entered into the equation. The results show that the Wald statistic is significant for all variables.

Discussion and Conclusion:

The results showed that in farming activity, family labor are mostly used which its comparison with the employment capacity of the production units shows there is surplus labor in these units, namely the units exploit their labor in a non-economic way that resulting in reduced efficiency of production units. Perhaps one of the reasons for this issue is the lack of employment opportunities for family members in other economic activities and hence, they are forced to work in the same unit.

The results of the studies of Bakhtiari and Paseban, Ellis, Lohmar all emphasize that agricultural credits promote the level of employment in this sector which contrasts with the results of the present study. This is due to the presence of surplus labor in production units which by receiving facilities, these units get closer to the economic level of the labor force and there is no need to employ new workers.

On the other hand, investigating the characteristics of the respondents' production units indicated that the average number of livestock is 80.56 head that shows a significant difference with the average production unit nominal capacity or actual production capacity (147.65), namely production units don't use 100% of their nominal capacity and are not in profitability area. If they apply 100% of their nominal capacity naturally, the fixed paid costs such as maintenance and location costs, cost of utilities and the total fixed costs of production are taken on a downward trend and production units get closer to the profitability area.

One of the main reasons that led production units cannot use their real capacity is the lack of liquidity in the enterprise. Assessing the number of livestock of persons receiving facilities, before and after receiving facilities, shows that they have been able to develop their production unit which this issue is due to increase in liquidity and their ability to purchase inputs for production. On the other hand, farmers who have not been able to get facilities were forced to sell their livestock and reduced the size of their production unit, while there is a significant difference between the farmers who have received facilities and the farmers who have not received facilities in the term of the number of livestock which were sold.

The farmers who didn't receive facilities sold a greater number of livestock that this problem in the past two years was due to their inability to provide inputs for production and lack of liquidity in their units. The results of this research is aligned with Najafi and Yaghubi, Roknoddin Eftekhari and Einali, Jamshidi and Arab Mazar [2], Carter [6], Godiean, Tripathi and Sharma, Freeman and jabber [9]. All studies show credit is the direct role in increasing agricultural production.

The results of Khalaj and Nasabian, Reed and Beffus, Schreiner and Colombet emphasized on the positive role of credit on the investment which is accompanied by an increase in the number of livestock per production unit. Hence it can be said that the by proving facilities, it can be hoped that the ranchers move to the area of economic production.

Ranchers believe that their receiving facilities brings salient social and economic effects that the most impotent one is improve in household livelihoods and reducing poverty in society and contributes to social justice, on the other hand, they believe that by receiving facilities, they can increase the number of animals and liquidity of their unit. In the perspective of ranchers, the most important problem to get a loan is the Bank's strict regulations for payment. Banks usually give facilities to large production units with adequate financial resources and are though for smaller ranchers who cannot provide the necessary guarantees. The results of this study converge with the research results of Forouzandeh [8], Lahooti [17], Jalali Moussaoui [14], Bakhshi [4], Saadi and Arab Mazar [2], Khandker *et al*.

Investigating factors affecting the demand for loans and credits of the Agriculture Bank by ranchers of the region, indicated that the strict regulation of payment is the most important factor and next on the agenda is the inadequacy of the loan amount and high interest rate. Studies of Anari Bozcheloei [1], Varmaziari *et al*. [30], Mohieldin and Wright [19] know the administrative bureaucracy and lack of familiarity as the major obstacles to receive loans.

Based on these results, we suggest the following items:

Animal husbandry experience has a negative and effective role in receiving facilities, hence it is proposed that ranchers who have more experience be prior to get loans.

Government support in the preparation of production inputs, especially barley and wheat which impose more costs on the production process;

The amount of agricultural land is a variable affecting the loan, hence the farmers who have less land must be a prior.

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