

## Analysis Mechanization Skill of Wheat Farmers in Khoramabad Township, Iran

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The purpose of this study was analyzing the skill of Khoram Abad township wheat farmers regarding mechanization. This research was applied research and, based on methodology, was descriptive and correlative. Wheat farmers of Khoram Abad township, (N=18597) were considered as statistical population. Based on Krejcie and Morgan table, 377 ones were selected as sample. In this study, cluster random sampling was selected and, after confirming the validity of the study tool by expert panel, alpha Cronbach coefficient was used to determine the reliability of the study tool, and the resulted coefficients for all parts of the questionnaire was calculated upper than 0.7. Based on the results, level of skill regarding mechanization was determined to be average. In addition, stepwise regression indicated that social participation, level of education, participation in extension and educational classes, number of parts, and level of attitude, interactively explained %48 ( $R^2=0.48$ ) of changes in dependent variable. [Namdar Sayadi. Analysis Mechanization Skill of Wheat Farmers in Khoram Abad Township, Iran. *International Journal of Agricultural Science, Research and Technology in Extension and Education Systems*, 2012; 2(4):187-190].

**Keywords:** Skill, Wheat Farmer, Mechanization



Abstract

Received: 8 January 2013,  
Reviewed: 5 March 2013,  
Revised: 20 March 2013,  
Accepted: 27 March 2013

### 1. Introduction

Mechanization is the most important factor of increasing productivity, quantity, and quality of agricultural products (Glichli, 2006). Main objectives of agriculture mechanization are increasing land and workforce efficiency by reducing the difficulty of agricultural operations, planting at wider areas, saving energy and resources ( seed, fertilizer, water, and etc.), welfare and safety, environment preservation through accurate farming, and increasing the public income ( Salokhe and Ramalingam, 1998). Agricultural mechanization technology plays a key role in improving agricultural production in developing counties, and should be considered as an essential input to agriculture. The term 'mechanization' is generally used as an overall description of the application of the variety of mechanical inputs (such as tools, implants, and machinery). Proper use of mechanized inputs into agriculture, both the level and appropriate choice, has a direct and significant effect on labor productivity, the profitability of farms, and the quality of life of people engaged in agriculture (Clarke, 2000).

Fernando et al. (2005) exhibited the technology transfer strategies for small farm mechanization in the Philippines. The results showed that, the most important challenges for agricultural

mechanization were: lack of information, limited-resource farmers, small farm size, lack of appropriate machinery, lack of agricultural mechanization experts, political interference and institutional weaknesses.

Owombo et al (2012) revealed that education, extension practices and machine access were significant determinants of adoption of mechanization practices.

### 2. Materials and methods

Based on objective of research, this research was an applied research and, based on methodologically, was descriptive-correlative. Khoram Abad township was selected as the study region. Wheat farmers of Khoram Abad township, (N=18597) were considered as statistical population. Based on Krejcie and Morgan table, 377 ones were selected as sample. Based on cluster sampling method, sampling was conducted. At the first stage, from 17 rural districts of Khoram Abad, 7 districts were randomly selected, and at the second stage, from the available villages in the 7 districts, 21 villages were selected.

Then the validity of questionnaire was confirmed by the panel of experts. In the other hand, the reliability of questionnaire was acceptable, and

using the completed questionnaire, needed information was collected. Finally, using SPSS software, the collected information was statistically analyzed.

In this study, technical skill of Khoram Abad city's wheat farmers on mechanization was considered as dependent variable and individual characteristics (age, level of education, and experience in agriculture), agricultural characteristics ( type of planting, type of farming system, type of farming by agriculture machinery system, rate of wheat performance, rate of area under wheat, and number of parts), economic characteristics ( total land owned, income of agricultural activities, income of nonagricultural activities, financial debt, and use of bank credits), social characteristics ( social participation and social position), and extension characteristics ( participation in educational and extension classes, rate of access and use of information resources, and farm's distance from agricultural extension and service centers) were considered as independent variable. Descriptive and inferential statistics were used to process, describe, and analyze the data.

### 3. Results and discussion

Based on the findings, 122 wheat farmers (%32.4), with maximum frequency, are between 41 and 50 years old (table1). Results of data analysis indicated that 126 ones (3.34 percent), with maximum frequency, are in primary group and 33 ones (8.8 percent), with the minimum frequency, are in (high school) diploma and higher group (table2).

Findings showed that 340 wheat farmers (90.7 percent), with maximum frequency, have owned farming system (table 3).

Findings indicated that 315 ones (83.8 percent), with the maximum frequency, use rental system of agriculture machinery farming (table 4).

Information gained from questionnaire showed that 204 ones (56.5 percent), with maximum frequency, own 10.1 to 15 hectares of land (table 5).

Analyzing the study results, 248 ones (%65.8), with maximum frequency, have a 4.5 to 50 million Rials income from agricultural activities.

In continue, 10 items were designed to evaluate the wheat farmers' skills on mechanization. In this evaluation, researcher used direct evaluation and farmers' skill based on Likert domains (1. No part of the duty can be done; 2.less than a half of the duty can be done; 3.more than a half of the duty can be done; 4.all of the duty can be done but much time is needed; 5.all of the duty can be done at a determined time) were evaluated.

Evaluating the rate of wheat farmers' skills on mechanization showed that average skill of wheat farmers was 31.9 and its standard deviation was 4.96. Based on the results, 67.4% of farmers had average skill (table 7).

In addition, stepwise regression indicated that social participation, level of education, participation in extension and educational classes, number of parts, and level of attitude, interactively explained %48 ( $R^2=0.48$ ) of changes in dependent variable.

Table1. Frequency distribution of the wheat farmers based on age groups

| Age group(year) | Frequency | Percent | Cumulative percent |
|-----------------|-----------|---------|--------------------|
| 23-30           | 12        | 3.2     | 3.2                |
| 31-40           | 89        | 23.6    | 29.6               |
| 41-50           | 122       | 32.4    | 59.5               |
| 51-60           | 103       | 27.3    | 86.9               |
| 61-70           | 39        | 10.3    | 97.3               |
| 71-81           | 10        | 2.7     | 100                |
| Without respond | 2         | 0.5     |                    |
| Total           | 377       | 100     |                    |

Mean:49 median:49 max:81 min:23 standard deviation:1.08

Table2. Frequency distribution of the wheat farmers groups in terms of level of education

| Level Of Education | Frequency | percent | Cumulative percent |
|--------------------|-----------|---------|--------------------|
| Illiterate         | 98        | 26      | 26                 |
| Primary            | 126       | 33.4    | 61.4               |
| Guidance           | 80        | 21.2    | 82.6               |
| High School        | 38        | 10.1    | 92.7               |
| Diploma And Higher | 33        | 8.8     | 99.5               |
| Without Respond    | 2         | 0.5     | 100                |
| Total              | 377       | 100     |                    |

Table3. Frequency distribution of the wheat farmers groups based on type of farming system

| Type of farming system | Frequency | Percent | Cumulative percent |
|------------------------|-----------|---------|--------------------|
| Owned                  | 340       | 90.7    | 90.7               |
| Rental                 | 11        | 2.9     | 93.6               |
| Sharing                | 12        | 3.2     | 96.8               |
| Mixed                  | 12        | 3.2     | 100                |
| Total                  | 375       | 100     |                    |

Table 4. Frequency distribution of the wheat farmers groups based on agriculture machinery system

| Type Of Farming System | Frequency | Percent | Cumulative percent |
|------------------------|-----------|---------|--------------------|
| Private                | 59        | 15.7    | 15.7               |
| Rental                 | 315       | 83.8    | 99.5               |
| Cooperative            | 2         | 0.5     | 100                |
| Total                  | 375       | 100     |                    |

Table 5. Frequency distribution of the wheat farmers groups based on rate of owned lands

| Total land owned hectare | Frequency | Percent | Cumulative percent |
|--------------------------|-----------|---------|--------------------|
| 0.4-5                    | 11        | 2.9     | 2.9                |
| 5.1-10                   | 13        | 3.4     | 6.3                |
| 10.1-15                  | 204       | 54.1    | 60.4               |
| 15.1-20                  | 124       | 32.9    | 93.3               |
| 20.1-25                  | 15        | 3.9     | 97.2               |
| 25.1-30                  | 10        | 2.6     | 100                |
| Total                    | 377       | 100     |                    |

Mean: 7.2    median: 5    max: 30    min: 0.4    standard deviation: 2.1

Table 6. Frequency distribution of the wheat farmers groups based on annual income from agricultural activities

| Annual income( million Rials) | Frequency | Percent | Cumulative percent |
|-------------------------------|-----------|---------|--------------------|
| 4.5-50                        | 248       | 65.8    | 65.8               |
| 51-100                        | 96        | 25.5    | 91.2               |
| 101-150                       | 19        | 5       | 96.3               |
| 151-200                       | 4         | 1.1     | 97.3               |
| 201-250                       | 2         | 0.5     | 97.9               |
| 251-300                       | 7         | 1.9     | 99.7               |
| More than 300                 | 1         | 0.3     | 100                |
| Total                         |           | 100     |                    |

Mean: 53    Median: 36.5    max: 720    min: 4.5    standard deviation: 56

Table 7. Frequency distribution of the wheat farmers groups in terms of the level of skill in mechanization

| Levels Of Skill | Frequency | Percent | Cumulative percent |
|-----------------|-----------|---------|--------------------|
| Very Weak       | 1         | 0.3     | 0.3                |
| Weak            | 37        | 9.8     | 10.1               |
| Average         | 254       | 67.4    | 77.5               |
| Good            | 74        | 19.6    | 97.1               |
| Very Good       | 11        | 2.9     | 100                |
| Total           | 377       | 100     |                    |

Table 8. Findings of stepwise regression

| Independent variables                            | B     | SEB   | Beta  | t     | sig   |
|--|-------|-------|-------|-------|-------|
| Social participation(x1)                         | 0.313 | 0.125 | 0.245 | 4.18  | 0.000 |
| Level of education(x2)                           | 0.451 | 0.162 | 0.357 | 6.49  | 0.000 |
| Education classes(x3)                            | 0.321 | 0.171 | 0.341 | 5.51  | 0.000 |
| Number of parts(x4)                              | 0.30  | 0.38  | 0.21  | 3.9   | 0.000 |
| Level of attitude(x5)                            | 0.153 | 0.043 | 0.195 | 3.52  | 0.000 |
| Intercept  | 22.72 | 2.954 |       | 7.691 | 0.000 |
| signif F=0.000    f=19.8    R <sup>2</sup> =0.48 |       |       |       |       |       |

#### 4. Conclusion and Recommendations

Wheat farmers' educational level has a significant role on their technical skill on mechanization. This is confirmed by Owombo et al (2012). So, it is suggested that, by establishing educational centers specially for agriculture, education becomes standardized for farmers' needs.

Wheat farmers' level of attitude has a significant role on their technical skill on mechanization. So, through educational classes, changing the attitude of farmers in order to accept mechanization is suggested.

Wheat farmers' level of social participation has a significant role on their technical skill on mechanization. Thus, it is suggested that, by organizing different educational and cultural programs, rate of social participation in social activity is increased.

Wheat farmers' level of participation in extension and educational classes has a significant role on their technical skill on mechanization. This is confirmed by Roling and Pretty (1997) Thus, it is suggested that, by organizing extension and education programs, rate of skills is increased.

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