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Farmers' Knowledge towards the Role of Extension Services in Agricultural Development in Opolski County, Lubelskie Province of Poland

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

This research aimed at identifying and evaluating farmers' knowledge in Opolski County towards the role of extension services in the agriculture development, identifying the farmers' knowledge in Opolski County in each item/statement of research (in scheduled questionnaire) and identifying correlation between the farmers' knowledge and independent variables in the research. For data collection, a questionnaire was designed and tested, in accordance with said objectives. It was consisted of two parts, first part including the personal variables that were related to farmers' socioeconomic characteristics (age, education level, farm size, contact degree with information sources and methods of agricultural production). The second part included the scale for farmers' knowledge towards the role of extension services in the agricultural development, this scale was consisted of 20 statements (items).
The results showed that the farmers' knowledge in Opolski County towards the role of extension services in the agriculture development was medium tending to high degree. The results also showed that farmers' knowledge was high in the statement, 'Agricultural extension methods help in

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transferring agricultural information and new knowledge to farmers'. The results also showed there was significant correlation between farmers' knowledge and variables (age, contact degree with sources information and methods of agricultural production). There was no significant correlation found between knowledge level and independent variables (education level, size of farm).

Keywords: Extension services; farmers' knowledge; agricultural development; Opolski County.

1. INTRODUCTION

The agricultural extension services are very important in the development of rural knowledge and innovation system for farmers [1]. Agricultural extension services are established to improve the knowledge and skills of farmers in farming practices, and make their attitudes positive towards agricultural innovations [2,3].

Prime objectives of agricultural extension services are to bring about behavioral changes that are desirable and specific in the individual's behavior. These changes begin in knowledge and individual inclinations and beliefs and change in skills of farmers until the desired change [4,5].

The agricultural extension was primarily undertaking technology transfer activities in the past, but now it also focuses on the facilitation of all the steps involved in the whole farming process. Nowadays, extension goes beyond training, teaching and helping farmers in forming farmer groups. Now in its wider working sphere, it also takes initiatives to address the marketing issues and joins hands to enter into partnerships with the wide-range of service providers and other related organizations [6,7]. Agricultural extension today is partner of all those organizations that support, facilitate and assist the farming communities involved in agricultural production [2,8].

The agricultural extension system has existed in Poland for more than 100 years. It is estimated that agricultural extension institutions in Poland were developed simultaneously with agricultural education. The origins of the extension organizations date backs to the second half of nineteenth century and were forced by the development of the capitalist relations in agriculture. The first instructor in agriculture was hired by agricultural society in Poland in 1883. At the same time the first farmer group was organized and in this way these became the basis for agricultural extension and its development in Poland [9,10,11].

Agricultural extension works in a wider knowledge system that embraces different components, of which research and agricultural education are some [12,13]. Agricultural extension is important because in the first place, information about good or new agricultural practices in a particular environment from research station or farmers experience can be assembled, synthesized and made available to use. Secondly, this information can be used especially for educational purpose to further investigate it or to disseminate knowledge. Thirdly, it results in creation of organizational and administrative setup which can make dissemination of technologies easier. Natural calamities such as famine, crop failure and problems such as soil degradation and economic crises can also result in immediate initiation of extension work.

Keeping in view the above facts regarding importance of agricultural extension services in achieving rural and agricultural development, it was necessary to conduct studies and research in order to identify and evaluate the information and knowledge possessed by farmers towards the role of extension services in agricultural sector development as well as rural development. To fulfill the research needs, Opolski County in Poland was selected for the implementation of research idea: to identifying the farmers' knowledge in Opolski County towards the role of extension services in the agriculture development, to identifying the farmers' knowledge in Opolski County in each item/statement of research (in scheduled questionnaire) and to identifying correlation between the farmers' knowledge and independent variables in the research.

2. RESEARCH METHODOLOGY

The research community was consisted of all farmers in the Opolski County. Simple random sampling was done and a total number of fifty farmers were selected in the research sample. A well-structured questionnaire was designed and employed as a tool to collect data in order

to achieve the research objectives. The questionnaire was consisted of two parts:

The first part including personal variables related to farmers' socioeconomic characteristics (age, education level, size of farm, contact degree with information sources towards the role of extension services in the agricultural development). The second part of questionnaire was included with the scale for farmers' knowledge towards the role of extension services in the agricultural development. This scale consisted of 20 items/statements. The data was collected during the period of 2015. The author has also used Pearson correlation coefficient and Equation of Spearman-Brown to find if there is any correlation between farmers' knowledge and independent variables in current research. The independent variables has been measured, as following:

- **Age:** It has been measured through the age of farmers during the time of collecting the data of study.
- **Gender:** It has been measured through (2 levels) (males - females). It has been given the following degrees: Male: It has been given 2 degrees, and female: It has been given 1 degree.
- **Education level:** It has been measured according to the following levels: Primary school, secondary school, high school and university, it has been given the following degrees: Primary school - It has been given 1 degree, Secondary school - It has been given 2 degrees, High school and university- It has been given 3 degrees.
- **Size of farm:** It has been measured by number of hectares (ha.).
- **Contact degree with information sources and methods of agricultural production:** This variable was measured through the four sources (Centers of agricultural extension, agricultural Newspapers, others farmers, Radio and TV programs in the media). It has been given degree for answer ranging from (1-10 numeric value) for each source. Through the collected answers of asked questions from farmer towards the role of extension services in the agriculture development, the author in the end got the final degree for farmers' answer (from 40 numeric value) about this variable. Thus, the range of answers for this variable (sources of information) lies between 1-40 numeric values.

The dependent variables were measured through the scale of farmers' knowledge, it was consisted of 20 statements (items), relating to the role of agricultural extension in the agricultural development, was put in front of each item (4 alternatives/options), which has been given the following degrees, namely:

- I know significantly, (4 degrees)
- I know moderately, (3 degrees)
- I know slightly, (2 degrees)
- I do not know at all, (1 degree)

Through the collection of answers of farmer about these items, the author has gotten the final degree for farmer knowledge towards the role of extension services in the agricultural development. The author had used Pearson correlation coefficient and Equation of Spearman-Brown to find if there is any correlation between farmers' knowledge and independent variables in the research.

Standard method of range and category length was used to divide the independent variables to the (3 categories), these variables (age, size of farm, contact degree with sources information and methods of agricultural production).

3. RESULTS AND DISCUSSION

3.1 Identifying the Farmers' Knowledge in Opolski County towards the role of Extension Services in the Agriculture Development

The results from present study revealed that the numeric values that were obtained by farmers and which represented the farmers' knowledge towards the role of extension services in the agriculture development, was the highest value (80) and lowest value was 20. Farmers were distributed to three categories according to the farmers' knowledge towards the role of extension services in the agriculture development, as shown in the Table 1.

The Table 1 showed that the highest proportion of farmers was in the medium category, which accounted for 74%. This means that the farmers' knowledge towards the role of extension services in the agriculture development is medium tends to high degree. This maybe because the farmers in study region, they always used to visit the agricultural extension centers in order to know and see the activities of extension services through participating in the training courses in

the different topics of agricultural extension topics.

3.2 Identifying the Farmers' Knowledge in Opolski County in each Item/ Statement of Research

It has been identified form survey that the farmers' knowledge in each item towards the role of extension services in the agricultural development and it has been ranked in descending order, according to the centennial weight of items, as shown in Table 2.

The Table 2 showed the items that took the first three rank in the centennial weight and respectively, are (Agricultural extension methods help to transfer of agricultural information and new knowledge to farmers, agricultural extension helps farmers to solve their problems on their own, agricultural extension helps farmers on the proper use of pesticides). This means that farmers have the sufficient knowledge and information towards the role of extension services in the agricultural development, especially in the role of extension in transferring the new information and technology to farmers and helping them to use these technologies in their farms, which maybe because the farmers in study region try to get the new info of technology through the agricultural extension centers. Because of these reasons they have enough information and knowledge about these topics.

The items, that have taken the last three ranks according to the centennial weight, respectively are (Agricultural extension contributes in the development of the fisheries, agricultural extension helps farmers on the water management in agriculture, agricultural extension helps farmers how to use agricultural mechanization in agriculture). This means that farmers have low knowledge and information in these topics, especially in the role of agricultural extension in the development of the fisheries, which maybe because the farmers in study region they don't have interest in breeding the fish.

3.3 Identifying Correlation between the Farmers' Knowledge and Independent Variables in the Research

3.3.1 The age

The results showed that the highest age of farmers was 70 year, and the lowest age was 38 year, and the mean of 54 year. The farmers were distributed to categories according to the age. The results showing that the medium category has higher percentage of 76%. Also, the results found a positive correlation between the farmers' knowledge towards the role of agricultural extension in the agricultural development and the age of farmers. The value of Pearson correlation coefficient was 0.3112 and was also significant (p-value = 0.0004**). Whereas, Table 3 explained this phenomenon, which means that the farmers' knowledge towards the role of extension services in the agricultural development depend on age of farmers, maybe because the elderly farmers have knowledge and information towards the role of extension services through the experience, which they have acquired through participating in activities of agricultural extension centers, also they have knowledge from other sources.

3.3.2 Education level

The farmers were distributed to categories according to the education level. The results from these findings showing that the category of secondary school has got the higher percentage of 64%. Also, the results found that there was no correlation between the farmers' knowledge towards the role of extension services in the agriculture development and education level. The value of spearman correlation coefficient was 0.2090 and was not significant (p-value = 0.2867). Table 3 explained these facts, which means that farmers' knowledge towards the role of extension services in the agriculture development do not depend on education of farmer, but may depend on other variables.

3.3.3 Size of farm

The results regarding farm size showed that the maximum size of farms was 30ha, and the lowest size was 4 ha. with a mean value of 18 ha. The farmers were distributed to categories according to the size of farm. The results also showing that the low category has higher percentage (80%). Also, the results declared that there was no correlation between the farmers' knowledge about role of agricultural extension in the agricultural development and the size of farm. The value of Pearson correlation coefficient was 0.4030 and was not significant (p-value = 0.1346). Table 3 explained that fact. It means that the farmers' knowledge towards the role of extension services in the agriculture development do not depend on size of farm, but may depend on other variables.

3.3.4 Contact degree with sources information and methods of agricultural production

The results for this parameter showed that highest numeric value for sources of agricultural information was 29 and the lowest was 3, with the mean of 15. The farmers were distributed to categories according to the sources of agricultural information. The results showing that the medium category has higher percentage of 80%. Also, the results found there was positive correlation between the farmers' knowledge towards the role of extension services in the agriculture development and sources of agricultural information. The value of Pearson correlation coefficient was 0.4421 and it was significant (p-value = 0.0031**). Table 3 explaining this finding. Therefore, farmers' knowledge towards the role of extension services in the agriculture development depends on sources of agricultural information. This means, if the farmers use more sources of information about the agricultural extension, it will lead to increase their knowledge in the topics of agricultural extension.

Table 1. The distribution of farmers according to the knowledge towards the role of extension services in the agriculture development

Categories (numeric value)	Frequency	Percentage %
Low (20 – 40)	5	10
Medium (41 – 61)	37	74
High (62 – 82)	8	16
Sum	50	100

Mean (56 year)

3.3.5 Methods of agricultural production

The farmers were distributed to the categories according to the methods of agricultural production. The results showing that the category the (methods of plants-animals) has got the higher percentage of 80%. Also, a positive correlation was found between the farmers' knowledge towards the role of extension services in the agricultural development and the methods of agricultural production, The spearman correlation coefficient was significant with value of 0.5131 and significant at p-value = 0.0040**.

Table 2. Ranks of items according to the centennial weight of the items

No.	Statements (Items)	centennial weight of items
1	Agricultural extension methods help to transfer of agricultural information and new knowledge to farmers.	84.76
2	Agricultural extension helps farmers to solve their problems on their own.	83.21
3	Agricultural extension helps farmers on the proper use of pesticides.	83.10
4	Agricultural extension contributes to the training of farmers in different areas of agricultural work.	80.23
5	Agricultural extension helps farmers on how to eliminate the insects and diseases that affect the crops.	77.25
6	Agricultural extension helps in providing farmers with information and new agricultural technologies for agricultural production.	76.87
7	Agricultural extension plays an important role in livestock development.	75.23
8	Agricultural extension helps farmers on the proper use of fertilizers.	74.97
9	Agricultural Extension contributes to the increase of agricultural production in quantity and quality.	71.32
10	Posters and bulletins of extension help to increase information and knowledge farmers in the cultivation of different crops.	67.11
11	Agricultural extension helps farmers to exploit the agricultural land in scientific way.	63
12	Agricultural extension contributes in help of rural women.	61.87
13	Agricultural extension contributes in help of rural youth.	58.32
14	Agricultural extension helps on how to exploit the natural and human resources in rural areas.	56.98

No.	Statements (Items)	centennial weight of items
15	The visits of workers agricultural extension to the farmer's farms, will be help solve farmers' problems.	53.13
16	Agricultural extension has important role in agricultural marketing.	48.65
17	Agricultural extension helps farmers on how to carry on agriculture.	45.87
18	Agricultural extension helps farmers how to use agricultural mechanization in agriculture.	40.65
19	Agricultural extension helps farmers on the water management in agriculture.	39.11
20	Agricultural extension contributes in the development of the fisheries.	37.34

Table 3. The distribution of farmers to categories according to the independent variables and its correlation with farmers' knowledge

Independent variables	Frequency	Percentage %	Person correlation		Spearman correlation	
			Pearson correlation coefficient	p-value	Spearman correlation coefficient	p-value
Age (year)						
38- 48	9	18				
49 – 59	38	76	0.3112	0.0004**		
60- 70	3	6				
Sum	50	100%				
Education level						
Primary School	8	16				
Secondary School	32	64			0.2090	0.2867
Higher School and university	10	20				
Sum	50	100%				
Size of farm (ha.)						
4-12 Low	40	80				
13-21 Medium	7	14	0.4030	0.1346		
22-30 High	3	6				
Sum	50	100%				
contact degree with sources information (numeric values)						
3-11 Low	2	4				
12-20 Medium	40	80	0.4421	0.0031**		
21-29 High	8	16				
Sum	50	100%				
Methods of agricultural production						
Plant	10	20			0.5131	0.0040**
Plant s-animals	40	80				
Sum	50	100%				

(**)Significant at the level (0.01)

This means that the farmers' knowledge depend on the methods of agricultural production, maybe because the farmers who use the methods of (plant and animals). They will try to getting the

information and knowledge towards the role of extension services in the agriculture development from different sources from in order to use these information and knowledge in their farms and agricultural work.

4. CONCLUSIONS

Depending on the results of present research, the author concluded the following:

1. Farmers have sufficient information and knowledge towards the role of agricultural extension methods in agricultural development in different topics of agriculture.
2. Farmers are equipped with high knowledge towards the role of agricultural extension methods in transfer of agricultural information and new knowledge to farmers.
3. Farmers are suffering also from a lack of information's and have low knowledge about the contribution of agricultural extension in the development of fisheries.
4. The variables including age, contact degree with sources information and methods of agricultural production, have found to be significantly effective in the development the farmers' knowledge towards the role of extension services in the agricultural development.
5. The variables regarding socioeconomic characteristics (education level, size of farm), these don't have visible effect and clear role in the development of the knowledge level and information of farmers towards the role of extension services in the agricultural development.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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