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A Suggested Model for Organizing the Relationships among Agricultural Extension, Research and Educational Institutions in The Sulaymani Governorate

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Abstract: This research aimed at a proposal to regulate the relationships among extension, research and educational agricultural institutions in Sulaymani Governorate, by diagnosing the personal variables of the respondents, and identifying the reality of organizing relationships between these institutions, leading to preparing a proposed model for organizing relations between them. The research population included the agricultural organizations represented by (Agricultural Extension Directorate, Agricultural Research Directorate, Agricultural Colleges and Institutes), and a proportional stratified random Sample of 15% was chosen from all organizations, the total of the instructor sample is 85 respondents. The proposed model was prepared according to the following procedures: literature and forms, expert observations, review of research and articles, conducting field visits, documents and records. 3 fields, 12 elements and 168 paragraphs were developed, all of which formed the initial formula of the model. The model was presented in its initial form to a group of experts in the field of agricultural extension and management, and after taking their observations into account; the model now includes 3 fields, 12 elements and 148 paragraphs. The research found that there is no process of organizing the relationships between the studied institutions, and showed that all respondents agreed on the paragraphs of the proposed model. And recommends its application in real agricultural work in Sulaymani province.

Key words: Agricultural Education Centres. Agricultural Research Centres, Organizing the agricultural extension.

Introduction

The agricultural sector is considered one of the most important economic sectors that constitute the economic structure of most countries of the world, whether developed or developing ones, as the importance of this sector for developed countries appear through the prominent role it played in promoting the economies of these countries as the agricultural sector contributed to financing the economic development process in general and industrial development in particular in most of these countries (Maher, 2017). Therefore, developing the agricultural sector and modernizing its production methods is not a goal that developing countries seek

today, but it is considered an urgent necessity for the establishment and success of economic development in general. This importance is doubled in developing countries, including Iraq, where this sector participates in economic growth in general (Al-Haboby *et al.,* 2016). The agriculture and food sector in Iraq and the Kurdistan region can play an important role in rural job creation and income generation, meaning that it can contribute to political and economic stability more generally (FAO, 2018; Jongerden *et al*., 2019).

Sulaymani Governorate is a part of the Kurdistan Region, where the agriculture sector in Sulaimani is one of the sectors of main productivity, due to its abundance of natural resources, including agricultural lands, the area of its lands is estimated at 4171232 acres and the area suitable for cultivation is 1167996 acres. (28%) of the total area (The Ministry of Planning, 2011). A high percentage of the governorate population contributes to supporting regional income by increasing exports and food production for the general community. The agricultural sector in Sulaymani faces great challenges, especially in the current conditions represented by the revolution of information technology, natural disasters that occur as a result of human action, rural poverty, food insecurity, increase in production costs, stopping government support to the agricultural sector, and to face such challenges and their repercussions on agricultural development strategies. It is necessary to adopt many development systems, including agricultural extension, scientific research and agricultural education in their various activities and practices, especially the interconnection and interaction between them. Research and extension play important roles in the enhancement of agricultural productivity. Research, on one hand, generates improved technologies and practices that help to raise crop yields and incomes, particularly of small farmers. Extension, on the other hand, provides the mechanism by which those technologies and practices are disseminated for adoption by farmers. (Sharma, 2002).

There is no doubt that all achieved increases in agricultural production and productivity are due to the efforts in agricultural research and extension (Anang *et al.,* 2020; Sebaggala & Matovu, 2020). Extension without continuous and renewed applied researches cannot achieve its objectives. Likewise, agricultural research without an effective extension device communicating its results to farmers becomes sterile and useless. While agricultural education without agricultural extension cannot open the horizons and areas of new specializations according to the changing problems and needs of society. Also, agricultural education without higher research cannot continue to be revitalized and effective because scientific research in turn stimulates the education process. Accordingly, it can be said that agricultural extension, agricultural scientific research and agricultural education grow, rise and develop whenever the interaction movement between them becomes active and the greater the interdependence between them. With regard to these organizations in the world, despite the difference in their temporal age, organizational forms and areas of their work, most of these organizations, especially in developing countries, suffer from many

problems, among them, the weak participation of researchers in the implementation of extension programs, weakness in coordinating the nature of relations between them, and an unclear relationship between the nature of work between those involved in extension and educational work, and this was confirmed by (Eneyew, 2013).

Regarding the existence of a lack of coordination between education, extension and scientific research, (Ghobashi, 2004) also indicated that there is a lack of communication and coordination between extension and agricultural research in the Sultanate of Oman. Hagras & Mikhaiel (2011) and Abdel-Maksoud, (2017) indicated in Egypt that the weak relationship between agricultural research and extension is one of the most important obstacles facing agricultural extension work in implementing agricultural extension recommendations by rural people .

Omar *et al.* (2012).stated in the eastern Libya there is a weak relationship between the agricultural extension and the scientific research organs with regard to these organizations in Iraq, they share with the organizations in the Arab countries almost the same problems (Kshash & Oda, 2021) confirmed that there are coordination problems facing the extension, research and educational organizations in Iraq, including weak communication and indicative coordination with external organizations, whether they are agricultural research organizations or educational institutions. Agricultural or other development organizations are not far from extension, education and research organizations in Sulaymani governorate, which is part of Iraq, which share the same problems with the other organizations in Iraq, as they suffer from weak communication and extension coordination with external organizations, whether they are agricultural research organizations or agricultural educational institutions. As a result of all of the above and the absence of previous research on organizations on relationships among the studied institutions in Sulaymani, this research came to answer the following two questions:

1. What is the reality of organizing relations among agricultural extension, research and educational institutions in the Sulaymani Governorate?

2. What is the proposed model for organizing the relationships among agricultural extension, research and educational institutions in the Sulaymani Governorate?

The aim of the study:

First: describe the variables of the respondents. Second: disclosing the reality of organizing the relationships among agricultural extension, research and educational institutions. Third: preparing a model for organizing the relationships among agricultural extension, research and educational institutions in the Sulaymani governorate.

Materials & Methods

Research Methodology:

In order to achieve the objective of the research, the descriptive approach, which is one of the methods to obtain adequate and accurate information from social reality and contribute to the analysis of its phenomena, was used. (Nassaji, 2015), this approach is suitable to get

detailed data and facts on the proposed regulation of relations among agricultural extension, research and educational institutions in the Sulaymani Governorate.

Research region

Sulaymani Governorate was chosen from the Kurdistan region as a region to conduct the research.

The research population

The research population included the agricultural organizations in the Sulaymani Governorate represented by (the Organization of agricultural extension, the Agricultural Research Directorate, Agricultural Colleges and Institutes). A proportional stratified random sample was chosen (15%) from all organizations, the total sample of population search 85 respondents.

Stages of proposed model

The first stage: The proposed model has been prepared according to the following procedures: the literature and models that have been viewed in the field of organization, expert's observations and researchers specialized in this field. In addition to the officials of agricultural departments and research and articles, undertaking visits and official records approved in the agricultural departments, the available information regarding the regulation process through the Internet, 3 elements, 12 domains and 168 paragraphs were developed, the total of which was the initial form of the model.

The second stage: The form was presented in its initial form to a group of experts and specialists in the field of agricultural extension, a total of ten experts by questionnaire in order to determine the level of their agreement on each field and paragraph, a measure of approval consisting of three levels: agree, agree with the amendment (The amendment is mentioned), disagree, and the following weights were given 3, 2 and 1 respectively. As for the level of approval with the amendment procedure, a field related to the proposed amendment was set according to the standard level.

The third stage: As a percentage of agreement 80% was determined by the opinions of experts as a criterion (condition), areas, or paragraphs within the initial proposed form as it obtained the approval of 80% of the experts' opinions, it is entirely valid. the cutting threshold is a commonly used term in educational and psychological research. The paragraphs that needed to be modified and merged the similar paragraphs with each other were reformulated, and some paragraphs were added from expert observations, as the sum of 3 fields and 12 elements and 148 paragraphs distributed over the proposed model.

The 4^{th} stage: Five-point scale of phrases consisting of (very agree, agree, neutral, disagree, very disagree), the following weights are assigned to them successively (5, 4, 3, 2, and 1). Presenting the model to the specialized experts. The apparent honesty of the questionnaire was confirmed and its content validated. As apparent honesty means the degree to which the paragraphs relate to the job or behavior to be measured, i.e. all the paragraphs of the questionnaire, its instructions and, its appearance must be related to the topic, whereas the validity of the content is intended The degree to which the test represents the

content and objectives of the behaviour, and the content of the content has earned this name because it relates to the content of the behaviour to be measured (Prasad & Reghunath, 2011). The data was collected in the personal interview by means of a questionnaire for the respondents, which includes: the first is for personal and employment variables, and the second is concerned with revealing the reality of organizing relations between the studied institutions. The second part relates to identifying the degree of consent of the respondents to the proposed paragraphs related to the areas of the proposed model for organizing relations between the studied institutions.

Results & Discussion

Description of the personal variables of the respondents

The results of the research indicated that the highest age of the respondents was 65 years, and the lowest age 29 years, with an average of 46 years. The age of the respondents was divided into four age groups as shown in the table (1).

Table (1) indicates that the highest percentage of the total respondent (37.65%) fall within the age group (51 and over) years, and the lowest percent (7.06%) falls within the age group (30 or less years), and this indicates that the majority of respondents are of the high ages. As the research results indicated that the percentage 55.29% of the total respondents for all groups are male while the results of this research indicated that the highest percentage 32.94% was obtained by the category of Master's graduates, while the lowest percentage (1.18) for the category of junior preparatory. Also, the results showed that 16.47% of the total respondents for all groups are from the agricultural extension specialization, and the highest numerical value expressing the number of years of service for all groups 43 years. The least service seven years, and with an average of 21 years. Whereas the highest years of service out of the total number of respondents fall within the category 21-30 at a rate of 30.59%. However, the lowest percentage is included in the category (30 and more years) with percentage 16.47%.

Uncovering the reality of organizing the relationships among agricultural extension, research and educational institutions

The results of the research indicated that (91.76% of the respondents for all groups confirmed the absence of the organization process between the institutions studied in the Sulaymani governorate, while 8.24% of the respondents for all groups indicated their presence as shown in the table (2):

The results of this research also indicated that 91.76% of the respondents for all groups confirmed the lack of a planning process among the institutions studied, while 8.24% of all respondents indicated their presence, While the percentage 90.6% of the respondents to all groups confirmed the absence of the implementation process between the institutions studied, while 9.4% of the respondents for all groups indicated their presence, and with regard to the evaluation process, the research results indicated that the percentage 89.4% respondents of all groups confirmed the absence of the evaluation

Table (1): Distribution of researchers according to personality variables.

Variables	Extension Workers		Researchers		Teachers		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Age								
30 or less	1	5	-	-	5	11.11	6	7.06
31-40	11	55	12	60	6	13.33	29	34.11
41 - 50	4	20	5	25	9	20	18	21.18
51 or more	4	20	3	15	25	55.56	32	37.65
(Gender)								
Male	7	35	13	65	27	60	47	55.29
Female	13	65	7	35	18	40	38	44.71
Educational attainment								
Preparatory	1	5	-	-	-	-	1	1.18
Institute	4	20	1	5	-	-	5	5.88
College	14	70	11	55	-	-	25	29.41
Higher Diploma	1	5	1	5	2	4.44	4	4.71
Master	-	-	7	35	21	46.67	28	32.94
Ph.D	-	-	-	-	22	48.89	22	25.88
(Specialization)								
extension	1	5	-	-	13	28.89	14	16.47
Other departments.	19	95	20	100	32	71.11	71	83.53
Length of service								
10 years or less	4	20	6	30	10	22.22	20	23.53
11-20	10	50	8	40	7	15.56	25	29.41
21-30	5	25	6	30	15	33.33	26	30.59
30 or more	1	5	-	-	13	28.89	14	16.47
Total	20	100	20	100	45	100	85	100

Table (2): Distribution of respondents on the reality of organizing relations between agricultural extension, research and educational institutions.

Categories	Extension Workers		Researchers		Teachers		Total		Calculated value X^2	D.F	Level of significance
	Frequency	%	Frequency	%	Frequency	%	Frequency	%			
Organization process											
presence of the organization	7	35	-	-	-	-	7	8.24	24.79	2	significance
Lack of organization	13	65	20	100	45	100	78	91.76			
planning process											
presence of the planning	7	35	-	-	-	-	7	8.24	24.79	2	significance
Lack of the planning process	13	65	20	100	45	100	78	91.76			
implementation process											
Presence of implementation	7	35	0	0	1	2.2	8	7	20.16	2	Significance
Lack of implementation	13	65	20	100	44	97.8	77	90.58			
evaluation process											
Presence of evaluation	7	35	1	5	1	2.2	9	10.6	16.57	2	significance
Lack of evaluation	13	65	19	95	44	97.8	76	89.4			
Total	20	100	20	100	45	100	85	100			

Std. Deviation = 0.56 Std. Error of Mean = 0.06

process among the studied institutions, while 10.6% of the respondents indicated to all groups their presence.

Preparing a model for organizing the relationships among agricultural extension, research and educational institutions:

Approval of the elements of the organizing model, relations among the proposed agricultural extension, research and educational institutions

The organization model obtained the relationships among the proposed agricultural extension research and educational institutions of 12 elements, with balanced averages ranging between 4.24 - 4.47 degrees and percentage weights between 84.8 - 89.4%, and therefore all these paragraphs remain in the final form of a model in order for each of them to obtain a weighted average for approval degrees higher than the hypothetical mean level of 3 degrees, as shown in the table (3). Table (3) indicates that the element (organization between agricultural research and agricultural education) came first in terms of importance and percentage weight, as it achieved an weighted average of 4.47 degrees and a percentage weight of 89.4%, this may be attributed to the fact that there is a kind of coordination between the teaching staff and researchers in carrying out their joint research in the fields, while the implementation component between agricultural extension and research has made the arrangement the latter according to importance and percentage weight, as it achieved a weighted average of 4.25 degrees and a percentage weight 85%, which is lower than the average weighted averages of other elements and the reason for this may be due to the lack of available capabilities to cover implementation expenses of human, material and financial needs in the governorate, for comparison between the categories of respondents in terms of the degree of approval of the proposed areas in the model, use the mono-variance analysis (F) whose calculated value is 12.19 and it exceeds its tabular value of 3.107 with a significant level 0.05 indicates that there are significant differences between the mean scores of the respondents 'approval of the regulation model relationships between the extension and research and educational institutions Agricultural proposed in the model.

The purpose of identifying the main source of this difference, an LSD test was used, whose calculated value reached 0.002 degrees with a level of 0.05, and this indicates that there are significant differences between the categories of the subjects and the way in which the degree of importance is higher for the teaching class, followed by the degree of importance of the category researchers, and finally, the degree of importance of the agricultural extension group followed, perhaps due to the fact that the process of organizing relations is a factor that teachers know more than researchers and agricultural extension as shown in the table (4).

Approval of the communication component paragraphs between the extension centres and the proposed agricultural research

The paragraphs of the communication element between the extension centres and the proposed agricultural research, which numbered 58 paragraphs, got balanced averages ranging between

3.99- 4.60 degrees and percentage weights between 79.8-92%, and therefore all these paragraphs remain in the final form of the proposed model, And that each of them obtained a weighted average of approval degrees higher than the hypothetical mean score of 3 degrees, as shown in the table (5)

Table (3): Average weighted averages and the percentage weight of the subjects' agreement to the elements of the proposed model.

Elements	Ranking	Weighted Average			Aver. weighted averages	Weight %
		Extension Workers	Teachers	Researchers		
1. Regulation between agri. extension and research	9.5	4.16	4.42	4.49	4.36	87.2
2. Planning between agri* . extension and research	5	4.09	4.35	4.76	4.40	88
3. Implementation between agri. extension and research	12	3.96	4.32	4.45	4.24	84.8
4. evaluation between agri. extension and research	9.5	3.91	4.41	4.77	4.36	87.2
5. organization between agri. extension and agri. Education	3.5	4.13	4.58	4.58	4.43	88.6
6. planning between agri. extension and agri. Education	7.5	4.09	4.27	4.74	4.37	87.4
7. Implementation between agri. extension and Education	7.5	4.09	4.43	4.58	4.37	87.4
8. Evaluation between agri. extension and agri. .Education	9.5	4.01	4.35	4.73	4.36	87.2
9. Organization between research and agricultural Education	1	4.07	4.70	4.65	4.47	89.4
10. Planning between agri. research and agri. Education	6	4.08	4.44	4.61	4.38	87.6
11. Implementation between research and agri. education	3.5	4.08	4.50	4.70	4.43	88.6
12. The evaluation between agri. research and agri. Education	2	4.10	4.55	4.73	4.46	89.2
averages		4.06	4.44	4.65	4.39	87.7
n=85						

*****agri. = agriculture, Std. Deviation = 0.50, Std. Error of Mean = 0.05

Table (4): the directions of moral differences regarding the proposed model elements.

Categories	Agricultural Guides	Researchers	Teachers
Averages	4.06c	4.44b	4.65a

Table (5): Average weighted and percentage weight of the degree of respondents ' agreement to the paragraphs of the communication component between the extension and the research.

Elements	Paragraphs	Weighted averages					
		Ranking	Extension Workers	Researchers	Teachers	Average wt. averages	Weight %
Organization	1. Coordination to transfer the problems and needs of farmers.	1	4.45	4.55	4.80	4.60	92
	2. Coordination to transfer modern technologies	3	4.35	4.45	4.67	4.49	89.8
	3. Coordination in preparing research plans and projects.	2	4.30	4.40	4.93	4.54	90.8
	4. Coordination to conduct field experiments.	9.5	4.30	4.40	4.58	4.42	88.4
	5. Coordination in organizing field days with farmers at the local level.	44	4.20	4.35	4.07	4.20	84
	6. Coordination in organizing and developing extension bulletins	40.5	4.10	4.45	4.20	4.25	85
	7. Coordination in organizing and preparing reports and required information on extension activities	28.5	3.95	4.50	4.53	4.32	86.4
	8. Coordination of extension activities for the development of women and rural youth.	45.5	3.80	4.40	4.26	4.18	83.6
	9. The existence of a joint communication to coordinate the capabilities available to each of them to develop the rural community	18.5	4.05	4.40	4.67	4.37	87.4
	10. Among the formulas that indicate the existence of a regular mechanism of communication is the presence of organizational units in their organizational structure.	43	4.10	4.35	4.18	4.21	84.2
	11. One of the formulas indicating the existence of a regular mechanism of communication is the presence of linking the members between them	15.5	4.20	4.45	4.53	4.39	87.8
	12. Among the formulas that indicate the existence of a regular mechanism of communication is the existence of committees to coordinate between them.	25.5	4.10	4.40	4.53	4.34	86.8
	13. One of the formulas that indicate the existence of a regular mechanism of communication is the existence of periodic meetings between them	37	4.20	4.35	4.33	4.29	85.8
	Weighted averages for regulation		4.16	4.42	4.49	4.36	87.2

plan	1. Participating in setting the general strategy for all aspects of agricultural production	11.5	4.10	4.35	4.78	4.41	88.2
	2. Participation in setting agri. policies to create favorable conditions for farmers.	22	3.80	4.35	4.93	4.36	87.2
	3. Participation in setting the general framework for future plans for agricultural development in the governorate	8	4.05	4.30	4.96	4.43	88.6
	4. Participate in preparing a plan for the agri. extension training program at the governorate level.	18.5	3.95	4.40	4.76	4.37	87.4
	5. Participation in preparing a plan for the training program for rural youth and women	23.5	4.05	4.25	4.76	4.35	87
	6. participation in holding seminars and extension meetings for Agri. Extension workers	4	4.25	4.40	4.80	4.48	89.6
	7. Participation in preparing and publishing agri. topics in the local newspapers.	25.5	3.95	4.35	4.73	4.34	86.8
	8. Contributing to preparing and disseminating various agricultural programs through mass communication means.	5	4.25	4.40	4.76	4.47	89.4
	9. Contributing to holding exhibitions and agri. festivals in all agri. activities.	15.5	4.20	4.45	4.53	.394	87.8
	10. Contribute to establishing field days in farmers' fields and research centres for plantations that have proven successful.	33.5	4.10	4.25	4.56	4.30	86
	11. Holding periodic conferences between counseling and research in the field of planning and management to raise the efficiency of extension.	11.5	4.20	4.30	4.73	4.41	88.2
	12. Participation in selecting the extension leaders in the villages of the extension centres in the governorate	6.5	4.25	4.35	4.78	4.46	89.2
	Weighted averages for a plan		4.09	4.35	4.76	4.40	88
Implementation	1. Participation in preparing the requirements for implementing the extension activities.	42	3.85	4.30	4.53	4.23	84.6
	2. Participation in the implementation of extension activities according to the plan.	45.5	4.00	4.20	4.33	4.18	83.6
	3. Participation in modifying the plan in real life.	23.5	4.15	4.25	4.51	4.30	86
	4. Participation in training agri. extension agents who carry out extension activities	48	3.10	4.35	4.51	3.99	79.8
	5. Participation in training local leaders for their business or activities.	28.5	4.20	4.25	4.51	4.32	86.4
	6. Participation in identifying the requirements to implement the training process.	39	4.05	4.40	4.33	4.26	85.2
	7. Participation in diagnosing and curing problems that occur during implementation.	40.5	3.90	4.35	4.51	4.25	85
	8. Implementing joint agri. programs to disseminate generalize and use agricultural	52	4.00	4.35	4.31	4.22	84.4

	research recommendations.						
	9. Implementation of extension seminars, with the participation of the extension centres and agricultural research.	18.5	4.10	4.40	4.62	4.37	87.4
	10. .Implementation of field experiments, with the participation of the extension centres and agri. researches.	23.5	4.05	4.40	4.60	4.35	87
	11. Implementation of agri. demonstration field programs for farmers.	45.5	4.10	4.30	4.13	4.18	83.6
	12. Implementation of the joint agricultural statistical surveys	38	4.00	4.30	4.51	4.27	85.4
	Weighted averages for implementation		3.96	4.32	4.45	4.24	84.8
Evaluation	1. Participation in evaluating the general strategy for all aspects of agri. production.	6.5	3.95	4.45	4.98	4.46	89.2
	2. Participation in evaluating agri. policies to create favorable climate for farmers.	13.5	3.90	4.40	4.89	4.40	88
	3. Participation in the evaluation of the general framework for future plans for agri. development in the governorate.	33.5	3.75	4.40	4.76	4.30	86
	4. Participation in following up activities related to planning and implementing extension programs in the governorate.	9.5	3.85	4.45	4.96	4.42	88.4
	5. Participation in following up the extension work through reports and records.	30.5	3.75	4.40	4.78	4.31	86.2
	6. Participation in identifying the beneficiaries of the evaluation reports.	33.5	3.80	4.35	4.76	4.30	86
	7. Participation in setting standards for evaluation.	30.5	4.05	4.40	4.47	4.31	86.2
	8. Participation in measuring the degree of effectiveness of the guiding methods in achieving desired behavioral changes.	15.5	4.10	4.40	4.67	4.39	87.8
	9. Participation in forming a unit to analyze reports and field surveys	13.5	3.90	4.40	4.89	4.40	88
	10. Participation in the follow-up of agricultural programs by measuring the beneficiaries of these programs in the governorate.	18.5	4.00	4.40	4.71	4.37	87.4
	11. Participation in the follow-up of training extension workers through reports submitted for this purpose.	27	3.95	4.45	4.60	4.33	86.6
	Weighted averages for evaluation		3.91	4.41	4.77	4.36	87.2
	Average degrees of paragraphs		4.03	4.38	4.62	4.34	86.8

Std. Deviation = 0.61 Std. Error of Mean = 0.14

Table (5) indicated that the paragraph (Coordination to transfer the problems and needs of farmers) came in first place according to importance and percentage weight, as it achieved an average weighted averages of 4.60 degrees and a percentage weight of 92%, which is higher than the average weighted averages of the other paragraphs.

It achieved an average of weighted averages of 3.99 degrees and a percentage weight 79.8%, which is lower than the average weighted averages for the other paragraphs. This may be attributed to the fact that mentors suffer from lack of training with the scientific research apparatus.

For comparison between the categories of respondents in terms of the degree of approval of the proposed paragraphs on the communication element between extension centres and agricultural research in the model, a single variance analysis (F) was used, whose calculated value was 12.45, which exceeds its tabular value of 3.107 at the level of significance 0.05, and this indicates the existence of significant differences between the mean degrees of the respondents 'approval degrees. For the purpose of identifying the main source of this difference, the LSD test was used, whose calculated value was 0.276 score at the level of 0.05, and the class of teachers was superior to the group of researchers and agricultural extension workers as shown in the table (6).

Table (6): The trend of the significant differences regarding the paragraphs of the communication component between the extension and research centres.

Categories	Extension Workers	**Researchers**	Teachers
Averages	4.02c	4.27b	4.61a

Approval of the paragraphs of the communication component between the proposed agricultural extension and agricultural education

The 48 paragraphs of the communication component between the proposed agricultural extension and education centres have obtained weighted averages ranging between 3.98-4.58 degrees and weights of percentage between 79.6 - 91.6%. All of these paragraphs remain in the final form of the proposed model. Because each of them obtained a weighted average of approval scores higher than the hypothetical mean degrees of 3 degrees, as shown in the table (7). Table (7) indicated that the paragraph (Coordination in organizing summer training for agricultural colleges as it is one of the requirements for practical courses for developing agricultural extension workers) came in the first place, As it achieved the average weighted averages of 4.58 degrees and a percentage weight of 91.6%, which is higher than the average weighted averages for the other paragraphs, and this may be attributed to the fact that training is an important activity in human resource development as it is a tool for social and economic development. While the

Table (7): The average weighted and the percentage weight of the paragraphs of the communication component between the extension centres and the agricultural education.

Elements	Paragraphs	Weighted averages					
		Ranking	Extension Workers	Researchers	Teachers	Aver. wt. averages	Weight %
Organization	1. Coordination to prepare research results of colleges of agri. to agri. extension workers.	7.5	4.15	4.55	4.73	4.48	89.6
	2. Coordination in field surveys and data collection	42	3.90	4.45	4.53	4.29	85.8
	3. Coordination to make integrated educational programs with extension programs.	9	4.10	4.80	4.49	4.46	89.2
	4. Coordination in providing and preparing in-service training programs for agri. Extension workers.	2.5	4.25	4.85	4.62	4.57	91.4
	5. Coordination in organizing summer training for agri. colleges as it is one of the requirements for practical courses for developing agri. Extension workers.	1	4.30	4.80	4.64	4.58	91.6
	6. Coordination in the faculties of agri. to spend time working in agri. Extension.	2.5	4.30	4.75	4.67	4.57	91.4
	7. The existence of contact to coordinate joint efforts between extension organization and agri. Education in the governorate.	33.5	4.15	4.40	4.47	4.34	86.8
	8. Among the formulas that indicate the existence of a regular mechanism of communication is the presence of organizational units in their organizational structure.	10.5	4.15	4.50	4.69	4.45	89
	9. Among the formulas that indicate the existence of a regular mechanism of communication is the presence of linking members between them.	27.5	4.05	4.45	4.60	4.36	87.2
	10. Among the formulas that indicate the existence of a regular mechanism for communication is the existence of committees to coordinate between them.	43.5	4.05	4.45	4.29	4.26	85.2
	11. One of the formulas that indicate the existence of a regular mechanism of communication is the existence of periodic meetings between them.	27.5	4.00	4.40	4.69	4.36	87.2
	Weighted averages for regulation		4.13	4.58	4.58	4.43	88.6
plan	1. Participation in setting the general strategy in aspects of agricultural production.	10.5	4.05	4.35	4.96	4.45	89
	2. Participating in developing agri. policies to create favorable conditions for farmers	43.5	3.65	4.35	4.78	4.26	85.2

	3. Participating in setting the general framework for future plans for agri. development.	37.5	3.70	4.30	4.98	4.33	86.6
	4. Development of agri. extension with the help of the Faculties of Agriculture in building and designing the courses required for training extension workers	31.5	4.05	4.10	4.91	4.35	87
	5. Holding periodic conferences between them in the field of planning and management	4	4.30	4.40	4.82	4.51	90.2
	6. Conducting field visits to farms and holding training courses for farmers.	5.5	4.30	4.40	4.76	4.49	89.8
	7. Participation in identifying seminars for farmers by the College of Agriculture.	7.5	4.25	4.35	4.84	4.48	89.6
	8. Participation in identifying methods and written materials in order to communicate information to illiterate farmers.	10.5	4.30	4.40	4.64	4.45	89
	9. Contribution to the preparation and dissemination of various agricultural programs through mass communication means.	14	4.20	4.35	4.78	4.44	88.8
	10. Participation in preparing and publishing agri. topics in the local newspapers.	20.5	4.25	4.30	4.62	4.39	87.8
	11. The agri. Education system provides the extension institutions with cadres and qualifies them with pre-service training	47	4.05	4.20	4.44	4.23	84.6
	12. Participation in opening new specializations in agri. education according to the problems and needs of society.	48	3.95	3.70	4.29	3.98	79.6
	Weighted averages for a plant		4.09	4.27	4.74	4.27	87.4
Implementation	1. Participation in the implementation of the general strategy of agri. production.	24.5	4.00	4.50	4.62	4.37	87.4
	2. Participation in the implementation of agri. policies to create climate and conditions encouraging farmers.	45.5	3.80	4.50	4.44	4.25	85
	3. Participation in laying down the general framework for implementing future plans for agri. development	40.5	3.85	4.40	4.64	4.30	86
	4. Participation in preparing the requirements for implementing extension activities.	31.5	4.15	4.45	4.44	4.35	87
	5. Participation in the implementation of extension activities according to the joint plan between education and extension	24.5	4.25	4.40	4.47	4.37	87.4
	6. Participation in training Agri. Extension agents who carry out extension activities.	18.5	4.00	4.35	4.84	4.40	88
	7. Participation in training local leaders on the work	33.5	4.20	4.35	4.47	4.34	86.8
	8. Participation in determining the requirements to implement the training process.	27.5	4.25	4.30	4.53	4.36	87.2

	9. Participation in diagnosing and treating problems that arise during implementation.	20.5	4.25	4.45	4.47	4.39	87.8
	10. Implementing joint agri. programs to disseminate, generalize and use research recommendations	15.5	4.30	4.45	4.51	4.42	88.4
	11. Implementation of extension seminars with the participation of extension centres and education.	27.5	4.10	4.45	4.53	4.36	87.2
	12. Executing field experiments with the participation of extension centres and Agri. Education	17	4.05	4.50	4.67	4.41	88.2
	13. Participation in implementing the agricultural demonstration programs for farmers	20.5	4.05	4.45	4.67	4.39	87.8
	14. Implementing joint agri. statistics between extension and agricultural education.	20.5	3.95	4.40	4.82	4.39	87.8
	Weighted averages for implementation		4.09	4.43	4.58	4.37	87.4
Evaluation	1. Participation in evaluating the general strategy in aspects of agri. production.	18.5	3.90	4.35	4.96	4.40	88
	2. Participation in evaluating agri. policies to create favorable climate for farmers.	40.5	3.80	4.35	4.76	4.30	86
	3. Participation in the evaluation of framework of future plans for agri. development	15.5	3.90	4.40	4.96	4.42	88.4
	4. Participation in following up the extension work through reports and records.	5.5	4.15	4.40	4.93	4.49	89.8
	5. Participation in the evaluation of the considered plan.	24.5	4.10	4.40	4.60	4.37	87.4
	6. Participation in identifying the beneficiaries of the evaluation reports.	37.5	3.95	4.30	4.73	4.33	86.6
	7. Participation in setting standards for evaluation.	33.5	4.15	4.30	4.58	4.34	86.8
	8. Participation in measuring the degree of effectiveness of the extension methods in achieving the desired behavioral changes.	10.5	4.30	4.30	4.76	4.45	89
	9. Participation in forming a unit to analyze field reports and surveys	33.5	4.00	4.30	4.73	4.34	86.8
	10. Participation in agri. programs by measuring the beneficiaries of agri. programs.	39	4.05	4.35	4.56	4.32	86.4
	11. Participation in the follow-up of training extension workers through reports submitted for this purpose.	45.5	3.90	4.35	4.51	4.25	85
	Weighted averages for evaluation		4.10	4.35	4.73	4.36	87.2
	Average degrees of respondents' agreement with the paragraphs		4.08	4.40	4.66	4.38	87.6

Std. Deviation = 0.57 Std. Error of Mean = 0.06

paragraph (Participation in opening new specializations in agricultural education according to the problems and needs of society) ranked last as it achieved the average weighted averages of 3.98 degrees and a percentage weight 79.6%. The other may be due to the lack of sufficient teaching staff in the governorate.

In order to compare the categories of respondents in terms of the degree of approval of the proposed paragraphs on the paragraphs of the communication component between the agricultural extension centres and agricultural education in the model, a single variance analysis (F) calculated value was 12.71 which exceeds its tabular value of 3.10 at a significant level 0.05, and this indicates the existence of significant differences between the mean of the respondents' approval degrees.

The purpose of determining the main source of this difference, the LSD test was used, whose calculated value was 0.235 score at the level of 0.05. The teaching category was superior to the researchers and agricultural extension workers. This may be attributed to the fact that the process of organizing relationships is a factor that the teachers know more than the researchers and agricultural extension workers, as shown in the table (8):

Table (8): The trend of the significant differences regarding the clauses of the communication component between extension centres and agricultural education.

Categories	Extension Workers	Researchers	Teachers
Averages	4.08c	4.40b	4.65a

partic ipatio n of researchers and the teaching staff in planning research projects) came first in

Approval of the paragraphs of the proposed communication component between agricultural research and proposed agricultural education

The 42 paragraphs of the proposed element of communication between agricultural research and agricultural education have obtained weighted averages ranging between 4.18- 4.59 degrees and percentage weights located between 83.6- 91.8%. All of these paragraphs remain in the final form of the proposed model. This is because each of them obtained a weighted average of approval scores higher than the hypothetical mean, as shown in the table (9):

Table (9) indicated that the paragraph (The existence of a joint communication for the terms of importance and percentage weight, as it achieved the average weighted averages of 4.59 degrees and a percentage weight of 91.8%, which is higher than the average. Weighted averages for the other paragraphs and this may be attributed to the fact that planning is the first step that should start with preparing development programs that planned on the basis of facts and data stemming from problems and needs of concern to people. While the paragraph (Participation in conducting research in the context of economic and social

. **Table (9): Average weighted averages and percentage weight of the paragraphs of the communication component between agricultural research and agricultural education**

Elements	Paragraphs	Weighted averages					
		Ranking	Extension Workers	Researchers	Teachers	Aver. wt. averages	Weight %
Organization	1. Coordination to exchange information between them in the field of developing and transferring Agri. technologies.	27	4.05	4.45	4.69	4.40	88
	2. Coordination in the field of research topics entrusted to graduate students.	2	4.35	4.70	4.69	4.58	91.6
	3. Coordination in preparing and issuing the Agri. magazine	28.5	4.30	4.70	4.16	4.39	87.8
	4. Coordination in modifying educational curricula in Agri. college	38	4.10	4.70	4.18	4.33	86.6
	5. Coordination to maintain the definition of research results and stimulate the education process.	17.5	4.00	4.80	4.58	4.46	89.2
	6. Coordination to provide researchers and stimulate the research.	22	3.80	4.80	4.71	4.44	88.8
	7. A joint communication exists for the participation of researchers and the faculty in planning research projects.	1	4.00	4.90	4.87	4.59	91.8
	8. The existence of a joint communication to coordinate the capabilities available to each of them with each other to develop the rural community.	15	3.95	4.75	4.78	4.49	89.8
	9. Among the formulas that indicate the existence of a regular mechanism of communication is the presence of organizational units in their organizational structure.	4.5	4.20	4.70	4.76	4.55	91
	10. Among the formulas that indicate the existence of a regular mechanism of communication is the presence of linking members between them.	16	4.10	4.70	4.64	4.48	89.6
	11. One of the formulas that indicate the existence of a regular mechanism for communication is the existence of committees to coordinate between them.	8.5	4.10	4.65	4.84	4.53	90.6
	12. One of the formulas that indicate the existence of a regular mechanism for communication is the existence of periodic meetings.	17.5	3.95	4.60	4.84	4.46	89.2

	Weighted averages for regulation		4.07	4.70	4.65	4.47	89.4
plan	1. Participating in setting the general strategy in aspects of agri. production.	23	4.20	4.40	4.69	4.43	88.6
	2. Participation in setting agricultural policies to create climate and conditions encouraging farmers.	33.5	4.05	4.40	4.67	4.37	87.4
	3. Participating in setting the general framework for future plans for agricultural development in the governorate.	33.5	4.05	4.40	4.71	4.37	87.2
	4. Participating in identifying sources of agri. information and data in the governorate.	35.5	4.00	4.40	4.49	4.36	90.2
	5- The education will provide the research institutions with staff and qualify them with pre-service training.	12.5	4.20	4.50	4.82	4.51	89
	6. Participating in the continuous updating of academic courses.	20.5	4.05	4.60	4,71	4.45	87.6
	7. Participate in the integrated scientific, intellectual and personal preparation of a faculty member and a creative researcher in accordance with international specifications.	31.5	4.00	4.45	4.69	4.38	85.4
	8. Holding periodic joint conferences in the field of planning and management to raise the efficiency of agriculture.	41	4.10	4.40	4.31	4.27	88.4
	9. Conducting joint visits to some farmers among the faculty and agri. research staff.	24.5	4.15	4.45	4.67	4.42	88
	10. Participating in conducting research in the context of economic, social and scientific development.	42	3.90	4.35	4.29	4.18	83.6
	Weighted averages for a plant		4.08	4.44	4.61	4.38	87.6
Implementation	1. Participation in the implementation of the general strategy in aspects of agri. production	37	4.05	4.45	4.56	4.35	87
	2. Participation in the implementation of agri. policies to create climate and conditions encouraging farmers.	39	3.95	4.45	4.53	4.31	86.2
	3. Participation in the implementation of the general framework for future plans for agricultural development.	40	4.00	4.45	4.42	4.29	85.8
	4. Participating in implementing the training of research cadres during employment service in the governorate.	6.5	4.20	4.50	4.93	4.54	90.8
	5. Participate in the implementation of periodic conferences in the field of planning	11	4.05	4.55	4.96	4.52	90.4

	6. Participation in preparing the requirements for implementing research activities.	4.5	4.15	4.55	4.96	4.55	91
	7. Participation in the implementation of the confirmatory experiments jointly between research and education.	31.5	4.15	4.55	4.44	4.38	87.6
	8. Participation in determining the requirements necessary to implement the research process.	12.5	4.10	4.50	4.93	4.51	90.2
	9. Participation in treating problems that occur during the research process.	28.5	4.10	4.50	4.56	4.39	87.8
	Weighted averages for implementation		4.08	4.50	4.70	4.43	88.6
Evaluation	1. Participation in evaluating the general strategy in aspects of agri. production.	3	4.20	4.55	4.92	4.56	91.2
	2. Participation in the evaluation of agricultural policies to create climate and conditions encouraging farmers.	8.5	4.10	4.50	4.76	4.53	90.6
	3. Participation in the evaluation of the general framework for future plans for agricultural development.	17.5	4.05	4.50	4.84	4.46	89.2
	4. Participation in evaluating the training of research cadres during job service in the governorate.	20.5	4.10	4.55	4.69	4.45	89
	5. Participation in the periodic calendar of conferences in the field of planning and management to raise agri. efficiency.	14	4.05	4.60	4.86	4.5	90
	6. Participation in preparing the requirements for the evaluation of research activities.	26	4.05	4.50	4.69	4.41	88.2
	7. Participation in evaluating affirmative experiences jointly between agricultural research and education.	6.5	4.20	4.50	4.91	4.54	90.8
	8. Participation in determining the necessary needs to evaluate the research process.	24.5	4.15	4.50	4.60	4.42	88.4
	9. Participation in identifying the beneficiaries of the evaluation reports.	28.5	4.00	4.60	4.56	4.39	87.8
	10. Participation in setting standards for evaluation.	35.5	4.05	4.60	4.44	4.36	87.2
	11. Participation in forming a unit to analyze field reports	8.5	4.20	4.60	4.78	4.53	90.6
	Weighted averages for evaluation		4.10	4.55	4.73	4.46	89.2
	Average degrees of respondents' agreement with the paragraphs		4.08	4.55	4.67	4.43	88.6

Std. Deviation = 0. 0.58 Std. Error of Mean = 0.06

development and Scientific), the last ranking according to importance and percentage weight, as it achieved the average of weighted averages of 4.18 degrees and a percentage weight 83.6%, which is lower than the average of weighted averages for the other paragraphs, perhaps due to the lack of material resources necessary to conduct agricultural research in the governorate. For the sake of comparison between the categories of respondents in terms of the degree of approval of the proposed paragraphs on the paragraphs of the communication component between agricultural research and agricultural education in the model, a single (F) analysis of variance was used, whose calculated value was 12.45 which exceeds its tabular value of 3.10 at a significant level 0.05 and this indicates the existence of significant differences between the means of the respondents' approval degrees.

For the purpose of determining the main source of this difference, the LSD test was used, whose calculated value was 0.235 at a level of 0.05. The class of teachers was superior to the agricultural extension group, while there were no significant differences between the teachers and researchers due to the difference being the result. The average degree between the two mentioned categories is less than the calculated value, as shown in the table (10):

Table (10): The trend of the significant differences regarding the paragraphs of the communication component between agricultural research and agricultural education.

Categories	Extension Workers	Researchers	Teachers
Averages	4.08b	4.55a	4.67a

Conclusions:

1. The low level of performance of organizing relationships among agricultural extension, research and educational institutions in Sulaymani Governorate and its weak effectiveness, which is reflected in the performance of the respondents, and then the agricultural organization negatively.

2. The results of the study showed that the element (organization between agricultural research and agricultural education) ranks first, this may be attributed to the fact that there is some kind of coordination between the teachers and researchers in doing their joint research in the fields, while the component (implementation between agricultural extension and research) was ranked last according to importance, and the reason for this may be attributed to the lack of available capabilities to cover implementation expenses .

3. The results of the study showed that the paragraph (joint coordination to transfer the problems and needs of farmers) came in first perhaps due to the fact that coordination leads to rapid transfer of technologies and results of agricultural research that are applicable to farmers, while the paragraph (Participation in opening new specializations in agricultural education according to the problems and needs of the community) achieved the last

arrangement, and this may be due to the lack of sufficient teaching staff in the Governorate.

4. The respondents 'agreement on the elements of the proposed model for organizing relations among the studied institutions expresses its suitability for the conditions of agricultural work in the Kurdistan Region of Iraq.

Recommendations and suggestions

1. The application of the proposed model to regulate the relationships among agricultural extension, research and educational institutions by the Ministry of Agriculture in the Kurdistan Region of Iraq in order to identify its effectiveness and practicality.

2. Conducting studies and research dealing with agricultural work in the Kurdistan Region in other areas in terms of organization.

3. Conducting more detailed research on the proposed model and its components, each component was taken separately.

4. Making use of the elements and fields used in this research to conduct similar studies in other fields.

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أنموذج مقترح لتنظيم العلاقات بين المؤسسات الارشادية والبحثية والتعليمية الزراعية في محافظة السليمانية

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قسم الادارة والتنمية الريفية، كلية الهندسة الزراعية، جامعة السليمانية، العراق

المستخلص :استهدف البحث مقترح لتنظيم العلاقات بين المؤسسات الارشادية والبحثية والتعليمية الزراعية في محافظة السليمانية، من خلال تشخيص المتغيرات الشخصية للمبحوثين، والتعرف على واقع تنظيم العلاقات بين تلك المؤسسات وصولاً إلى اعداد أنموذج مقترح لتنظيم العلاقات بينهم. وقد شمل مجتمع البحث التنظيمات الزراعية المتمثلة بـ(مديرية الارشاد الزراعي، مديرية البحوث الزراعية، الكليات والمعاهد الزراعية)، وقد اختيرت عينة عشوائية طبقية تناسبية بنسبة (15%) من كافة التنظيمات وبذلك يكون مجموع افراد عينة البحث (85) مبحوثاً. تم أعداد الأنموذج المقترح وفق الاجراءات الآتية :الأدبيات والنماذج، ملاحظات الخبراء، مراجعة البحوث والمقالات، القيام بزيارات ميدانية ،الوثائق والسجلات . وعلى ضوء ذلك تم وضع 3 عناصر و12 مجالاً و168 فقرة كونت مجموعها الصيغة الاولية للأنموذج. عرض الانموذج بشكله الاولي على مجموعة من الخبراء في مجال الارشاد الزراعي والادارة وبعد الاخذ بملاحظاتهم اصبح النموذج يتضمن 3 عناصر و12 مجالاً و148 فقرة، وعرض الانموذج بعد اجراء التعديلات عليه على افراد عينة البحث لبيان مدى موافقتهم عليها. وتوصل البحث الى عدم وجود عملية التنظيم العلاقات بين المؤسسات المدروسة، وكذلك موافقة جميع المبحوثين على فقرات الانموذج المقترح ،والتوصية بتطبيقه في واقع عمل الزراعي في المحافظة السليمانية

الكلمات المفتاحية: مراكز التعليم الزراعي ، مراكز البحوث الزراعية، تنظيم الارشاد الزراعي