

## **Building a model to evaluation the total quality in agricultural extension work in agriculture directorate /Nineveh Governorate**

### **بناء أنموذج لتقويم الجودة الشاملة في العمل الإرشادي الزراعي في مديرية الزراعة / محافظة نينوى**

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#### **Abstract**

The research aims to identify the basis of evaluating the quality of agricultural extension process in Nineveh governorate, identify the evaluate level for performance quality of agricultural staff in general ,identify conditions for quality improvement of agricultural extensional process , identify the difficulties which limit the application agricultural extensional process quality in Nineveh Governorate , and to identify the differences in the evaluation level according to each variable, the research included (151) employee with (50 % ) from the total number of employees in the directorate , data were collected through questionnaire consists of (4) parts The first is consists of some personal variables, the second part consists of criteria of quality performance , which consists of scaled digital scale of (38) item .the third part consist of (7) conditions of quality improvement , the fourth part consists of (5) item related with difficulties which limit the application performance quality , , data were analyzed by using mean ,Kruskal wallis, Man - Wittny . The results showed that the criteria which ranked the first is Computer recruitment in transfer of agriculture innovations among staff and to the farmers, and the evaluation level of agricultural extensional performance quality of the staff in the agricultural branches is medium trend to high in general ,the most conditions of quality improvement are: encourage the real communication and group work. The most difficulties which limit the application agricultural extensional quality are : lack of sufficient physical support, the inability to repair broken devices, there was a significant difference between evaluation level of extensional process quality according to variable period of previous training

**Keywords:** Quality of agricultural extension work , total quality , model of evaluation .

#### **المخلص :**

تتلخص اهم اهداف البحث في التعرف على اسس تقويم جودة العملية الإرشادية الزراعية في محافظة نينوى ، والتعرف على مستوى التقويم لجودة اداء الموظفين الزراعيين بشكل عام ، كذلك التعرف على شروط تحسين الجودة للعملية الإرشادية الزراعية كذلك التعرف على الصعوبات التي تحد من تطبيق جودة العملية الإرشادية الزراعية في محافظة نينوى، كذلك تحديد الاختلافات في مستوى التقويم لجودة العملية الإرشادية وبعض المتغيرات الخاصة بالموظفين كذلك . شمل البحث ( 151 ) موظف يمثلون (50) % من عدد الموظفين في الشعب الزراعية التابعة لمديرية الزراعة ، تم جمع البيانات بواسطة استمارة استبيان تكونت من اربعة اجزاء : الاول متغيرات شخصية ، والثاني معايير تطبيق الجودة والمتكون من مقياس تقدير رقمي متدرج مكون من (38) فقرة ، اما الجزء الثالث فيتكون من (7) متطلبات تحسين الجودة والجزء الرابع فتكون من ( 5 ) فقرة خاصة بالصعوبات التي تحد من تطبيق جودة الاداء للموظفين الزراعيين ، تم استخدام المتوسط الحسابي واختبار كروسكال والس واختبار مان وتني لتحليل البيانات وأهم النتائج التي ظهرت ان المعيار الذي احتل المرتبة الأولى من معايير جودة الأداء الوظيفي هو توظيف الكمبيوتر في نقل المبتكرات الزراعية بين الموظفين الزراعيين والى الفلاحين ، وان مستوى التقويم بشكل عام لأداء

الموظفين الزراعيين هو متوسط يميل للارتفاع , وان اهم شروط تحسين الجودة لعملية الارشاد الزراعي هي تشجيع الاتصال الحقيقي الفعال والعمل الجماعي, وان اهم الصعوبات التي تحد من تطبيق جودة اداء الموظفين هي عدم وجود دعم مادي كافي وعدم امكانية تصليح الاجهزة المتعطلة. كذلك تبين وجود اختلافات معنوية في مستوى التقويم لجودة العملية الارشادية باختلاف مدة التدريب السابق.

الكلمات المفتاحية : جودة العمل الارشادي الزراعي ، الجودة الشاملة ، انموذج التقويم .

### **Introduction and research problem**

Rural community development plants have a great interest to international institutions and governments of countries especially in developing countries , This is due to belief that , these countries including Iraq that the trend toward development is foundation of the development of community as hole [ 1 ] one of the controversial matters today is how the evaluation power tends to change behavior could be affected by care and corroboration . Many evaluators requesting to make an irrational search for quality and a contemptuous talk about corroboration and advancement , so evaluators may extremely think about some topics and dedicate with them in their works [ 2 ] , but measuring the impact of program with evaluating its effectiveness on the aim groups and the evaluation process take many ways to be implemented of different times frames either through implementation or after completion an agricultural extensional program. [3] the training is very important to the members of any institute to performance his job correctly although having many information and skills [4] it is important to evaluate the trainers from time to time but many trainers consider that is not important[5] but it help to improve the performance of the trainers and if we apply quality in any institution , this will enhance the reputation of the institution and increase the competitiveness of the global and consumer protection and reduce cost , and this will only be achieved through application of comprehensive to various quality control technique [6] Successful implementation of total quality management requires consistent efforts from all members of the institution , whether educational , agricultural or industrial ... , and have coordinated objectives [7] ,many studies have matters of evaluation including : study [8] agricultural training programs were implemented and aimed at describing problems related to evaluation of extension program , importance of evaluating from the point of view of trainees, the most important problems have been identified : shorting the evaluation time for the training project , lack of tools used in the evaluation , and showed that ( 75 % ) of the trainees stressed the need to evaluate the extension programs , also study [9] was found in his assessment of vocational training at the Nineveh Center for agricultural and training more than ( 80 % ) of trainees evaluation for training for the medium tends to high , there were no significant differences according to the academic qualification , the extent of their employment , and previous training. In addition [10] evaluated the training courses for agricultural extension workers in Duhok governorate, the results show that there were no significant differences in the level of training and the academic qualification of the extent of their extension service , their previous training .

It is possible to identify the success of staff in the tasks assigned to them in the extension and research through the current research to achieve full interaction between staff in agricultural branches and teachers in the collage of agriculture and farmers , to achieve continuous improvement , as well as a few previous studies in this area , in spite of spread of training units in most institutes there is a lack of studies conducted to evaluate the activities , services and program provided ,also study [11] include of criteria and fields to measure the training evaluation and met of each criteria digital scale it measured the degree of investigation the efficiency in training , also to determine the difficulties which limit

employees job and suggestions to development the vocational agricultural job ,the most important results , also study of :Abbas and Ghada [12] these period studies were used to prepared the research questionnaire and building it .

### **Research objectives**

- 1- To identify the basis for evaluating the quality of agricultural extension process in Nineveh governorate.
- 2- To identify the evaluation level for performance quality of agricultural staff in general.
- 3- Identify the conditions for improving the quality of agricultural extension process.
- 4- Identify the difficulties that limit the application of quality to agricultural extension function.
- 5- To identify the differences in the evaluation of performance of agricultural staff according to each variable of the staff:(age ,specialization ,period of previous training ,duration of actual work in extension work ,educational level , the sex ).

### **Research Hypothesis:**

There are no significant differences in agricultural employee's performance evaluation level according to each of variables : age ,specialization ,period of previous training ,duration of actual work in extension work ,educational level , and the sex.

### **procedural definitions:**

- 1- Total quality implementation :follow all right instruments and procedures in implementation agricultural extensional work .
- 2- Conditions of quality improvement : are the requirements to be provided to improve agricultural employee's performance in Nineveh agriculture directorate .

### **Research methodology**

The research was conducted in the period (august 2018 - April 2019) .

**Research community** consist of all the agricultural employees in Nineveh agriculture directorate which were (301)\* employee, from type proportional class random sample [13] it is using when taking the same ratio from each class and the same it from the society of research then was taken with percentage (50%) consists of (153) employee, as shown in table (1) ( two questionnaires were excluded because incompleteness there answers and to collection the data ,therefore the research sample became at finally (151)employee. questionnaire has been prepared with four parts: the first one consist of personal , vocational and social variables concerned with agriculture staff, the second one is rating scale consisted of (38) item related with quality criteria, for every item three alternatives [ completely applicable partially applicable, not applicable] equivalent weights 3,2,1 respectively.

Table 1 :The Research community and its sample

F	Agri. Branches	Research community	Sample 50%
1.	Brunch of Agri. Extension	21	11
2.	Brunch of Plant protect	37	19
3.	Brunch of seeds production	25	13
4.	Management of water resources	123	62
5.	Brunch of Plant production	49	25
6.	Anima production	46	23
	Total Summation	301	153

One of the alternatives is selected by the employee, the summation of degrees of employee is the degree of employee performance to quality criteria, and the summation of all items for all criteria for all employees is the functional performance quality which has been divided into three categories according to theoretical range and the length of the class, the actual range is ranged (49 – 114) and the theoretical range is ranged (38 – 114) degree.

There are five criteria in the first criteria to measure the quality is measurement and evaluation consist of (10) items related with the followed strategy by the employee in evaluation and measurement farmers’ performance after done the agriculture extensional recommendations. The second criteria; computer recruitment in agriculture techniques and innovations transfer among employee to the farmers, consisted of (5) items related with directing computer usage in agricultural education. Third criteria, using advanced methods to explain the modern to techniques of agriculture consisted of (5) items related with follow the modern methods and advanced in techniques transfer.

Fourth criteria employees share in to the different activities out of the directorate (as giving lectures, attend conference, seminars, courses into and out Iraq) Consisted of “7” items, fifth criteria meet the beneficiaries needs (farmers’) auditors to the directorate, consisted of “10” items.

Then them we arranged all items which included the criteria according to their means.

**The third part** of (7) conditions to applied the quality in agricultural instructions, each of these conditions determined by two alternative meet of each condition (agree, not agree), it has been assigned grades (2, 1) respectively, the values were about (1-14).

**The Forth part** of questionnaire is the difficulties which limits from implementation of functional performance quality in directorate, consisted of rating scale of (5) item, against each one ( very big ,big ,medium, few, very few) equivalent weights (5 , 4 , 3 , 2 , 1) respectively, one of the alternatives selected by employee, the summation of degrees of all employees is the degree of employees’ difficulties which limit from implementation, the theoretical range is ranged (5-25) degree, then arranged according to their means, then after take notes from the tribunals and experts in this field, conducted modification and the level of acceptance was determined with percentage (86.65%) . The questionnaire was applied on a primary sample consisted of (30) employee (out of the final research sample)then verifiable validity and the reliability by Cronbach Alpha of the second part of the questionnaire it was (0.91), while the reliability of the third part (0.87),the fourth part was(0.77) ,due to the questionnaire is good and we can depended on it in data collection, statistical tools which used in statistical analysis: Man-Wittny, Kruskal-Wallis, mean, frequency.

**Results and discussion**

**First:** Identify the basis for evaluation the quality of agricultural extension process in Nineveh governorate.

There are several divisions to quality criteria such as: the degree or order or highest number or lowest number or as appropriate (12), while in the current search the basis of evaluation the quality of agricultural extensional process by put five criteria and arranged according to mean ,as shown in table 2 :

Table 2: shows the order of the performance quality of agricultural extensional functional performance and their items

<i>The criteria and their items</i>	Mean	Order
<i>The first criteria: Computer recruitment in transfer of agriculture innovations among staff and to the farmers.</i>		
1. Using of data projector “Data show” in view the results of seminar.	2.417	1
2. Using power paint program in submit the lecture.	2.404	2
3. Using the internet in support the agricultural techniques researches.	2.357	3
4. Encourage the farmers in using the internet to again the information.	2.311	4
5. Using the developed statistical programs in analysis the agriculture data.	2.238	5
6. Using micro media programs in submit film in the lecture.	2.161	6

Mean=2.314

St. Dev. =0.09

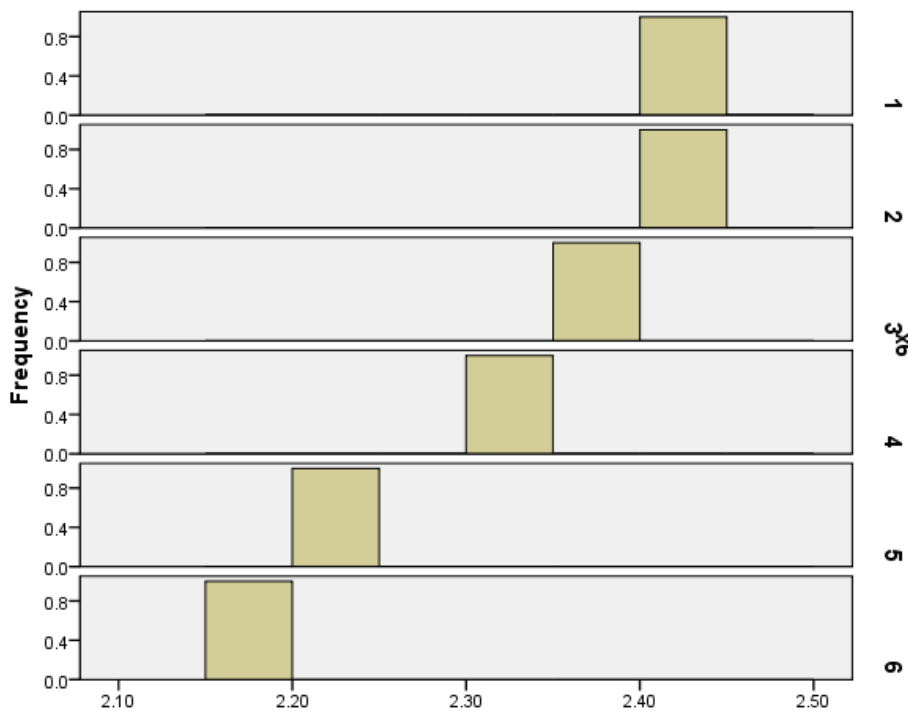


Fig. (1) Shows the order items of the first criteria

<i>The criteria and their items</i>	Mean	Order
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***The second criteria: Using advanced methods to explain the modern techniques to the farmer***

<i>1. Application of mutual discussion style instead of the traditional lecture.</i>	2.311	1
<i>2. Taking regular notice from the farmers during the feedback.</i>	2.291	2
<i>3. Prepared training courses constantly and training the farmers on the techniques.</i>	2.264	3
<i>4. Concerned on local leadership and the elders in the district to facilities of diffusion of techniques.</i>	2.006	4
<i>5. Submit the material support to the featured farmers to encourage the rest to the applying.</i>	1.993	5

Mean=2.173

St. Dev. = 0.142

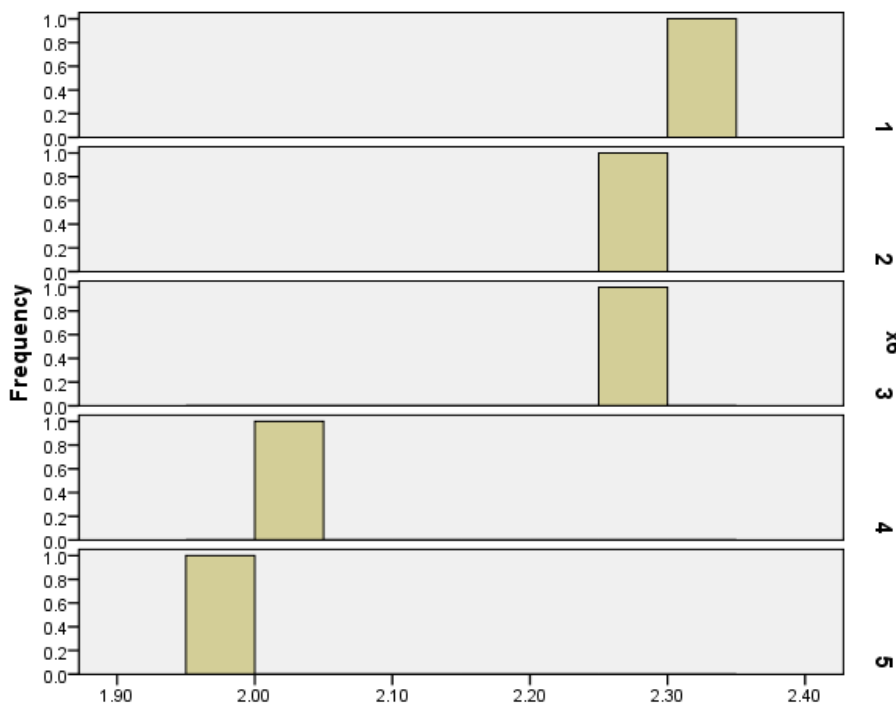


Fig .(2) shows the order items of the second criteria

<i>The criteria and their items</i>	<b>Mean</b>	<b>Order</b>
<i>The third criteria :Measurement and evaluation</i>		
<i>1. Recording the farmers’ problems that appear after application.</i>	2.377	1
<i>2. the continuity of the means used in the evaluation</i>	2.351	2
<i>3. Prepared feedback tested constantly</i>	2.251	3
<i>4. Cultivation of mental skills by encouraging them to experiment and apply some modern techniques.</i>	2.245	4
<i>5. focus the test of how much benefits on intellectual skills</i>	2.22	5
<i>6. Install the notes on Farmer's performance and progress</i>	2.109	6
<i>7. Helping farmers to making their decisions with him selves</i>	2.06	7
<i>8. Writing report about farmer’s performance.</i>	2.04	8
<i>9. Concerning the questions which directed to the farmers on actual skills.</i>	2.02	9
<i>10. Measuring the laboratory skills which given to the farmers.</i>	2.01	10

Mean=2.168

St. Dev. =0.13

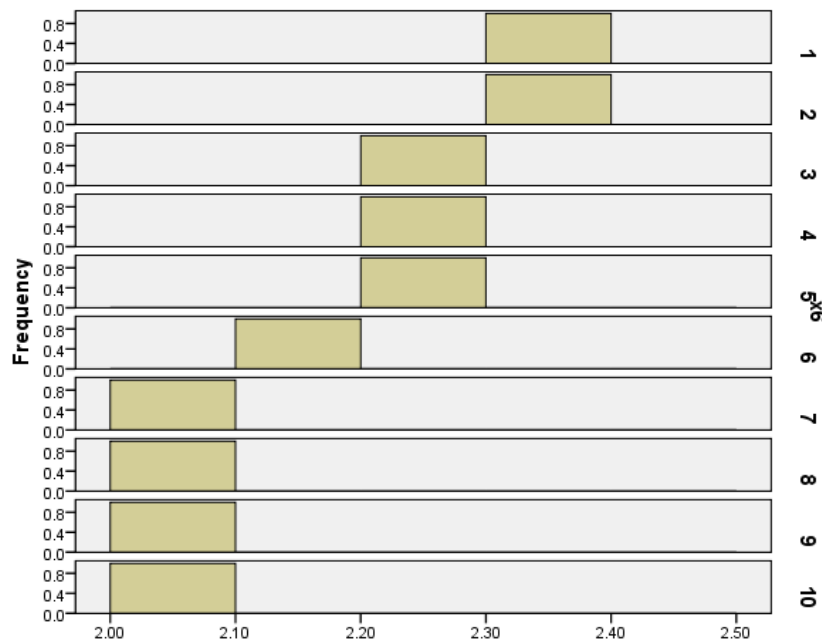
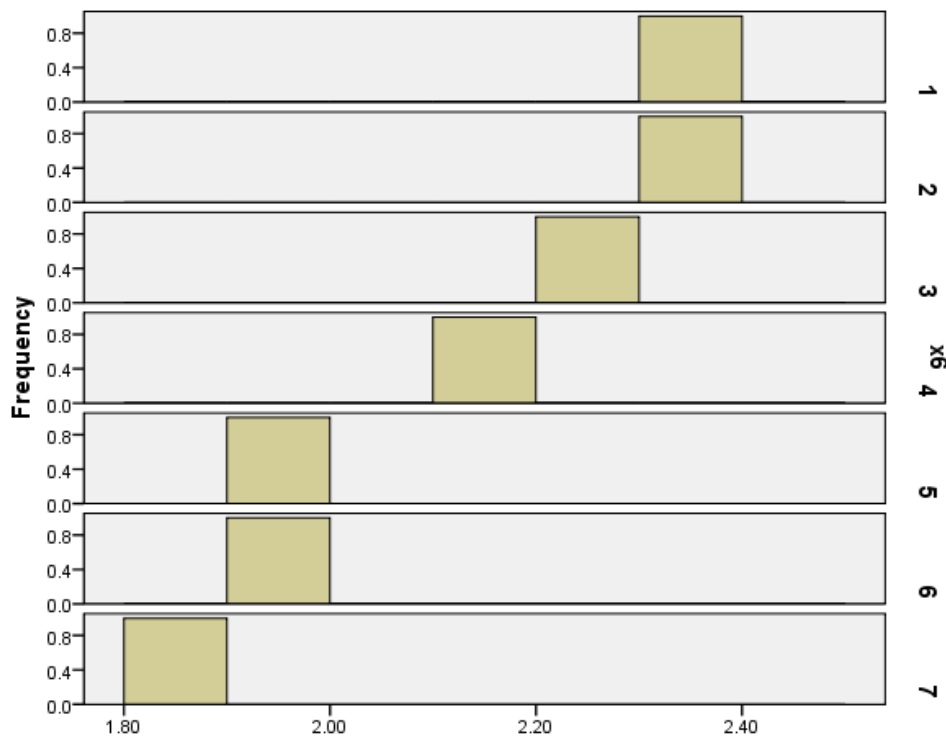


Fig. (3) Shows the order items of the third criteria

<i>The criteria and their items</i>	<b>Mean</b>	<b>Order</b>
<i>The fourth criteria : share of the staff in different activities out of the branches</i>		
<i>1. Doing joint research with teachers from agriculture</i>	2.344	1
<i>2. Continue to use the evaluation methods.</i>	2.317	2
<i>3. Doing area visits constantly to the rural district.</i>	2.231	3
<i>4. Participation in scientific seminars and conference field.</i>	2.112	4
<i>5. Prepared the plans of different works.</i>	1.953	5
<i>6. Diffusion the results of researches and articles in age. Magazines and bulletins.</i>	1.920	6
<i>7. Writing the books in the specialty area.</i>	1.834	7

*Mean=2.101*

*St. Dev.=0.18*



*Fig. (4) Shows the order items of the fourth criteria*



<b>The fifth criteria: Meeting the need of farmer’s beneficiaries’ auditors to the branches.</b>		
1. Achieving quality in design of statistical and laboratory experiments	2.092	1
2. Prepare feedback tests constantly.	2.059	2
3. Helping farmers to making decisions with him selves.	2.046	3.5
4. Dealing with farmers simply.	2.046	3.5
5. Extension the farmers socially, psychology, add to agriculture matters.	2.019	5
6. Helping farmers to investigation the educational motivation.	2.013	6
7. Submit the results of research simply.	2.013	7
8. Submit the results of research flexibility.	1.993	8
9. Giving the chances to farmers to practice activities.	1.953	9
10. Encourage the farmers to practice their rights and individuality.	1.801	10

Mean=2.003

St. Dev.=0.07

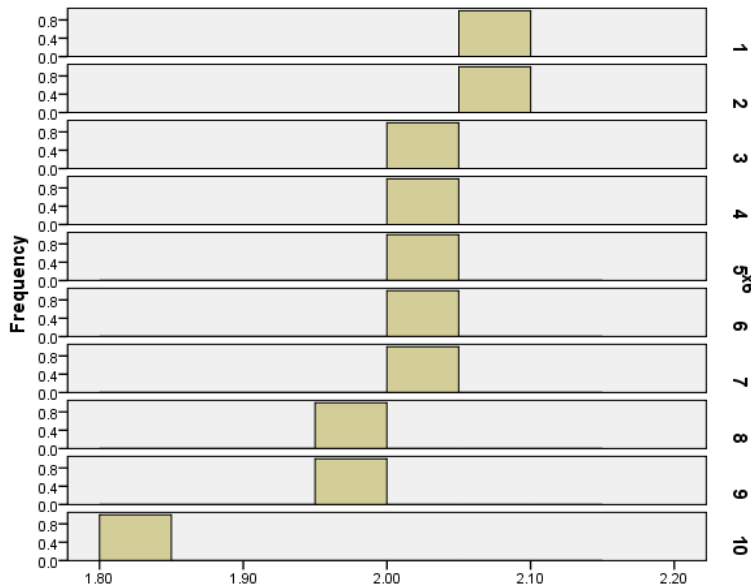


Fig. (5) Shows the order items of the fifth criteria

**The second: Identify the level of evaluating the quality of agriculture extension process in Nineveh governorate in general:** The functional performance quality was measured by summation the degrees the items for all the criteria and all the employees. Then, it divided into three categories according to theoretical range.

Table 3: Categories of functional performance quality to the staff in Nineveh agriculture director.

Categories	Frequency	%
<i>Few (38 – 62) degree</i>	21	13.9
<i>Medium (63 – 88) degree</i>	74	49.0
<i>Large (89 – 114) degree</i>	56	37.0
<i>Sum</i>	151	100

Max=114 less=40 Mean=81.079 Standard Deviation =14.267

This result due to the performance of employees was very good in general, this result agreement with result of study of (AL- Natasha, 2009)

**The third: Identify the conditions for improving the quality of agricultural extension process. As shown in the table (4).**

Table 4: The conditions for improving the quality of agricultural extension process.

Conditions for improving the quality of <i>agricultural extension Process</i>	Mean	Rank
<i>Encourage real communication and group work</i>	1.9	1
<i>Development clear objectives related with quality improvement.</i>	1.7	2
<i>Technology and scientific planning.</i>	1.6	3
<i>Participate with vocational associations and organizations.</i>	1.3	4.5
<i>Encourage on the initiative.</i>	1.3	4.5
<i>Continuing improvement related with tools and devices.</i>	1.2	6
<i>Focus on the beneficiary.</i>	1.0	7

As shown at table (4) that the maximum mean in the condition is to Encourage real communication and group work; Development clear objectives related with quality improvement, that due to this conditions are very necessary preparation the appropriate climate for application.

**The fourth: Identify the difficulties that limit the application of quality to agricultural extension function:** The difficulties were known and arranged according to mean as shown in the table (5).

Table 5: Shows the difficulties.

The Difficulties	Mean	Rank
<i>Lack of sufficient physical support.</i>	4.81	1
<i>In ability to repair broken devices.</i>	4.62	2
<i>Not available the laboratory and chemical materials.</i>	4.12	3
<i>Difficult the transfer from place to place.</i>	3.70	4
<i>Not available the suitable places to technical tests.</i>	3.21	5

**The fifth: To identify the differences in the evaluation of performance of agricultural staff according to each variable of the staff as shown in table (6):**

Table 6: the differences in evaluation the agricultural performance according to some variables.

<i>variable</i>	<b>Number</b>	<b>%</b>	<b>Median</b>	<b>Average rank</b>	<b>Calculated H</b>	<b>Calculated Z</b>	<b>P -Value</b>
<b>Age</b>							
(27-36) years <i>small</i>	78	52	5	80	4.83	_____	0.48
(37-46) years <i>Medium</i>	43	28	4	72			
(47-56) years <i>Large</i>	30	20	4	69			
<b>Specialization</b>							
<i>Agriculture extension</i>	10	6.62	3	51	2.17	_____	0.43
<i>Plant protect</i>	19	12.58	5	68			
<i>Seeds</i>	12	7.94	5	62			
<i>Management of water resources</i>	62	41.05	4	58			
<i>Planet production</i>	25	16.55	3	55			
<i>Animal production</i>	23	15.23	4	62			
<b>Period of previous Training</b>							
(1-15) months	27	17.88	3	51	8.97 *	_____	0.0381
(16-31) months	58	38.41	4	57			
(32-47) months	66	43.70	5	62			
<b>Duration of actual work in Extension work</b>							
(5-19) months	30	19.86	5	55	6.11	_____	0.76
(20-34) months	40	26.49	5	51			
(35 and more) months	81	53.64	3	43			
<b>Educational Level</b>							
<i>Diploma</i>	18	11.92	3	67	0.56	_____	0.25
<i>College</i>	80	52.98	4	59			
<i>Master</i>	38	25.16	3	42			
<i>PhD</i>	15	9.93	3	45			
<b>The Sex</b>							
<i>Male</i>	85	56	4	55	_____	0.781	0.33
<i>Female</i>	66	44	5	69			

\* Significant at level 5 %

As shown in table (6) : There are significant differences in the evaluation level of performance quality of agriculture staff according to period of previous training appeared significant differences in the evaluation of performance of agriculture staff according to this variable, with using Kruskal-wallis test, the value of calculated [H] is [8.97] which significant at [5%] level, this indicates to the necessary of enjoy the staff with training courses and increases the period of training due to increase an experience staff, Then, apply in their duty. This result different with research hypothesis this result disagreement with the study of (Al-Naqash, 2009) and study of (Al-Abbasi and others, 2013), while there aren't significant differences at [5%] in evaluation level of performance quality according to each of: to the age, specialization, duration of actual work, education level and the sex. (And these results agreement with research hypothesis).

### **Conclusions:**

1. It is clear from the result of the research the criteria of computer recruitment in transfer of agriculture innovations among staff and to the farmers obtained the first rank; we conclude that the employs in the branches using activity techniques to transfer and reach information among them and reach it to the farmers during performance their tasks. and the last rank of criteria is Meeting the need of farmers beneficiaries' auditors to the branches due to they should enjoy training courses in this field and work more to meeting farmer's needs.
2. The level of evaluating the quality of agriculture extension process is good, we conclude that the employees are components and able to deliver information to the farmers.
3. We should focus on period of previous training to the agricultural employees as an important variable to increase or to improve the quality of agriculture performance.
4. The variables: Age, educational level, the sex; play a weak role in the improve the quality of agriculture extension performance.

### **Recommendation:**

1. Establishment a special unit in each of the agriculture branches followed to the directorate under name training and academic development unit to improve the quality in these branches.
2. Encourage the real communication and group work.
3. Development clear objectives related with quality improvement.
- 4- Organization of extensional activities (seminars, training courses.)To define about total quality important as an essential element to improve the agri. Extension work.

\* **Source: Nineveh Agri. directorate / planning division (2018 – 2019)**

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