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Environmental Facters Effective Face Planning Program Of Diffusion And Adopion Process Of Invoation And Agriculural Technologies

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Abstract: *The research aims to determine the effective environmental factors in planning program in diffusion of Agricultural technologies that provided by ministry of agriculture and describing classification of using standers from the point of view of specialists, academics, and Workers in the Agriculture College in Baghdad and other Agricultural Research Services. Data were collected from a random sample of 30 specialists in the production, diffusion and adoption of agricultural technologies. A questionnaire was prepared for this purpose consisting of three parts and the reality of the use of agricultural technologies was described by a three-level scale and 13 agricultural technologies were identified planted by the Ministry of Agricultureand the last section was identified 17 factors of the environmental factors affecting the dissemination and adoption of them distributed in three axes. These axes include Factors related to the external environment of the extension system,characteristics of individuals in the community environment, and factors related to the characteristics of agricultural technologies. The results showed that 93% of the sample indicated that their participation in the production, diffusion and adoption of agricultural technologies was weak.The results showed that the highest frequency (numerical value) of the effect of environmental factors in the diffusion and adoption of agricultural technologies was 8.8 in the axis of external environmental factors of the extension system, 6.2 in the focus of characteristics of individuals targeted in the community environment, and 7.4 In the axis of factors related to the characteristics of technology.The highest correlation between the environmental factors and total agricultural technolo.gies was 0.918 in the technical efficiency factor of the extension workers,the lowest correlation value of 0.653 in the agricultural experience factor of the target farmers. The research recommends the formation of working committees at specific levels of specialists in the director of Agricultural Research and academics Agriculture college , this high committee must have the power , guidance to blead and face and resolve the effectiveness of environmental factors affecting the process of diffusion and adoption.In addition, changing the traditional strategies that used currently to the strategy of developing extension education as a means to solve the problems of modern technology transfer.*

Keyword: *environmental, planning, diffusion, Innovation*

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I. Introduction

The modern technique is defined as an idea or a practice of materialistic thing or a new change in view of an individual or group.The modern innovations techniques are crossed to the used techniques that led to the improvement of productivity efficiency via revenue increase or cost reduction or products quality promotion or work performance facilitation in respect of effort , time or any other aspects planned for , taking into consideration the targeted society individuals. Many techniques used in the agriculture in the 3rd world countries are decrease or they are not suited to the conditions of farmer or they resulted into dispersing the farmer and immigration from countryside to the city.(1,6).The problems in the developing countries got increased owing to the reduction of lands suitable for agriculture , along with the weakness of the farmer to solve the problems that resulted into placing new means of agricultural research and building creation knowledge based on the transfer of information from the research centre to the farmer (2,10,17).The process of diffusion the techniques is considered one process of multi- one starting with the individual's awareness of the problem or needs , then searching for solution for that problems , and as a result , the decision will be taken to solve that problem . based on that , there will be a planned program for diffusion the agricultural techniques[18,20] that could be defined as a type or diffusion the modern innovations among social system individuals. The process of taking the decisions to adopt modern techniques is affected by many factors , most importantly [3,19]:

1.Persobal factors (individuals aspects) that include their social characteristics , age , education, health , individual membership in the social organizations. 2.Social factors (organization characteristics) include type of local society and social prestige, family and relatives.3.Economic factors (technique characteristics) that include agricultural income , size of farm , type of agricultural ownership and level of living. Of what has been mentioned above of effective factors upon adopting modern techniques lead us to search to what extent the instructive activities being active for being most important developmental activities in developing the agricultural sector , The process of diffusion of the modern agricultural updates consists of [18]: innovation, communication channels, social system and time. The activity 's totality ofthe process of diffusion is the curve of diffusion that is similar to the letter (S)and that represents as an X axis of time and (Y) axis represents a number of those using thoughts, knowledge and ideas . In this respect, Robiston indicated that there is life cycle of modernized thoughts , confirming that there is an stage of decline in the curve of diffusion and that occurred due to gradual adoption of a farmer and new knowledge competition and factors of oblivion as well as the aforesaid factors that affect the development of agricultural instruction activity , besides , the method of transferring modern agricultural techniques that are suitable to the definite area are passed through many of organizational and planning stages, especially the process of planning to develop techniques and its designs as that indicated in the methodology of "College"3 or management of diffusion agricultural techniques. Placing a role for the agricultural extension service in Iraq requires to use renewable practices and techniques , together with the preservation of the resources that could achieve economic and environmental benefits for the farmers and local society . It means using a little of foreign elements participated into the process of production just like(Counter: this could be done through using techniques that keep the resources like agricultural pest control , water and soil protection , re-cycling nutrition elements , planting many corps , re-producing wastes , artificial vaccination , breeding fish in cages , textile plantation and others (6). All these techniques need to a good diffusion activities to reach to the agricultural more sustainable with the preparation of a huge number of farmers to manage the resources in a coordinated and idealized way (4,13).All the outcomes including FAO indicated that most of the developing countries have failed to transfer the new agricultural techniques in centres from researches to the concerned farmers owing to the weakness of agricultural extension activities and adhering systems and means unsuitable to the social , economic and political conditions and to the weakness of the relationship with the education foundations and agricultural research institutions from one side and from other side the local agricultural organizations and farmers . Besides , weakness of awareness of these organizations ' prominent figures to look upon themselves as a part of this huge system which is the agricultural technology system(7)

This system helps how to integrate efforts of researchers producing agricultural techniques and connecting them with the huge system's goals that contributes into developing and increasing the production and productivity and to sustain the resources for both the farmers and the state with the possibility of placing structure reforms to the extension activities along with suitability of development in methods and systems of instructive activities. The service and extension activates provide had not appropriated planning, which it is led to a negative and not encouraging results (15), and the annual extension planning need to be in extension programs (9), related to productivity, extension and import which face difficult problems (14). It was conclude the importance of main stream planning mechanism, when we published the results of agricultural techniques, due to methods to spread and diffusion scientific research results (28).

Thus, this research comes to respond to the inquiries listed hereunder :1.What is the reality of agricultural techniques and its standards description?. 2.What are the applicable environmental factors having an effect upon adopting some modern agricultural techniques in the Ministry of Agriculture?. 3. What is the nature of interrelated correlation relations of environmental factor having an effect upon adopting modern techniques?

The research’s hypothesis:The programs planned for diffusion and adopting modern techniques are carried out in suitable way and having not affected by any type of environmental factors that imbed the process of adoption and diffusion.

II. Materials And Methods

Using field survey method in the research to fulfil goals of the current society is deemed suitable to get data of environmental factors having an effect upon diffusion and adoption of modern agricultural techniques.

Research community involves all the specialists, academic, and MA/ PhD holders who are concerned with producing and diffusion agricultural techniques for the college of Agriculture \ University of Baghdad as well as the researchers who are working in the department of agricultural research. They are (180) researcher in the college of agriculture, and (120) researcher in the department of agricultural researchers and its' subdepartments in other provinces. Their total number is (300) researcher in different agricultural specializations. One random sample has been tested which is in proportion of 10% and its specialists are (30), who are in different positions of work, for the year 2016 [5,12].

Questionnaire is used in collecting data from respondents. Questionnaires are considered one of the most active data collecting activities. The form consists of three parts: the first part involves a group of general questions concerning general information about

respondents. The second part determines a clear description for producing, diffusion, and adoption of the modern agricultural techniques. As for the third part, it involves the applicable factors that affect diffusion and adopting the modern agricultural techniques. Then, it involves the use of the suitable alternative among a group of options. The option number (13) involves a technique introduced by the Ministry of agriculture while (17) is the number of factors that affect diffusion and adopting the

modern agricultural techniques. These are divided on three axes which are given a numeric value for each frequency. Also, statistical methods were used like frequency, percentage, and average. Also, the test of stability and validity has been done by the use of alpha chronbach equation, which is 0.938, 0.912 respectively.

III. Results And Discussion

Firstly: The reality of agricultural techniques and the description of

1- Determination of the presence or participation of the specialists by producing, diffusion, or adopting the modern agricultural techniques mentioned in the last three years.

The results have shown that 93% have contributed in producing or diffusion the modern agricultural techniques in different agricultural locations. This is done by their contribution in the agricultural activities of extension and research department and its sub- departments in other provinces. Yet, it is mentioned that 7% of them has no participation with the mentioned parties as clarified in the table (1).

Table 1 Distribution according to the participation in producing and diffusion agricultural techniques

Determination of participation	number	%
Yes	28	93
No	2	7
Total number	30	100

From table number 1, it is concluded that there are clear efforts done by the specialists and agricultural academic members to contribute in diffusion and adopting modern agricultural techniques due to their importance in developing and improving agricultural products. Also, it is important to communicate the scientific recommendations by agricultural specialists with the farmers in farms' locations.

2- The nature of extension activities provide in the field of diffusion and adopting the modern agricultural techniques is determined for all the agricultural departments in farms' locations for the years (2014-2016) to reach193 activity. Most of the agricultural specialists have contributed in these activities which involve: experimental clarifying fields, extension seminars, field observations, extension leaflets, and TV extension programs.

Table 2 Frequency of the two groups according to the participation and extension activities in the field of producing and diffusion modern agricultural techniques.

Year / Activity	2014	2015	2016	Total number
	Num.	Num.	Num.	
field demonstration	16	14	12	42
Extension seminar	21	25	20	66
Field observation	17	14	18	49
Extension leaflet	5	3	2	10
Extension program T.V	8	6	9	23
Producing a technique	2	1	-	3
	69	63	61	193

*One contribution or more for each specialist

From table 2, it is concluded that there are little number of activities implemented for the farmers in the field of modern techniques. Also, there are few contributing specialists in the extension activities, as they did not exceed three participation annually. These participation do not allow making use of scientific expertise of the available academic specialists.

The form of the specialists' participation in the field of diffusion and adopting the modern agricultural techniques.From table 3, it is concluded that there is a percentage that exceeds 2\3 of respondents, and description the process of specialists' contribution for all agricultural departments yet, it does not happen in a suitable efficient way- to make the required changes of communities' diffusion and adopting of the modern agricultural techniques. As such, we refuse they research's hypothesis.

The results have shown that 63% of the respondents have mentioned that the form of the specialists' contribution in the field of diffusion and adopting modern agricultural techniques is done in a weak way and that 20% of respondents have referred that it is in the middle. While, 17% of them have mentioned that it is good, as show in the table number (3).

Table 3 frequency of respondents' distribution according to the form of contribution in the field of diffusion and adopting the modern agricultural techniques.

Contribution form	number	percentage
Good	5	17
In the middle	6	20
Weak	19	63
Total num.	30	100

Secondly:

Determination of environmental factors that affect diffusion and adopting the modern agricultural techniques in the Ministry of agriculture:

1- Determining the effect of the factors that are concerned with the extension system (outsider environment) on diffusion and adopting the modern agricultural techniques. Table number 4 shows systematic perception for the classification of the environmental factors which affect diffusion the modern agricultural techniques which is concerned with the extension activities (the outsider environment). Also, it classifies some of the new modern agricultural techniques that are introduced by the ministry of agriculture in the perspective of some academic agricultural specialists who have efforts done in this field. This involves (the efficiency of the workers in the extension system, the suitability of extension methods, the suitability of extension messages in meeting the requirements, the availability of working developing service institutes, and agricultural extension methods and curriculum). The repetitive group value has reached (114,115,84,43,34) numeric

value respectively, on table number (4).

Table 4. Extension factors (outside environment) effective of diffusion and adopting modern agricultural techniques .

Num.	Effective factors / Modern Agricultural Techniques	Professional competence of workers in the extension activities	Suitability of extension methods	Suitability of extension message	Availability of developing and service institutes	System and curriculum of agricultural directions	Total num.
1	Increasing short-term corps	3	5	7	5	10	30
2	Using agricultural cycle	1	1	3	6	19	30
3	Using preserving planting	2	2	6	9	11	30
4	Using the renewing groundwater	4	6	5	11	4	30
5	Applying interfering Environmental planting	2	4	5	9	10	30
6	Water harvest and small Dams	3	1	8	7	11	30
7	Using modern irrigation techniques	4	3	8	8	7	30
8	Artificial Insemination	3	2	8	12	5	30
9	Breeding fish In cages	2	5	8	9	6	30
10	Making fodders And proteins for Fodders	1	4	3	11	11	30

11	Using shami rams And goats which are genetically improved	2	5	9	9	5	30
12	Tissue planting to increase palms	2	2	7	11	8	30
13	Defense system IPM	5	3	7	8	7	30
Repet-ition	Rate	34	43	84	115	114	390

The table (4) shows that the highest frequency reached 19 as a numeric value (degree) in the group of the factors related to the extension systems and curriculum that affect the techniques of using agricultural cycle. While, 12 degree is the highest frequency in the total number of the factors relating to the availability of developing modern institutes which work on diffusion and adopting artificial insemination technique. Also, the highest and degree come in the group of factors suitable to the extension messages in diffusion and adopting the technique of using Shami rams and goats being genetically improved. 5 degree is the highest frequency in the group of factors relating to the suitability of direction methods in the technique of exploiting groundwater. The highest frequency comes in the group of factors relating to the technical efficiency for the workers in the extension activities in diffusion and adopting the system of complete defense.

2- Determining the effect of personal factors for the respondents in diffusion and adopting agricultural techniques.

Table number (5) shows the systematic perception of classifying the effective factors in diffusion agricultural techniques which is related to personal features of respondents from farmers with the classification of agricultural techniques mentioned earlier, which are introduced by the Ministry of agriculture in the perspective of academic specialists which involves (social rank, level of having the land, income, age, educational level, agricultural experience, and community system of values). The frequency specified to them have reached 22,30,62, 57, 80, 72, 67 respectively , on table 5.

Table 5. The personal factors of respondents that affect diffusion and adopting modern techniques

n num.	Personal Factors / Modern Agricultural techniques	Social rank	The Level of Having Land	Harvest income	age	Educational level	Agricultural experience	System of values	Total Num.
1	Increasing short-term corps	2	4	7	4	6	4	3	30
2	Using agricultural cycle	1	3	6	4	5	6	5	30
3	Using preserving planting	2	2	6	5	6	7	2	30
4	Using renewing groundwater	1	1	3	5	7	5	8	30
5	Applying interfering Environmental planting	1	2	6	5	6	4	6	30
6	Harvest Water and small dams Dams	2	2	4	6	5	7	4	30
7	Using modern irrigation techniques	3	3	3	3	7	4	7	30
8	Artificial insemination	1	3	5	4	6	5	6	30
9	Breeding fish in cages	1	1	6	3	7	7	5	30
10	Making fodders and Proteins	2	1	3	6	6	5	7	30
11	Using Shami rams and Goats which are	1	2	5	3	7	7	5	30

	Genetically improved								
12	Tissue planting to Increase palms	2	3	4	4	6	6	5	30
13	Defense system IPM	3	3	4	5	6	5	4	30
	Total number	22	30	62	57	80	72	76	390

Table 5 shows that the highest frequency has reached 80 in a group related to the factors of the system of social values to the farmer which affect diffusion and adopting exploiting groundwater technique. While, the highest frequency for the group of economic factors to the planting income that affect diffusion and adopting short-term corps technique has reached 7. Highest Frequency for the group of educational factors that affect exploiting groundwater technique, enlarging the use of irrigation technique, fish breeding, and Shami rams and goats has reached 7 too. As for the group of agricultural expertise factors in diffusion and adopting preserving planting, using water of small dams, usage of modern irrigation systems has got the frequency of 7. Also, the highest frequency of age factor that affects diffusion and adopting using the water of small dams technique, advert- making, fodder making is 6. Then, the highest frequency number for the group of agricultural activities that affect the short- term corps technique is 4. Finally, 3 comes to be the degree of the group of factors of social rank that affect diffusion and adopting , modern irrigation technique usage and defense system IPM technique.

3- Determining the effect of the factors related to characteristics or features technique.

Table 6 shows the systematic perception of classifying the effective factors on diffusion and adopting agricultural techniques related to the features of the technique itself with the classification of the previously mentioned techniques that are introduced by the Ministry of agriculture. These involve (percentage privilege, the ability to show results directly, suitability to the values of the local society, the ability to experience on limited domain, and the difficulty of application). The frequency for this group have reached 55, 68, 61, 4, 77 respectively.

Table 6. Frequency of the factors related to the characteristics or features of modern techniques

Num.	Personal factors / Modern Agricultural techniques	Relative privilege	Ability to Show results	Suitable To society Values and needs	Possibility of Experiencing Them on limited domain	Difficulty of application	Total number
1	Increasing short- term Corps	3	4	8	6	9	30
2	Using planting planting cycle	4	4	5	7	10	30
3	Using preserving planting	5	5	5	6	9	30
4	Using groundwater	6	6	4	9	5	30
5	Applying environmental Interfering planting	7	4	5	7	7	30
6	harvest water and small dams	3	5	7	7	8	30
7	Using new irrigation techniques	6	4	6	8	6	30
8	Artificial insemination	3	6	7	9	5	30
9	Breeding fish in cages	4	18	6	6	7	30
1011	Making fodders and proteins	5	6	6	8	5	30
11	Using Shami rams and Goats which are genetically improved	4	6	5	8	7	30
12	Tissue planting for Increasing palms	3	4	6	7	10	30
13	Defense system IPM	4	5	7	6	8	30
14	Total num.	55	68	77	94	96	390

Table 6 shows that the highest frequency is 10, in the group of factors related to the difficulty of application that affect diffusion and adopting the techniques of using planting cycle and tissue planting to increase palms. The highest frequency in the group of factors in the difficulty of testing techniques is on limited domain in diffusion and adopting the techniques of exploiting groundwater and artificial insemination. Also, the highest frequency is 8 for the group of factors relating to the suitability of numbers to the needs of local society in diffusion and adopting the techniques of increasing short- term corps. And, 7 is the highest frequency number for the group of factors related to the ability of techniques to show the results directly in diffusion and adopting the technique of breeding fish in cages. Finally, the highest frequency number for the factors affecting percentage privilege in diffusion and adopting the technique of agricultural interfering planting application is 7.

4- Determination of environmental factors in diffusion and adopting the modern agricultural technique.

Table 7 shows the total number for the environmental factors that affect diffusion and adopting the agricultural techniques which are produced by the Ministry of agriculture in the perspective of academic specialists. These factors are distributed depending on the axes and the groups of affective factors (17 factor). The highest average for frequency has reached 8.8 in 29.3% in a group that supplies the developing service requirements. The fewest balanced average has reached 1.7 in 5.6% in the group of factors related to the social rank of respondents. While, the general weighted average reaches 5.4 degree.

Table 7. The average and percentage of the environmental factors effect on diffusion and adopting modern agricultural techniques.

axes	Factors	Average (degree)	percentage	Arrangement According to axes	Final arrangement According to factors
first	Factors related to the extension system (outsider environment)				
	1- Technical efficiency of workers	2.6	8.7	5	15
	2- Suitability of extension method	3.3	11.0	4	14
	Suitability of the extension message In meeting the requirements	6.5	21.6	3	5
	Availability of developing and service Requirement	8.8	29.3	1	1
	Systems and curriculum of extension Methods	8.7	29.0	2	2
	Total average	6	100		
second	Personal factors for respondents				
	1. Social rank	107	5.6	7	17
	2. The agricultural possession	2.3	7.7	6	16
	3. Planting income	4.7	15.6	4	11
	4. Age	4.4	14.6	5	12
	5. educational level	6.2	20.7	1	6
	6. agricultural expertise	5.5	18.3	2	8
	7. value system	5.2	17.3	3	10
	Average	4.3	100		
Third	Factors related to the features of modern techniques				
	1- percentage advantage	4.2	14.0	5	13
	2- the ability to show results directly	5.2	17.4	4	9
	3- suitability to the values and needs of local society	5.9	19.7	3	7
	4- possibility of testing in limited domain	7.2	24.0	2	4
	5- difficulty of application	7.4	24.7	1	3
	Total average	6	100		
General weighted average			5.4		

Table 7 shows that the highest average has reached 8.8 degree in the axes of factors related to the extension activities. Also, it reached 6.2 in the axes of personal factors for respondents. It reached 7.4 in the axes of factors related to modern techniques. It is concluded from the table that concerned parties in the Ministry of agriculture should work seriously to cure all factors that have the numbers 1-6 generally. Also, they should work on the first and second factors relating to finding new methods and curriculum in extension work, supplying developing service requirements (material, humans, informational, financial) to diffusion agricultural techniques.

Third\ Determining the type of relation for the affective environmental factors in diffusion and adopting modern agricultural techniques.

Table 8 shows the form, nature and strength of this relation for environmental factors 17 that affect the process of diffusion and adopting modern agriculture techniques which are introduced by the Ministry of Agriculture.

The relation is measured by the correlation coefficient factor. It is considered high and positive values and all of them of moral scientific values in the level 0.01, as in the table 8.

Table 8. Correlation coefficient of the environmental factors that affect diffusion and adopting modern techniques in the perspective of specialists

Num.	Items	Correlation coefficient With other items	Arrangement
1	Technical efficiency of workers in agricultural direction	0.918	1
2	Suitability of agricultural direction methods	0.711	16
3	Suitability of direction message	0.876	5
4	Availability of developing service requirements	0.860	8
5	Systems, curriculum, and methods of agricultural direction	0.729	13
6	Social rank for respondents	0.777	12
7	Level of having agricultural technique	0.887	4
8	Planting income	0.884	3
9	Age	0.862	7
10	Educational level	0.841	10
11	Agricultural expertise	0.653	17
12	System of values for local society	0.899	2
13	Percentage advantage of the technique	0.874	6
14	Ability to show results directly	0.837	9
15	Suitability for the society values and needs	0.787	11
16	Possibility of testing on limited domain	0.857	8
17	Difficulty of application	0.772	15

Table 8 shows that the highest correlation value has reached 0.918 between the factors of technical efficiency in the extension system and the other modern agricultural techniques. The fewest correlation value has reached 0.653 of agricultural expertise factor and other agricultural modern techniques which are introduced by the Ministry of Agriculture.

The values of correlation coefficient are considered enough for the purpose of determining the shape and nature of the effective factors in diffusion and adopting the agricultural techniques. The latter prevents the programs of enlarging generating and diffusion agricultural techniques among farmers in local societies.

According to the data extracted from the research, there is a great group of environmental factors that are important and interfering with each other. They affect the process of diffusion and adopting the modern agricultural techniques because of the weakness of extension activities on the level of the departments in all provinces. They are weak in developing and improving the systems, methods and curriculum of agricultural direction. Also, they are weak in transporting the modern agricultural techniques and there is no material, humanistic, financial, or informational requirements available. Finally, the weakness of governmental parties' role in developing service that works in the agricultural field.

The research recommends the formation of working committees at specific levels of specialists in the director of Agricultural Research and academics Agriculture college, this high committee must have the power, guidance to lead and resolve the effectiveness of environmental factors affecting the process of diffusion and adoption.In addition, changing the traditional strategies that used currently to the strategy of developing extension education as a means to solve the problems of modern technology transfer.

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