"The obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks in the climate change ninawaa"

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Abstract

The of the research was to identify the obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change ninawaa, and determine the significant correlation between the obstacles faced by agricultural extension workers. The research included all agricultural extension workers at the Agricultural Extension Center in Nineveh and the affiliated demonstration farms. numbering (293) agricultural respondents. A simple random sample of (165) respondents, representing (56%), was selected, and the sample size was determined using Morgan's table. Thus, the sample size became (155) respondents. The questionnaire consisted of two parts: The first part measured the independent variables, including personal and professional information of agricultural extension workers. The second part included (10) items to measure the obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change in general. The content validity and face validity were assessed by presenting the questionnaire to a group of agricultural extension experts to gather their feedback and suggestions regarding the type of items, wording, and overall formulation. For reliability, a sample of 30 respondents was randomly selected from the Nineveh Agriculture Directorate, its agricultural sections, The statistical analysis was conducted using SPSS software. The results showed that the level of obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change was very high. Furthermore, the item "the lack of experienced agricultural extension workers in using agricultural media to mitigate climate change risks" ranked first, with a mean of (3.28) and a percentage weight of (0.820). The results also revealed a significant correlation between the obstacles faced by agricultural extension workers and variables such as age, gender, training courses, and years of service. Some key recommendations included the need to conduct several training courses for agricultural extension workers in the use of agricultural media, providing necessary technical resources such as computers, the internet, and smartphones to agricultural extension workers,

Keyword: obstacles , agricultural extension workers, climate change

Introduction and Research Problem:

Development issues are among the urgent human concerns that are indispensable for the developing countries of the world. Every society strives to improve its conditions, as individuals are the goal of development. Therefore, awareness is necessary, and this is where the close relationship between different

media and development comes in. Developing countries need media that aligns with their development plans and works to create participation from individuals in the development process. It is the way to spread knowledge about the country's plans and goals [7]. Agriculture has undergone many transformations over thousands of years since humanity transitioned from a hunting society to an agricultural one. There was significant development in farming methods, inputs, and the agricultural machinery used. At the same time, large areas of agricultural land are now managed by farming families who own small holdings, under many difficulties, including increasing competition for limited resources, land loss, water shortages, agricultural pollution, and other agricultural problems [2]. Climate change has become one of the priority issues on the international agenda recently, attracting significant attention both from countries and researchers in various fields of knowledge. Although climate change is not a new phenomenon in terms of its emergence, the political, economic, and social results and impacts that it now generates have forced it to strongly impose itself in the past five years [9]. When thinking about the problem of climate change, it is considered a difficult challenge because this issue can be perceived in different ways depending on the field of specialization. There is climate science, which focuses on monitoring and measuring climate changes and how increasing concentrations of greenhouse gases affect temperature, ocean chemistry, vegetation, and the associated impacts [1]. Climate change is not a cause but an effect of what humans have done to the environment, leading to increased emissions in the atmosphere. Human activities are the main cause of this damage due to the destruction of ecosystems. Increased waste disposal, changes in agricultural systems, and the introduction of toxins into soil and water have led to the loss of biodiversity [15]. Climate change has become one of the most daunting challenges facing the world in the 21st century. According to the World Health Organization, over 140,000 people die each year as a direct result of climate change [4]. Climate changes pose risks to agriculture, humans, and the economy, threatening many animal and plant species worldwide. The issue of climate change is considered one of the extreme phenomena, manifested in drought, desertification, floods, and scarcity of water resources. These phenomena have multiple effects on every region of the Earth Climate change and its potential effects have become a major concern for countries around the world in recent years, especially after it became a tangible reality that affects every person in the world. Climate change is considered one of the most dangerous results of human interference with the environment. Growing human activities and their consequences, such as environmental destruction, have caused disruptions in climate patterns that threaten food production, rising sea levels that increase the risk of catastrophic floods, biodiversity degradation, drought, water scarcity, wildfires, and hurricanes [11].Climate change and mitigating its effects have become some of the most important topics discussed at local, regional, and international levels. Opinions have converged on the damage that climate change can cause [6]. The media is considered one of the most important and effective ways to raise awareness and address this phenomenon, transmitting it to the public to deal with it and build new behaviors toward the environment we interact with every day [3]. The media is defined as providing people with accurate news, valid information, facts,

ISSN 2072-3857

opinions, and ideas that objectively reflect the mentality, trends, and preferences of the public, with the ultimate goal of persuading them by spreading these ideas and information [12]. The media, in general, and agricultural media specifically, play an effective role in agricultural development by providing advisory programs and services to all segments of the rural community. Due to its impact, it becomes a tool for change. Agricultural television programs, as a mass media tool targeting a large audience simultaneously, play a role in directing farmers' attention to participate in new and ongoing development projects, providing them with modern agricultural information, convincing them of it, and equipping them with the necessary skills to apply Media also plays a role in alleviating the social stagnation regarding climate change [14]. It is well known that the media is a primary source of information for citizens, playing a central role in shaping public understanding and participation in climate change and influencing it [13]. The media plays a significant role in addressing the manifestations of climate change because it provides comprehensive coverage of the changes resulting from climate change and its ramifications on various aspects of life. Additionally, it plays a major role in rationalizing people's behaviors and highlighting the incorrect practices that exacerbate environmental problems and climate change. This is done by showcasing activities organized at the national, regional, and international levels related to the developments of the climate change crisis and its associated problems. The media is also relied upon, in its various forms, to inform about the national strategies adopted by countries facing climate changes through monitoring and analyzing the role of media coverage in the region, as well as proposing mechanisms to strengthen its role in reducing the negative effects of climate change [8]. Since agricultural extension workers are the group most closely connected with the concepts of environmental awareness, this research focuses on the role of media in providing them with the necessary and accurate information to enhance their knowledge about the phenomenon of desertification and equip them with proper environmental behaviors so they can fulfill their role effectively and contribute to sustainable development by preserving the environment. Despite the importance of environmental awareness in combating desertification and the role of media in this, especially satellite channels, radio, newspapers, magazines, the internet, and videos [10], there are many challenges that hinder achieving the desired goals or affect the quality of conveying climate-related data and information. These challenges range from issues related to the workers covering climate change, such as their lack of experience in conveying information about climate change through agricultural media, understanding the causes of this phenomenon, and addressing its various aspects. Other challenges stem from the rapidly changing environmental factors in the climate of Iraq in general and Nineveh specifically. This study will address the challenges faced by agricultural extension workers in covering climate change and mitigating its negative impacts on the agricultural reality in Nineveh. This study will focus on the challenges facing extension workers in mitigating the effects of climate change and the role of agricultural media in addressing climate change [5 [

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Objectives:

-To identify the obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change in general.

-obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change according to their relative importance.

-To find the significant correlation between the obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change and some variables such as (gender, age, years of service, and training courses.(

Research Hypotheses:

-There is no significant correlation between the obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change and gender.

-There is no significant correlation between the obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change and age.

-There is no significant correlation between the obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change and years of service.

-There is no significant correlation between the obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change and training courses.

Materials and Methods:

The research was conducted in the Nineveh Governorate, Iraq. It included all agricultural extension workers in the Nineveh Directorate of Agriculture, the affiliated agricultural offices, the agricultural extension center in Nineveh, and the affiliated extension farms. The total number of subjects in the study was 293, distributed across the Nineveh Directorate of Agriculture, the 32 agricultural offices, the agricultural extension center, and the 3 extension farms, with 260 agricultural extension workers. A random sample of 165 subjects was selected, representing 56% of the total, with the sample chosen using Morgan's table to determine the research sample. Ten forms were discarded because they were not fully completed, leaving a final sample size of 155 subjects. The researcher prepared a special questionnaire to measure the obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change. The questionnaire consisted of two parts. The first part measured independent variables, including the personal and professional information of the agricultural extension workers. The second part included 10 items measuring the obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change in general. These items were developed after reviewing previous research and literature on the topic. The face validity and content validity of the questionnaire were tested by presenting it to a group of experts in agricultural extension. The questionnaire was reviewed By professors from the Department of Agricultural Extension and Technology Transfer at the College of Agriculture and Forestry at the University of Mosul, as well as experts from the University of Tikrit, College of Agriculture, University of Kirkuk, College of Medicinal and Aromatic Plants, University of Baghdad, College of Agricultural

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Engineering Sciences, and University of Dohuk, College of Agriculture. The goal was to gather their feedback and suggestions regarding the phrasing of the items and ensure that. they were clear, appropriate, and suitable for the level of the respondents. To ensure the reliability of the study, a random sample of 30 subjects was selected, distributed across the Nineveh Directorate of Agriculture, the agricultural offices, and the agricultural extension center and its affiliated farms. The reliability coefficient was calculated using Cronbach's alpha method, which yielded a value of 0.96, indicating good reliability for the scale. A reliability coefficient of 0.70 or higher is considered acceptable. The response alternatives for the obstacles faced by agricultural extension workers were as follows: (1) Hinders significantly, (2) Hinders moderately, (3) Hinders slightly, (4) Does not hinder. These were coded as (1, 2, 3, 4) respectively. The main statistical tools used in the study were derived from the SPSS program .

Results and Discussion:

-1 Identifying the Obstacles Faced by Agricultural Extension Workers Regarding the Role of Agricultural Media in Mitigating the Risks of Climate Change in General:

To achieve this objective, the scores representing the obstacles faced by agricultural extension workers when using agricultural media were divided into three categories using the theoretical range and the length of each category. The lowest value of the categories was (10), while the highest value was (32 or more) with an average of (2.529), and a standard deviation of (0.538). Based on this, the first category was defined as "low impact" (10-20 points), the second category ranged from (21-31 points), and the last category was (32 or more points), as shown in Table (1.(

Table 1: Distribution of respondents according to the obstacles faced by agricultural extension workers when using agricultural media in Nineveh Governorate in general.

t	Category	Number	Percentage	M	S.TD
1	(10-20) Low Impact	3	1.9%	2.529	0.538
2	(21-31) Moderate Impact	67	43.2%		
3	(32-32 or more) High Impact	85	54.8%		
	Total	155	100.0%		

The results of Table (1) show that approximately (1.9%) of the respondents faced minor obstacles in using agricultural media to mitigate the risks of climate change, while (43.2%) of the respondents faced moderate obstacles. Those who faced significant obstacles amounted to (54.8%) of the respondents. These findings indicate that the majority of participants encounter substantial challenges in effectively utilizing agricultural media to address climate challenges, underscoring the need for comprehensive support strategies and training programs to enhance their capacity to tackle these challenges.. It is evident that the obstacles faced by extension workers were significant, mainly due to a lack of information,

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insufficient training, and a lack of motivation among agricultural extension workers regarding the role of agricultural media in mitigating climate change risks. Additionally, the lack of necessary funding to implement extension programs related to agricultural media and the type of media used were contributing factors.

-2 Ranking the Obstacles Faced by Agricultural Extension Workers Regarding the Role of Agricultural Media in Mitigating Climate Change Risks According to Their Relative Importance :To achieve this objective, the mean and percentage weight for each obstacle faced by agricultural extension workers when using agricultural media to mitigate climate change risks were calculated and ranked according to their importance, as shown in Table (2.(

Table (2): Ranking of the obstacles faced by agricultural extension workers when using agricultural media.

Survey Form Sequence:	Obstacles Faced by Agricultura Extension Workers in Using Agricultural Media	MEAN	%	Rank
1	Lack of experienced agricultura extension workers in using agricultural media to reduce climate change risks	3.28	0.820	1
3	Lack of training courses for agricultural extension workers abou the importance of using agricultura media to address climate change	3.19	0.797	2
2	Lack of awareness among many workers regarding the importance o media and its role in reducing climate change risks	3.17	0.792	3
4	Few seminars on how to use agricultural media to raise awareness about dealing with climate fluctuations	3.15	0.787	4
8	Few radio and television programs related to environmental and climate issues and how to deal with them	3.11	0.777	5
9	Weak media content on climate change programs without in-depth analysis of their substance and content	3.08	0.770	6
10	Weak governmental support for media bodies that provide topics related to climate change and how to mitigate it	3.04	0.760	7
5	Lack of agricultural print materials or the necessary steps to reduce climate	3.02	0.755	8

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	change			
7	Lack of specialized agricultural media programs on environmental issues	2.99	0.747	9
6	Few visual and audio media addressing the necessary actions to mitigate climate change	2.95	0.737	10

The results of Table (2) showed that the item ranked first in terms of the challenges faced by agricultural extension workers when using agricultural media to mitigate climate change risks is "The lack of experienced agricultural extension workers in using agricultural media to mitigate climate change risks," with a mean score of (3.28) and a percentage weight of (0.820%). The reason for this could be that the absence of specialized extension staff in using agricultural media is one of the biggest obstacles, as media requires in-depth study and specialists in its use due to its significant impact on the agricultural audience. On the other hand, the item ranked last is "The limited coverage of visual and audio media on the necessary actions to mitigate climate change," with a mean score of (3.05) and a percentage weight of (0.762%). This could be attributed to the rise of the internet era, which has shifted people's attention away from traditional media outlets like television and radio, making radio and TV programs less frequently viewed and more scarce.

-3 To find the significant correlation between the obstacles faced by agricultural extension workers regarding the role of agricultural media in mitigating the risks of climate change and some variables such as (gender, age, years of service, and training courses.(

Gender: The respondents were classified according to Gender factor into two categories (male and female). The number of males was (104), representing (67.1%) of the total, while the number of females was (51), representing (32.9%). As shown in Table (3.(

Table (3): Shows the correlation between the role of agricultural media and gender.

t	Gender	Number	Percentage	Calculated Chi-Square Value	Table Chi-Square Value	Degrees of Freedom
1	Male	104	67.1%	1.123	5.991	2
2	Female	51	32.9%			
	Total	155	100%			

The results of Table (3) show that the correlation between the role of agricultural media in mitigating the risks of climate change and the gender variable is not significant. The calculated chi-square value was (1.123), which is less than the tabulated value at the 0.05 significance level. This indicates that there is no significant correlation between the role of agricultural media in mitigating the risks of climate change and gender. Therefore The results indicate acceptance of the null hypothesis (H0) and rejection of the alternative hypothesis (H1), meaning there is no statistically significant correlation between the role of agricultural media in mitigating climate change risks and the gender variable. This can be interpreted as both male and

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female agricultural extension workers facing the same challenges when using agricultural media to mitigate climate change risks. This finding suggests that gender is not a determining factor in the obstacles encountered in using agricultural media to address climate challenges.

Years:

The age was divided into three categories based on the range and length of the category. The highest numerical value representing age was (62) years, while the lowest value was (28) years. It was found that agricultural extension workers with younger ages (28-39 years) numbered (68) participants, representing (43.9%) of the total sample. The agricultural extension workers with medium ages (40-51 years) numbered (62) participants, representing (40.0%) of the total sample. Meanwhile, agricultural extension workers with older ages (52 years and above) numbered (25) participants, representing (16.1%) of the total sample, as shown in Table (4.(

Table (4): Shows the correlation between agricultural media and age.

t	Categories	Frequency	Percentage	Calculated Chi-Square Value	Tabulated Chi-Square Value
1	28-39 years	68	43.9%	20.994	9.487
2	40-51 years	62	40.0%		
3	52 years and above	25	16.1%		
	Total	155	100%		

The results of Table (4) show a significant correlation between the role of agricultural media in reducing the risks of climate change and age. The calculated Chi-Square value was (20.994), which is greater than the tabulated value at the (0.05) significance level. Therefore, we reject the null hypothesis (H0) and accept the alternative hypothesis (H1). This indicates a significant correlation between the role of agricultural media in reducing the risks of climate change and age. This could be attributed to the fact that the age group of agricultural extension workers (28-39 years) has a greater awareness and effectiveness regarding the importance and role of agricultural media. They are considered more up-to-date with these media and have more experience in using agricultural media to disseminate information, measures, and actions to mitigate the risks of climate change compared to the other age groups.

Years of Employment Service:

The respondents were categorized based on the length of their service into three categories. The highest value for years of service was (32) years, while the lowest value was (1) year. It appears that respondents with short service years (1 to 10 years) numbered (58) respondents, representing (37.4%) of the total respondents. Next, respondents with medium service years (11 to 20 years) numbered (88) respondents, representing (56.8%) of the total respondents. Finally, respondents with long service years (21 years or more) numbered (9) respondents, representing (5.8%) of the total respondents, as shown in Table (5(

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Table (5): Shows the correlation between the role of agricultural media and years of employment service.

t	Years of Service	Frequency	Percentage (%)	Calculated Chi-square Value	Tabulated Chi-square Value	Degrees of Freedom
1	1-11 years	58	37.4	72.480	9.487	4
2	12-22 years	88	56.8			
3	23+ years	9	5.8			
	Total	155	100.0			

The results from Table (5) show that there is a significant correlation between the role of agricultural media in mitigating the risks of climate change and the variable of years of service. The calculated Chi-square value was 72.480, which is higher than the tabulated Chi-square value at a significance level of (0.05). Therefore, we reject the null hypothesis (H0) and accept the alternative hypothesis (H1). This indicates that there is a significant correlation between the role of agricultural media in mitigating climate change risks and years of service. The reason for this could be that agricultural extension workers, due to their years of experience, are exposed to repetitive information about agricultural media, how to use it, and its actual importance and impact on the target audience.

Training Courses:

The respondents were divided into two categories: those who had attended training courses (38 respondents, representing 24.5% of the total), and those who had not attended any training courses (117 respondents, representing 75.5% of the total). As shown in

Table (6), the relationship between agricultural media and training courses is explored

T	Training courses in the field of media	Number	Percentage	Calculated Chi-square Value	Tabulated Chi-square Value	Degrees of freedom
1	1	Trained	38	24.5	40.265	5.991
2	2	Untrained	117	75.5		
		Total	155	100.0		

The results of Table (6) showed that the correlation between the role of agricultural media in mitigating the risks of climate change and the variable of training courses in the field of media had a calculated value of Chi-square of (40.265), which is higher than the tabular value of Chi-square at a significance level of (0.05). Therefore, we reject the null hypothesis H0 and accept the alternative hypothesis H1. This indicates a significant correlation between the role of agricultural media in mitigating the risks of climate change and the training courses in the field of media. The reason for this is that untrained agricultural extension workers suffer from a lack of effective use of agricultural media and limited experience in selecting the appropriate means to convey agricultural information regarding mitigating the phenomenon of climate change appropriately.

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Conclusions:

.3We conclude from the research that agricultural extension workers face many obstacles when using agricultural media to significantly mitigate the risks of climate change, primarily due to limited experience in using agricultural media and a lack of information about it and how to use it.

.4We conclude from the research that the scarcity of experienced agricultural extension agents in using agricultural media to mitigate climate change risks is one of the biggest obstacles they face, as it requires expertise and intensive study from the agricultural extension workers to use it efficiently.

.1We conclude from the research that independent variables of agricultural extension workers, such as age, gender, years of service, and training courses, play an important role in overcoming the obstacles faced by agricultural extension workers in using agricultural media to mitigate the risks of climate change.

.2We conclude from the research that age has no relation to the presence of obstacles facing workers regarding the role of agricultural media in mitigating the risks of climate change.

Recommendations:

.1The researcher recommends the necessity of conducting multiple training courses for agricultural extension workers in the field of using agricultural media.

.2The researcher recommends the need to provide the necessary technical resources such as computers, internet, and smartphones for agricultural extension workers to use them for communicating information about mitigating the risks of climate change.

.3Providing opportunities for collaboration between media institutions and agricultural extension workers.

.4The researcher recommends conducting the same study with the same subjects but with other independent variables such as educational qualifications and attitudes towards agricultural media in agricultural extension work.

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