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Attitudes of Agricultural Extension Workers toward the use of Electronic Extension Methods in Agricultural Extension in the Kingdom of Saudi Arabia

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ABSTRACT

This research aimed to identify the agricultural extension agents' attitudes towards the use of electronic extension methods, as well as the obstacles they face during their use, in addition to the impact of independent variables on the degree of attitudes. The research included (169) agricultural extension agents, and the number of questionnaires returned and completed according to the research conditions was (138) agricultural extension agents, representing about (82%) of the study community, and the results revealed that 64% of the agricultural extension workers in the Kingdom of Saudi Arabia showed positive attitude, and that 18% showed negative and neutral attitude towards electronic agricultural extension methods, and the most important obstacles were the lack of follow-up of agricultural extension agents to websites interested in electronic extension methods, followed by the lack of seriousness of some agricultural extension agents in using electronic extension methods, a significant positive correlation was found at the level of 0.01 between "educational level" and access to training in agricultural extension methods and the availability of electronic devices for agricultural extension agents as independent variables and the degree of agricultural extensions' attitudes towards food. The electronic agricultural extension service as a dependent variable, and there is a negative significant correlation at a significant level (0.01) between age, as an independent variable, and the degree of extension trends as a dependent variable.

Key words: Extension workers, Saudi Arabia and Electronic Extension Methods.

INTRODUCTION

The agricultural sector showed remarkable progress in all its technical aspects accompanied by the development of ideas, information, innovations, or modern agricultural innovations, but all these developments have no significant impact and clear and real progress unless this development is accompanied by innovative methods or means. Effective transfer of agricultural extension work can transfer these innovations or new technologies from their sources of production and simplify them to make it easier for farmers and motivate them to adopt them (Qamar, 2000). Various studies revealed that new methods positively impact on farmer's learning. The most frequently accessed sources of information among farmers were mobile applications, extension institutions, and progressive farmers (Kassem et al., 2021).

Since the success and effectiveness of agricultural extension work are based primarily on the charge of agricultural extension work, especially the agricultural extension agents who are responsible for direct contact with rural communities in general and the agricultural community (Al-Nassar et al., 2003). The efficiency of agricultural extension work is measured by the efficiency of workers through training, possessing knowledge, skills, abilities, and technical scientific stock. The effectiveness of this agricultural extension work is affected by the availability of effective extension methods, knowledge, and experience of agricultural extension agents in the appropriate timing for their use which leads to satisfying the educational needs of agricultural extension workers (Al-Nassar et al., 2003).

The Agricultural Extension Authority in the Kingdom of Saudi Arabia uses many traditional agricultural extension methods, such as methods of communication with individuals and groups. According to the past study, the most frequently used source of communication among farmers in Saudi Arabia was mobile applications followed by extension institutions (Kassem et al., 2021).

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The electronic extension methods aim to employ modern technology such as computers and the Internet as a new way of communicating ideas, knowledge, information, and innovations to farmers, which has become widely applied in many countries of the world (Singh et al., 2015). It also aims to develop links between agricultural research centers, agricultural extension, extension workers, and communication with remote rural areas. It increases the process of interaction between agricultural extension workers, beneficiaries, and researchers which avoid the shortage of agricultural extension workers and eliminate the various issue faced by agricultural extension workers (El-Gamal, 2013).

The Ministry of Environment, Water and Agriculture, represented by the General Administration of Agricultural Extension, tried to use electronic extension methods and apply them (MEWA, 2021) It could be beneficial for them in the agricultural extension work to develop different activities and delivery of innovative information, ideas, and innovations to the farmer, as well as provide the opportunity for farmers to communicate with agricultural guides and specialists in the field of extension agents without any effort. So, the Ministry created an electronic platform through which it communicates with the farmers in all regions, governorates, centers, villages, and deserts of the Kingdom of Saudi Arabia under the name (Your Agricultural Guide), which aims for farmers in the Kingdom to obtain solutions to their problems in writing or contact with specialists and agricultural extension agents (General Administration Agricultural Extension, 2021). Therefore, the current research was conducted to identify the attitudes of agricultural extension agents towards the use of electronic extension methods in agricultural extension work in the Kingdom of Saudi Arabia.

MATERIALS AND METHODS

This research included all 169 agricultural extension workers in the Ministry of Environment, Water and Agriculture and its branches in all regions, governorates and centers of the Kingdom. The electronic questionnaire was distributed to them. 138 agricultural extension agents, representing about (82%) of the study population, responded. A validity test was conducted on the questionnaire by presenting it to specialists in the Agricultural Extension Department and the rural community, as well as a stability test using the Cronbach Alpha coefficient 0.81. In its final form, the researchers placed it on agricultural guide platform, which includes all agricultural extension workers in the Kingdom. The respondents' responses were collected, and then those responses were processed statistically using some statistical methods such as frequencies, percentages, the arithmetic mean, standard deviation, and Spearman's simple correlation coefficient through the statistical program SPSS.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Respondents

The table 1 showed that 59.6% of the respondents are belonged to age group 35 years to less than 48 years. while 14.5% of the respondents belonged to age group (less than 35 years) and only 29.5% of the respondents belonged to ager group 47 years or more than 47. With regard to the educational level, it was found that more than half of the respondents had been to college, and they are those who obtained a bachelor's degree in any field of agricultural obtained a bachelor's degree in any field of agricultural

Map of Saudi Arabia

sciences. From university 11.5% of the respondents got higher degree like research. 37.4% of the respondents had been to under university and got diploma degrees. Whether related to modern extension methods during their work as agricultural extension agents, the percentage of those who did not receive any training course was (49.6%) of the total number of agricultural extension agents. And 50.4% of the respondents got training. Regarding experiences more than 50% of the respondents have 5 to 10 years of experience and 38.8% and 10.1% of the respondents have the years or more and less than five years of experience respectively. It was found that 51.8% have electronic devices, while the percentage of those who do not have electronic devices is 33.1%. 15.1% indicated that they are not interested in this, and that having electronic devices used in presenting extension methods.

Agricultural Extension Agents' Attitudes towards Electronic Extension Methods

Table (2) showed that statements "It helps in communicating with the mentors easily and easily (mean value=3.73), Provides important information and knowledge to the mentors (mean value=3.73), Give absolute freedom to express opinions (mean value=3.69), Stimulate the spirit of competition among agricultural extension agents (mean value=3.68), The mentor is useful to benefit from the discussions of others (mean value=3.67), It helps to transfer information quickly and effectively (mean value=3.66), Give enough time for discussion and dialogue (mean value=3.65), Eliminate the shortage in the number of guides (mean value=3.63), It eliminates the spatial dimension (mean value=3.63), It eliminates the psychological barrier between the mentor and the mentor (mean value=3.61), It is one of the most effective guidance methods on the recipient (mean value=3.53), It is widely used in Saudi Arabia and It may be an effective alternative to the traditional extension methods (mean value=3.53)" ranked according to their mean values.

The Numerical Value of the Degree of Agricultural Extension Workers' Attitudes toward Modern Breeding Methods

It should be noted that the degree of attitudes toward electronic agricultural extension methods ranged between (13-65) degrees, distributed into three categories: the negative trend (less than 30 degrees), the neutral trend (30 to less than 43 degrees), and the positive trend (43 degrees). and more), and the data in Figure (1) shows that 64% of agricultural extension agents in the Kingdom of Saudi Arabia have a positive attitude, and 18% have a negative and neutral attitude towards electronic agricultural extension methods, with the same percentage for each direction, and the higher the degree of attitude in the sample reflects good indicator through which we expect to provide agricultural extension services with the latest means and methods, and are in line with the tremendous development in digital services in the modern era.

Third: Obstacles to the use of Electronic Extension Methods from the Point of View of Agricultural Extension Agents

Table 3 showed the statements are ranked according to their mean values. The stamen "Some of the clients are not convinced of the efficiency of the electronic guidance methods (mean value= 3.53), Lack of computers for agricultural extension workers (mean value= 3.47), Lack of sites in Arabic that provide agricultural information on the Internet (mean value= 3.44), Some officials are not convinced of the importance of using electronic guidance methods (mean value=3.38), Unfamiliarity of agricultural extension workers with computers (mean value= 3.35), Lack or lack of adequate training for agricultural extension agents (mean value= 3.35), Unavailability or slow internet for agricultural extension workers (mean value= 3.34), Non-follow-up of agricultural extension agents to websites interested in electronic extension methods (mean value=2.47) and the lack of seriousness of some agricultural extension agents in using electronic extension methods (mean value=2.32)".

Factors Affecting the Degree of Agricultural Extension Workers' Attitudes towards Electronic Agricultural Extension Methods

Table 4 showed Spearman's correlation coefficient, results showed significant positive correlation at 0.01 between "educational level, access to training in agricultural extension methods, and the availability of electronic devices for agricultural extension agents as independent variables and the degree of agricultural extension agents' attitudes towards electronic agricultural extension methods as a dependent variable, where the simple correlation coefficient of Spearman for each of them, respectively (0.701, 0.321, 0.504), that is, with an increase in the educational level, there is an increase in the degree of attitudes of agricultural extension agents towards

Table 1: The personal, social and economic characteristics of the agricultural extension workers for the respondents (n = 139)

Properties			Properties		
Age			Years of Experience		
	N	%		N	%
Less than 35 years old	34	14.5	Less than 5 years	14	10.1
35 years to less than 48 years	64	59.6	From 5 years to less than 10 years	71	51.1
Senior age group (47 years and over(	41	29.5	10 years and over	54	38.8
Educational Level			Availability of Electronic Devices		
under university	52	37.4	Available	72	51.8
collegiate	71	51.1	I'm not interested	21	15.1
above university	16	11.5	unavailable	46	33.1
Get Trained					
Yes	70		50.4		
no	69		49.6		

Table 2: Distribution of agricultural extension agents according to the degree of attitudes toward electronic agricultural extension methods

Statements	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	SD
	N	%	N	%	N	%	N	%	N	%		
It helps in communicating with the mentors easily and easily	10	7.2	17	12.2	23	16.5	40	28.8	49	35.3	3.73	1.26
Provides important information and knowledge to the mentors	10	7.2	17	12.2	22	15.8	42	30.2	48	34.5	3.73	1.26
Give absolute freedom to express opinions	10	7.2	16	11.5	26	18.7	42	30.2	45	32.4	3.69	1.24
Stimulate the spirit of competition among agricultural extension agents	11	7.9	16	11.5	24	17.3	43	30.9	45	32.4	3.68	1.26
The mentor is useful to benefit from the discussions of others	12	8.6	16	11.5	24	17.3	41	29.5	46	33.1	3.67	1.28
It helps to transfer information quickly and effectively	10	7.2	17	12.2	27	19.4	41	29.5	44	31.7	3.66	1.24
Given enough time for discussion and dialogue	11	7.9	17	12.2	25	18	43	30.9	43	30.9	3.65	1.26
Eliminate the shortage in the number of guides	10	7.2	18	12.9	25	18	47	33.8	39	28.1	3.63	1.22
It eliminates the spatial dimension	11	7.9	15	10.8	30	21.6	42	30.2	41	29.5	3.63	1.24
It eliminates the psychological barrier between the mentor and the mentor	9	6.5	18	12.9	32	23	39	28.1	41	29.5	3.61	1.22
It is one of the most effective guidance methods on the recipient	9	6.5	17	12.2	41	29.5	35	25.2	37	26.6	3.53	1.19
It is widely used in Saudi Arabia	10	7.2	20	14.4	35	25.2	34	24.5	40	28.8	3.53	1.25
It may be an effective alternative to the traditional extension methods	12	8.6	17	12.2	42	30.2	31	22.3	37	26.6	3.46	1.25

Strongly disagree=1; Disagree= 2; Neutral=3; Agree=4; Strongly Agree=5.

Table 3: Distribution of agricultural extension agents according to obstacles to the use of electronic agricultural extension methods from their point of view

Statements	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	SD
	N	**%**	N	**%**	N	**%**	N	**%**	N	**%**		
Some of the clients are not convinced of the efficiency of the electronic guidance methods	12	8.6	14	10.1	35	25.2	44	31.7	34	24.5	3.53	1.21
Lack of computers for agricultural extension workers	10	7.2	15	10.8	37	26.6	54	38.8	23	16.5	3.47	1.11
Lack of sites in Arabic that provide agricultural information on the Internet	11	7.9	16	11.5	34	24.5	57	41	21	15.1	3.44	1.12
Some officials are not convinced of the importance of using electronic guidance methods	12	8.6	15	10.8	52	37.4	28	20.1	32	23	3.38	1.2
Unfamiliarity of agricultural extension workers with computers	38	27.3	44	31.7	36	25.9	13	9.4	8	5.8	3.35	1.15
Lack or lack of adequate training for agricultural extension agents	11	7.9	20	14.4	37	26.6	52	37.4	19	13.7	3.35	1.13
Unavailability or slow internet for agricultural extension workers	10	7.2	18	12.9	44	31.7	49	35.3	18	12.9	3.34	1.09
Non-follow-up of agricultural extension agents to websites interested in electronic extension methods	22	15.8	56	40.3	41	29.5	13	9.4	7	5	2.47	1.03
The lack of seriousness of some agricultural extension agents in using electronic extension methods	33	23.7	52	37.4	36	25.9	12	8.6	6	4.3	2.32	1.07

Strongly disagree=1; Disagree= 2; Neutral=3; Agree=4; Strongly Agree=5.

those methods by virtue of the richness of knowledge and the ability to address their problems and realize their importance, and with the increase in qualification and training, the degree of attitudes towards electronic agricultural extension methods increases, and with the availability of electronic devices The agricultural extension agents have more In terms of the degree of their attitude towards modern agricultural extension methods, this is consistent with the findings of (Awad et al., 2019), as well as the findings of Salim et al. (2021) in his study on the attitudes of agricultural extension agents towards the use of electronic communication in relation to the variables of

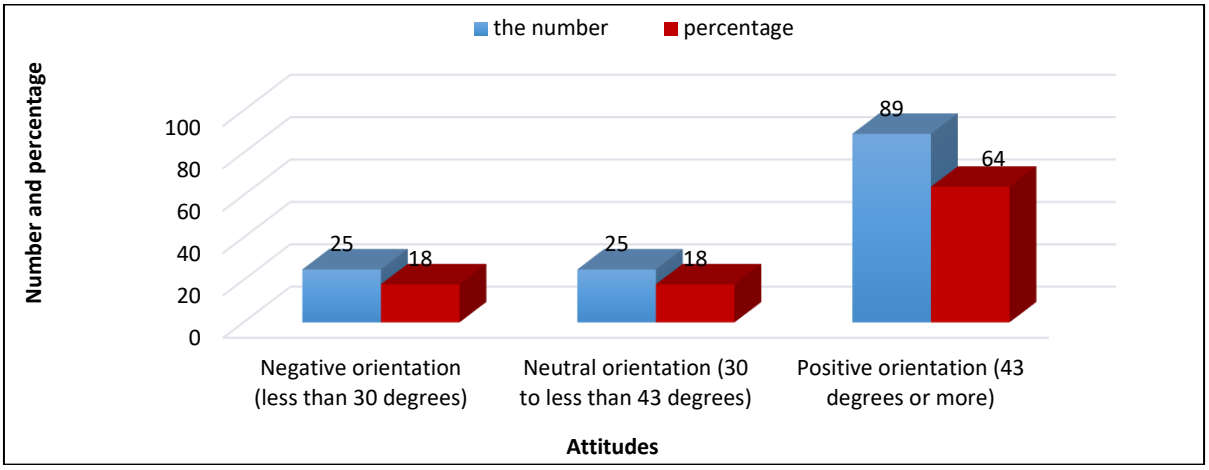

Fig. 1: Distribution of agricultural extension agents according to the numerical value of the degree of attitudes toward electronic agricultural extension methods.

Table 4: The correlation between some independent variables and the degree of agricultural extension workers' attitudes as a dependent variable

Variables	Attitudes	
	Correlation coefficient	Sig. (2-tailed)
Age	-0.220**	0.009
Education level	0.701**	0.001
Experience in agricultural extension work	-0.115	0.179
Obtaining training in electronic guidance methods	0.321**	0.000
Availability of electronic devices	0.504**	0.001

Table 5. The effect of some of the studied variables on the attitudes of agricultural extension agents towards electronic extension methods

Independent Variables	R	t	Sig.
Education level	0.448	7.121	0.000**
Age	0.497	8.284	0.000**
Availability of electronic devices	0.527	-3.749	0.002**
R2 = 0.53 & F = 52.3 & ** Significant at 0.01			

education and access to training courses. It was found that there was a significant negative correlation at a significant level (0.01) between age, as an independent variable, and the degree of agricultural extension agents' attitudes towards electronic agricultural extension methods as a dependent variable, meaning that the greater the age of the agricultural extension worker, the lower the degree of his attitude towards electronic extension methods, which may be due to the adoption of agricultural extension agents elderly people rely on agricultural extension methods and methods that they know and are able to do as they believe in their efficiency or because they are unfamiliar with modern technology, which is also consistent with the findings of (Awad et al., 2019) and is consistent with the findings of Wahed et al. (2015).

Table 5 show the most important factors influencing the degree of agricultural extension workers' attitudes and based on the correlation matrix, stepwise multiple regression was used whose data show that the educational level, age, and the availability of electronic devices have contributed significantly to the total variance that explains the change in the degree of agricultural extension workers' attitudes toward electronic agricultural extension methods, all of which were responsible for explaining (53%) of the total variation in their attitude towards those methods. Education is important to change extension agent's attitude, education is required to improve it (Chetsumon, 2005). Attitude may improve by increase in age, in other perspective, Alotaibi (2019) revealed that interests of extension agents in training were not significantly different between the age groups.

Conclusion

Current study revealed that socio-economic characteristic including educational level, age and availability of electronic devices have effect of attitude of extension agents towards electronic extension methods. Furthermore, Education level, obtaining training in electronic guidance methods and Availability of electronic devices have positive and significant relationship with attitude of extension agents. While age showed inverse and significant relationship. Current findings will support policy makers to provide a suitable platform to resolve issues facing by extension agents. Additionally, it is suggested that intensive training courses should be implemented for agricultural extension agents related to electronic agricultural extension methods, in view of what was observed of a high percentage who were not subjected to training of this kind. The rehabilitation programs should be planned for old counselors to link their accumulated experiences with electronic means, through which the best counseling model can be produced due to the integration of experiences with modern means. The material and moral incentives to encourage agricultural extension agents to use electronic extension methods.

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