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A PROPOSED MODEL FOR DOWNWARD ACCOUNTABILITY AS AN APPROACH IMPROVING THE QUALITY OF AGRICULTURAL EXTENSION SERVICES PROVIDED TO FARMERS IN IRAQ

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ABSTRACT

The objective of this study was to preparing a proposed model for downward accountability as an approach to improving the quality of agricultural extension services provided to farmers in Iraq. To achieve this goal, a framework was designed, incorporating 90 evaluation criteria distributed across eight domains, namely: Evaluation of the Feasibility of Services, Evaluation of Farmers' Participation, Evaluation of the Content of Extension Services, Evaluation of the Methods and Approaches for Delivering Extension Services, Evaluation of Farmers' Accountability of Extension Service Providers, Evaluation of the Outcomes of Extension Services Provided to Farmers, Evaluation of Farmers' Satisfaction with Services, and Evaluation of the Responsiveness of Extension Service Providers. Data were collected from a stratified random sample of 395 respondents across eight Iraqi governorates (Nineveh, Salah al-Din, Baghdad, Diyala, Babylon, Najaf, Maysan, and Muthanna) through a structured questionnaire administered during the last third of 2024.The results indicated that the mean approval ratings for the proposed accountability model domains ranged from(4.28-4.39) on a five-point Likert scale (strongly agree, agree, somewhat agree, disagree, strongly disagree), with numerical values ranging from(5-1).indicating strong agreement with the model. Moreover, the findings showed no statistically significant differences across most domains, suggesting a high level of consensus among respondents regarding the model's importance and effectiveness in improving the quality of agricultural extension services. Based on these findings, we recommend that policymakers and decision-makers in the Ministry of Agriculture and the agricultural extension system adopt the proposed model by integrating downward accountability mechanisms into agricultural extension programs and initiatives aimed at farmers in Iraq.

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INTRODUCTION

Agricultural extension today constitutes a vital system in sustainable agricultural development, as it contributes to ensuring the sustainability of increased agricultural production, preserving natural resources and their proper use, preserving agricultural biodiversity, and combating climate change (AL-Taiy *et al.*, 2021; Abdel-Hussein and Fayyadh, 2024). At the same time, it is an important tool for improving farmers' incomes from agriculture and the incomes of rural families,

improving their standard of living, and improving the gross domestic product.(OECD and FAO, 2023; Lamloum and Karmid, 2024) It has proven successful in agriculturally advanced countries such as the United States of America, Canada, Australia and Denmark, thanks to their possession of effective and efficient extension systems (Rivera and Qamar, 2003; AL-Taiy, 2014; Yang and O,2022) As a vital system in the agricultural innovation system in every country (UNDP, 2015; TAP, 2016) and the system of facilitating farmers' and their organizations' access to knowledge, information, and modern technologies, and improving their interaction with relevant parties such as scientific research centers, universities, suppliers, and agricultural input service providers (World Bank, 2012). This system aims to support farmers in developing their administrative, organizational, and technical skills and practices, which enhances their ability to manage their agricultural activities, and increase their productivity and economic returns (Sulaiman and Davis, 2012; Abdul-Razzaq and Salman, 2018; Mekouar, 2019).

In addition to encouraging innovation within agricultural communities. (Mekouar; IFPRI, 2018; Modi *et al.*, 2024) In this context, agricultural extension at the global level is witnessing a transitional phase aimed at improving its efficiency and effectiveness, amid increasing pressure to enhance its performance and respond to farmers' needs and challenges and the challenges of agriculture in general, in addition to achieving quality standards.(Mur, 2016; Blum and Sulaiman 2020), and calls in this direction are increasing by international agricultural development organizations, most notably the Food and Agriculture Organization (FAO), the World Bank, the Agricultural Bank, the United States Agency for International Development (USAID), the Organization for Economic Co-operation and Development (OECD), the Royal Tropical Institute (KIT) and the International Forum for Agricultural Advisory Services (GFRAS), to respond to the challenges of contemporary farmers, ensuring that the needs of all rural groups, including men, are met. And women and youth, working in the agricultural sector (Anderson and Feder, 2004; Canton, 2021; AL-Taiy *et al.*, 2021. Alsinayi *et al.*, 2022).

The Food and Agriculture Organization of the United Nations has indicated that providing the necessary support and attention to farmers will enable everyone to address the major challenges facing agriculture in the world (Mekouar, 2015, which will continue for decades to come), namely improving food security and nutrition, while preserving natural resources and reducing the effects of climate change. The essence of development efforts lies in empowering rural communities, improving their resilience, and advancing comprehensive growth. (Rivera and Qamar,2003; Rivera and Qamar,2005; Swanson,1997; Swanson,2008; AL-Taiy *et al*.,2020)

Among the contemporary trends in reforming agricultural extension systems at the global level is supported by international development organizations, which previously mentioned the importance of adopting downward accountability for extension service providers as a strategy and input into achieving the participation of farmers, the target people and their organizations in all stages of decision-making related to extension services and agricultural techniques (Anderson and Feder, 2007).

Downward accountability depends on enabling beneficiaries to evaluate the quality and effectiveness of the services provided to them, which enhances the participatory approach in providing this service and their active participation in

stating their observations and reactions and providing feedback and judging the feasibility and quality of the advisory service provided to them as an entry point to improve the quality of that service.(Madu and Wakili, 2013; Al-Zaidy and Naji 2016; Ragasa *et al*., 2017; Chilewa, 2023; Ranjan *et al.*, 2024; Sahu).

Studies have indicated that involving farmers in the decision-making process enhances the efficiency of the extension system and leads to improved rates of adoption of modern agricultural techniques, which contributes to raising productivity and achieving food security (Rivera and Qamar, 2003; Birner *et al*., 2009).

Despite the increasing importance of downward accountability, this practice still faces major challenges, especially in public extension systems. These challenges include the weak participation of farmers in planning and monitoring the extension system, their lack of knowledge of available service providers, in addition to their limited willingness to pay for these services, and the absence of effective mechanisms for receiving and responding to their feedback (Davis, 2008). Accordingly, there is a need to adopt extension policies that ensure downward accountability and enhance farmers' participation in the various stages of service provision, from planning and preparation to implementation and evaluation (Swanson and Rajalahti, 2010). Recent trends in extension reform indicate the importance of involving farmers as active agents in holding service providers, whether from the government or private sector, accountable to ensure sustainable improvement in the quality of extension services (Wongtschowski *et al.*, 2016; Feder *et al.*, 2001).

Also, raising farmers' awareness of their rights as beneficiaries of these services is an essential element in the success of this model (Birner et al., 2009). Hence, designing extension policies based on the accountability of service providers by farmers represents a necessary step towards achieving a more transparent, efficient and responsive extension system to the needs of beneficiaries. (Bawole and langnel, 2016; Altarawneh *et al*., 2020; AL-Taiy *et al.*, 2021).

The agricultural extension service in Iraq is the responsibility of the government sector, as it is managed by extension departments linked to the Ministry of Agriculture and its various formations. The extension system in the country includes a network of extension units and their workers, who work to provide extension services to farmers at multiple levels (Mekouar, 2019; Sadeq, 2023). Despite these efforts, extension services still face major challenges, as studies indicate a clear gap between the desired goals of these services and the actual reality, which limits their effectiveness in supporting sustainable agricultural development (Al-Taiy, 2014; Ridha & Hassuny, 2015; Al-Fatlawy and Al- Taiy, 2018; World Bank, 2020; Al-Hafiz & Al-Taiy, 2022; Hameed, 2024 ; Alzubaidi, 2024; Hasan, 2024).Although the agricultural extension system in Iraq extends for more than 60 years (DTEA, 2019), the current challenges in the agricultural sector, such as low productivity, weak adaptation to climate change, and increased dependence on food imports, reflect the limited impact of agricultural extension in achieving sustainable agricultural development (FAO, 2021). Iraq is still a major market for foreign agricultural products and supplies, especially food (such as vegetables, meat, poultry, etc.), and this is an important indicator that the extension service is still below the level of the challenges of farmers and agriculture in it, which indicates that current extension services have not yet been able to enhance agricultural self-sufficiency or

improve farmers' response to market requirements (Adnan, 2022; Nofiu, 2024).Therefore, the absence of downward accountability is one of the most prominent challenges facing agricultural extension in Iraq, as there are not sufficient mechanisms for farmers' participation in evaluating the quality of services provided to them. Downward accountability is a vital element in improving the response of agricultural extension to farmers' needs, as it allows them to express their opinions and provide feedback on the efficiency and quality of services, which contributes to improving the overall performance of this vital sector (Birner *et al*., 2009). However, existing evaluation and monitoring practices still rely on official evaluation conducted by government institutions and international organizations, while the role of farmers in evaluating these services is largely absent (Davis, 2008; Rajalahti and Swanson, 2010). Therefore, involving farmers in the evaluation processes of extension services is essential to ensure the quality of services provided and enhance their effectiveness in meeting the needs of the agricultural sector (Anderson and Feder, 2007). This is an important indicator that the extension service is characterized by the absence of downward accountability, despite its importance in improving the response of this service and improving its feasibility, given that the outcomes of this accountability represent the voice of farmers, and it is still in its infancy in developing countries. Also, studies in the field of accountability are not extensive, and in Iraq as a country that is primarily agricultural and its governorates have agricultural activity that constitutes its primary source; therefore, this research came to shed light on proposing a model of downward accountability as an entry point in improving the quality of agricultural extension service provided to farmers in Iraq.

Research Objectives

This study aims to develop a proposed model for downward accountability as an approach for improving the quality of agricultural extension services provided to farmers in Iraq through the following:

1. Determining the respondents' agreement on the domains of the proposed downward accountability model as an approach to improving the quality of agricultural extension services provided to farmers in Iraq.
2. Determining the respondents' agreement on the criteria of the proposed downward accountability model as an approach to improving the quality of agricultural extension services provided to farmers in Iraq.

MATERIALS AND METHODS

Research methodology

The researchers adopted the descriptive approach as an approach that provides a description of the phenomenon under study (Williams, 2007).

Research area

The research was conducted at the level of Iraq Except for the Kurdistan region, considering that all of its governorates have extensive agricultural activities in addition to the presence of agricultural and extension organizations.

Research community and sample

The research community consisted of all workers departments in agricultural organizations centers, extension (senior, middle, executive management, agricultural

leadership) in all governorates. A stratified random sample was selected from the governorates of Iraq at a rate of (50%) and in (8) governorates (Nineveh, Salah al-Din, Baghdad, Diyala, Babylon, Najaf, Maysan, Muthanna), then a random sample was selected at a rate of 50% of the research community from workers in extension and agricultural organizations represented by (the Agricultural Extension Department and its affiliated extension centers and farms and the Directorates of Agriculture and their agricultural branches in the governorates, and agricultural leadership in the unions) Their total was (395) researchers distributed according to categories into (senior management (17), middle management (84), executive management (159), agricultural leadership (135)

Research tool

The proposed model consists of (90) criteria distributed over (8) areas, namely (evaluation of the feasibility of the extension service, evaluation of farmers' participation in the extension service, evaluation of the content of the extension service, evaluation of the method and approach of providing the extension service, evaluation of farmers' accountability to extension service providers, evaluation of the results achieved from the service provided to farmers, evaluation of satisfaction with the extension service, and the response of extension service providers). It was measured through a five-point agreement scale (fully agree, agree, neutral, disagree, completely disagree), and its numerical values were determined as (5, 4, 3, 2, 1) points, respectively. After verifying the validity and reliability of the tool, data were collected from the respondents through a questionnaire, in addition to conducting interviews during field visits to agricultural extension departments, agricultural directorates, extension centers, and agricultural leaders in agricultural cooperative unions in the governorates of the research sample. The questionnaires were completed by (395) respondents in extension and agricultural organizations in the last third of 2024. After completing the data collection process, entering the data into Excel and analyzing it using SPSS v.24, weighted arithmetic means, percentage weights, and one-way analysis of variance test were used to determine significant differences between respondent categories and LSD test for subsequent comparisons between respondent category means.

RESULTS AND DISCUSSION

Determining the respondents' approval of the areas of the proposed model of downward accountability as an introduction to improving the quality of agricultural advisory services provided to farmers in Iraq

The results showed that the averages of the respondents' approval of the areas of the proposed model of downward accountability, which numbered (8) areas, ranged between (4.28-4.39) degrees, according to an approval scale whose highest degree was (5) degrees, and its lowest degree was (1) degree, with a total average of approval for the areas of the model amounting to (4.34) degrees. All areas fall within the level of agreement towards completely agree. The results also showed the existence of significant differences between the averages of the approval of the categories of respondents (senior management, middle management, executive management, agricultural leadership) for the areas of the model, which was determined by one-way analysis of variance (ANOVA), where the P-value reached

(0.008) at a significance level of (0.05), Accordingly, the alternative hypothesis is accepted, which states: "There are statistically significant differences between the averages of the approval scores of the respondent categories according to the fields of the proposed model." It was found that these differences are statistically significant in favor of the category of senior management compared to the categories of executive management and agricultural leadership, according to the least significant difference test (LSD) as shown in Tables (1) (2).

Table (1): Average numerical values of respondents' agreement on the areas of the proposed model of downward accountability.

Domains of the Downward Accountability Model	Rank	Weighted Mean	Relative Weight
Evaluation of the Outcomes of Extension Services Provided to Farmers	1	4.39	87.80
Evaluation of Farmers' Participation in Extension Services	2	4.37	87.40
Evaluation of Farmers' Accountability of Extension Service Providers	3	4.36	87.20
Evaluation of the Feasibility of Agricultural Extension Services	4	4.34	86.80
Evaluation of the Content of Extension Services	5	4.33	86.60
Responsiveness of Extension Service Providers	6	4.32	86.40
Evaluation of Farmers' Satisfaction with Extension Services	7	4.30	86.00
Evaluation of the methods and style for providing the extension service	8	4.28	85.60
Overall Mean		4.34	86.80
Senior Management		4.40	88.00
Middle Management		4.34	86.80
Executive Management		4.28	85.60
Agricultural Leadership		4.32	86.40
F (4.795) p-value < (0 .008)			
(N=395) Senior Management (17), Middle Management (84), Executive Management (159), Agricultural Leadership (135)			

From Tables (1) (2), the following can be concluded: 1. The awareness of the respondents in the extension and agricultural organizations (senior, middle and executive management and agricultural leadership) of the importance of the areas of the proposed model of downward accountability, and its application under the current conditions of extension work, to ensure improving the quality of agricultural extension services provided to farmers despite the differences in approval of the model. 2. The awareness of senior management of the importance of downward accountability due to the importance of their role in formulating policies and making administrative decisions, and confirming their acceptance of the downward accountability model and the importance of applying it in extension work to improve the quality of its services.

Table (2): Results of post-hoc comparisons of the LSD test for the fields of the proposed model of downward accountability according to the averages of the respondents' categories.

Domain	Respondent Categories	Means	Post Hoc Comparisons of Category Means	Differences Between Means	P - value
proposed model of downward accountability	Senior Management	4.40	Senior Management - Executive Management	*0.11875	0.001
	Middle Management	4.34	Senior Management - Agricultural Leadership	*0.07875	0.020
	Executive Management	4.28			
	Agricultural Leadership	4.32			

Determining the respondents' approval of the criteria of the proposed model of downward accountability is an approach to improving the quality of agricultural extension services provided to farmers in Iraq

Evaluation of the Feasibility of Agricultural Extension Services

The results showed that the averages of the respondents' agreement in the field of evaluating the feasibility of the counseling service, which numbered (5) standards, ranged between (4.27-4.44) degrees, on a scale of agreement whose highest degree was (5) degrees and whose lowest degree was (1) degree, with an overall average of agreement of (4.34) degrees, and that all standards were at a level of agreement towards completely agree.

Table (3): Average numerical values for the respondents' agreement with the criteria for Evaluation of the Feasibility of Agricultural Extension Services

criteria Evaluation of the Feasibility Agricultural Extension Service	Rank	Weighted Mean	Relative Weight
The Connection of Extension Services to the Core Agricultural Activities of Farmers and Their Families.	1	4.44	88.80
Building the Service Based on the Basic Needs and Problems of Farmers and Their Families in Their Agricultural Activities.	2	4.39	87.80
Building the Service Based on Current Developments Relevant to Agricultural Activities.	3	4.33	86.60
Building the Service Based on the Interests and Desires of Farmers and Their Families.	4	4.29	85.80
Clarity of the Objectives of Extension Services Aimed at Serving Farmers, Addressing Their Needs, and Solving Their Problems.	5	4.27	85.40
Overall Mean		4.34	86.80
Senior Management		4.42	88.40
Middle Management		4.32	86.40
Executive Management		4.30	86.00
Agricultural Leadership		4.33	86.80
F (2.127) p-value < (0 .137)			
(N=395) Senior Management (17), Middle Management (84), Executive Management (159), Agricultural Leadership (135)			

Accordingly, the null hypothesis is accepted, which states: "There are no statistically significant differences between the averages of the respondents' approval categories according to the criteria for evaluating the effectiveness of the extension service." as shown in Table (3).

From Table (3) the following can be concluded: 1. The awareness of the respondents in the extension and agricultural organizations (senior, middle and executive managements and agricultural leaders) of the importance of the standards of the feasibility of the extension service, and their inclusion in the model, in a way that ensures the achievement of effective downward accountability to improve the quality of the extension services provided to farmers through the service's connection and its construction on the needs, desires and interests of farmers. 2. The respondents' views on the criteria for the feasibility of the extension service are consistent, and this confirms the absence of significant differences, which means their awareness of the importance of the criteria for the feasibility of the extension service.

Evaluating farmers' participation in the extension service

The results showed that the averages of the respondents' agreement in the field of evaluating farmers' participation in the extension service, which numbered (9) criteria, ranged between (4.29-4.43) degrees, on a scale of agreement whose highest degree was (5) degrees and whose lowest degree was (1) degree, with a total average of agreement amounting to (4.37) degrees, and that all the criteria were at an agreement level towards completely agree. The results also showed that there were no significant differences between the averages of the respondents' approval categories (senior management, middle management, executive management, agricultural leaders) for the criteria for evaluating farmers' participation in the extension service, which was determined by one-way analysis of variance (ANOVA), where the p-value reached (0.239) at a significance level of (0.05). Accordingly, the null hypothesis is accepted, which states: "There are no statistically significant differences between the averages of the respondents' approval categories according to the criteria for evaluating farmers' participation in the extension service.". As shown in Table (4).

From Table (4) the following can be concluded: 1. The awareness of the respondents in the extension and agricultural organizations (senior, middle and executive management and agricultural leaders) of the importance of the criteria for evaluating farmers' participation in the extension service, and including it in the model, in a way that ensures improving and developing the quality of the extension service provided to farmers by involving farmers in the decisions and processes of providing and evaluating the service throughout its stages, starting from its preparation to its evaluation. 2. Harmony of the respondents' views towards agreeing on the criteria for evaluating farmers' participation in the extension service. This confirms the absence of significant differences, which means their awareness of the importance of farmers' participation in the extension service.

Evaluation of the Content of Extension Services

The results showed that the averages of the respondents' agreement in the field of the content of the extension service, which numbered (8) criteria, ranged between (4.26-4.41) degrees, on a scale of agreement whose highest degree was (5) degrees and whose lowest degree was (1) degree, with a total average of agreement amounting

to (4.33) degrees. And that all the criteria were at an agreeable level towards a very agreeable direction.

Table (4): Numerical values of the averages of respondents' agreement with the criteria for Evaluating farmers' participation in the extension service:

criteria evaluating farmers' participation in the extension service	Rank	Weighted Mean	Relative Weight
The Involvement of Farmers and Other Target Groups in the Farm (Women, Youth) in Identifying the Basic Needs and Problems They Face, Which Are Fundamental in Designing Extension Programs and Services.	1	4.43	88.60
Farmers' Participation in All Decisions Related to Extension Services, from Identification to Implementation, Including Evaluation and Accountability.	2	4.41	88.20
Their Participation in Selecting the Technologies to Be Introduced or Disseminated through Extension Services on Their Fields.	3	4.39	87.80
Their Participation in the Process of Monitoring the Implementation of Extension Services.	4.5	4.38	87.60
Their Role in Adapting Technologies to Suit Their Conditions and Environments.	4.5	4.38	87.60
Their Participation in All Phases of the Implementation Process of Extension Service Programs and Activities.	6	4.37	87.40
Their Participation in Defining the Content and Technologies of Extension Services to Be Provided to Them.	7	4.32	86.40
Their Participation in Implementing Follow-up Programs in Their Fields (Verification of Results).	8	4.30	86.00
Their Participation in Setting the Goals to Be Achieved by Extension Services.	9	4.29	85.80
Overall Mean		4.37	87.40
Senior Management		4.39	87.80
Middle Management		4.37	87.40
Executive Management		4.36	87.20
Agricultural Leadership		4.35	87.00
F (1.477) p-value< (0 .239)			
(N=395) Senior Management (17), Middle Management (84), Executive Management (159), Agricultural Leadership (135)			

The results also showed significant differences between the averages of the respondents' approval categories (senior management, middle management, executive management, agricultural leadership) for the standards of evaluating the content of the extension service, which was determined by one-way analysis of variance (ANOVA) where the P-value reached (0.000) at a significance level of (0.05), Accordingly, the alternative hypothesis is accepted, which states: "There are statistically significant differences between the averages of the respondents' approval categories according to the criteria for evaluating the content of the counseling service." It was found that these differences are statistically significant in favor of the category of senior and middle management compared to the categories of executive

management and agricultural leadership, according to the test of the least significant difference LSD. As shown in Tables (5) (6).

Table (5): Averages of the numerical values of the respondents' approval of the Criteria evaluation of the content of extension services

Criteria Evaluation of the Content of Extension Services	Rank	Weighted Mean	Relative Weight
The Connection of Extension Services to the Core Agricultural Activities of Farmers for Developing Their Technical Capabilities.	1	4.41	88.20
Addressing the Challenges Faced by Farmers, including: (Sustainability of Increased Productivity, Sustainability of Quality Improvement, Land Conservation, Water Use Efficiency, Climate Variability, Improving Economic Returns, and Improving Livelihoods).	2.5	4.38	87.60
Relevance of the Service, including: (Providing Solutions Relevant to Farmers' Basic Needs and Problems, Offering Solutions to Help Farmers Tackle Their Environmental Challenges (Land Degradation, Water Scarcity, Climate Change), and Offering a Variety of Components Such as: (Recommendations, Practices, Technologies, Organizational Methods, Marketing Strategies)).	2.5	4.38	87.60
Reliability and Modernity, including: (Ensuring the Service Is Delivered by Fully Trusted Sources (Proven Success Under Their Conditions), Describing the Service as Modern, contributing to the Modernization of Their Activities or Farms, Achieving Better Market Linkages for Farmers (Beyond Local Markets), and Encouraging Farmers to Innovate in Family-Based Agricultural Practices).	4	4.35	87.00
Practicality of the Service: The Feasibility of Implementing Its Content in Their Specific Conditions.	5	4.32	86.40
Extension Services Addressing the Dimensions of Needs and Core Problems Faced by Farmers and Other Farm Family Members.	6	4.30	86.00
The Connection of Extension Services to the Interests, Desires, Aspirations, and Goals of Farmers.	7	4.27	85.40
The Extension Service Exhibits Sustainability for Farmers.	8	4.26	85.20
Overall Mean		4.33	86.60
Senior Management		4.46	89.20
Middle Management		4.35	87.00
Executive Management		4.26	85.20
Agricultural Leadership		4.25	85.00
F (12.522) p-value < (0.000)			
(N=395) Senior Management (17), Middle Management (84), Executive Management (159), Agricultural Leadership (135)			

From Tables (5) (6), the following can be concluded: 1. The awareness of the respondents in the extension and agricultural organizations (senior, middle and executive managements and agricultural leaders) of the importance of the standards for evaluating the content of the extension service, and including them in the model, in a way that ensures the improvement and development of the quality of the

extension service provided to farmers through its connection to the basic activity of farmers and its suitability to their needs to enable them to face their environmental and agricultural challenges. 2. The awareness of the senior and middle managements of the importance of the standards of the service content in the downward accountability in a way that ensures the improvement of the extension service provided to farmers, as a result of their administrative responsibility in planning and their interest in the outputs of the service provided to the targeted.

Table (6): Results of post-hoc comparisons of the LSD test for the field of evaluating the content of the extension service according to the averages of the respondents' categories.

Domain	Respondent Categories	Means	Post Hoc Comparisons of Category Means	Differences Between Means	P -value
Evaluation of the Content of Extension Services	Senior Management	4.46	Senior management - Middle management	*0.10625	0.009
	Middle Management	4.35	Senior management - Executive management	*0.19375	0.000
	Executive Management	4.26	Senior management - Agricultural leadership	*0.20375	0.000
	Agricultural Leadership	4.25	Middle management - Executive management	*0.08750	0.028
			Middle management - Agricultural leadership	*0.09750	0.016

Evaluation of the methods and style for providing the extension service

The results showed that the averages of the respondents' agreement in the field of evaluating the style and method of providing the counseling service, which numbered (12) standards, ranged between (4.20-4.40) degrees, on a scale of agreement with the highest degree at (5) degrees and the lowest degree at (1) degree, with a total average of agreement amounting to (4.28) degrees. All the criteria were at an agreeable level towards very agreeable, and the results showed significant differences between the averages of the approval of the respondents' categories (senior management, middle management, executive management, agricultural leadership), which was determined by one-way analysis of variance (ANOVA) where the P-value reached (0.009) at a significance level of (0.05) Accordingly, the alternative hypothesis is accepted, which states: "There are statistically significant differences between the averages of the respondents' categories' approval according to the criteria for evaluating the method and approach to providing extension services." It was found that these differences are statistically significant in favor of the agricultural leadership category compared to the senior, middle and executive management, according to the Least Significant Difference (LSD) test, as shown in Tables (7) (8).

From Tables (7) and (8), the following can be concluded: 1. The awareness of the respondents in the extension and agricultural organizations (senior, middle and executive managements and agricultural leaders) of the importance of the criteria for evaluating the method and way of providing the extension service, and including it in the model, in a way that ensures achieving downward accountability to improve and develop the quality of the extension service provided to farmers by having

extension workers listen to the opinions and observations of farmers, while adopting effective dialogue mechanisms that ensure an effective response from extension service providers to the problems, desires, interests and needs of farmers. 2. Agricultural leaders' awareness of the importance of extension service providers listening to farmers' opinions and observations, while adopting effective dialogue mechanisms that ensure an effective response from extension service providers.

Table (7): Average numerical values of respondents' agreement on the criteria evaluation of the methods and style for providing the extension service.

criteria Evaluation of the methods and style for providing the extension service	Rank	Weighted Mean	Relative Weight
Listening to Farmers' Opinions, Observations, and Comments During the Planning and Implementation of Extension Services.	1	4.40	88.00
Rapid Response of Extension Organizations to Requests for Extension Services.	2	4.37	87.40
Adopting Dialogue and Interaction Between Relevant Stakeholders, Including Farmers (Target Beneficiaries) and Extension Service Providers.	3	4.36	87.20
Identifying Problems That Arise During Farmers' Implementation of New Practices and Recommendations.	4	4.30	86.00
Using Methods That Enable Farmers to Engage in Field-Based Learning from One Another.	5	4.28	85.60
Utilizing Direct Communication Methods to Facilitate Farmers' Access to Extension Services.	6	4.27	85.40
Ensuring the Transfer of Information and Experiences Between Farmers (Target Beneficiaries) and Extension Service Providers.	7.5	4.25	85.00
Addressing Issues That Emerge as a Result of Implementation in a Timely Manner.	7.5	4.25	85.00
Monitoring Farmers in the Application of New Technologies and Practices in Their Fields.	9	4.24	84.80
Providing Farmers with Opportunities to Solve Problems, Disseminate Family-Based Innovations, and Share Their Expertise Within Their Communities.	10	4.22	84.40
Using Modern Communication Technologies (Mobile Phones and Applications) to Access Extension Services.	11.5	4.20	84.00
Receiving Farmers' and Their Families' Calls to Request Extension Service	11.5	4.20	84.00
Overall Mean		4.28	85.60
Senior Management		4.26	85.20
Middle Management		4.26	85.20
Executive Management		4.22	84.40
Agricultural Leadership		4.37	87.40
F(4.315) p-value< (0.009)			
(N=395) Senior Management (17), Middle Management (84), Executive Management (159), Agricultural Leadership (135)			

Table (8): Results of post-hoc comparisons of the LSD test for the field of evaluating the style and method of providing extension services according to the averages of the respondents' categories.

Domain	Respondent Categories	Means	Post Hoc Comparisons of Category Means	Differences Between Means	P -value
Evaluation of the methods and style for providing the extension service	Senior Management	4.26	Agricultural leaders - senior management	0.11833*	0.013
	Middle Management	4.26			
	Executive Management	4.22	Agricultural leaders - middle management	0.10917*	0.022
	Agricultural Leadership	4.37	Agricultural leaders - executive management	0.15750*	0.001

Evaluation of Farmers' Accountability of Extension Service Providers

The results showed that the averages of respondents' approval in the field of farmers' accountability to extension service providers, which numbered (14) criteria, ranged between (4.29-4.48) degrees, on a scale of approval with a maximum of (5) degrees and a minimum of (1) degrees, with an overall average of approval of (4.36) degrees. All the criteria were at a level of agreement towards a very agreement, and the results showed that there were no significant differences between the averages of the approval of the respondents' categories (senior management, middle management, executive management, agricultural leadership), which was determined by one-way analysis of variance (ANOVA), where the p-value reached (0.283) at a significance level of (0.05), Accordingly, the null hypothesis is accepted, which states that "there are no statistically significant differences between the averages of the respondents' categories' approval according to the criteria for evaluating farmers' accountability to extension service providers."as shown in Table (9).

From Table 1, the following can be concluded: 1. The awareness of respondents in extension and agricultural organizations (senior, middle, and executive administrations and agricultural leaders) of the importance of standards for evaluating the accountability of farmers to extension service providers, and including them in the model, in a way that ensures the improvement and development of the quality of extension service provided to farmers through the service providers' respect for the values and beliefs of farmers in addition to their possession of the capabilities of insight and clarification of the service provided and the use of methods. Suitable for all categories of farm personnel (men, women, youth). 2. Harmony of the respondents' viewpoints towards agreeing on the criteria for evaluating farmers' accountability to extension service providers. This confirms the absence of significant differences, which means their awareness of the importance of farmers' accountability to extension service providers in the extension service.

Table (9): Averages of the numerical values of the respondents' approval of the criteria for Evaluation of Farmers' Accountability Extension Service Providers

criteria Evaluation of Farmers' Accountability Extension Service Providers	Rank	Weighted Mean	Relative Weight
Respect of Extension Service Providers for the Beliefs and Values of Farmers and Their Families.	1	4.48	89.60
Their Ability to Provide Insight and Clarity While Delivering Extension Services.	2	4.46	89.20
Effective Use of Communication Methods Appropriate for the Nature of Farmers.	3	4.43	88.60
Extension Service Providers Possess Both Theoretical and Practical (Field) Expertise in Core Agricultural Activities for the Family (Family Farm).	4	4.38	87.60
Encouraging Farmers to Practice Downward Accountability as a Right They Are Entitled To.	5	4.37	87.40
Possessing Persuasive Abilities to Promote Innovations, Technologies, and Developments.	6.5	4.36	87.20
Extension Service Providers Have the Ability to Interact with Farmers and Their Family Members Working on the Farm.	6.5	4.36	87.20
The Relevance of Extension Service Providers' Expertise to the Core Agricultural Activities Practiced by Farmers and Their Families.	8	4.35	87.00
Extension Service Providers Clearly Define and Explain the Extension Service and Its Activities (Transparency).	9	4.34	86.80
Extension Service Providers Display Integrity in Transmitting Data, Information, Needs, and Problems.	10.5	4.32	86.40
Possessing Skills in Delivering Electronic Extension Messages (Directly or Indirectly).	10.5	4.32	86.40
Availability of Female Agricultural Extension Workers to Provide Services to Rural Women.	12	4.31	86.20
Extension Service Providers Have the Ability to Engage in Constructive Dialogue with Farmers and Their Families Working on the Farm.	13	4.30	86.00
Respect for the Experience, Knowledge, and Practices of Farmers and Their Families by Extension Service Providers.	14	4.29	85.80
Overall Mean		4.36	87.20
Senior Management		4.40	88.00
Middle Management		4.37	87.40
Executive Management		4.32	86.40
Agricultural Leadership		4.36	87.20
F(1.304) p-value <(0.283)			
(N=395) Senior Management (17), Middle Management (84), Executive Management (159), Agricultural Leadership (135)			

Evaluation of Outcomes Extension Services Provided to Farmers

The results showed that the averages of the respondents' agreement in the field of evaluating the results achieved from the service provided to farmers, which

numbered (13) criteria, ranged between (4.16-4.56) degrees, on a scale of agreement whose highest degree was (5) degrees and whose lowest degree was (1) degree, with an overall average of agreement amounting to (4.39) degrees.

Table (10): Average numerical values of respondents' agreement with the criteria for Evaluation of the Outcomes of Extension Services Provided to Farmers.

criteria evaluation of outcomes extension services provided to :farmers	Rank	Weighted Mean	Relative Weight
Identifying the Skills Acquired in Operations (Land Preparation Management, Irrigation Management, Marketing Management).	1	4.56	91.20
Identifying the Economic Impacts on Farmers Resulting from Participation in the Extension Service.	2	4.49	89.80
Identifying the Technologies and Their Importance That Farmers Learned Through the Extension Service.	3	4.44	88.80
Identifying Practices That Prevent Correcting Extension Service Delivery.	4	4.43	88.60
Identifying the Technologies Implemented by Farmers Through Their Participation in Extension Programs and Services.	5.5	4.42	88.40
Identifying the Managerial Skills Acquired in Managing Agricultural Activities.	5.5	4.42	88.40
Identifying New Practices and Technologies Introduced to Farmers.	7.5	4.40	88.00
Identifying the Outcomes and Achievements in Productivity Resulting from Farmers' Participation in Extension Services (Improvement of Agricultural Production in Their Fields).	7.5	4.40	88.00
Identifying the Skills Acquired in Organizing Their Farm Operations.	9	4.34	86.80
Identifying the Information Acquired by Farmers from Their Participation in the Extension Service.	11	4.33	86.60
Identifying the Practices Gained Through Their Participation in the Extension Service.	11	4.33	86.60
Identifying the Skills Acquired in Agricultural Operations from Preparation (Land Preparation) to Marketing.	11	4.33	86.60
Identifying the Knowledge and Its Importance Gained from Participating in the Provided Extension Service.	13	4.16	83.20
Overall Mean		4.39	87.80
Senior Management		4.60	92.00
Middle Management		4.40	88.00
Executive Management		4.22	84.40
Agricultural Leadership		4.33	86.60
F (14.707) p-value < (0.000)			
(N=395) Senior Management (17), Middle Management (84), Executive Management (159), Agricultural Leadership (135)			

All the criteria were at an agreeable level towards very agreeable, and the results showed significant differences between the averages of the respondents' categories (senior management, middle management, executive management, agricultural leadership) for the criteria for evaluating the results achieved from the service

provided, which was determined by one-way analysis of variance (ANOVA), where the P-value reached (0.000) at a significance level of (0.05), Therefore, the alternative hypothesis is accepted, which states "there are statistically significant differences between the averages of the respondents' categories' agreement according to the criteria for evaluating the results achieved from the service provided to farmers." It was found that these differences are statistically significant in favor of the category of senior and middle management compared to the categories of executive management and agricultural leadership, according to the test of the least significant difference LSD. As shown in Tables (10) and (11).

Table (11): Results of post-hoc comparisons of the LSD test for the criteria for evaluating the results achieved from the service provided to farmers according to the averages of the respondents' categories.

Domain	Respondent Categories	Means	Post Hoc Comparisons of Category Means	Differences Between Means	P -value
Evaluation outcomes Extension Services Provided to Farmers:	Senior Management	4.60	Senior Management - Middle Management	0.20692*	0.001
	Middle Management	4.40	Senior Management - Executive Management	0.37846*	0.000
	Executive Management	4.22	Senior Management - Agricultural Leadership	0.27692*	0.000
	Agricultural Leadership	4.33	Middle Management - Executive Management	0.17154*	0.006

From Tables (10) and (11) the following can be concluded: 1. The awareness of the respondents in the extension and agricultural organizations (senior, middle and executive management and agricultural leaders) of the importance of the criteria for evaluating the results achieved from the service provided, and including them in the model, in a way that ensures improving and developing the quality of the extension service provided to farmers by identifying the farmers' acquired capabilities in the field of agricultural operations, starting from land management to marketing management, and the economic effects and what resulted from them in terms of increased production and improved economic income and the technologies they learned as a result of their participation in the service provided. 2. The awareness of the senior and middle management in the extension and agricultural organizations of the importance of the results achieved from the service represented by the economic impact resulting from increased production and improved farmers' income.

Evaluation of Farmers' Satisfaction with Extension Services

The results showed that the average agreement of the respondents in the field of the content of the counseling service, which numbered (16) standards, ranged between (4.24-4.39) degrees, on a scale of agreement whose highest degree was (5) degrees and whose lowest degree was (1) degree, with a total average of agreement of (4.30) degrees, and that all standards were at a level of agree towards very agree. The results also showed that there were no significant differences between the averages of approval of the categories of respondents (senior management, middle management, executive departments, and agricultural leaders), which was determined by one-way analysis of variance (ANOVA), where the P-value reached (0.068) at a

significance level of (0.05). Accordingly, the null hypothesis is accepted, which states: “There are no statistically significant differences between the averages of the approval scores of the respondent categories according to the criteria for evaluating satisfaction with extension services. "As shown in Table (12).

Table (12): Averages of the numerical values of the respondents' approval of the criteria for evaluating satisfaction with the extension service

criteria Evaluation of Farmers' Satisfaction with Extension Services	Rank	Weighted Mean	Relative Weight
Satisfaction with the Inclusiveness of the Service for All Family Members Working on the Farm (Farmer, Women, Rural Youth).	1	4.39	87.80
Satisfaction with the Extension Workers' Interaction with Farmers.	2	4.38	87.60
Satisfaction with the Method of Delivering Extension Services.	3	4.35	87.00
Satisfaction with the Solutions Provided for the Problems Faced in Agricultural Activities.	4	4.33	86.60
Satisfaction with the Approach to Delivering Extension Services.	5	4.32	86.40
Satisfaction with the Results (Productivity Impacts) of the Service Provided.	6	4.31	86.20
Satisfaction with the Relevance of Extension Services to Their Conditions and the Characteristics of Their Farm Systems.	7	4.30	86.00
Satisfaction with the Agricultural Practices Achieved.	8.5	4.29	85.80
Satisfaction with the Effectiveness of Extension Services in Meeting Their Needs, Solving Problems, and Addressing Challenges.	8.5	4.29	85.80
Satisfaction with What Extension Services Have Delivered (Recommendations, Practices, Technologies, Information, Knowledge).	10.5	4.28	85.60
Satisfaction with the Speed of Response to Service Requests.	10.5	4.28	85.60
Satisfaction with the Interaction and Flow of Information Between Farmers.	12	4.27	85.40
Satisfaction with the Organizational Skills Acquired.	13	4.26	85.20
Satisfaction with the Extension Service Providers.	14.5	4.25	85.00
Satisfaction with the Technical Skills Acquired.	14.5	4.25	85.00
Satisfaction with the Timing of Extension Service Delivery.	16	4.24	84.80
Overall Mean		4.30	86.00
Senior Management		4.33	86.60
Middle Management		4.30	86.00
Executive Management		4.29	85.80
Agricultural Leadership		4.27	85.40
F (2.503) p-value<(0.068)			
(N=395) Senior Management (17), Middle Management (84), Executive Management (159), Agricultural Leadership (135)			

From Table (12), the following can be concluded: A. The awareness of the respondents in the extension and agricultural organizations (senior, middle and executive managements and agricultural leaders) of the importance of the criteria for evaluating satisfaction with the extension service, and including them in the model, in a way that ensures improving and developing the quality of the extension service provided to farmers through their satisfaction with the comprehensiveness of the

service for all categories working on the farm, and their satisfaction with the method and way of providing the service and their dealings with farmers and the results and economic effects it achieves on farmers and their family members. B. The harmony of the respondents' opinions towards agreeing on the criteria for evaluating satisfaction with the extension service, and this confirms the absence of significant differences between the categories of respondents.

Response of extension service providers

The results showed that the averages of the respondents' agreement in the field of the response of extension service providers, which numbered (13) criteria, ranged between (4.24-4.40) degrees, on a scale of agreement with a maximum of (5) degrees and a minimum of (1) degrees, with a total average of agreement of (4.32) degrees. All criteria were at an agree level towards very agree. The results also showed that there were no significant differences between the averages of the respondents' agreement categories (senior management, middle management, executive management, agricultural leadership), which was determined by one-way analysis of variance (ANOVA), where the P-value reached (0.138) at a significance level of (0.05). Accordingly, the null hypothesis is accepted, which states: "There are no statistically significant differences between the averages of the respondents' categories' approval according to the response criteria of extension service providers." as shown in Table (13).

Table (13): Averages of the numerical values of the respondents' approval of the responsiveness of extension service providers

criteria Responsiveness of Extension Service Providers	Rank	Weighted Mean	Relative Weight
Listening to the opinions, observations, comments, complaints, and reactions of farmers (individually or in groups) by extension administrations and their staff regarding the services provided to them.	1.5	4.40	88.00
Utilizing the findings from farmers' reports on accountability, their reactions, observations, and messages as key inputs in decision-making processes for improving extension services.	1.5	4.40	88.00
Monitoring all social media publications related to farmers' evaluations, observations, and comments on the extension services provided.	3	4.38	87.60
Receiving evaluation reports (accountability reports) prepared by farmers, their associations, or unions (organizations) concerning the services provided to them.	4	4.36	87.20
Receiving messages and reports sent by farmers (the target beneficiaries) regarding the services provided to them.	5.5	4.33	86.60
Accepting responsibility for the results of the analysis, whether positive or negative (the summary of accountability outcomes, whether favorable or unfavorable).	5.5	4.33	86.60
Informing farmers (the target beneficiaries) about the decisions taken by extension administrations to improve services based on farmers' opinions and suggestions.	7	4.32	86.40
Identifying weaknesses, if any, in the services provided.	8.5	4.31	86.20

criteria Responsiveness of Extension Service Providers	Rank	Weighted Mean	Relative Weight
Ensuring the sustainability of extension services for farmers.	8.5	4.31	86.20
Reviewing complaints, suggestions, reactions, and evaluation (accountability) reports submitted by farmers regarding extension services.	10	4.30	86.00
Achieving farmers' satisfaction with all aspects of the service.	11	4.27	85.40
Deriving conclusions and insights about extension services based on the analysis of reports, messages, observations, and suggestions submitted by farmers.	12	4.26	85.20
Ensuring the quality of the extension services provided.	13	4.24	84.80
Overall Mean		4.32	86.40
Senior Management		4.35	87.00
Middle Management		4.33	86.60
Executive Management		4.29	85.80
Agricultural Leadership		4.32	86.40
F(1.928) p-value< (0.138)			
(N=395) Senior Management (17), Middle Management (84), Executive Management (159), Agricultural Leadership (135)			

From Table (13), the following can be concluded: 1. The awareness of the respondents in the extension and agricultural organizations (senior, middle, executive and agricultural leaderships) of the importance of the response criteria of extension service providers, and their inclusion in the model, in a way that ensures the improvement and development of the quality of the extension service provided to farmers by the administration listening to the opinions, observations and comments of farmers and everything published through social media and taking their opinions into account and making them basic inputs in providing the extension service. 2. The harmony of the respondents' views towards the approval of the response criteria of extension service providers, and this confirms the absence of significant differences between the categories of respondents

CONCLUSIONS

That agricultural extension workers in the senior and executive administrations and agricultural leaderships in Iraq see:

1. The importance of adopting downward accountability for extension service providers as an approach to improving the performance of this service, its effectiveness and achieving its feasibility**.**
2. The proposed model of downward accountability with its areas and paragraphs is acceptable to all of them in light of the conditions of farmers and extension work in our country.

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CONFLICT OF INTEREST

The authors state that there are no conflicts of interest with the publication of this work.

انموذج مقترح للمساءلة التنازلية مدخل في تحسين جودة الخدمات الارشادية الزراعية المقدمة للفلاحين في العراق

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الخلاصة

هدف البحث الى اعداد انموذج مقترح للمساءلة التنازلية مدخل في تحسين جودة الخدمة الارشادية الزراعية المقدمة للفلاحين في العراق ،وتحقيقا لهدف البحث أُعد مخططا تكون من (90) معياراً موزعاً على (8) مجالات رئيسية هي (تقويم جدوى الخدمة، تقويم مشاركة الفلاحين في الخدمة، تقويم محتوى الخدمة ,تقويم أسلوب وطريقة تقديم الخدمة ،تقويم مساءلة الفلاحين لمقدمي الخدمة ،تقويم النتائج المتحققة من الخدمة المقدمة للفلاحين، تقويم الرضا عن الخدمة، استجابة مقدمي الخدمة) ،وجمعت البيانات من عينة عشوائية طبقية شملت (395) في(8) محافظات عراقية (نينوى، صلاح الدين، بغداد، ديالى، بابل، النجف، ميسان، المثنى) بوساطة استبانة خلال الثلث الأخير من عام 2024 ،وخلصت النتائج الى ان متوسطات الموافقة على مجالات الانموذج المقترح للمساءلة تراوحت بين(4.28–4.39) وبمتوسط اجمالي موافقة بلغ مقداره (4.34) على مدرج ليكرت الخماسي (موافق تماماً، موافق، موافق الى حد ما، غير موافق، غير موافق تماماً) تراوحت قيمه الرقمية بين (5–1) درجة وجميعها تقع ضمن مستوى موافق باتجاه موافق تماماً، كما بينت النتائج عدم وجود فروق معنوية في اغلب مجالات الانموذج مما يشير الى اتفاق وجهات نظر المبحوثين لأهمية الانموذج وفاعليته في تحسين جودة الخدمات الارشادية ،وقد أوصى الباحثان بضرورة تبني الانموذج من قبل صناع السياسة ومتخذي القرار في وزارة الزراعة ومنظومة الارشاد الزراعي من خلال تضمين المساءلة التنازلية في برامج وانشطة الخدمات الارشادية المقدمة للفلاحين في العراق.

الكلمات المفتاحية: التقويم، الجدوى، المساءلة، المشاركة، الرضا.

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