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## Identifying Respondent Group Representation in Extension Capacity Assessments: A Meta-Synthesis of the Literature and a Primary Study

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# Identifying Respondent Group Representation in Extension Capacity Assessments: A Meta-Synthesis of the Literature and a Primary Study

## Abstract

A key factor in determining the future of agricultural extension efforts is ensuring that the voices of those who need to be heard are represented at all stages of the decision-making process. As agricultural extension becomes increasingly globalized, it is critical that the diversity of voices represented within capacity assessments likewise increases. Using two distinct approaches, the present study attempts to address a current gap within the extension literature specifically related to extension assessment respondent groups. First, 97 extension related assessment manuscripts were identified during a literature review and analyzed for respondent group. The results indicated most studies included only one respondent group. Among these assessments Clientele and Beneficiaries and Formal Power Roles were the respondent group categories most frequently examined. Next, a primary study was conducted to identify which respondent groups should be represented in capacity assessment according to agricultural extension experts. The panelists had the highest level of agreement regarding the inclusion of extension clientele and beneficiaries within capacity assessments. However, panelists agreed that representation from outside influences and formal power roles were also important to include in the capacity assessment process. The results indicate extension networks should purposively include a diverse set of respondents when conducting assessments to ensure a comprehensive perspective is represented.

## Keywords

capacity assessment, extension clientele, extension networks, meta-synthesis

## Erratum

A duplicate of this article appeared in an earlier volume of the journal. The journal erred in publishing "Lamm, K. W., Powell, A., Lamm, A., & Davis, K. E. (2021). Identifying Respondent Group Representation in Extension Capacity Assessments: A Meta-Synthesis of the Literature and a Primary Study. *Journal of International Agricultural and Extension Education*, 28(5), 65-95. DOI: <https://doi.org/10.4148/2831-5960.1031>" in the earlier volume, and the article has been withdrawn from the journal. The removed article's DOI (10.4148/2831-5960.1031) now directs to this article. A DOI number, which had not been created had and is non-function, was associated with the earlier published article. The article "Lamm, K. W., Powell, A., Lamm, A., & Davis, K. E. (2022). Identifying Respondent Group Representation in Extension Capacity Assessments: A Meta-Synthesis of the Literature and a Primary Study. *Journal of International Agricultural and Extension Education*, 29(2), 43-73. DOI: <https://doi.org/10.4148/2831-5960.1033>" represents the content which had been associated with non-functional DOI "10.5191/jiaee.2020.27439."

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## **Identifying Respondent Group Representation in Extension Capacity Assessments: A Meta-Synthesis of the Literature and a Primary Study**

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### **Abstract**

*A key factor in determining the future of agricultural extension efforts is ensuring that the voices of those who need to be heard are represented at all stages of the decision-making process. As agricultural extension becomes increasingly globalized, it is critical that the diversity of voices represented within capacity assessments likewise increases. Using two distinct approaches, the present study attempts to address a current gap within the extension literature specifically related to extension assessment respondent groups. First, 97 extension related assessment manuscripts were identified during a literature review and analyzed for respondent group. The results indicated most studies included only one respondent group. Among these assessments Clientele and Beneficiaries and Formal Power Roles were the respondent group categories most frequently examined. Next, a primary study was conducted to identify which respondent groups should be represented in capacity assessment according to agricultural extension experts. The panelists had the highest level of agreement regarding the inclusion of extension clientele and beneficiaries within capacity assessments. However, panelists agreed that representation from outside influences and formal power roles were also important to include in the capacity assessment process. The results indicate extension networks should purposively include a diverse set of respondents when conducting assessments to ensure a comprehensive perspective is represented.*

**Keywords:** capacity assessment, extension clientele, extension networks, meta-synthesis

## **Introduction**

Assessments examining needs or capacities are critical tools in improving the functioning and programming of agricultural extension services (Warner et al., 2016). This method is defined as a “systematic approach to studying the level of knowledge, ability, interest of attitudes of a defined audience or group involving a particular subject” (McCawley, 2009, p. 3) and provides extension agents with the information necessary to determine gaps in effectiveness (Garst & McCawley, 2015). Within agricultural extension, assessments help to identify training and education needs for extension agents and farmers (Heaney-Mustafa et al., 2018; Moore & Harder, 2016), extension agent competencies (Ghimire et al., 2017), barriers to extension agents and networks (Seiler-Martinez et al., 2018), capacities of extension networks (Lamm et al., 2021; Camillone et al., 2020; Lamm et al., 2020) and behaviors related to technology adoption (Kamruzzaman et al., 2018).

Needs assessments have been instrumental in identifying weaknesses of extension services; however, such assessments sometimes fail to include diverse perspectives (Masambuka-Kanchewa et al., 2020a). The global agriculture industry is faced with complex issues that require multidisciplinary, collaborative solutions. International extension networks can meet this need by leveraging the diverse perspectives and knowledge available to them through actors and stakeholders. These actors include farmers (Moore & Harder, 2016), extension personnel (Ghimire et al., 2017), government authorities (Ojha, 2011), non-governmental organizations (NGOs; Feder et al., 2011), and academic researchers (Davis et al., 2018). Primarily, extension assessments have included input from government authorities, extension personnel, and clientele. However, greater insight into extension may be gained by including other actors involved in agricultural production. By including traditionally excluded or underrepresented respondent groups within future assessments, extension networks can increase availability of innovative services that enable agricultural producers to thrive amid complex challenges (Masambuka-Kanchewa et al., 2020b).

At the time of writing, there is no study that exists which comprehensively examines the respondent groups included in extension capacity assessments. This manuscript attempts to address a current gap within the international extension literature by generating a comprehensive list of respondent groups typically included in capacity assessment studies. Furthermore, this study identifies which respondent groups are underrepresented within the existing literature and advocates for the inclusion of these groups in future extension assessments. There is value in research conducted through a multidisciplinary and diverse lens. The current study will advance the extension capacity assessment literature by offering recommendations to improve diversity of respondent groups within capacity assessments.

### **Conceptual Framework**

Traditionally, extension efforts have focused on disseminating knowledge through the transfer of knowledgeable outsiders to less knowledgeable beneficiaries. However, “in order to move from a teaching paradigm towards a learning paradigm, highly participatory interaction and knowledge sharing among all actors is critical for extension institutions both in applied extension programs and teaching institutions” (Toness, 2001, p. 26). The conceptual framework for the present study is Participatory Action Research (Chevalier & Buckles, 2019) within a larger theoretical frame of social constructivism which “emphasizes the importance of culture and context in understanding what occurs in society and constructing knowledge based on this understanding” (Kim, 2001, para. 7). Participatory action research is used “for the purpose of taking action and making change” (MacDonald, 2012, p.36). This qualitative method focuses on moving social inquiry from a linear perspective towards a participatory one that considers the contexts of others’ lives (MacDonald, 2012). We chose this framework because we seek to make a change within extension assessments and participatory action research provides a way to do so, while considering the perspectives of affected persons.

Advisory programs have historically been rooted in learning processes and farmer participation, although the latter was not necessarily a core focus (Faure et al., 2012). In the past few decades, extension services have undergone a scientific revolution, shifting from a teaching-based approach to a participatory-based one (Norton & Alwang, 2020). This approach is rooted in experiential learning and emphasizes the practical application of technical skills (Davis, 2008; Faure et al., 2012; Davis et al., 2012; Gockowski et al., 2010). Through participatory-based extension programs, farmers can gain autonomy, become their own experts on technical aspects of their operation (Davis, 2008), and gain benefits related to income, crop, and livestock production (Davis et al., 2012). Employing a participatory, learning-based paradigm strengthens local capacity for problem definition and resolution, assessment and planning, independence, and sustainability (Toness, 2001; Kemmis et al., 2013).

The transition to participatory-based extension has resulted in numerous benefits for extension clientele. Quisumbing and Pandofelli (2010) found that the transition to demand-driven, participatory-based extension approaches increased access to extension services among poor female farmers in sub-Saharan African and South Asia. Furthermore, Kiara (2011) found that the involvement of youth and women, as well as poor and vulnerable populations, in extension resulted in the generation of solutions to address food insecurity and other issues in the location of study. In a systematic review of participatory extension programs,

Knook et al. (2018) found that 95% (n = 68) of the programs reviewed reported a positive difference following implementation of a participatory extension approach. Therefore, there is evidence to support that participatory-based extension programs produce meaningful outcomes, including “changing farm practices, enhancing social learning, increasing resilience to challenges and uncertainties, and sharpening farmers’ management skills and decision-making abilities” (Knook et al., 2018, p.310).

As extension shifts from a linear, top-down approach to a participatory approach, it is important that the methods for evaluating participatory-based programs also change. Traditionally, top-down extension approaches have been evaluated by whether the target group adopted a particular innovation (Murray, 2000). However, “predetermined measures and predetermined outcomes are not compatible with participatory processes” (Murray, 2000, p.523). In general, evaluations should provide a “report to justify spending and to understand whether the stated objectives of the program have been met” (Dart et al., 1998, p.29). As a result, the pressure to undertake impact or outcome-focused evaluations can influence the design of the program and shift participatory extension towards a top-down approach (Murray, 2000). Therefore, justifying participatory-based approaches to stakeholders other than program participants may be difficult (Murray, 2000).

Knook et al. (2018) offer insights as to how methods for assessing program effectiveness can be tailored to participatory-based approaches. Researchers should consider the design of an ex-post evaluation when designing a participatory-based program but should partner with participants to determine some of the outcome variables (Knook et al., 2018). Additionally, qualitative data should be used to complement quantitative data to reveal insights pertaining to the motivations and barriers for participants and the context in which programs are implemented (Knook et al., 2018). Finally, when conducting quantitative approaches, researchers must be careful to select methods that address endogeneity and selection bias, particularly when using quasi-experimental study designs (Knook et al., 2018).

A participatory-based extension approach cannot be widely integrated unless there is a concentrated effort across global extension organizations to involve all extension actors in the sharing and learning process (Toness, 2001). Pluralism within extension services complicates the mission to ensure that the needs of all farmers are met (Norton & Alwang, 2020). Extension can be conceptualized as a system connecting separate entities. While each separate entity may not be able to meet the needs of all clients itself, the whole system is responsible for meeting the needs of all individuals who require extension services (Norton & Alwang, 2020). One way that extension professionals can accomplish this objective is by including diverse respondents within capacity

assessments. Doing so can illuminate underlying factors and offer a more holistic view of an extension network's capacities and needs (Murray, 2000; Norton & Alwang, 2020).

### **Purpose and Research Objectives**

The purpose of this study is to identify groups commonly represented in extension assessment processes. The purpose was addressed using the following research objectives:

1. Conduct meta-synthesis of literature to examine, identify, and categorize extension actors who participated in extension assessments.
2. Conduct a primary study to generate consensus on which respondent groups should be included in extension assessments.

### **Methodology**

#### **Meta-Synthesis Process**

To address research objective one, a qualitative meta-synthesis of articles in the literature related to assessments in agricultural extension and rural advisory services (RAS) networks was conducted. Meta-synthesis is a relatively new qualitative research synthesis methodology that compiles findings from related articles to provide a wholistic view of the topic of interest (Walsh & Downe, 2005; Zimmer, 2006). Respondent group analysis was conducted within studies located in the literature

To identify relevant studies, a literature review was completed using Google Scholar and the University of Georgia library's online database. Keywords such as "capacity", "needs assessment", "evaluation", "agricultural extension", "organizational assessments", and "community assessments" were used. Additionally, there was a primary focus on these topics in international settings. The time frame for publication dates was set from 2006 to present day (2021 at the time of the writing). The timeframe was purposively selected to focus on more contemporary studies in the literature.

A total of 97 articles were identified for analysis. For the purposes of the present study, assessments, including both needs assessments, capacity assessments, as well as other related assessments, were included in the analysis. The included articles were further thematically analyzed to provide a summary of types of study, and frequencies, as additional context.

Based on recommendations within the literature (Zimmer, 2006) a heuristic set of respondent groups were used for the purposes of the study, additionally, summary tables were provided to limit reactivity and provide a

perspective from which to consider the analysis. Specifically, four groups were used in the analysis: 1) formal power roles, 2) informal power roles, 3) clientele and beneficiaries, and 4) outside influences. Formal power roles were defined as individuals who had the ability to affect change directly, e.g., organizational officers and staff. Informal power roles were defined as individuals that had influence but did not have the ability to affect change directly, e.g., funding agencies. Clientele and beneficiaries were defined as recipients of programming efforts, e.g., farmers. Outside influences were defined as individuals who operated in similar domains as agricultural extension networks but did not have a formal relationship with the organization of interest. One example is non-governmental organizations (NGOs) that offer services similar to those provided by extension networks.

### **Primary Study Process**

To address research objective two, a modified Delphi technique was utilized. Data were collected as part of a larger research study (Lamm & Lamm, 2017). This disclosure is made for clarity according to recommendations in the literature (Kirkman & Chen, 2011). The larger research study was conducted to identify capacities associated with effective extension network functioning across multiple thematic areas. Data for the current study were collected between June and December 2016 using an online questionnaire.

Members of the expert panel were nominated by the Global Forum for Rural Advisory Services (GFRAS), a global extension service network that connects smallholder farmers through global, national, and regional level networks. This organization gives formal structure to rural extension services and enables smallholder farmers to become integrated within systems of agricultural innovation (GFRAS, n.d.). Panelists were selected based on their involvement with, and expertise of, extension networks at an internal level (e.g., board member or local primary point of contact) or external level (e.g., extension worker, private sector representative, farmer representative). The resulting panel was comprised of 31 individuals representing 24 countries including: Bangladesh, Belgium, Bulgaria, Ecuador, Fiji, Georgia, Ghana, Guyana, India, Italy, Lao People's Democratic Republic, Malawi, Nicaragua, Nigeria, Pakistan, Philippines, Samoa, Solomon Islands, South Africa, Switzerland, Uganda, United States of America, and Uzbekistan. Panelists had an average of 18 years of extension experience, with the minimum years of experience being four and the maximum being 45.

For the purposes of the study, panelists were presented with a list of potential capacity respondent groups and asked to identify which group(s) were best suited to provide information imperative to capacity assessments, particularly as it relates to extension networks. A preliminary list of potential respondent

groups was based on a review of the extension capacity literature. The proposed list was then reviewed and updated by a group of five international extension experts. The experts represented extension programs at universities in the United States, an international policy organization, and a global extension coordination organization. A final list of 14 respondent groups were identified. For clarity, the groups were assigned by the researchers to one of the respondent groups identified in the meta-synthesis of the literature: 1) formal power roles, 2) informal power roles, 3) beneficiaries and clientele, and 4) outside influences.

Specifically, the Formal Power Roles group included the following: 1) steering committee or board members of regional and sub-regional networks and country fora, 2) GFRAS steering committee members, 3) GFRAS secretariat members. The Informal Power Roles group included: 1) international development partners, 2) GFRAS affiliates, 3) key funders of GFRAS, regional networks, and RAS. The Clientele and Beneficiaries group included: 1) RAS clientele (e.g., smallholder farmers), 2) people active in regional networks, and 3) people active in country fora. Lastly, the Outside Influences group included: 1) regional or country level affiliated organizations (e.g. NGO peers), 2) RAS providers that may not be directly associated with GFRAS/regional networks/country fora, 3) public sector officials that may not be directly affiliated with GFRAS/regional networks/country fora (e.g. Ministers of Agriculture and their direct reports), 4) private sector representatives that may not be directly affiliated with GFRAS/regional networks/country fora (e.g. business owners, suppliers, seed providers, transportation).

During the Delphi process, panelists were presented with the list of respondent groups generated by the researchers. Panelists were asked to indicate whether they thought the respondent group should be included in extension capacity assessments by marking either “Yes” or “No.” Panelists were also provided an opportunity to specifically identify additional group(s) they believed should be included through an open-ended question. Data analysis was completed using the SPSS version 21 software package. A composite consensus percentage was computed for each respondent group, quantifying the percentage of panelists that agreed the respondent group should be included in capacity assessments. A response rate of 94% ( $n = 29$ ) was obtained. A consensus threshold of 70% was determined *a priori* according to recommendations in the literature (see Keeney et al., 2011; Vernon, 2009).

## Results

### Objective One: Meta-Synthesis Findings

A meta-synthesis of the literature indicates there are numerous actors engaged in agricultural extension systems. The individuals in the reviewed studies were broadly classified under four categories: formal powers, informal powers, clientele and beneficiaries, and outside influences. Table 1 identifies the studies that were reviewed and categorizes the literature according to the four categories of extension assessment respondents.

**Table 1**

*Meta-Synthesis of Extension Assessment Respondents from Literature (n = 97)*

| Source                          | Formal<br>Power<br>Roles | Informal<br>Power<br>Roles | Clientele and<br>Beneficiaries | Outside<br>Influences |
|---------------------------------|--------------------------|----------------------------|--------------------------------|-----------------------|
| Abi-Ghanem et al., 2013         | X                        |                            |                                |                       |
| Adisa, 2011                     |                          |                            | X                              | X                     |
| Agbarevo, 2013                  |                          |                            | X                              |                       |
| Aker, 2011                      | X                        |                            |                                |                       |
| Arndt et al., 2016              | X                        |                            |                                |                       |
| Bates, 2006                     |                          |                            |                                | X                     |
| Bird et al., 2016               |                          | X                          |                                |                       |
| Bramwell et al., 2017           |                          |                            | X                              |                       |
| Bunyatta et al., 2006           |                          |                            | X                              | X                     |
| Cahyono & Agunga, 2016          | X                        |                            |                                |                       |
| Charalambous-Snow & Ingram 2011 | X                        |                            | X                              | X                     |
| Chizari et al., 2006            | X                        |                            |                                |                       |
| Chukwuone et al., 2006          | X                        |                            | X                              |                       |
| Cidro & Radhakrishna, 2006      | X                        |                            | X                              |                       |
| Clark et al., 2016              | X                        | X                          | X                              |                       |
| Comito et al., 2018             |                          |                            | X                              |                       |
| David, 2007                     |                          |                            | X                              |                       |
| Davis, 2008                     | X                        |                            |                                |                       |
| Davis et al., 2012              |                          |                            | X                              |                       |
| Davis & Spielman, 2017          | X                        | X                          |                                | X                     |
| Dolly, 2009                     |                          |                            | X                              |                       |
| Dooley et al., 2018             |                          |                            | X                              |                       |
| Dragon & Place, 2006            |                          | X                          | X                              |                       |
| Duo & Bruening, 2007            | X                        | X                          |                                |                       |
| Erbaugh et al., 2007            | X                        | X                          |                                | X                     |
| Faure et al., 2012              |                          | X                          | X                              |                       |
| Fleischer et al., 2002          | X                        |                            |                                |                       |

**Table 1** (continued).

|                                       |   |   |   |   |
|---------------------------------------|---|---|---|---|
| Foti et al., 2007                     |   |   | X |   |
| Ganpat, Harder et al., 2014           | X |   |   |   |
| Ganpat, Webster et al., 2014          |   |   | X |   |
| Ganpat et al., 2016                   | X |   |   |   |
| Ganpat et al., 2017                   |   |   | X |   |
| Ghimire et al., 2017                  |   |   | X |   |
| Gockowski et al., 2010                |   |   | X |   |
| Harder et al., 2011                   |   |   | X |   |
| Harder et al., 2013                   | X |   |   |   |
| Heaney-Mustafa et al., 2018           | X |   |   | X |
| Heaton et al., 2012                   | X |   | X |   |
| Hellin, 2012                          | X |   | X |   |
| Hoque & Usami, 2007                   | X |   |   |   |
| Hossain et al., 2010                  | X |   |   | X |
| Janeiro et al., 2015                  | X |   |   |   |
| Kamruzzaman et al., 2018              | X |   |   |   |
| Kante et al., 2009                    |   |   | X |   |
| Karbasioun et al., 2007               |   |   | X |   |
| Kim et al., 2009                      |   | X |   | X |
| Kiptot & Franzel, 2014                | X |   |   |   |
| Kumar et al., 2008                    |   |   | X |   |
| Labarthe & Laurent, 2013              | X |   |   |   |
| Lameck et al., 2019                   |   |   | X |   |
| Lamm et al., 2013                     | X |   |   |   |
| Lamm et al., 2017                     |   | X | X | X |
| Lamm et al., 2018                     |   | X | X | X |
| Lamm et al., 2019                     |   | X | X | X |
| Lamm, et al., 2020                    |   | X | X | X |
| Lamm, Masambuka-Kanchewa et al., 2020 | X | X |   |   |
| Lamm et al., 2021                     |   | X |   |   |
| Landini, 2020                         | X |   |   |   |
| Lego et al., 2018                     | X |   |   |   |
| Leta et al., 2017                     |   | X | X |   |
| Manfre et al., 2013                   |   |   | X |   |
| Meagy et al., 2013                    |   |   | X |   |
| Michailidis, 2007                     |   |   | X |   |
| Milder et al., 2014                   |   | X |   |   |
| Minh et al., 2014                     | X |   |   |   |
| Moore & Harder, 2015                  | X |   |   | X |
| Moriba et al., 2011                   | X |   | X |   |
| Namdar et al., 2010                   | X |   |   |   |
| Okorley et al., 2009                  | X |   |   |   |

**Table 1** (continued).

|                              |   |   |   |   |
|------------------------------|---|---|---|---|
| Okorley et al., 2014         |   |   | X |   |
| Oladele, 2008                |   |   | X |   |
| Oladele, 2012                | X |   |   |   |
| Owolade & Kayode, 2012       |   |   | X |   |
| Ragasa et al., 2013          | X | X |   |   |
| Ramdwar et al., 2015         | X |   |   | X |
| Richardson & Roberts, 2020   | X |   |   |   |
| Rigyal & Wongsamun, 2011     | X |   |   |   |
| Roberts et al., 2015         |   |   | X |   |
| Roberts et al., 2016         | X |   |   |   |
| Rumble et al., 2018          | X |   |   |   |
| Saleh et al., 2016           | X |   | X |   |
| Sandlin, 2015                | X | X | X |   |
| Sanga et al., 2014           |   |   | X |   |
| Schut et al., 2015           | X |   | X |   |
| Seiler-Martinez et al., 2018 |   |   |   | X |
| Sjah et al., 2006            | X |   | X | X |
| Spielman et al., 2014        | X |   | X |   |
| Strong & Harder, 2011        | X |   |   |   |
| Suvedi & Ghimire, 2016       |   |   | X |   |
| Tanzo & Yusongco, 2014       | X |   |   |   |
| Tobin et al., 2012           | X |   | X |   |
| Tselaesele et al., 2018      |   |   | X |   |
| Umar et al., 2017            | X |   |   |   |
| Vatta et al., 2008           |   |   | X |   |
| Windon & Lewis, 2017         |   |   | X |   |
| Witt et al., 2008            |   |   | X |   |
| Zelaya et al., 2016          |   |   | X |   |

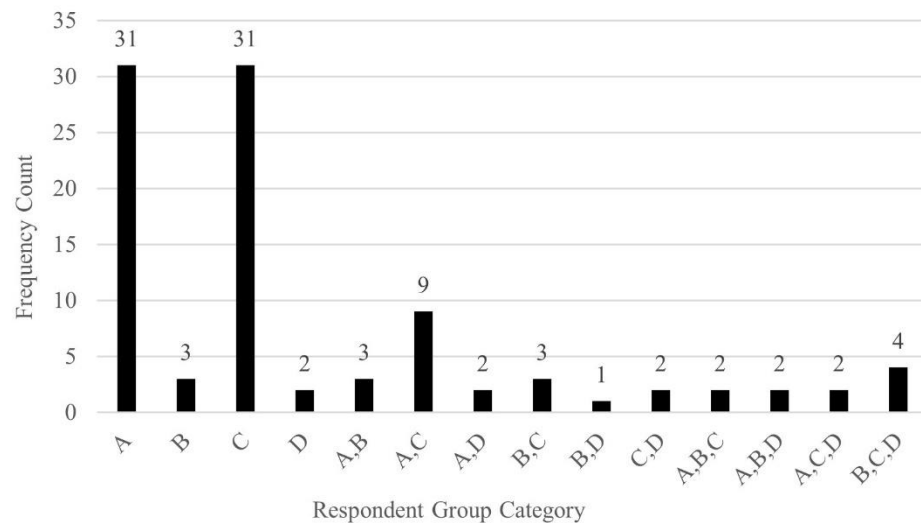
The Clientele and Beneficiaries group was represented most frequently, with 54.6% ( $n = 53$ ) of studies including a respondent group from this category. The Formal Power Roles category had the second highest frequency, with 52.6% ( $n = 51$ ) of studies examined including a respondent group from this category. Comparatively, 18.5% ( $n = 18$ ) of studies included a respondent group in the Informal Power Roles category, while 17.5% ( $n = 17$ ) of studies included a respondent group from the Outside Influences category.

At the individual article level, there were no studies that included respondent groups from all four categories. The majority of studies ( $n = 67$ ) included only one respondent group category. Of these articles, the categories with the highest frequency were Formal Power Roles ( $n = 31$ ) and Clientele and Beneficiaries ( $n = 31$ ). Additionally, 20 studies included respondent groups from two categories and ten studies included respondent groups from three categories.

Figure 1 displays the frequency counts for each respondent group category and combination of respondent group categories identified within the meta-synthesis.

**Figure 1**

*Frequency Counts of Respondent Group Categories Identified in Meta Synthesis*



*Note.* 'A' denotes Formal Power Roles, 'B' denotes Informal Power Roles, 'C' denotes Clientele and Beneficiaries, and 'D' denotes Outside Influences

### **Objective Two: Primary Study Results**

Panel members were presented a list of potential respondent groups and asked to identify which groups should be included in a capacity assessment process, specifically in relation to extension network assessments. The initial list of respondent groups as well as their associated consensus ratings are presented in Table 2.

**Table 2**

*Modified Delphi Technique Results: Level of Consensus with Capacity Assessment Respondent Groups (n = 14)*

| Item                                                                                                                                                                                          | Consensus<br>% |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| People active in regional networks <sup>C</sup>                                                                                                                                               | 96.3           |
| People active in country fora <sup>C</sup>                                                                                                                                                    | 96.3           |
| Steering committee or board members of regional and sub-regional networks and country fora <sup>A</sup>                                                                                       | 88.9           |
| Regional or country level affiliated organizations (e.g., NGO peers) <sup>D</sup>                                                                                                             | 85.2           |
| RAS clientele (e.g., smallholder farmers) <sup>C</sup>                                                                                                                                        | 77.8           |
| RAS providers that may not be directly associated with GFRAS /regional networks/country fora <sup>D</sup>                                                                                     | 70.4           |
| Public sector officials that may not be directly affiliated with GFRAS /regional networks/country fora (e.g., Ministers of Agriculture and their direct reports) <sup>D</sup>                 | 70.4           |
| Private sector representatives that may not be directly affiliated with GFRAS /regional networks/country fora (e.g., business owners, suppliers, seed providers, transportation) <sup>D</sup> | 66.7           |
| International development partners <sup>B</sup>                                                                                                                                               | 66.7           |
| GFRAS affiliates <sup>B</sup>                                                                                                                                                                 | 59.3           |
| GFRAS steering committee members <sup>A</sup>                                                                                                                                                 | 59.3           |
| Key funders of GFRAS, regional networks, and RAS <sup>B</sup>                                                                                                                                 | 51.9           |
| GFRAS secretariat members <sup>A</sup>                                                                                                                                                        | 48.2           |

Note: <sup>A</sup>Formal Power Roles; <sup>B</sup>Informal Power Roles; <sup>C</sup>Clientele and Beneficiaries; <sup>D</sup>Outside Influences.

Of the 14 groups, there were two groups that received a near unanimous agreement from the expert panel: 1) people active in regional networks, 2) people active in country fora. Thus, almost every panelist agreed that these groups would be best suited to provide information regarding capacity assessment in extension networks. Additionally, respondents were given the opportunity to indicate whether they felt other groups not included in the initial list should be considered. Among the panelists, 41% of did not consider the original list as complete and provided their recommendations for additional groups. A comprehensive list of the additional respondent groups is presented alphabetically in Table 3.

**Table 3*****Additional Panel-Identified Respondent Groups***


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|                                                                        |
|------------------------------------------------------------------------|
| Academic Institutions <sup>A</sup>                                     |
| Agricultural research networks and systems <sup>D</sup>                |
| Doers (e.g., agri-food producers) <sup>C</sup>                         |
| E-agriculture owners <sup>C</sup>                                      |
| Farmer leaders <sup>A</sup>                                            |
| Farmer organizations who provide member services <sup>A</sup>          |
| Formal/informal farmer groups and federations <sup>A</sup>             |
| Government mandate apex organization <sup>A</sup>                      |
| Media <sup>D</sup>                                                     |
| Private sector association <sup>D</sup>                                |
| Research and development practitioners and their networks <sup>A</sup> |
| Traders <sup>C</sup>                                                   |

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Note: <sup>A</sup>Formal Power Roles; <sup>B</sup>Informal Power Roles;

<sup>C</sup>Clientele and Beneficiaries; <sup>D</sup>Outside Influences

## **Conclusion, Discussion, and Recommendations**

### **Objective One – Meta-Synthesis of the Literature**

Extension services, particularly those run by public or government organizations, were created to address a need in the agricultural sector and to provide training and assistance to farmers and agricultural producers who may lack necessary skills, education, or resources. The results of the meta-synthesis indicate that most studies included representation from Clientele and Beneficiaries (n = 53) and Formal Power Roles (n = 51) when conducting extension assessments. Furthermore, the meta-synthesis revealed that the perspectives of individuals in informal power roles or outside influences were less likely to be considered in extension assessments.

Framing extension assessments through the lens of intended purpose enables agricultural and extension educators to determine which respondent groups should be included in the assessment. For example, if the purpose of an assessment is to identify competency or training needs, we recommend the inclusion of respondents from the Formal Power Roles (e.g., extension agents or extension network personnel) and the Clientele and Beneficiaries (e.g., farmers and community members) respondent group categories. Groups within these categories are most appropriate to include because these individuals will directly benefit from the increased training or competency development. Additionally, if an extension assessment is intended examine the effects of a certain type of

extension program or delivery method, a recommendation would be to include perspectives from Informal Power Roles and Outside Influences. While such assessments should include respondent groups who are directly impacted (e.g., extension agents and clientele), it is important to consider the effect of these programs and delivery methods in the context of other respondent groups as well. Individuals who represent respondent groups classified under Outside Influences or Informal Power Roles may be able to offer key insights about the extension program or delivery method that can be found only through a third-party perspective (i.e., as someone not directly involved with the service).

As a guiding principle, researchers are encouraged to ensure they are obtaining a diverse set of perspectives representative of the general target population. For example, Masambuka-Kanchewa et al. (2020a) found that gatekeepers in agricultural communities have a considerable amount of influence regarding the sampling of research subjects and the data collection process. Therefore, it is important for researchers to consider such barriers and ensure that data is collected from diverse sources to limit potential biases and expand generalizability.

### **Objective Two – Primary Study**

Analysis of the primary study data indicate a range of agreement regarding respondent groups that should be included in extension capacity assessments. Panel members almost unanimously agreed that two respondent groups, 1) individuals active in regional networks and 2) individuals active in country fora, were necessary to include in capacity assessments. The results of the primary study are consistent with the results of the analysis from objective one. Those involved in extension services (in this case, advisory networks and fora) should also be included in extension capacity assessments.

A somewhat surprising observation was that only 77.8% (n = 23) of panelists members agreed that RAS clientele (i.e., smallholder farmers, agricultural producers, and so forth) were necessary to include in extension capacity assessments. Within the extension literature, there is overwhelming support for researchers to increase their reliance on local or indigenous knowledge when conducting studies. Indeed, many scholars argue that the recipients of extension services (i.e., RAS clientele) should be directly involved in the research and improvement of extension (see Masambuka-Kanchewa et al., 2020b; Kmoch et al., 2018; Jacobi et al., 2017). Therefore, we assumed that a high percentage of expert panelists (85-95%) would agree that RAS clientele should be included in extension capacity assessments. Therefore, the fact that 22.2% (n = 6) of expert panelists did not think that RAS clientele should be included in extension capacity assessments was contrary to our assumptions.

The results of the expert analysis also provided additional insights. Specifically, the panelists indicated that respondent groups from the other categories (i.e., Formal Power Roles, Informal Power Roles, and Outside Influences) should be included in extension assessments. An overall theme within the findings is that panelists tended to agree local representation was more important than higher level representation (i.e., state, national, or international). For example, panelists expressed a higher level of agreement for the inclusion of regional or country level affiliated organizations (85.2%) than international development partners (66.7%) or private sector representatives that may not be directly affiliated with GFRAS, regional networks, or country fora (66.7%). Similarly, within the Formal Power Roles group, panelists expressed a higher level of agreement for the inclusion of steering committee or board members of regional and sub-regional networks and country fora (88.9%) than GFRAS secretariat members (48.2%).

### **Recommendations**

Based on the results of the present study, we recommend that future extension capacity assessments include representatives from a diversity of respondent groups. Most of the articles ( $n = 67$ ) in the meta-synthesis only included one respondent group category in the assessment process. This finding indicates that, in a majority of the studies, diverse perspectives may be missing from the assessment process. The results of the meta-synthesis indicated that individuals from respondent groups within the Formal Power Roles or Clientele and Beneficiaries categories were included most frequently; however, the results of the primary study indicate a lack of agreement regarding which respondent group categories should be included. Given the context for the study, the results would indicate that the panelists believed representation should be prioritized amongst Formal Power Roles at the lowest level of the program, specifically at the regional or country level. While these results may serve as a starting guideline for future studies, it may be important to include perspectives from other respondent group categories depending on the goals of the assessment. In general, to improve future extension capacity assessments, we recommend that the appropriate respondents be identified according to the intended outcome of the process.

When considering extension from a participatory perspective, it is possible to observe how each entity or respondent group may be related to the others (Chevalier & Buckles, 2019). The meta-synthesis indicated that 65% of the assessments reviewed included representation from only one of the respondent group categories. Therefore, we recommend that extension assessments shift from examining a singular group of actors to examining multiple interrelated groups.

Additionally, we recommend that extension services provide opportunities for different groups to participate in the assessment process. This participatory perspective may help to illuminate how decisions in one group effect another and how extension can balance the competing needs of different groups to offer equitable, innovative services.

A second recommendation would be for researchers to use the methods and results of the present study to inform future practice regarding capacity assessments. At the highest level, we recommend using the respondent group categories identified in the meta-synthesis to examine whether assessment respondents are representative of the intended audience. Moreover, the results of the primary study may inform which groups should be engaged in the process at a very specific level. Therefore, a recommendation for practice is to use the consensus results as a guide, but not a strict requirement. Thus, higher priority may be accorded to groups with higher levels of consensus in the primary study; however, groups with lower levels of consensus from the primary study may also be appropriate given different circumstances. For example, if a researcher wanted to conduct a capacity assessment regarding the reporting of objectives and results by GFRAS-affiliated extension services to key funding partners, it would be prudent to include participants that represented “key funders of GFRAS, regional networks, and RAS” even though the level of consensus regarding the inclusion of this group was lower relative to other groups. Similarly, the panelists’ recommendations of additional respondent groups should be considered as potential respondent groups for capacity assessments, based on context and environment.

Overall, the present study summarizes the contemporary literature related to extension assessments and provides recommendations for improving the relevancy and participatory nature of future assessments. It is not the intent of the study to recommend that every extension assessment include representatives from every possible respondent group category or individual respondent group. The researchers recognize that time and funding constraints may limit the number of respondent groups that are included within extension capacity assessments. However, agricultural and extension educators should consider implementing assessments that include multiple respondent groups when possible (Charalambous-Snow & Ingram, 2011) and should always strive to include diverse or underrepresented perspectives in their studies, not just the perspectives of individuals that are convenient to survey (Camillone et al., 2020; Masambuka-Kanchewa et al., 2020a). These recommendations should help to improve the utility and overall participatory nature of extension capacity assessment efforts (Chevalier & Buckles, 2019).

**Limitations**

Despite the novel nature of the present research, there are several limitations which must be acknowledged. First, although a thorough review of the contemporary extension assessment literature was undertaken, it is likely there were studies which were not included in the analysis. The exclusion or omission of any studies may influence the overall meta-synthesis results and interpretation. Accordingly, the results of the present study should be used as a starting point and be updated and revised as new data becomes available.

An additional limitation is related objective two and the associated results. Although every attempt was made to reduce the potential bias among panelist members (Garson, 2014), we recognize that panel members are inherently limited by the scope of their own experience, perspectives, and knowledge. Thus, the recommendations made by panel members concerning extension capacity assessment respondent groups may not be generalizable to other contexts.

## References

- Abi-Ghanem, R., Carpenter-Boggs, L., Koenig, R., Ullman, J., Murphy, K., & Pannkuk, C. (2013). Access to agricultural inputs, technology and information, communicating with farmers, and the role of women in agriculture: Perceptions of Iraqi extension agents. *Journal of International Agricultural and Extension Education*, 20(1), 6-18.  
<https://doi.org/10.5191/jiaee.2013.20101>
- Adisa, R. (2011). Management of farmer-herdsmen conflicts in North-Central Nigeria: Implications for collaboration between agricultural extension service and other stakeholders. *Journal of International Agricultural and Extension Education*, 18(1), 60-72.  
<https://doi.org/10.5191/jiaee.2011.18105>
- Agbarevo, M. N. B. (2013). Farmers' perception of effectiveness of agricultural extension delivery in Cross-River State, Nigeria. *Journal of Agriculture and Veterinary Sciences*, 2(6), 1-7.
- Aker, J. C. (2011). Dial 'A' for agriculture: A review of information and communication technologies for agricultural extension in developing countries. *Agricultural Economics*, 42(6), 631-647.  
<https://doi.org/10.1111/j.1574-0862.2011.00545.x>
- Arndt, C., Pauw, K., & Thurlow, J. (2016). The economy-wide impacts and risks of Malawi's farm input subsidy program. *American Journal of Agricultural Economics*, 98(3), 962-980.  
<https://doi.org/10.1093/ajae/aav048>
- Bates, R. M. (2006). Jumpstart your international extension experience with farmer-to-farmer. *Journal of Extension*, 44(6).  
<https://archives.joe.org/joe/2006december/iw1.php>
- Bird, B., Lamm, A. J., & Telg, R. (2016, February 7-9). Extension: Building common ground between leaders of agricultural and natural resources and public needs [Poster presentation]. Southern Region Conference of the American Association for Agricultural Education, San Antonio, TX, USA.  
<http://aaaeonline.org/resources/Documents/Southern%20Region/2016%20Poster%20Session%20Proceedings.pdf#page=105>
- Bramwell, S. G., Moorehead, S., Meade, A., Sero, R., Gray, S., & Nowlin, M. (2017). South Puget Sound agricultural producer needs assessment. Washington State University Extension.  
<https://s3.wp.wsu.edu/uploads/sites/2056/2017/04/South-Sound-Ag-Producer-Needs-Assessment-Final.pdf>

- Bunyatta, D., Mureithi, J., Onyango, C., & Ngesa, F. (2006). Farmer field school effectiveness for soil and crop management technologies in Kenya. *Journal of International Agricultural and Extension Education*, 13(3), 47-63. <https://doi.org/jiaee.2006.13204>
- Cahyono, E. D., & Agunga, R. (2016). Policy and practice of participatory extension in Indonesia: A case study of extension agents in East Java Province. *Journal of International Agricultural and Extension Education*, 23(3), 38-57. <https://doi.org/10.5191/jiaee.2016.23303>
- Camillone, N., Duiker, S., Bruns, M. A., Onyibe, J., & Omotayo, A. (2020). Context, challenges, and prospects for agricultural extension in Nigeria. *Journal of International Agricultural and Extension Education*, 27(4), 144-156. <https://10.5191/jiaee.2020.274144>
- Charalambous-Snow, E., & Ingram, P. (2011). Increasing communication effectiveness and efficiency between the Department of Agriculture and the Cypriot farmers they serve. *Journal of International Agricultural and Extension Education*, 18(1), 73-86. <https://doi.org/10.5191/jiaee.2011.18106>
- Chevalier, J. M., & Buckles, D. J. (2019). *Participatory action research: Theory and methods for engaged inquiry*. Routledge.
- Chizari, M., Baygi, A., & Breazeale, D. (2006). Analysis of the training needs of multi-functional extension agents associated with sustainability. *Journal of International Agricultural and Extension Education*, 13(1), 51-58. <https://doi.org/10.5191/jiaee.2006.13105>
- Chukwuone, N., Agwu, A. E., & Ozor, N. (2006). Constraints and strategies toward effective cost-sharing of agricultural technology delivery in Nigeria: Perception of farmers and agricultural extension personnel. *Journal of International Agricultural and Extension Education*, 13(1), 29-41. <https://doi.org/10.5191/jiaee.2006.13105>
- Cidro, D., & Radhakrishna, R. (2006). Farmers' and extension agents' perceptions of the Philippines hybrid rice program. *Journal of International Agricultural and Extension Education*, 13(3), 19-32. <https://doi.org/10.5191/jiaee.2006.13302>
- Clark, W. C., Tomich, T. P., van Noordwijk, M., Guston, D., Catacutan, D., Dickson, N. M., & McNie, E. (2016). Boundary work for sustainable development: Natural resource management at the Consultative Group on International Agricultural Research (CGIAR). *Proceedings of the National Academy of Sciences of the United States of America*, 113(17), 4615-4622. <https://www.pnas.org/content/113/17/4615>
- Comito, J., Haub, B. C., & Licht, M. (2018). Rapid needs assessments and response technique. *Journal of Extension*, 56(2). <https://archives.joe.org/joe/2018april/tt1.php>

- David, S. (2007). Learning to think for ourselves: Knowledge improvement and social benefits among farmer field school participants in Cameroon. *Journal of International Agricultural and Extension Education*, 14(2), 35-49. <https://doi.org/10.5191/jiaee.2007.14203>
- Davis, K. E. (2008). Extension in sub-Saharan Africa: Review and assessment of past and current models, and future prospects. *Journal of International Agricultural and Extension Education*, 15(3), 15-28. <https://doi.org/10.5191/2008.15302>
- Davis, K., Nkonya, E., Kato, E., Mekonnen, D. A., Odendo, M., Miiro, R., & Nkuba, J. (2012). Impact of farmer field schools on agricultural productivity and poverty in east Africa. *World Development*, 40(2), 402-413. <https://doi.org/10.1016/j.worlddev.2011.05.019>
- Davis, K., & Spielman, D. J. (2017). Applying the best-fit framework to assess and strengthen national extension and advisory services. *Journal of International Agricultural and Extension Education*, 24(3), 80-90. <https://doi.org/10.5191/jiaee.2017.24307>
- Davis, K., Dolly, D., Lamm, A. J., & Lamm, K. W. (2018). The future of extension: A network emergence perspective from the case of the Global Forum for Rural Advisory Services. *Journal of International Agricultural and Extension Education*, 25(4), 40-51. <https://doi.org/10.5191/jiaee.2018.25403>
- Dolly, D. (2009). An assessment of the implementation and outcomes of recent farmer field schools to improve vegetable production in Trinidad and Tobago. *Journal of International Agricultural and Extension Education*, 16(2), 7-19. <https://doi.org/10.5191/jiaee.2009.16201>
- Dooley, K. E., Dobbins, C. E., & Edgar, L. D. (2018). Using participatory rural appraisal for a community needs assessment in Timor-Leste. *Journal of International Agricultural and Extension Education*, 25(4), 63-73. <https://doi.org/10.5191/jiaee.2018.25405>
- Dragon, S., & Place, N. (2006). Perceptions of farmers, students, and faculty regarding university-based extension: A case study from EARTH University, Costa Rica. *Journal of International Agricultural and Extension Education*, 13(3), 65-78. <https://doi.org/10.5191/jiaee.2006.13305>
- Duo, S., & Bruening, T. (2007). Assessment of the Sasakawa Africa Fund for extension education in Ghana. *Journal of International Agricultural and Extension Education*, 14(1), 5-13. <https://doi.org/10.5191/jiaee.2007.14101>

- Erbaugh, M., Kibwika, P., & Donnermeyer, J. (2007). Assessing extension agent knowledge and training needs to improve IPM dissemination in Uganda. *Journal of International Agricultural and Extension Education*, 14(1), 59-70. <https://doi.org/10.5191/jiaee.2007.14105>
- Faure, G., Desjeux, Y., & Gasselin, P. (2012). New challenges in agricultural advisory services from a research perspective: A literature review, synthesis, and research agenda. *Journal of Agricultural and Extension Education*, 18(5), 461-492. <https://doi.org/10.1080/1389224x.2012.707063>
- Feder, G., Birner, R., & Anderson, J. R. (2011). The private sector's role in agricultural extension systems: Potential and limitations. *Journal of Agribusiness in Developing and Emerging Economics*, 1(1), 31-54. <https://doi.org/10.1108/20440831111131505>
- Fleischer, G., Waibel, H., & Walter-Echols, G. (2002). Transforming top-down agricultural extension to a participatory system: A study of costs and perspective benefits in Egypt. *Public Administration and Development*, 22(4), 309-322. <http://dx.doi.org/10.1002/pad.233>
- Foti, R., Nyakudya, I., Moyo, M., Chikuvire, J., & Mlambo, N. (2007). Determinants of farmer demand for "fee-for-service" extension in Zimbabwe: The case of Mashonaland Central province. *Journal of International Agricultural and Extension Education*, 14(1), 95-104. <https://doi.org/10.5191/jiaee.2007.14108>
- Ganpat, W. G., Narine, L. K., & Harder, A. (2017). The impact of farm visits on farmers' satisfaction with extension: Examining the dependence on individual methods in the Caribbean. *Journal of International Agricultural and Extension Education*, 24(3), 20-35. <https://doi.org/10.5191/jiaee.2017.24303>
- Ganpat, W. G., Ramjattan, J., & Strong, R. (2016). Factors influencing self-efficacy and adoption of ICT dissemination tools by new extension officers. *Journal of International Agricultural and Extension Education*, 23(1), 72-85. <https://doi.org/10.5191/jiaee.2016.23106>
- Ganpat, W. G., Harder, A., & Moore, A. (2014). Envisioning the future of extension and advisory services in the Caribbean. *Journal of International Agricultural and Extension Education*, 21(3), 19-31. <https://doi.org/10.5191/jiaee.2014.21302>
- Ganpat, W. G., Webster, N., & Narine, L. (2014). Farmers' satisfaction with extension services in the organization of Eastern Caribbean states. *Journal of International Agricultural and Extension Education*, 21(3), 49-62. <https://doi.org/10.5191/jiaee.2014.21304>
- Garson, G. D. (2014). *The Delphi method in quantitative research*. Statistical Associated Publishing.

- Garst, B. A., & McCawley, P. F. (2015). Solving problems, ensuring relevance, and facilitating change: The evolution of needs assessment within cooperative extension. *Journal of Human Sciences and Extension*, 3(2), 26-47. <https://www.jhseonline.com/article/view/684>
- Ghimire, R., Suvedi, M., Kaplowitz, M., & Richardson, R. (2017). Competency assessment as a way of determining training and educational needs of extension professionals in Nepal. *Journal of International Agricultural and Extension Education*, 24(2), 137-151. <https://doi.org/10.5191/jiaee.2017.24210>
- Global Forum for Rural Advisory Services [GFRAS]. (n.d.). Context and background. <https://www.g-fras.org/en/about-us/context.html>
- Gockowski, J., Asamoah, C., David, S., Gyamfi, I., & Kumi, M. A. (2010). An evaluation of farmer field school induced changes in Ghanaian cocoa production. *Journal of International Agricultural and Extension Education*, 17(3), 43-56. <https://doi.org/10.5191/jiaee.2010.17304>
- Harder, A., Lamm, A. J., Ganpat, W., & Lindner, J. (2011). An examination of Trinidad extension officers' behavioral beliefs and intent to participate in international extension experience. *Journal of International Agricultural and Extension Education*, 18(3), 22-34. <https://doi.org/10.5191/jiaee.2011.18306>
- Harder, A., Ganpat, W., Moore, A., Strong, R., & Linder, J. R. (2013). An assessment of extension officers' self-perceived programming competencies in selected Caribbean countries. *Journal of International and Agricultural Extension Education*, 20(1), 33-46. <https://doi.org/10.5191/jiaee.2013.20103>
- Heaney-Mustafa, S., Sofo, F., Afzal, M., Anwar, Z., Fatima, B., & ul Hasan, F. (2018). Bridging farmer and researcher: Extension through the eyes of agents in rural Pakistan. *Journal of International Agricultural and Extension Education*, 25(3), 111-124. <https://doi.org/10.5191/jiaee.2018.25308>
- Heaton, J., Barnhill, J., & Hill R. W. (2012). Strengthening Armenian irrigation capability through extension education and mentoring. *Journal of International Agricultural and Extension Education*, 19(3). <https://doi.org/10.5191/jiaee.2012.19303>
- Hellin, J. (2012). Agricultural extension, collective action, and innovation systems: Lessons on network brokering from Peru and Mexico. *Journal of Agricultural Education and Extension*, 18(2), 141-159. <https://doi.org/10.1080/1389224X.2012.655967>

- Hoque, M., & Usami, K. (2007). Effectiveness of agricultural extension training courses for block supervisors at the Department of Agricultural Extension (DAE) in Bangladesh. *Journal of International Agricultural and Extension Education*, 14(2), 51-59. <https://doi.org/10.5191/jiaee.2007.14204>
- Hossain, D., Eley, R., Gorman, D., & Coutts, J. (2010). Attitudes of advisory and extension agents towards people with mental health problems. *Journal of International Agricultural and Extension Education*, 17(3), 19-30. <https://doi.org/10.5191/jiaee.2010.17304>
- Jacobi, J., Mathez-Stiefel, S., Gambon, H., Rist, S., & Altieri, M. (2017). Whose knowledge, whose development? Use and role of local and external knowledge in agroforestry projects in Bolivia. *Environmental Management*, 59(3), 464-476. <https://doi.org/10.1007/s00267-016-0805-0>
- Janeiro, M. G. F., Martin, J., & Atilas, J. H. (2015, June 10-12). Multicultural needs assessment of extension educators – Oklahoma cooperative extension service [Paper presentation]. Latinos in the Heartland 14<sup>th</sup> Annual Conference, Kansas City, MO, United States. <https://mospace.umsystem.edu/xmlui/bitstream/handle/10355/52493/2016Fabregas.pdf?sequence=1>
- Kamruzzaman, M., Chowdhury, A., van Paassen, A., & Ganpat, W. (2018). Extension agents' use and acceptance of social media: The case of the Department of Agricultural Extension in Bangladesh. *Journal of International Agricultural and Extension Education*, 25(2), 132-149. <https://doi.org/10.5191/jiaee.2018.25210>
- Kante, A., Igo, C., & Frick, M. (2009). Enhancing effectiveness of extension efforts: A case study of Malian shea butter producers. *Journal of International Agricultural and Extension Educators*, 16(1), 105-115. <https://doi.org/10.5191/jiaee.2009.16108>
- Karbasioun, M., Biemans, H., & Mulder, M. (2007). Supporting role of the agricultural extension services and implications for agricultural extension instructors as perceived by farmers in Esfahan, Iran. *Journal of International Agricultural and Extension Education*, 14(1), 31-44. <https://doi.org/10.5191/jiaee.2007.14103>
- Kemmis, S., McTaggart, R., & Nixon, R. (2014). Introducing critical participatory action research. In S. Kemmis., R. McTaggart, & R. Nixon (Eds.), *The action research planner* (pp.1-31). Springer.
- Keeney, S., Hasson, F., & McKenna, H. (2011). *The delphi technique in nursing and health research*. Wiley.
- Kiara, J. K. (2011). Focal area approach: A participatory community planning approach to agricultural extension and market development in Kenya. *International Journal of Agricultural Sustainability*, 9(1), 248-257. <https://doi.org/10.3763/ijas.2010.0566>

- Kim, B. (2001). Social constructivism. In Orey, M. (Ed.), *Emerging perspectives on learning, teaching, and technology*, retrieved June 7, 2021 from: [http://epltt.coe.uga.edu/index.php?title=Social\\_Constructivism](http://epltt.coe.uga.edu/index.php?title=Social_Constructivism)
- Kim, J., Kong, M., & Ju, D. (2009). Challenges in public agricultural extension of Korea. *Journal of International Agricultural and Extension Education*, 16(3). <https://doi.org/10.5191/jiaee.2009.16304>
- Kiptot, E., & Franzel, S. (2014). Voluntarism as an investment in human, social, and financial capital: Evidence from a farmer-to-farmer extension program in Kenya. *Agriculture and Human Values*, 31, 231-243. <https://doi.org/10.1007/s10460-013-9463-5>
- Kmoch, L., Pagella, T., Palm, M., & Sinclair, F. (2018). Using local agroecological knowledge in climate change adaptation: A study of tree-based options in northern Morocco. *Sustainability*, 10(10). <https://doi.org/10.3390/su10103719>
- Knook, J., Eory, V., Brander, M., & Moran, D. (2018). Evaluation of farmer participatory extension programs. *The Journal of Agricultural Education and Extension*, 24(4), 309-325. <https://doi.org/10.1080/1389224X.2018.1466717>
- Kumar, G. D., Popat, M. N., & Kanani, P. R. (2008). Farmers' perceptions of quality of groundnut: Vis-à-vis farmers' characteristics. *Journal of International Agricultural and Extension Education*, 15(1), 45-54. <https://doi.org/10.5191/jiaee.2008.15105>
- Labarthe, P., & Laurent, C. (2013). Privatization of agricultural extension services in the EU: Towards a lack of adequate knowledge for small-scale farms? *Food Policy*, 38, 240-252. <https://doi.org/10.1016/j.foodpol.2012.10.005>
- Lameck, C., Mwajombe, K., & Scheer, S. D. (2019). The influence of an agricultural subsidy extension program on smallholder maize farmers in Tanzania. *Journal of International Agricultural and Extension Education*, 26(1), 10-16. <https://doi.org/10.5191/jiaee.2019.26102>
- Lamm, A. J., Israel, G. D., & Diehl, D. (2013). A national perspective on the current evaluation activities in extension. *Journal of Extension*, 51(1). <https://archives.joe.org/joe/2013february/a1.php>
- Lamm, K. W., & Lamm, A. J. (2017). Capacity assessment of regional networks. Global Forum for Rural Advisory Services.
- Lamm, K. W., Lamm, A. J., Davis, K., & Swaroop, J. B. (2017). Identifying knowledge management capacity needs of rural advisory service networks. *Journal of International Agricultural and Extension Education*, 24(2), 93-106. <https://doi.org/10.5191/jiaee.2017.24207>

- Lamm, K. W., Lamm, A. J., Davis, K., & Swaroop, J. B. (2018). Effective advocacy for extension networks: An evaluation of critical capacities. *Journal of International Agricultural and Extension Education*, 25(2), 43-56. <https://doi.org/10.5191/jiaee.2018.25204>
- Lamm, K. W., Lamm, A. J., Davis, K., Swaroop, J. B., & Edgar, L. D. (2019). Identifying information and communication technology use capacity needs of extension networks. *Journal of International Agricultural and Extension Education*, 26(3), 58-71. <https://doi.org/10.5191/jiaee.2019.26304>
- Lamm, K. W., Lamm, A. J., Davis, K., Swaroop, B. J., & Edgar, L. D. (2020). Identifying capacities an extension network may need to effectively support the professionalization of extension providers. *Journal of International Agricultural and Extension Education*, 27(2), 91-107. <https://doi.org/10.5191/jiaee.2020.27291>
- Lamm, K. W., Lamm, K. W., Davis, K., Powell, A., & Swaroop, B. J. (2021). Effective organizational functioning capacity needs of rural advisory service networks: A delphi study. *Journal of International Agricultural and Extension Education*, 28(3), 104-119. <https://doi.org/10.5191/jiaee.2021.283104>
- Lamm, K. W., Masambuka-Kanchewa, F., Lamm, A. J., Davis, K., & Nahdy, S. (2020). Strengthening coordination among extension service providers for improved provision of agricultural extension and advisory services: A case study from Kenya. *Journal of International Agricultural and Extension Education*, 27(3), 18-26. <https://doi.org/10.5191/jiaee.2020.27318>
- Landini, F. (2020). How do rural extension agents learn? Argentine practitioners' sources of learning and knowledge. *Journal of Agricultural Education and Extension*, 27(1), 35-54. <https://doi.org/10.1080/1389224X.2020.1780140>
- Lego, I., Bordoloi, R., Meghwal, P. K., Singh, R. J., & Singh, R. (2018). Training needs assessment of agricultural extension personnel in Arunachal Pradesh, India. *International Journal of Current Microbiology and Applied Sciences*, 7(1), 1684-1694. <https://doi.org/10.20546/ijcmas.2018.701.204>
- Leta, G., Kelboro, G., Stellmacher, T., & Hornidge, A. (2017). The agricultural extension system in Ethiopia: Operational setup, challenges, and opportunities [Working Paper 158]. Center for Development Research. University of Bonn. <https://www.econstor.eu/handle/10419/187464>
- MacDonald, C. (2012). Understanding participatory action research: A qualitative research methodology option. *Canadian Journal of Action Research*, 13(2), 34-50. <https://doi.org/10.33524/cjar.v13i2.37>

- Manfre, C., Rubin, D., Allen, A., Summerfield, G., Colverson, K., & Akeredolu, M. (2013). Reducing the gender gap in agricultural extension and advisory services: How to find the best fit for men and women farmers (MEAS Brief #2). USAID. <https://meas.illinois.edu/wp-content/uploads/2015/04/Manfre-et-al-2013-Gender-and-Extension-MEAS-Discussion-Paper.pdf>
- Masambuka-Kanchewa F., Lamm, K. W., & Lamm, A. J. (2020a). Gate keepers in agricultural extension research: A retrospective analysis. *Journal of International Agricultural and Extension Education*, 27(4), 94-110. <http://doi.org/10.5191/jiaee.2020.27494>
- Masambuka-Kanchewa, F., Lamm, K. W., & Lamm, A. J. (2020b). Beyond diffusion of improved technologies to promoting innovation creation and information sharing for increased agricultural productivity: a case study for Malawi and Kenya. *Journal of International Agricultural and Extension Education*. <https://doi.org/10.5191/jiaee.2020.27106>
- McCawley, P. F. (2009). *Methods for conducting an educational needs assessment*. University of Idaho Extension.
- Meagy, M. J., Rashid, M. H., Barker, A., Islam, M. M., & Islam, M. N. (2013). Effectiveness of farmer information needs assessment as perceived by the farmers. *Journal of International Agricultural and Extension Education*, 20(2), 34-50. <https://doi.org/10.5191/jiaee.2013.20103>
- Michailidis, A. (2007). Agricultural extension services in the mountain areas of Greece. *Journal of International Agricultural and Extension Education*, 14(1), 71-80. <https://doi.org/10.5191/jiaee.2007.14106>
- Milder, J. C., Hart, A. K., Dobie, P., Minai, J., & Zaleski, C. (2014). Integrated landscape initiatives for African agriculture, development, and conservation: A region-wide assessment. *World Development*, 54, 68-80. <https://doi.org/10.1016/j.worlddev.2013.07.006>
- Minh, T. T., Friederichsen, R., Neef, A., & Hoffmann, V. (2014). Niche action and system harmonization for institutional change: Prospects for demand-driven agricultural extension in Vietnam. *Journal of Rural Studies*, 36, 273-284. <https://doi.org/10.1016/j.jrurstud.2014.09.008>
- Moore, A., & Harder, A. (2015). Capacities of extension personnel within the pluralistic system of post-conflict Liberia. *Journal of International Agricultural and Extension Education*, 22(3), 7-19. <https://doi.org/10.5191/jiaee.2015.22301>
- Moriba, S., Kandeh, J., Edwards, M. C. (2011). Diffusion of technologies by the Tikonko Agricultural Extension Centre (TAEC) to farmers of the Tikonko chiefdom in Sierra Leone: Impacts, problems, proposed solutions, and an updated outlook. *Journal of International Agricultural and Extension Education*, 18(3). <https://doi.org/10.5191/jiaee.2011.18304>

- Murray, P. (2000). Evaluating participatory extension programs: Challenges and problems. *Australian Journal of Experimental Agriculture*, 40(4), 519-526. <https://doi.org/10.1071/EA99079>
- Namdar, R., Rad, G., & Karamidehkordi, E. (2010). Professional competencies needed by agricultural and extension program evaluation staff and managers of Iranian Ministry of Agriculture. *Journal of International Agricultural and Extension Education*, 17(2), 21-31. <https://doi.org/10.5191/jiaee.2010.17202>
- Norton, G. W., & Alwang, J. (2020). Changes in agricultural extension and implications for farmer adoption of new practices. *Applied Economic Perspectives and Policy*, 42(1), 8-20. <https://doi.org/10.1002/aepp.13008>
- Ojha, G. P. (2011). Partnership between and among the state and non-state actors in agricultural extension. *Social Research Reports*, 20. Retrieved from <https://www.cceol.com/search/article-detail?id=16812>
- Okorley, E., Gray, D., & Reid, J. (2009). Improving agricultural extension human resource capacity in a decentralized policy context: A Ghanaian case study. *Journal of International Agricultural and Extension Education*, 16(2), 35-46. <https://doi.org/10.5191/jiaee.2009.16203>
- Okorley, E. L., Adjargo, G., & Bosompem, M. (2014). The potential of farmer field school in cocoa extension delivery: A Ghanaian case study. *Journal of International Agricultural and Extension Education*, 21(2), 32-44. <https://doi.org/10.5191/jiaee.2014.21203>
- Oladele, O. I. (2008). Comparative analysis of use of videos versus traditional extension agents and techniques in dissemination of rice cultivation practices in Ogun State, Nigeria. *Journal of International Agricultural and Extension Education*, 15(1), 55-67. <https://doi.org/10.5191/jiaee.2008.15106>
- Oladele, O. I. (2012). Knowledge levels and perceived effect of ecosystem services and valuation on extension delivery in North West Province, South Africa. *Journal of International Agricultural and Extension Education*, 19(1), 42-53. <https://doi.org/10.5191/jiaee.2012.19106>
- Owolade, E. O., & Kayode, A. (2012). Information-seeking behavior and utilization among snail farmers in Oyo State, Nigeria: Implications for sustainable animal production. *Journal of International Agricultural and Extension Education*, 19(3). <https://doi.org/10.5191/jiaee.2012.19304>
- Quisumbing, A. R., & Pandofelli, L. (2010). Promising approaches the address the needs of poor female farmers: Resources, constraints, and interventions. *World Development*, 38(4), 581-592. <https://doi.org/10.1016/j.worlddev.2009.10.006>

- Ragasa, C., Ulimwengu, J., Randriamamonjy, J., & Badibanga, T. (2013). Assessment of the capacity, incentives, and performance of agricultural extension agents in western Democratic Republic of Congo (Discussion Paper 01283). *International Food Policy Research Institute*.
- Ramdwar, M. N. A., Stoute, V., & Ganpat, W. G. (2015). Extension officers' perceptions of farmers' groups in Trinidad, West Indies and implications for extension. *Journal of International Agricultural and Extension Education*, 22(1), 35-48. <https://doi.org/10.5191/jiaee.2015.22103>
- Richardson, M. A., & Roberts, R. (2020). Modern women and traditional gender stereotypes: An examination of the roles women assume in Thailand's agricultural system. *Journal of International Agricultural and Extension Education*, 27(4), 7-21. <https://doi.org/10.5191/jiaee.2020.27407>
- Rigyal, S., & Wongsamun, C. (2011). Perceived professional competency level and job performance of block-level extension agents in Bhutan. *Journal of International Agricultural and Extension Education*, 18(1), 87-103. <https://doi.org/10.5191/jiaee.2011.18107>
- Roberts, T. G., Ganpat, W. G., Albert B., Narine, L., & Sudeen, S. (2016). Agricultural extension officers' knowledge and perceptions of food security issues in Trinidad and Tobago. *Journal of International Agricultural and Extension Education*, 23(3), 72-84. <https://doi.org/10.5191/jiaee.2016.23305>
- Roberts, T. G., Ganpat, W. G., Narine, L., Heinert, S. B., & Rodriguez, M. T. (2015). Trinidad food producers' training needs for food security and implications for extension. *Journal of International Agricultural and Extension Education*, 22(1), 7-20. <https://doi.org/10.5191/jiaee.2015.22102>
- Rogers, E. M. (2003). *Diffusion of Innovations*. Free Press.
- Rumble, J. N., Lamm, A. J., & Gay, K. D. (2018). Identifying extension agent needs associated with communicating about policies and regulations. *Journal of Agricultural Education*, 59(4), 72-87. <https://doi.org/10.5032/jae.2018.04072>
- Saleh, J. M., Man, N., Salih, M. H., Hassan, S., Nawi, N. M., & Mohammed, S. J. (2016). Training needs of agriculture extension officers in Iraq. *International Journal of Scientific and Research Publications*, 6(2), 146-152.
- Sandlin, M. R. (2015). The agriculture industry in Trinidad and Tobago: Perspectives of industry professionals. *Journal of International Agricultural and Extension Education*, 22(2), 6-19. <https://doi.org/10.5191/jiaee.2015.22201>

- Sanga, C., Kalungwizi, V. J., & Msuya, C. P. (2014). Bridging gender gaps in provision of agricultural extension service using ICT: Experiences from Soikoine University of Agriculture (SUA) farmer voice radio project in Tanzania. *International Journal of ICT Research and Development in Africa*, 4(1), 1-19. <https://doi.org/10.4018/ijictrda.2014010101>
- Schut, M., Klerkx, L., Rodenburg, J., Kayeke, J., Hinnou, L. C., Raboanarielina, C. M., Adegbola, P. Y., van Ast, A., & Bastiaans, L. (2014). RAAIS: Rapid appraisal of agricultural innovation systems (part one). A diagnostic tool for integrated analysis of complex problems and innovation capacity. *Agricultural Systems*, 132, 1-11. <https://doi.org/10.1016/j.agsy.2014.08.009>
- Seiler-Martinez, A., Murphrey, T. P., Wingenbach, G., & Lombardini, L. (2018). Barrier analysis as a tool to inform extension activity planning: Insights from Guatemala. *Journal of International Agricultural and Extension Education*, 25(2), 7-10. <https://doi.org/10.5191/jiaee.2018.25201>
- Sjah, T., Cameron, D., & Woodford, K. (2006). Extension service and farmer decision making on new cropping lands in East Lombok, Indonesia. *Journal of International Agricultural and Extension Education*, 13(2), 39-55. <https://doi.org/10.5191/jiaee.2006.13104>
- Spielman, D. J., Mekonnen, D. K., & Alemu, D. (2014). Seed, fertilizer, and agricultural extension in Ethiopia. In S. Rashid & P. Dorosch (Eds.), *Food and agriculture in Ethiopia: Progress and policy challenges* (pp. 84-122). International Food Policy Research Institute. <https://www.ifpri.org/publication/seed-fertilizer-and-agricultural-extension-ethiopia-0>
- Strong, R., & Harder, A. (2011). Recommended competencies needed for teaching in international extension settings. *Journal of International Agricultural and Extension Education*, 18(3), 72-83. <https://doi.org/10.5191/jiaee.2011.18306>
- Suvedi, M., & Ghimire, R. P. (2016). In search of an alternative agricultural extension strategy: An action research on off-season vegetable production in Nepal. *Journal of International Agricultural and Extension Education*, 23(2), 50-62. <https://doi.org/10.5191/jiaee.2016.23204>
- Tanzo, I. R., & Yusongco, C. G. (2014). Rice sufficiency officers' role perception and job satisfaction as agricultural research and extension workers. *Journal of International Agricultural and Extension Education*, 21(2), 72-82. <https://doi.org/10.5191/jiaee.2014.21206>

- Tobin, D., Bruening, T., Brennan, M., & Olson, B. (2012). Agricultural extension and market-led agrarian reform: Findings from an exploratory case study in Limpopo Province, South Africa. *Journal of International Agricultural and Extension Education*, 19(2), 39-52.  
<https://doi.org/10.5191/jiaee.2012.19205>
- Toness, A. S. (2001). The potential of participatory rural appraisal (PRA) approaches and methods for agricultural extension and development in the 21<sup>st</sup> century. *Journal of International Agricultural and Extension Education*, 8(1), 25-37. <https://doi.org/10.5191/jiaee.2001.08103>
- Tselaesele, N. M., Bagwasi, N., Lepetu, J., Bahta, S., & Oladele, I. O. (2018). Training needs assessment for transformation of smallholder livestock farming in Botswana. *South African Journal of Agricultural Extension*, 46(1), 92-105. <http://dx.doi.org/10.17159/2413-3221/2018/v46n1a450>
- Umar, S., Man, N., Nawi, N. M., Latif, I. A., & Samah, B. A. (2017). Core competency requirements among extension workers in peninsular Malaysia: Use of Borich's needs assessment model. *Evaluation and Program Planning*, 62, 9-14.  
<https://doi.org/10.1016/j.evalprogplan.2017.02.001>
- Vatta, A. F., de Villiers, J. F., Gumede, S., Mapeyi, N. P., Harrison, L. J. S., Pearson, R. A., Krecek, R. C., Rijkenberg, F. H. J., & Worth, S. H. (2008). Participation of Zulu farmers in a goat health research and extension project in South Africa. *Journal of International Agricultural and Extension Education*, 15(3), 81-93.  
<https://doi.org/10.5191/jiaee.2008.15307>
- Vernon, W. (2009). The Delphi technique: A review. *International Journal of Therapy and Rehabilitation*, 16(2), 69-76.  
<https://doi.org/10.12968/ijtr.2009.16.2.38892>
- Walsh, D., & Downe, S. (2005). Meta-synthesis method for qualitative research: A literature review. *Journal of Advanced Nursing*, 50(2), 204-211.
- Warner, L. A., Chaudhary, A. K., & Lamm, A. J. (2016). Using importance-performance analysis to guide extension needs assessment. *Journal of Extension*, 54(6). <https://archives.joe.org/joe/2016december/a1.php>
- Winton, S., & Lewis, D. (2017, April 24-28). Assessing future needs of extension educational programs: Integrative approach [Poster presentation]. 33<sup>rd</sup> Annual Conference of the Association for International Agricultural and Extension Education, Minneapolis, MN, USA.
- Witt, R., Pems, D., & Waibel, H. (2008). The farmer field school in Senegal: Does training intensity affect diffusion of information? *Journal of International Agricultural and Extension Education*, 15(2), 47-60.  
<https://doi.org/10.5191/jiaee.2008.15204>

- Zelaya, P., Harder, A., & Roberts, T. G. (2016). Small-scale farmers' perceptions of agricultural information sources in Northern Haiti. *Journal of International Agricultural and Extension Education*, 23(2), 63-77.  
<https://doi.org/10.5191/jiaee.2016.23205>
- Zimmer, L. (2006). Qualitative meta-synthesis: A question of dialoguing with texts. *Journal of Advanced Nursing*, 53(3), 311-318.