

## **Comparison of Extension Personnel and Supervisor Perceptions of Communications Activities**

Cooperative Extension is considered the best-kept secret, and “many people who could find value in Extension’s programs know little or nothing about the organization” (West, Drake, & Londo, 2009, para. 12). Improvements in branding and marketing are needed to address local residents’ misunderstandings and unawareness of Cooperative Extension programs (Lawrence & Mandal, 2016; West et al., 2009). Indeed, Cooperative Extension may not be communicating in ways that generate support of the organization (Kalambokidis, 2011) and new demographic groups lack awareness of Extension programming and resources, including small and minority farmers, urban populations, and non-users of Extension programs (Kalambokidis, 2011; Ostrom, Cha, & Flores, 2010; Young & Jones, 2017). Although Cooperative Extension has generated high clientele satisfaction through traditional programming and outreach, new technologies and diverse programming strategies must also be adopted to reach larger, more diverse audiences (Franken-Dvorak, Kelsey, & Royer, 2010; Rennekamp, Warner, Nall, Jacobs, & Mauer, 2001; Burton, Glassman & Black, 2017).

As Cooperative Extension faces decreases in funding and staff restructuring (Wang, 2014), land-grant universities cannot assume stakeholder awareness and support (Abrams, Meyers, Irani, & Baker, 2010). New communication technologies and outreach can keep Cooperative Extension relevant to stakeholders amidst funding cuts (Gagnon, Garst, & Franz, 2015). Information must be delivered in a variety of formats to meet stakeholder needs and incorporate changes in public priorities, maintaining traditional programming while addressing technology’s influence on communication (Abrams et al., 2010; Cartmell, Orr, & Kelemen, 2006; DeBord, 2007; French Morse, 2015; Gould, Steele, & Woodward, 2014; Harder, 2007; Rodewald, 2001).

Although Extension employees rank *communicating effectively* as the most important competency required (Cochran, 2009), their self-reported competency in communication is low (Lakai, Jayaratne, Moore, & Kistler, 2014). This could be exacerbated with digital communication, as despite the trend of increasing technology in Extension (Cochran, 2009), Extension agents “do not have the skills or inclination to work in online environments” (Diem, Hino, Martin, & Meisenbach, 2011, p. 6). This could contribute to why digital platforms are not used to their full potential in public outreach of many organizations, such as the universities that house Extension (Barton et al., 2017).

Whether a person feels capable of using a new technology influences adoption, and this feeling of capability can be influenced by a variety of factors (Bandura, 1977). Yi and Hwang (2003) suggested self-efficacy yields a positive effect on technology adoption, and Cooperative Extension professionals who have more technology experience, which relates to ease of use and self-efficacy, tend to express a greater necessity for technology (Israel & Wilson, 2006). Additionally, perceived job relevance of a new technology and employees’ perception of their capability to learn the technology influence intention to use (Venkatesh & Davis, 1993).

However, Davis (1993) suggested the usefulness of a new technology, which relates to importance, is more powerful on attitude than ease of use (Davis, 1993). When considering Indian extension personnel's utilization of computers, Sivakumar, Parasar, Das, and Anantharaman (2014) found employees' perception of computer utility and organizational support influenced computer utilization, while inadequate skills and negative perceptions decreased employee use. Ruth-McSwain (2008) found agricultural communications professionals outside of Cooperative

Extension chose communication media that best met their own personal needs and comfort when reaching out to mass media outlets, despite acknowledging their communication choices were more difficult for the mass media outlets to use, which relates to job relevance.

Supervisors also influence employee adoption of technologies by communicating to employees which values are important in an organization (van Vuuren, de Jong, & Seydel, 2007). Positive feedback on employee performance also influences employee self-efficacy towards new technologies (Bandura, 1977). However, supervisors differ from personnel in perceptions of the importance of communication competencies (Cooper & Graham, 2001). Additionally, only 22% of Cooperative Extension family and consumer science personnel report social media use to supervisors (O'Neill, Zumwalt, & Bechmen, 2011) which indicates a need to understand employees' and supervisors' perceptions.

Cooperative Extension must continuously ensure its communications are rigorously evaluated, grounded in theory, and efficient (West et al., 2009), and it is important to acknowledge these technologies have the potential to reshape Extension professionals' knowledge and context of work and must be carefully evaluated (Lubell, Niles, & Hoffman, 2014). Needs assessments are one of the most vital components of Cooperative Extension program development, as they can assist Cooperative Extension in standing out from competitors through an understanding of stakeholder needs and Cooperative Extension strengths and weaknesses (Garst & McCawley, 2015). While past research has considered perceptions of Cooperative Extension personnel and supervisors toward communication in the context of needs assessments, it has largely considered the two demographic groups separately and has not simultaneously compared traditional and newer technologies (Erichsen, 2008; Jernigan, Edgar, Miller, & Cox, 2015; McClure, Buquoi, Kotrlik, Machtmes, & Bunch, 2014; Meyers, Shaw, Irlbeck, Doerfert, & Abrams, 2015; O'Neill et al., 2011; Telg, Irani, Muegge, Kistler, & Place, 2007).

### **Theoretical Framework**

The Innovation Diffusion Process is influenced by user needs, attributes of an innovation, and peer-to-peer networks (Rogers, 2003). For example, the adoption of smartphones in medical professions is shown to be more likely when phones are perceived to have high job relevancy and compatibility (Putzer & Park, 2010). Attributes of an innovation can also influence the rate of adoption, with attributes including relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2003). Peer-to-peer networks can be created by early innovators, who adopt new technologies quickly and then share the innovation with others. Additionally, organizational structures and supervisor involvement can influence adoption.

Prior conditions, such as previous practices, felt needs, innovativeness, and social norms, can also affect adoption (Rogers, 2003). Additionally, personal factors can influence innovation adoption, as education level and the number of owned electronic devices affect farmers' likelihood of using eXtension (Triplett, 2012), which relates to Rogers' description of prior conditions. These decisions of whether to adopt an innovation are described by Rogers as the Innovation-Decision Process.

The Innovation-Decision Process (Rogers, 2003) consists of five stages: knowledge, persuasion, decision, implementation, and confirmation. Individuals gain an awareness of the innovation in the knowledge stage and develop an attitude, either unfavorable or favorable, in the persuasion stage. In the decision stage, actions are taken that lead to the choice of whether or not the innovation should be adopted. Individuals make use of the innovation in the implementation

stage and make a re-assessment of whether the innovation best met their needs and should continue to be used in the confirmation stage. Perceptions during the knowledge and persuasion stage influence the degree of implementation of innovations (Germain, Ellis, & Stehman, 2014).

Throughout the Innovation-Decision Process, individuals have numerous opportunities to reject the technology. During the knowledge stage, Extension agents with “no knowledge” may ignore attempts to educate them about the new technology (Harder & Lindner, 2008). During the confirmation stage, discontinuance may occur when an innovation is rejected (Rogers, 2003).

Diffusion of innovations may be influenced by a variety of personal factors, such as prior knowledge and awareness of advantages the innovation could provide, education, age, length of service in Extension, and learner preferences (Germain, Ellis, & Stehman, 2014; Hefny, 2013; Hightower, Murphrey, Coppernoll, Jahedkar, & Dooley, 2011; Hubbard & Sandman, 2007). However, Rota, Nasuelli, Spadoni, Valmori, & Zanasi (2013) report education has low influence on attitude toward a new innovation and observed perceived ease of use to influence perceived usefulness of information communication technology. Additionally, as perceived self-efficacy in using a technology increases, individuals may be more likely to expend more effort in its adoption (Bandura, 1977). Factors of the innovation may also influence innovation diffusion, including complexity, compatibility, observability, relative advantage, and trialability (Hubbard & Sandman, 2007). Kim and Ammeter (2014) report quality of an innovation to be the most dominant indicator of intention to use, and Davis (1993) reports the usefulness of a technology is more powerful on attitude than ease of use. For example, past research in smartphone adoption indicates innovations with high job relevance and compatibility had a more sustained use (Putzer & Park, 2010).

“Innovation is a collective process that involves the contextual re-ordering of relations in multiple social networks” (Leeuwis & Aarts, 2011, p. 21), and the influence of supervisors in the Innovation-Decision Process of personnel cannot be disregarded. Communication specialists and change agents influence the innovation diffusion process as they create the potential for change (Leeuwis & Aarts, 2011). Supervisors who communicate frequently are more likely to have engaged employees (Mitchell, 2015), and positive reinforcement during use of an innovation may promote adoption (Harder & Lindner, 2008). Supervisors also should provide incentives to adopt new innovations, as this can make positive reinforcement more effective (Bandura, 1977).

Professional development may influence both perceived importance and comfort of communication media, thus facilitating the progression of new communication media through the Innovation-Decision Process. Extension personnel have a desire to be trained on communicating Extension to external audiences (Ray, Baker, & Settle, 2015), and “quality Extension programs depend on properly prepared staff,” (Garst, Baughman, & Franz, 2014, para. 1). Professional development can improve skills of both new and long-time staffers (Bowie & Bronte-Tinkew, 2006), but careful consideration must be given to personnel’s preference of education delivery to ensure the professional development is utilized (Cater, Davis, Leger, Machtmes, & Arcemont, 2013).

As Cooperative Extension seeks to become a more influential engine for innovation and development (Rivera & Sulaiman, 2009), it must ensure information and communication technology is readily welcomed within the Cooperative Extension system (Sulaiman, Hall, Kalavani, Dorai, & Reddy, 2012). Information and communication technologies can spur real-life interaction and face-to-face communication (Materia, Giarè, & Klerkx, 2014), and use of digital technologies can mobilize research knowledge and data accessibility (Ingram & Gaskell, 2018). Maintaining use of a variety of communication activities, both technological and traditional, also ensures clientele who are either early and late adopters of technology can both still

access Cooperative Extension information (Hefny, 2013). A variety of information sources may influence various facets of clientele's perception towards Extension programming introducing new innovations (Marra, Jensen, Clark, English, & Menard, 2012).

### **Purpose & Objectives**

The purpose of this study was to understand the Mississippi State University Cooperative Extension personnel communication needs. The objectives of this study were to

1. Describe personnel's use, comfort, and perceived importance of each communication activity,
2. Describe supervisors' perceived importance and capability for personnel conducting each communication activity, and
3. Describe personnel's professional development preferences.

### **Methods**

A questionnaire was developed for this survey of Mississippi State University Extension personnel, including county agents, area agents, associates, regional specialists, and state specialists/faculty. The questionnaire was distributed online to 356 personnel and 129 responded (36.2%). The study also included a survey of the personnel's supervisors. This included statewide administrators, Extension center heads, regional Extension coordinators, and department chairs. Of the 25 sent the questionnaire, 15 responded (60%). Data collection occurred over the span of about three weeks. Respondents were sent successive reminders until the number of responses per reminder no longer justified continued reminders (Dillman, Smyth, & Christian, 2014). Each group received an initial emailed invitation and three reminders from the researcher, though only non-respondents received the reminders.

This study addressed which communications activities Extension personnel engaged in, their comfort with each activity they engaged in (1 = *uncomfortable*; 5 = *comfortable*), their perceptions of the importance of doing the communications activities for their jobs (1 = *not important*; 5 = *extremely important*), and preferences for communications professional development (1 = *dislike*; 5 = *like*) from 12 training formats. Personnel did not report comfort or importance of the activities if they did not engage in those activities. Supervisors reported if they had any personnel who engaged in the communications activities, how important they believed it was for personnel to engage in the communications activities (1 = *not important*; 5 = *extremely important*), and how capable the personnel were at those communications activities (1 = *not capable*; 5 = *extremely capable*). Supervisors responded to all items even if they had no employees engaging in those activities because it was important to understand potential supervisor buy-in should Extension seek to promote agent and specialist engagement in all activities.

There were 34 communications activities included in the instrument across a variety of areas, including more traditional communications (e.g., making a speech or presentation), written (e.g. writing an educational newsletter), visual (e.g. graphic design), social media (e.g. managing a Twitter account), and media relations (e.g. being interviewed for TV). The list of communications activities was provided by personnel in the Office of Agricultural Communications who also acted as the review panel for the instrument to ensure it would meet the needs of the organization and address the variety of communications activities personnel engage in. Cronbach's alpha is not reported for the instrument because none of the items are intended to be reported as an aggregated

scale. Instead, the intention is to understand the differences between individual items, which means internal consistency of the items is not the goal. For objectives 1 and 2, personnel use was analyzed using frequencies, while comfort and importance were reported using means. For objective 3, professional development preferences are reported using means.

## Results

### **RO 1: Describe personnel's use, comfort, and perceived importance of each communication activity.**

Making speeches or presentations (92.4%) and taking photos (90.9%) were the most commonly conducted communications activities by personnel (Table 1). The fewest personnel reported writing (12.9%) or managing (6.8%) a blog for work. The communication activity with the highest reported comfort by Extension personnel was writing a handout for class ( $M = 4.8$ ,  $SD = 0.4$ ), while the lowest was creating web pages ( $M = 3.6$ ,  $SD = 1.2$ ). Extension personnel considered making a speech or presentation most important ( $M = 4.7$ ,  $SD = 0.5$ ) and managing a Pinterest account least important ( $M = 3.4$ ,  $SD = 1.4$ ).

It is important to note scores described as high or low are compared to scores within the category (i.e. comfort scores are considered high/low relative to other comfort scores). "High" in this article is more than one standard deviation above the mean, and "low" is more than one standard deviation below the mean. The distributions of data for use, comfort, and importance scores were narrow, as no mean scores or frequencies were greater than two standard deviations away from the mean for any of the three categories.

Managing a Pinterest account had high comfort ( $M = 4.7$ ) but low importance ( $M = 3.4$ ) and low use (20%). Creating Snapchat posts had low comfort ( $M = 4.0$ ), importance ( $M = 3.4$ ), and use (17%); editing video also had low comfort ( $M = 4.1$ ), importance ( $M = 3.5$ ), and use (24%). Many other communication activities had a noticeably lower/higher score in one area but had other measurements within one standard deviation of the mean. For example, graphic design for promotional handouts had low comfort ( $M = 4.0$ ) but importance ( $M = 3.9$ ) and use (59%) scores within one standard deviation of the mean. Managing a blog had low use (7%) but importance ( $M = 3.7$ ) and comfort ( $M = 4.1$ ) scores were within one standard deviation of the mean. The only communication activities where Extension personnel reported importance scores higher than comfort scores were making a speech or presentation (comfort  $M = 4.5$ , importance  $M = 4.7$ ), marketing (comfort  $M = 4.5$ , importance  $M = 4.7$ ), and creating web pages (comfort  $M = 3.6$ , importance  $M = 3.8$ ), and the differences in scores was small.

### **RO 2: Describe supervisors' perceived importance and capability of personnel conducting each communication activity.**

Extension supervisors were asked if any of their personnel used each communication activity (Table 2). The highest number of supervisors had personnel who had written an educational newsletter (93.3%), made a speech or presentation (93.3%), and been interviewed for radio (93.3%). The fewest supervisors reported having personnel who had written an editorial column (40%) or managed a Pinterest account (40.0%). Supervisors gave the highest importance score to making a speech or presentation ( $M = 4.7$ ,  $SD = 0.5$ ) and the lowest importance scores for the communication activities of writing an editorial column ( $M = 2.2$ ,  $SD = 1.2$ ) and utilizing other social media ( $M = 2.2$ ,  $SD = 1.0$ ). Supervisors perceived their employees to be most capable in

making a speech or presentation ( $M = 4.4$ ,  $SD = 0.5$ ) and least capable of editing video ( $M = 1.8$ ,  $SD = 1.0$ ).

Table 1

*Extension Personnel's Use, Comfort, and Importance of Communications Activities.*

	Use <i>f</i> (%)	Importance <sup>1</sup> <i>M</i> ( <i>SD</i> )	Comfort <sup>2</sup> <i>M</i> ( <i>SD</i> )
Made a speech or presentation	122 (92.4)	4.7 (0.5)	4.6 (0.7)
Taken photos	120 (90.9)	4.3 (0.8)	4.6 (0.6)
Edited writing for grammar and clarity	109 (82.6)	4.4 (0.8)	4.5 (0.7)
Marketing	108 (81.8)	4.7 (0.6)	4.5 (0.7)
Written educational newsletter	107 (81.1)	4.4 (0.8)	4.6 (0.6)
Worked with local media to get coverage of Extension events/stories	106 (80.3)	4.5 (0.7)	4.5 (0.8)
Written a news release	104 (78.9)	4.2 (0.9)	4.5 (0.7)
Written business letter	101 (76.5)	4.3 (0.7)	4.6 (0.6)
Edited photos	100 (75.8)	3.9 (1.0)	4.2 (0.9)
Written a handout for class	98 (74.2)	4.4 (0.7)	4.8 (0.4)
Written promotional newsletter	93 (70.5)	4.4 (0.8)	4.6 (0.6)
Created Facebook posts	92 (69.7)	4.2 (0.9)	4.5 (0.7)
Written a news story	87 (65.9)	4.2 (0.8)	4.5 (0.8)
Managed Facebook page	82 (62.1)	4.2 (0.9)	4.3 (0.9)
Graphic design for promotional handouts	78 (59.1)	3.9 (1.0)	4.0 (1.1)
Been interviewed for TV	78 (59.1)	4.2 (0.9)	4.3 (0.9)
Been interviewed for radio	73 (55.3)	4.0 (0.9)	4.3 (1.0)
Graphic design for newsletter	65 (49.2)	4.0 (0.9)	4.2 (0.8)
Other communications	62 (47.0)	4.1 (1.0)	4.3 (0.8)
Written for audiences with low reading levels	60 (45.4)	4.0 (0.8)	4.4 (0.9)
Shot video	59 (44.7)	3.7 (1.1)	4.1 (1.0)
Managed a Facebook group	53 (40.2)	4.0 (0.9)	4.2 (1.0)
Written for webpages	52 (39.4)	4.0 (0.8)	4.2 (1.0)
Created Twitter posts	49 (37.1)	3.9 (1.0)	4.3 (0.9)
Managed a Twitter account	44 (33.3)	4.0 (0.9)	4.3 (0.8)
Edited video	32 (24.2)	3.5 (1.3)	4.1 (1.0)
Written an editorial column	29 (22.0)	3.9 (1.0)	4.0 (1.1)
Managed a Pinterest account	26 (19.7)	3.4 (1.4)	4.7 (0.6)
Created webpages	25 (18.9)	3.8 (1.0)	3.6 (1.2)
Created Snapchat posts	23 (17.4)	3.4 (1.2)	4.0 (1.1)
Created Instagram posts	22 (16.7)	3.5 (1.3)	4.6 (0.6)
Other social media	18 (13.6)	3.8 (0.9)	4.4 (0.7)
Written for a blog	17 (12.9)	3.9 (1.4)	4.3 (1.0)
Managed a blog	9 (6.8)	3.7 (1.4)	4.1 (1.2)

*Note:* <sup>1</sup>Responses were on a 5-point Likert scale where 1 = *not important*, 5 = *extremely important*. <sup>2</sup>Responses were on a 5-point Likert scale where 1 = *uncomfortable*, 5 = *comfortable*.

Table 2

*Extension Supervisor Perceptions of Personnel Communication Use, Comfort, and Importance*

	Use <i>f</i> (%)	Importance <sup>1</sup> <i>M</i> ( <i>SD</i> )	Capable <sup>2</sup> <i>M</i> ( <i>SD</i> )
Written educational newsletter	14 (93.3)	4.1 (0.8)	3.7 (0.9)
Made a speech or presentation	14 (93.3)	4.7 (0.6)	4.4 (0.5)
Been interviewed for radio	14 (93.3)	3.9 (0.3)	3.5 (1.0)
Written a news story	13 (86.7)	3.4 (0.9)	3.4 (0.7)
Written business letter	13 (86.7)	3.8 (1.3)	3.6 (1.2)
Written promotional newsletter	13 (86.7)	3.6 (1.2)	3.6 (0.8)
Written a handout for class	13 (86.7)	3.7 (1.0)	3.7 (0.9)
Worked with local media to get coverage of Extension events/stories	13 (86.7)	4.3 (1.0)	3.7 (1.1)
Been interviewed for TV	13 (86.7)	3.7 (1.0)	3.3 (1.1)
Edited writing for grammar and clarity	13 (86.7)	4.1 (1.4)	3.3 (0.9)
Written for webpages	13 (86.7)	3.7 (0.9)	3.3 (0.9)
Created Facebook posts	13 (86.7)	2.9 (1.1)	3.8 (1.2)
Created Twitter posts	13 (86.7)	3.0 (1.4)	3.6 (1.3)
Marketing	12 (80.0)	4.7 (0.5)	3.5 (0.9)
Taken photos	12 (80.0)	3.6 (1.4)	3.6 (0.8)
Managed a Facebook page	12 (80.0)	2.7 (0.9)	3.3 (1.3)
Managed a Twitter account	12 (80.0)	2.6 (1.2)	3.0 (1.1)
Other communications	12 (80.0)	2.5 (1.0)	2.6 (1.2)
Written a news release	11 (73.3)	3.5 (0.9)	3.4 (0.9)
Written for a blog	11 (73.3)	2.8 (1.2)	3.3 (0.9)
Edited photos	10 (66.7)	2.9 (0.8)	2.6 (1.1)
Managed a blog	10 (66.7)	2.5 (1.1)	2.6 (0.9)
Managed a Facebook group	10 (66.7)	2.6 (0.9)	2.8 (1.3)
Written for audiences with low reading levels	9 (60.0)	3.5 (1.1)	3.3 (1.1)
Graphic design for newsletter	9 (60.0)	2.6 (1.3)	2.3 (0.9)
Graphic design for promotional handouts	9 (60.0)	2.6 (1.3)	2.2 (0.9)
Shot video	9 (60.0)	2.8 (0.9)	2.7 (1.3)
Created webpages	9 (60.0)	2.9 (0.5)	2.2 (0.9)
Created Instagram posts	9 (60.0)	2.6 (1.2)	2.7 (1.1)
Created Snapchat posts	8 (53.3)	2.6 (1.2)	3.0 (1.1)
Other social media	8 (53.3)	2.2 (1.0)	2.4 (1.0)
Edited video	7 (46.7)	2.6 (1.1)	1.8 (1.8)
Written an editorial column	6 (40.0)	2.2 (1.2)	3.0 (1.0)
Managed a Pinterest account	6 (40.0)	2.4 (1.1)	2.7 (1.0)

*Note:* <sup>1</sup>Responses were on a 5-point Likert scale where 1 = *not important*, 5 = *extremely important*. <sup>2</sup>Responses were on a 5-point Likert scale where 1 = *not capable*, 5 = *extremely capable*.

It is important to note scores described as high or low are compared to scores within the category (i.e. capability scores are considered high/low relative to other capability scores). “High” in this article is more than one standard deviation above the mean, and “low” is more than one standard deviation below the mean. The data distribution for supervisor use and importance scores were narrow, as no mean scores or frequencies were greater than two standard deviations away from the mean for use and importance scores. The data distribution for capability was slightly broader, as two of the 34 scores (making a speech and editing video) were greater than two standard deviations away from the mean but was still more narrow than a normal distribution.

Two communication activities had high supervisor use, capability, and importance scores. Making a speech or presentation had high use (93%), importance ( $M = 4.73$ ), and capability ( $M = 4.36$ ) scores; writing an educational newsletter also had high use (93%), importance ( $M = 4.09$ ), and capability ( $M = 3.73$ ) scores. Only one communication activity, other social media, had low scores in all three categories; other social media had low use (53%), importance ( $M = 2.18$ ), and capability ( $M = 2.36$ ).

Some communication activities had one variable outside of one standard deviation but the other two variables within one standard deviation. For example, creating web pages had low capability ( $M = 2.18$ ) but use (60%) and importance ( $M = 2.91$ ) within one standard deviation of the mean. Managing a blog had low importance ( $M = 2.45$ ), but use (80%) and capability ( $M = 2.60$ ) were within one standard deviation of the mean. Editing writing for grammar and clarity had high importance ( $M = 4.09$ ), but use (87%) and capability ( $M = 3.27$ ) were within one standard deviation of the mean. Marketing also had high importance ( $M = 4.73$ ), but use (80%) and capability ( $M = 3.45$ ) were within one standard deviation of the mean.

### RO 3: Describe personnel's professional development preferences.

Overall, Extension personnel preferred hands-on practice ( $M = 4.7$ ,  $SD = 0.6$ ), demonstrations ( $M = 4.6$ ,  $SD = 0.6$ ), and field days ( $M = 4.3$ ,  $SD = 0.9$ ) for professional development related to communications activities (Table 3). Respondents least preferred readings ( $M = 3.3$ ,  $SD = 1.1$ ), discussion boards ( $M = 3.1$ ,  $SD = 1.2$ ), and non-Extension case studies ( $M = 3.0$ ,  $SD = 1.1$ ).

Table 3

#### *Personnel Professional Development Preferences for Communications Training.*

	<i>M</i>	<i>SD</i>
Hands-on practice	4.7	0.6
Demonstrations	4.6	0.6
Field days	4.3	0.9
Shadowing other agents	4.1	0.9
Extension-based case studies	3.9	1.1
Online videos	3.9	1.0
Webinars	3.7	1.1
Presentation-based lectures	3.7	1.1
Self-paced online modules	3.6	1.1
Readings	3.3	1.1
Discussion boards	3.1	1.2
Non-Extension case studies	3.0	1.1

*Note.* Responses were on a 5-point Likert scale where 1 = *Dislike* and 5 = *Like*

### Conclusions

Broadly speaking, personnel were more likely to do and be comfortable doing communication activities typical of most work environments, such as making speeches and presentations, as well as marketing, but they were less likely to do and be comfortable doing media relations communications activities (e.g., being interviewed for radio and TV) or related to non-Facebook social media (e.g., Twitter and Instagram). These findings are similar to past research where Extension personnel had higher comfort and use in written communication than other communications activities, especially in the form of newsletters, and had lower comfort in media-related communication, such as TV and radio outreach, video editing, and graphic design (Erichsen, 2008; Hopkins, 2013; Telg et al., 2007). Amongst social media platforms, previous research has found Extension personnel have had higher comfort in Facebook compared to other platforms such as Twitter (McClure et al., 2014).

Lower comfort for more technically oriented communications activities may be caused by low how-to knowledge in these more complex communication media, creating a barrier for use, whereas communication media with low personnel use but high comfort may be influenced by the characteristics of early adopters who are the first to use new technologies and have a higher comfort with the uncertainty of newer technologies in general (Rogers, 2003). Additionally,

self-efficacy may influence the relationship between use and comfort, as individuals are more likely to utilize tools in which they believe they are capable and skilled (Bandura, 1977).

“People fear and tend to avoid threatening situations they believe exceed their coping skills” (Bandura, 1977, p. 194), and a general pattern amongst communication activities were for activities with high comfort scores to also have high reported use. However, there were exceptions to this general pattern, where communication activities had high comfort and low importance and use. For example, managing a Pinterest account had high comfort but low importance and use. Personnel using these media may develop confidence from use, as “successes raise master expectations” (Bandura, 1977, p. 195). Users of these communication activities could be considered early innovators, with characteristics such as eagerness to try new communication activities and the likelihood of having high opinion leadership (Rogers, 2003). Such characteristics would make these early innovators ideal leaders in encouraging more widespread Extension adoption of these communication activities.

In the confirmation stage, the fifth stage of the Innovation-Decision Process (Rogers, 2003), innovations are reconsidered to decide if their use should be discontinued. It is possible communication patterns with very high use and importance, such as taking pictures or making a presentation or speech, have passed the confirmation stage to avoid discontinuance. Extension personnel consider the activities effective and therefore do not discontinue use to allow the use of newer technologies.

Unique patterns occurred in the broad categories of traditional, written, visual, social media, and media-outreach communication. Traditional communication, such as marketing and making a speech or presentation, tended to be strong in use, comfort/capability, and importance scores for both supervisors and personnel. Written communication, such as writing an educational newsletter also tended to be strong in use, capability, and importance scores for both personnel and supervisors. Visual communication, such as graphic design and editing video, tended to be lower than written and traditional communication in use; however, personnel maintained stronger comfort and importance score, while supervisors reported lower capability and importance scores, in some activities almost 50% lower than personnel. Social media tended to not have a strong use, comfort/capability, and importance scores for both personnel and supervisors, although there were exceptions. For example, 9% of personnel reported managing a blog, while 67% of supervisors reported having at least one personnel managing a blog. Media relations communications activities tended to have strong comfort/capability and importance scores for both personnel and supervisors, but reported use fluctuated greatly. For example, 55% of personnel reported being interviewed for radio, while 93% of supervisors reported having at least one employee being interviewed for radio.

Although supervisors play a crucial role in communicating workplace priorities, noticeable discrepancies were found between supervisor importance and personnel’s reported use in this study. This was especially noticeable for communication activities, such as being interviewed for radio and TV and creating web pages, where supervisors had high importance scores but personnel reported low use. Additionally, large differences occurred for graphic design for newsletters and promotional handouts, shooting video, creating Facebook posts, and managing a Twitter account, where supervisors had low importance but personnel reported high use.

Such differences could be a result of survey format, as supervisors were asked if at least one person used the communication activity before answering questions on capability and importance, while personnel were asked whether or not they had used the activity before assigning comfort and importance scores. However, supervisors play a crucial role in workplace dynamics, and clear supervisor-personnel communication is essential to ensure cohesiveness. Supervisors establish “a

clear view of which values are important, which goals are to be achieved, and how efficacious the organization has been in the past” (van Vuuren, et al., p. 116). The issue of supervisors’ perceptions of the importance of communication activities is important because the perceived utility of technology affects attitude more than the comfort with that technology (Davis, 1993).

Employees of an organization tend to avoid admitting a lack of skills (van Vuuren, de Jong, & Seydel, 2008). However, supervisors in this study consistently provided higher capability scores than the comfort scores personnel gave themselves. If personnel perceive themselves to be failing in use of a communication activity, self-efficacy in other areas may also decline (Bandura, 1977). For some communication activities where personnel and supervisors have low importance, the low comfort scores may simply be because personnel do not devote large amounts of time to learning these communication activities. However, the trend as a whole of lower comfort skills amongst personnel should not be ignored by supervisors, and effort should be taken to communicate supervisors’ confidence to personnel. “People are led, through suggestion, into believing they can cope successfully with what has overwhelmed them in the past,” (Bandura, 1977, p. 198).

For professional development, hands-on practice and demonstrations were clearly the most-preferred options, while readings, discussion boards, and non-Extension case studies were the least preferred. Looking at all of the items, the order of preference trended toward directly seeing the communication activities in action, with lower preferences for options that put more onus on learners being self-directed in gaining the knowledge.

### **Recommendations**

This study measured personnel and supervisors’ communication perceptions separately, without knowledge of whether their employees or supervisor had also responded. It is possible some supervisors who responded did not have any personnel employees respond and vice versa. This means definitive conclusions about the relationship between personnel and supervisor perceptions cannot be drawn. Future research should measure communication in a case study format to make more direct comparisons between supervisor and personnel perceptions.

Such a case study format should also measure clientele and community communication perceptions to understand how internal stakeholders’ perceptions compare to external stakeholders’ perceptions. Past research has identified factors that may affect Extension personnel’s communication, such as personnel’s perception of clientele access to technology (Alston, Hilton, English, Elbert, & Wakefield, 2011), specific community needs such as natural disaster assistance (Telg et al., 2007), and communicators’ preference of information media (Ruth-McSwain, 2008). There is a need to assess the relationship between personnel’s and clientele’s communication preferences directly. It is possible personnel’s and clientele’s communication is related uniquely in local settings or that differences in perceived importance and capability between personnel and clientele cause influence communication patterns.

Future research should consider four limitations to this study. First, responses on comfort and importance were only answered by individuals who reported doing those communication activities. While this reduced respondent fatigue by limiting time on the questionnaire, it did not provide information on non-users’ perceived comfort and importance. Second, the degree of use was not measured. It is possible a respondent may have done a communication activity only once and still reported use, and future research should structure questions to measure this potential difference. Third, reasons for personnel’s and supervisors’ estimates of use, comfort, and importance were not measured, and qualitative research could assist in identifying the causes of

communication patterns. Fourth, future research should expand beyond the single state measured in this study to incorporate a national perspective.

In practical recommendations for Extension communication specialists, supervisors and personnel should build mutual understanding on personnel capabilities and use of communication activities, while also setting clear priorities on the importance of each activity. As newer communication activities are implemented within Cooperative Extension, early innovators of these technologies should be encouraged to share their experiences with others during professional development activities. Attention should be given to personnel's preference for hands-on training and should address the differences in personnel and supervisor perceptions of use found in this study by building personnel skills in documenting communication. Additionally, opportunities should be given to supervisors to communicate to personnel which communication activities supervisors consider most important, as this study shows there may be discrepancies. Future research should also measure Extension personnel's use, importance, and comfort before and after such professional development to assess the actual effectiveness of the interventions.

- Abrams, K., Meyers, C., Irani, T., & Baker, L. (2010). Branding the land grant university: Stakeholders' awareness and perceptions of the tripartite mission. *Journal of Extension*, 48(6). Retrieved from <https://joe.org/joe/2010december/a9.php>
- Alston, A. J., Hilton, L., English, C. W., Elbert, C., & Wakefield, D. (2011). An analysis of the North Carolina Cooperative Extension Service's role in bridging the digital divide. *Journal of Extension*, 49(6). Retrieved from <https://joe.org/joe/2011december/rb1.php>
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 2, 191-215. doi: 10.1037/0033-295X.84.2.191
- Barton, E. T., Barton, E. A., Barton, S., Boyer, C. R., Brosnan, J., Hill, P., Hoyle, J., Seger, J., & Stafne, E. (2017) Using technology to enhance extension education and outreach. *HortTechnology*, 27(2), 177-186. doi: 10.21273/HORTTECH03608-16
- Bowie, L. & Bronte-Tinkew, J. (2006). The importance of professional development for youth workers. *Child Trends*. Retrieved from [http://resources21.org/resources/documents/professional\\_development\\_insight.pdf](http://resources21.org/resources/documents/professional_development_insight.pdf)
- Bull, N., Cote, L., Warner, P., & McKinnie, M. (2004). Is Extension relevant for the 21<sup>st</sup> century? *Journal of Extension*, 42(6). Retrieved from <https://joe.org/joe/2004december/comm2.php>
- Burton, G., Glassman, M., & Black, A. (2017). Reaping the digital return: Enhancing communities through modern Extension. Chicago, IL: The Chicago Council on Global Affairs. Retrieved from [https://www.thechicagocouncil.org/sites/default/files/report\\_globalfood\\_ag\\_extension\\_171212.pdf](https://www.thechicagocouncil.org/sites/default/files/report_globalfood_ag_extension_171212.pdf)
- Cartmell, D. D., Orr, C. L., & Kelemen, D. B. (2006). Effectively disseminating information to limited-scale landowners in the urban/rural interface. *Journal of Extension*, 44(1). Retrieved from <https://joe.org/joe/2006february/a5.php>
- Cater, M., Davis, D., Leger, B., Machtmes, K., & Arcemont, L. (2013). A study of Extension professionals preferences and perceptions of usefulness and level of comfort with blogs as an informal professional development tool. *Journal of Extension*, 51(4). Retrieved from <https://joe.org/joe/2013august/a6.php>

- Cochran, G. R. (2009). *Ohio State University Extension competency study: Developing a competency study for a 21<sup>st</sup> century Extension organization* (Master's thesis). The Ohio State University, Columbus, OH. Available from ProQuest Dissertations and Theses database. (UMI No. 304971727)
- Cooper, A. W., & Graham, D. L. (2001). Competencies needed to be successful county agents and county supervisors. *Journal of Extension*, 39(1). Retrieved from <https://joe.org/joe/2001february/rb3.php>
- Davis, F. D. (1993). User acceptance of information technology: system characteristics, user perceptions, and behavioral impacts. *Journal of Man-Machine Studies*, 38, 475-487. doi: [10.1006/imms.1993.1022](https://doi.org/10.1006/imms.1993.1022)
- DeBord, K. (2007). How integrated Extension programming helps market Cooperative Extension: The North Carolina recommendation. *Journal of Extension*, 45(5). Retrieved from <https://joe.org/joe/2007october/comm1.php>
- Diem, K. G., Hino, J., Martin, D., & Meisenbach, T. (2011). Is extension ready to adopt technology for delivering programs and reaching new audiences? *Journal of Extension*, 49(6). Retrieved from: <https://joe.org/joe/2011december/a1.php>
- Erichsen, A. R. (2008). Oklahoma Cooperative Extension Service educators' accessibility to resources and training regarding communications and marketing: A needs assessment. *Digital Collections at OKSTATE Library*. Retrieved from <https://hdl.handle.net/11244/8379>
- Franke-Dvorak, T. C., Kelsey, K. D., & Royer, T. A. (2010). Is Extension still reaching stakeholders? An assessment of minor crop producers' educational needs and use of Cooperative Extension Services. *Journal of Agricultural Education*, 51(1), 55-63. doi: [10.5032/jae.2010.01055](https://doi.org/10.5032/jae.2010.01055)
- French, C., & Morse, G. (2015). Extension stakeholder engagement: Adapting to the twenty-first century. *Journal of Human Sciences and Extension. Special issue: The Cooperative Extension Program Development Model*, 3(2). Retrieved from [https://scholars.unh.edu/nren\\_facpub/127/](https://scholars.unh.edu/nren_facpub/127/)
- Gagnon, R. J., Garst, B. A., & Franz, N. K. (2015). Looking ahead: Envisioning the future of the Extension Program Development Model. *Journal of Human Sciences and Extension*, 3(2), 170. Retrieved from [https://lib.dr.iastate.edu/edu\\_pubs/10](https://lib.dr.iastate.edu/edu_pubs/10)
- Garst, B. A., Baughman, S., & Franz, N. (2014). Benchmarking professional development practices across youth-serving organizations: Implications for Extension. *Journal of Extension*, 52(5). Retrieved from <https://joe.org/joe/2014october/a2.php>
- Germain, R. H., Ellis, B., & Stehman, S. V. (2014). Does landowner awareness and knowledge lead to sustainable forest management? A Vermont case study. *Journal of Extension*, 52(6). Retrieved from <https://joe.org/joe/2014december/rb3.php>
- Gould, F. I., Steel, D., & Woodward, W. J. (2014). Cooperative Extension: A century of innovation. *Journal of Extension*, 52(1). Retrieved from <https://joe.org/joe/2014february/comm1.php>
- Harder, A. M. (2007). *Characteristics and barriers impacting the diffusion of e-Extension among Texas Cooperative Extension county agents* (Doctoral dissertation). Texas A&M University, College Station, TX. Retrieved from <https://oaktrust.library.tamu.edu/bitstream/handle/1969.1/ETD-TAMU-1408/HARDER-DISSERTATION.pdf?sequence=1&isAllowed=y>
- Harder, A., & Lindner, J. R. (2008). An assessment of county Extension agents' adoption of eXtension. *Journal of Extension*, 46(3). Retrieved from <https://joe.org/joe/2008june/rb1.php>

- Hefny, M. A. M. (2013). Diffusion and adoption of e-Extension technology (computers and the internet) among Extension agents in Extension work in Sohag Governorate, Egypt. *African Journal of Agricultural Education*, 1(5), 094-099. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.672.6436&rep=rep1&type=pdf>
- Hightower, T. E., Murphrey, T. P., Coppernoll, S. M., Jahedkar, J., & Dooley, K. E. (2011). An examination of the strengths, weaknesses, opportunities, and threats associated with the adoption of Moodle™ by eXtension. *Journal of Extension*, 49(6). Retrieved from <https://joe.org/joe/2011december/rb3.php>
- Hopkins, S. C. (2013). *Arizona Extension agents' use of communication technologies* (Master's thesis). University of Arizona, Tucson, AZ. Retrieved from <https://www.learntechlib.org/p/119989/>
- Hubbard, W. G. & Sandman, L. R. (2007). Using diffusion of innovation concepts for improved program evaluation. *Journal of Extension*, 45(5). Retrieved from <https://joe.org/joe/2007october/a1.php>
- Ingram, J., & Gaskell, P. (2018). Reflections of co-constructing a digital advisor with stakeholders in agriculture and forestry. *13<sup>th</sup> European IFSA Symposium, 1-5 July 2018, Chania (Greece)*. Retrieved from [http://www.ifsa2018.gr/uploads/attachments/146/Theme4\\_Ingram.pdf](http://www.ifsa2018.gr/uploads/attachments/146/Theme4_Ingram.pdf)
- Israel, G. D., & Wilson, K. M. (2006). Sources and channels of information used by educational program clients. *Journal of Applied Communication*, 90(4). doi: 10.4148/1051-0834.1266
- Jernigan, H., Edgar, L. D., Miller, J. D., & Cox., C. K. (2015). Communication technology training beyond the university campus: a case study of skill development in the Arkansas Cooperative Extension service. *North American Colleges and Teachers of Agriculture*, (59)2, 122-129. Retrieved from <https://search.proquest.com/docview/1682905660?accountid=7098>
- Kalambokidis, L. (2011). Spreading the word about Extension's public value. *Journal of Extension*, 49(2). Retrieved from <https://joe.org/joe/2011april/a1.php>
- Kim, D., & Ammeter, T. (2014). Predicting personal information system adoption using an integrated diffusion model. *Information & Management*, 51(4), 451-464. doi: [10.1016/j.im.2014.02.011](https://doi.org/10.1016/j.im.2014.02.011)
- Lakai, D., Jayaratne, K. S. U., Moore, G. E., & Kistler, M. J. (2012). Barriers and effective educational strategies to develop Extension agents' professional competencies. *Journal of Extension*, 50(4). Retrieved from <https://joe.org/joe/2012august/rb1.php>
- Lawrence, T., & Mandal, B. (2016). Valuing Extension programming at the county level. *Journal of Extension*, 54(1). Retrieved from <https://joe.org/joe/2016february/a3.php>
- Leeuwis, C., & Aarts, N. (2011). Rethinking communication innovation processes: Creating space for change in complex systems. *The Journal of Agricultural Education and Extension*, 17(1), 21-36. doi: [10.1080/1389224X.2011.536344](https://doi.org/10.1080/1389224X.2011.536344)
- Lubell, M., Niles, M., & Hoffman, M. (2014). Extension 3.0: Managing agricultural knowledge systems in the network age. *Society and Natural Resources*, 27(10), 1089-1103. doi: [10.1080/08941920.2014.933496](https://doi.org/10.1080/08941920.2014.933496)
- Marra, A. E., Jensen, K. L., Clark, C. D., English, B. C., & Menard, R. J. (2012). Information sources and farmers' attitudes toward switchgrass production as a biofuel feedstock. *Journal of Extension*, 50(5). Retrieved from <https://joe.org/joe/2012october/rb6.php>

- Materia, V. C., Giarè, F., & Klerkx, L. (2014). Increasing knowledge flows between the agricultural research and advisory system in Italy: Combining virtual and non-virtual interaction in communities of practice. *The Journal of Agricultural Education and Extension*, 21(3), 203-218. doi: [10.1080/1389224X.2014.928226](https://doi.org/10.1080/1389224X.2014.928226)
- McClure, C., Buquoi, B., Kotrlík, J. W., Machtmes, K., & Bunch, J. C. (2014). Extension youth educators' technology use in youth development programming. *Journal of Agricultural Education*, 55(3), 17-31. doi: [10.5032/jae.2014.03017](https://doi.org/10.5032/jae.2014.03017)
- McDowell, G. (2004). Is Extension an idea whose time has come—and gone? *Journal of Extension*, 42(6). Retrieved from: <https://joe.org/joe/2004december/comm1.php>
- McGrath, D. M., Conway, F. D. L., & Johnson, S. (2007) The Extension Hedgehog. *Journal of Extension*, 45(2). Retrieved from <https://joe.org/joe/2007april/a1.php>
- Meyers, C., Shaw, K., Irlbeck, E., Doerfert, D., Abrams, K., & Morgan, C. (2015). Identifying agriculturists' online communication tool training needs. *Journal of Applied Communication*, 99(3). doi: [10.4148/1051-0834.1052](https://doi.org/10.4148/1051-0834.1052)
- Mitchell, R. N., (2015). *The correlation between virtual communication and employee engagement* (Doctoral dissertation). Walden University, Minneapolis, MN. Retrieved from <https://scholarworks.waldenu.edu/dissertations/497/>
- O'Neill, B., Zumwalt, A., & Bechmen, J. (2011). Social media use of Cooperative Extension family economics educators: Online survey results and implications. *Journal of Extension*. 49(6). Retrieved from <https://joe.org/joe/2011december/rb2.php>
- Ostrom, M., Cha, B., & Flores, M. (2010). Creating access to land grant resources for multicultural and disadvantaged farmers. *Journal of Agriculture, Food Systems, and Community Development*, 1(1), 89-105. doi: [10.5304/jafscd.2010.011.011](https://doi.org/10.5304/jafscd.2010.011.011)
- Putzer, G. J. & Park, Y. (2010). The effects of innovation factors on smartphone adoption among nurses in community hospitals. *Perspectives in Health Information Management*, 1(1b). Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2805554/>
- Ray, J., Baker, L. M., & Settle, Q. (2015). Ask the audience: Determining the organizational identity of a state Extension agency. *Journal of Applied Communication*, 99(4). doi: [10.4148/1051-0834.1061](https://doi.org/10.4148/1051-0834.1061)
- Rennekamp, R. A., Warner, P. D., Nall, M. A., Jacobs, C., & Maurer, R. C. (2001). An examination of customer satisfaction in the Kentucky Cooperative Extension Service. *Journal of Extension*, 39(2). Retrieved from <https://joe.org/joe/2001april/rb5.php>
- Rodewald, A. D. (2001). Delivery systems-Is the “latest” technology the greatest? *Journal of Extension*, 39(4). Retrieved from <https://joe.org/joe/2001august/tt2.php>
- Rogers, E. (2003). *Diffusion of Innovations* (5th ed.). New York, NY: Free Press.
- Rota, C., Nasuelli, P.A., Spadoni, C., Valmori, I., & Zanasi, C. (2013, June, 24-27). Factors affecting the sustainable use of ICTs for agriculture at the farm: The case of image line network community. *Paper presented at EFITA-WCCA-CIGR Conference, Sustainable Agriculture*, Turin, Italy. Retrieved from <http://www.cigr.org/Proceedings/uploads/2013/0021.pdf>
- Ruth-McSwain, A. (2008). Penchant for print: Media strategies in communicating agricultural information. *Journal of Applied Communication*, 92(3). doi: [10.4148/1051-0834.1210](https://doi.org/10.4148/1051-0834.1210)
- Sivakumar, P. S., Parasar, B., Das, R. N., & Anantharaman, M. (2014). Determinants of computer utilization by Extension personnel: A structural equations approach. *Journal of Agricultural Education and Extension*, 20(2), 191-212. doi: [10.1080/1389224X.2013.803986](https://doi.org/10.1080/1389224X.2013.803986)

- Sulaiman V, R., Hall, A., Kalaivani, N. J., Dorai, J., & Reddy, T. S. V. (2012). Necessary but not sufficient: Critiquing the role of information and communication technology in putting knowledge into use. *The Journal of Agricultural Education and Extension: Competence for Rural Innovation and Transformation*, 18(4), 331-346. doi: [10.1080/1389224X.2012.691782](https://doi.org/10.1080/1389224X.2012.691782)
- Talke, K., & Heidenreich, S. (2014). How to overcome pro-change bias: Incorporating passive and active innovation resistance in innovation decision models. *Journal of Product Innovation Management*, 31(5), 894-907. doi: [10.1111/jpim.12130](https://doi.org/10.1111/jpim.12130)
- Telg, R., Irani, T., Muegge, M., Kistler, M., & Place, N. (2007). Communication efforts of Florida Extension agents during the 2004 hurricane season. *Journal of Extension*, 45(3). Retrieved from <https://joe.org/joe/2007june/a4.php>
- Triplett, B. L. (2012). *Extension's role as an information source and channel among northeast Texas farmers* (Doctoral dissertation). Texas A&M University, College Station, TX. Retrieved from <https://oaktrust.library.tamu.edu/handle/1969.1/148200>.
- Van Vuuren, M., de Jong, M. D. T., & Seydel, E. R. (2007). Direct and indirect effects of supervisor communication on organizational commitment. *Corporate Communications*, 12(2), 116-128. doi: [10.1108/13563280710744801](https://doi.org/10.1108/13563280710744801)
- Venkatesh, V., & Davis, F. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Journal of Management Science*, 46(2), 186-204. doi: [10.1287/mnsc.46.2.186.11926](https://doi.org/10.1287/mnsc.46.2.186.11926)
- Wang, S.L. (2014). Cooperative Extension System: Trends and economic impacts on U.S. agriculture. *Choices*, 29(1), 1-8. Retrieved from <http://www.jstor.org/stable/choices.29.1.15>
- West, B. C., Drake, D., & Londo, A. (2009). Extension: A modern-day Pony Express? *Journal of Extension*. 47(2). Retrieved from <https://joe.org/joe/2009april/comm1.php>
- Yi, M. Y., & Hwang, Y. (2003). Predicting the use of web-based information systems: Self-efficacy, enjoyment, learning goal orientation, and technology acceptance model. *International Journal of Human-Computer Studies*, 59(4), 431-449. doi: [10.1016/S1071-5819\(03\)00114-9](https://doi.org/10.1016/S1071-5819(03)00114-9)
- Young, J. A. & Jones, K. (2017). Urban Extension- reflections on the past- a look to the future. *Journal of Human Sciences and Extension*, 5(2), 145-157. Retrieved from [https://docs.wixstatic.com/ugd/c8fe6e\\_79b5274c30d2468982e326c019c77dd1.pdf](https://docs.wixstatic.com/ugd/c8fe6e_79b5274c30d2468982e326c019c77dd1.pdf)

## ABOUT THE AUTHORS

Brittany Bowman is a master's student in agricultural communications in the Department of Agricultural Education, Communications and Leadership at Oklahoma State University.

Quisto Settle is an assistant professor of agricultural communications in the Department of Agricultural Education, Communications and Leadership at Oklahoma State University. He specializes in organizational branding to help increase public and policymaker understanding of agricultural and natural resources issues.

Elizabeth Gregory North is department head of Mississippi State University Extension's Office of Agricultural Communications.

Keri Collins Lewis is the media relations manager for the Office of Agricultural Communications at Mississippi State University.