

Agricultural communicators' use of mobile devices and social media in USA

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Abstract. Social media platforms and other new technologies support the communication of many topics, both beneficial and controversial to the development of the agriculture industry. Agricultural communicators' use of these platforms is critical for engaging with stakeholders and communicating information beneficial to agriculture. The purpose of this study was to explore agricultural communicators' use of devices and social media platforms in the United States. Researchers administered an online, descriptive questionnaire to collect data from members of the National Association of Farm Broadcasting. A majority of respondents used social media for work, with smartphones being the most common device used. Facebook and Twitter were used more than blogs and YouTube to interact with farmers/ranchers. Respondents agreed that social media allowed them to quickly and conveniently communicate with others. Significant relationships existed between perceived usefulness and Pinterest, blogs, and Instagram, while one significant correlation existed between perceived ease of use and Instagram. Respondents should continue to use Facebook and Twitter to engage their stakeholder groups in conversations about agriculture.

Keywords: social media, agricultural communicators, diffusion of innovations, technology acceptance model, online communication

Introduction

Agricultural communicators work in various professional roles, such as farm broadcasters, journalists and editors of agricultural magazines, communication specialists working in extension organizations, and science journalists. Agricultural extension agents often undertake roles of agricultural communicators (especially when engaging with their clients), communicating research and supporting agricultural and rural innovation. Agricultural communicators support communication among agricultural stakeholders and between agricultural (e.g. farmers, ranchers and suppliers) and non-agricultural stakeholders (e.g. consumers and citizens).

Social media set a revolutionary context of online communication for agricultural stakeholders, as it widens the scope of peer-to-peer communication, farmer-industry networking, engaging consumers, and building relationships with agribusiness and agri-entrepreneurs (Chowdhury & Hambly Odame 2013; Saravanan et al. 2015). The Pew Research Center reported roughly 30% of US adults use Facebook to get news, followed by 10% getting news from YouTube and 8% getting news from Twitter (Anderson & Caumont 2014). As communication technologies are changing, stakeholders' expectations of how to communicate are changing too. In order to engage with stakeholders, agricultural communicators must embrace social media platforms and other emerging new technologies (Rhoades & Aue 2010). If agricultural communicators including extension agents don't communicate using all the channels available to them, then their messages will likely be overwhelmed by what people hear through the alternative technologies and especially social media. For instance, there are challenges in dealing with controversial topics and messages, which if not properly managed, may pose a threat to the interests of agricultural communities (Eisee & Hoddle 2017). Many agricultural communicators see a benefit in using these platforms to reach new audiences and promote their organizations. Opportunities also exist to provide audiences with more timely and convenient messages and meet the increasing demands placed on agricultural communicators (Gharis et al. 2014). It is important to know how agricultural communicators are adopting and using such platforms to connect with various audiences. Previous research displays a need for understanding agricultural communicators' selection and use of social media platforms and similar technologies (Troxel 2010; Shaw et al. 2015). This study extends beyond previous research to determine agricultural communicators' use, challenges and opportunities for various communication devices and social media platforms in their professional work.

Theoretical framework and literature review

The theoretical framework in this study draws upon the diffusion of innovations and the Technology Acceptance Model (TAM). Diffusion is the process in which an innovation is communicated through various channels over a period of time among members of a community

or social system (Rogers 2003). An innovation is defined as an idea, practice or object unfamiliar to individuals within a social system (Rogers 2003). This communication is a two-way process that allows individuals to transfer information to achieve mutual understanding (Rogers 2003). After opinion leaders adopt an innovation, the innovation spreads to early majority, late majority, and then laggards.

The TAM model derives from the Theory of Reasoned Action to explain and predict intention and use of technology (Calisir, Atahan & Saracoglu 2013). The TAM model relies on two main components: perceived ease of use and perceived usefulness. Perceived ease of use is described as users' belief that a technology will require little effort, whereas perceived usefulness is defined by users' belief that a technology will improve their professional performance (Venkatesh & Davis 2000). One more construct has been included in the model because it is important to the context of social networking sites: perceived enjoyment (Venkatesh & Bala 2008; Calisir et al. 2013). Perceived enjoyment is defined as the user's level of pleasure and satisfaction received from using a specific technology (Praveena & Thomas 2013). Perceived enjoyment is considered a consequence of perceived ease of use in prior studies (Davis, Bagozzi & Warshaw 1992; Teo, Lim & Lai 1999). Perceived enjoyment had a positive effect on perceived ease of use and perceived usefulness of social network sites in Turkey (Calisir et al. 2013). Acceptance of social media usage and blogging among 521 experienced social media users in Taiwan depended heavily upon perceived ease of use and perceived usefulness (Chang & Yang 2013). The study also found that the characteristics and value of social media played a role in the acceptance of those technologies. In a similar study, Willis (2008) found the TAM model was effective and could explain acceptance and use of social media technologies that are relationship-focused, often extending beyond a single workplace.

Various devices are used for online use and access to social media sites (Lenhart et al. 2010). Most Americans own a cellphone (95%), while 77% own a smartphone (Pew Research Center 2017). Smartphone ownership has greater variation based on age, with 92% of Americans ages 18-29 owning a smartphone, followed by 88% of 30-49 year olds, 74% of 50-64 year olds, and 42% of Americans 65 years and older (Pew Research Center 2017). According to surveys conducted by the Pew Research Center, 78% of Americans own a desktop/laptop computer, while roughly half own a tablet computer. Individuals are more likely to prefer laptops and other mobile devices such as handhelds or cell phones for accessing the internet, including social media. Other devices used for accessing social media include desktops and gaming devices (Lenhart et al. 2010).

Acceptance of social media is high among agricultural communicators (e.g. farm broadcasters, agricultural editors, public relations professionals, and others) (Shultz 2010). A majority of agricultural communicators are using Twitter, Facebook, blogs and YouTube to engage with diverse online users (Shultz 2010; Steel & Filipic 2013). Twitter and Facebook are used by agricultural communicators belonging to the Association of Communication Excellence to post stories they have written, get story ideas, find sources, and follow hashtags (Steel & Filipic 2013). Other sites, such as Instagram, Pinterest and LinkedIn are also used by these agricultural communicators for similar purposes (Steel & Filipic 2013). However, a minority of agricultural communicators are using Pinterest, suggesting there are still emerging technologies that can be used (Steel & Filipic 2013). Few US agricultural communication organizations, such as National Association of Farm Broadcasting (NAFB) or Agricultural Communicators Network (AAEA), are using video services such as YouTube to reach new audiences (Rhoades & Aue 2010). Farming organizations and individual farmers have YouTube channels to create awareness about agriculture and sharing information about agricultural practices and businesses (Bhattacharjee & Raj 2016). Some activist organizations, such as People for the Ethical Treatment of Agriculture (PETA) or the Humane Society of the United States, have successfully used videos in their campaigns (Rhoades & Aue 2010). Although traditional audiences favour printed media, dissemination of information is growing through video platforms such as YouTube. Videos provide increasing opportunities for message exposure to online audiences and even cable television services.

Challenges exist to social media use, as differences in audience needs, preference, demographics, and economic conditions complicate agricultural communicators' ability to communicate their message (Troxel 2010). The benefits of social media are generally understood by agricultural communicators, but many are still struggling to figure out how best to use them. Some agricultural communicators believe challenges are not necessarily about the use of emerging technologies but rather how to communicate to match their audiences' expectations (Rhoades & Aue 2010). Although agricultural communicators feel confident in their use of the internet, many fail to frequently use new technologies, such as Twitter to obtain and share agriculture information

(Shultz 2010). Providing training and resources to agricultural communicators could allow for more effective use of social media (Abrams & Sackmann 2014).

The purpose of this study was to explore agricultural communicators' use of mobile devices, social media platforms, associated factors and challenges in their professional work in the United States. The following research questions guided this study:

1. How do agricultural communicators use communication devices and social media platforms for professional work?
2. What factors are associated with agricultural communicators' use of different social media platforms?
3. What challenges do agricultural communicators face for using social media in their professional work?

Methods

Data were collected from the members of the National Association of Farm Broadcasting (NAFB) (N = 257) using an online descriptive questionnaire administered through Qualtrics survey platform. The NAFB consists of members from a variety of backgrounds in agricultural communications, including broadcast, marketing and other industry representatives in different states of the USA (National Association of Farm Broadcasting 2017). The research ethics approval from the Utah State University was obtained before collecting data for this study. The first section of the questionnaire asked about the devices farm broadcasters use to access social media, by requesting respondents to rank the devices they use to access social media for work, where 1 is most used and 4 is least used. The second section asked about the social media sites used and how the sites are used. The components of perceived ease of use and perceived usefulness in the TAM model were measured on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Seven items related to the challenges of using social media were measured on a similar scale. Demographic and workplace characteristics (job title, years of work experience, state where employed, gender and age) were asked in the last section of the questionnaire.

A panel of experts familiar with survey methodology reviewed the questionnaire to establish face and content validity. A pilot test was conducted with members of the Agricultural Relations Council, consisting of agricultural communication professionals working in public relations or marketing. Reliability scores indicated a Cronbach's Alpha score of 0.91 for the perceived usefulness sub-construct, 0.94 for perceived ease of use sub-construct, and 0.88 for enjoyment sub-construct. The other constructs of TAM model were not included in the study since the reliability score is less than 0.80 (Nortcini 1999). The executive director of the NAFB sent an initial email and two reminder emails to 257 members in August 2016. Fifty-two NAFB members responded to the survey, providing a response rate of 20.2%. All of the collected data were analysed in SPSS to calculate descriptive statistics in the form of frequencies, means and standard deviations. We also calculated point-biserial correlation coefficients to determine relationships between the use of different social media and constructs of the TAM model.

Results

The majority of respondents were male (n = 29, 69%) and ranged in age from 23 to 73, with a mean of 49 years. Management or ownership positions for a broadcast station or network represented the most common job (n = 18, 36%), while other job titles included farm broadcaster (n = 10, 20%), broadcaster (n = 3, 6%), and farm director (n = 3, 6%). The NAFB is represented by three membership regions: East, South and West. The West region reported the most respondents (n = 19, 45%) with the South (n = 12, 29%) and East (n = 11, 26%) providing several responses as well. Respondents varied in work experience, with 52% (n = 22) having worked for over 22 years, 12% (n = 5) worked 18 to 22 years, 5% (n = 2) worked 13 to 17 years, 12% (n = 5) worked 8 to 12 years, 10% (n = 4) worked 3 to 7 years, and 10% (n = 4) worked less than 3 years.

How do agricultural communicators use communication devices and social media platforms for professional work?

Respondents ranked the devices they use to access social media platforms from most frequently used (1) to least frequently used (4). The smartphone ranked as the most frequently used device to access social media for work ($M = 1.85$), followed by laptop ($M = 2.22$), desktop computer ($M = 2.48$), and tablet ($M = 3.46$). Of the 31 respondents who recorded video for work purposes, 90% (n = 28) used a smartphone for this task, while 35% (n = 18) used a tablet, 43% (n = 12) used a laptop, and 18% (n = 5) used a desktop computer. Fifty respondents (96%) indicated they used social media for work, with Facebook being the most frequently used (n = 44, 88%) (see Table 1).

Table 1. Social media platforms used for work

Platforms	No.	%
Facebook	44	88.0
Twitter	32	68.1
Video (e.g. YouTube, Vimeo)	32	68.1
Podcasts	31	66.0
LinkedIn	29	61.7
Blogs	14	34.1
Instagram	13	31.0
Pinterest	3	8.1

n=52, multiple response is possible, % are of valid responses

A majority of respondents indicated they used Facebook to promote programs, workshops and other offerings ($n = 38, 73\%$), post media (photos, videos, audio files) ($n = 37, 71\%$), post news stories ($n = 33, 64\%$), and share links to news stories and web pages ($n = 30, 58\%$). Respondents were split on their use of Facebook to interact in real time with people ($n = 28, 54\%$) and announce events ($n = 28, 54\%$). Fewer respondents used Facebook to invite followers to events ($n = 22, 42\%$), ask questions ($n = 21, 40\%$), post press releases ($n = 16, 31\%$), join group pages ($n = 11, 21\%$), and promote fact sheets ($n = 7, 14\%$). Twitter was used for posting updates ($n = 29, 56\%$), sharing news links ($n = 27, 52\%$), receiving updates ($n = 24, 46\%$), following groups ($n = 20, 39\%$), and meeting new people ($n = 9, 17\%$). When asked how respondents used YouTube, 24 respondents (46%) posted videos on YouTube, while 52% of respondents ($n = 29$) indicated they viewed videos or shared links of YouTube videos ($n = 15, 27\%$).

Respondents were asked which stakeholder groups they most interacted with on the different social media platforms. As shown in Table 2, Facebook ($n = 39, 78.0\%$) and Twitter ($n = 27, 54\%$) were used more than blogs or YouTube to interact (ask questions, respond to messages and post information) with farmers/ranchers. Blogging was the least used social media tool for interacting with any of the stakeholder groups.

Table 2. Social media platforms used to interact with stakeholder groups

Stakeholder Groups	Facebook		Twitter		Blog		YouTube	
	No.	%	No.	%	No.	%	No.	%
Farmers/Ranchers	39	78.0	27	54.0	10	20.0	12	24.0
Educators	23	65.7	18	51.4	2	5.7	9	25.7
Agricultural Advisors (lobbyists)	26	66.7	21	53.8	4	10.3	8	20.5
Policy Makers	23	63.9	19	52.8	3	8.3	10	27.8
Researchers	21	37.5	18	51.4	4	11.4	7	20.0
Food Distributors	19	63.3	12	21.4	2	6.7	6	20.0
Communication Professionals/Journalists	29	67.4	24	55.8	1	2.3	9	20.9
Non-Profits/Civic Societies	23	69.7	18	54.5	1	3.0	7	21.2
Food Processing and Restaurant Industries	18	60.0	13	43.3	1	3.3	5	16.7

n=52, multiple response is possible, % are of valid responses

What factors are associated with agricultural communicators' use of different social media platforms?

When asked about their perceived ease of use, respondents agreed it was easy to learn to use social media ($M = 3.94, SD = 0.85$), become skilful when using social media ($M = 3.89, SD = 0.91$), and get social media to do what they want to do ($M = 3.62, SD = 1.03$). In regards to their perceived usefulness of social media, respondents agreed that social media allowed them to quickly communicate with others ($M = 4.04, SD = 0.79$), conveniently communicate with others ($M = 4.00, SD = 0.77$), and understand more information about the world and others ($M = 3.77, SD = 0.91$). In regards to perceived enjoyment, respondents agreed they liked sharing and receiving interesting greeting and humorous messages through social media ($M = 3.58, SD = 0.96$). Respondents were neutral about it being a pleasure to communicate through social media

($M = 3.44, SD = 1.05$), using social media is exciting ($M = 3.15, SD = 1.05$), and thinking social media are indispensable in their lives ($M = 3.10, SD = 1.15$).

Point-biserial correlations (r_{pb}) were calculated to describe the relationship between the social media platforms used for work, perceived usefulness, and perceived ease of use. As seen in Table 3, there were significant correlations between perceived usefulness and these social media platforms: Pinterest ($r_{pb} = .35, p = .036$), blogs ($r_{pb} = .34, p = .035$), and Instagram ($r_{pb} = .33, p = .039$). One significant correlation existed between perceived ease of use and Instagram ($r_{pb} = .47, p = .002$). All other correlations were non-significant at $p > .05$. Perceived enjoyment was significantly related to perceived ease of use ($r_{pb} = .54, p < .001$).

Table 3. The relationship between social media platforms and components of the TAM model

Use of Social Media Platforms	Perceived usefulness (r_{pb})	Perceived ease of use (r_{pb})
Blog (e.g. WordPress, Blogger, Tumblr) ($n = 39$)	0.34*	0.26
Instagram ($n = 40$)	0.33*	0.47**
Pinterest ($n = 36$)	0.35*	0.28
Podcast ($n = 45$)	0.02	-0.03
Twitter ($n = 45$)	0.17	-0.11
Facebook ($n = 45$)	-0.10	0.06
Video (e.g. YouTube, Vimeo) ($n = 41$)	-0.18	-0.17

* $p < .05$. ** $p < .01$.

What challenges do agricultural communicators face for using social media in their professional work?

Respondents indicated their level of agreement with potential challenges they face when using social media. As seen in Table 4, 21 respondents (49%) disagreed when asked if they lacked effective devices for social media use with 10 respondents (23%) strongly disagreeing. When asked about challenges related to the privacy concerns of their users, 10 respondents (23%) indicated they were neutral with 10 (23%) agreeing with the statement.

Table 4. Challenges in using social media

Item	Strongly Disagree		Disagree		Neither		Agree		Strongly Agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
My organization lacks control of content posted by others on the organization’s social media platforms.	6	14.0	17	39.5	14	32.6	4	9.3	2	4.7
I need training to show how to use social media platforms.	6	14.0	21	48.8	4	9.3	9	20.9	3	7.0
I lack the confidence to begin using social media platforms.	10	23.3	19	44.2	6	14.0	5	11.6	3	7.0
Lack of policy for my organization on how to use social media in the agri-food sector.	7	16.3	19	44.2	10	23.3	5	11.6	2	4.7
Lack of effective devices (e.g. size of smartphone, screen size etc.) for using social media.	10	23.3	21	48.8	7	16.3	4	9.3	1	2.3
Strong concern from users about the privacy of their information on my organization’s social media platforms.	5	11.6	12	27.9	10	23.3	10	23.3	6	14.0
Hesitate to communicate due to lack of social media literacy.	7	16.3	17	39.5	10	23.3	6	14.0	3	7.0

$n = 52$, No. and % were calculated based on valid responses (i.e. 43)

Discussion and Conclusion

Agricultural communicators' use of social media and mobile devices

Smartphones were the most common device used to access social media among respondents. Mackay & Ivory (2014) used the technology acceptance model and surveyed newspaper reporters and editors in Virginia about their social media and device use. Smartphones were most frequently used by Virginia journalists for their jobs, as well as laptop computers (Mackay & Ivory 2014). This use may indicate new routines have emerged at the workplace as a result of mobile technology. This result is consistent with past research on consumers' preferences of handheld devices, such as smartphones, to access the internet and social media (Lenhart et al. 2010; Pew Research Center 2017). Although ownership of tablets has increased in recent years, they are still not owned by the majority of the adult population (Anderson 2015). This finding could explain the lower rate of use among respondents. Use of tablets in the workplace by agricultural communicators has been slowly evolving.

Differences in background and preferences might explain lower use of certain social media platforms as past research has indicated varying usage rates of Instagram, Pinterest, and blogs among agricultural communicators (Steel & Filipic 2013). They might use certain social media less often because it was not part of their job role, respondents do not have the time to use social media, or they do not see the value in using that social media tool. The use of blogs is less for agricultural communicators, which is not surprising because Rhoades and Aue (2010) found that agricultural communicators felt their audiences did not want information through blogging. The findings are in line with other studies that agricultural stakeholder in Ontario use Facebook most frequently followed by Twitter and blogs (Guiry & Hilderley 2012; Chowdhury et al. 2013). Very few agricultural communicators are using Pinterest. This might be explained by the long-standing trend that women use Pinterest significantly higher than men in the USA (Greenwood et al. 2016). Since the majority of the respondents of this study is male, the number of agricultural communicators reported using Pinterest might be few. Nevertheless, agricultural communicators may consider using the tool to engage with specific audiences (e.g. female ranchers) on Pinterest by posting photography and videos from their websites and their broadcasts particularly on topics such as recipes, gardening, food, agriculture, and rural living. By communicating with audiences already using social media platforms, agricultural communicators may be able to learn how to effectively use and apply new platforms and skills, as suggested by past research (Steel & Filipic 2013).

Unlike the study of Cui (2014), the findings indicate that dialogue and conversation was less evident in the overall use of social media by agricultural communicators. The other study explored the use of Facebook for a specific topic (i.e. marketing of local produce) and found that Facebook pages of farmers' markets functioned as a platform for connecting and engaging local food and agricultural communities. In contrast, this research looked into the general use of social media by agricultural communicators and found that the major trends of social media were to inform audience about facts, news, and activities relating to agriculture. Furthermore, fewer agricultural communicators have adopted an approach of asking questions and inviting discussion about controversial food topics or encouraged regular interaction where both parties might have the opportunity for an on-going dialogue. The finding is consistent with other studies, such as Chowdhury and Hambly Odame (2013) who reported that information push-out and dissemination strategy is the dominant mode of social media use by agricultural and rural development stakeholders in Ontario; Reddick and Jaramillo (2014) who confirmed that Canadian public organizations use social networking media as a one-way communication channel; and Saulles (2011) who found that English local government agencies used social networking media as an information push strategy. This is indicative of top-down practices while communicating through social media (Paris, Thomas & Wan 2012).

Respondents' use of video and podcasts in this study contrasts with other research that found only a minority of agricultural communicators using these media (Rhoades & Aue 2010; Cui 2014). These differences may be due to an increasing demand for agricultural communicators to adopt these media for their professional work. These results may also suggest that video and podcast tools have significantly diffused among agricultural communicators. Moreover, the findings depict that agricultural communicators perceived image and visuals-based platforms, such as Instagram and Pinterest, useful for their professional work. The growing trend of use of visuals and video-based platforms by agricultural communities offers a number of benefits but also runs the risks of spreading controversies and propaganda about agricultural topics faster, which may impact communities negatively (Eise & Hoddle 2017). More agricultural communicators are using videos on YouTube, which is good since it will help them reach their audience and provide authentic information and clarification about anti-agriculture campaigns (Goodwin & Rhoades 2011).

Nevertheless, agricultural communicators need to move beyond passive use of video and adopt an active sharing of own video and appropriate video-based links so to offer a space for engagement for their audience.

The findings indicate that social media platforms were mainly used for dissemination of information. Agricultural communicators did not focus on an interactive two-way communication approach as indicated by the low number of respondents using different platforms (Facebook and Twitter) for asking questions and/or clarifications of the messages. Furthermore, video-based platforms are mostly used for viewing, and there is less evidence that agricultural communicators use the platforms for disseminating their own or other external video materials. This is indicative of passive consumption of messages rather than active engagement in online communication.

Factors associated with agricultural communicators' use of social media

Respondents indicated that social media allowed them to communicate quickly with others. Workplace characteristics and the need for dissemination of rapid interactions may explain their agreement with social media's perceived usefulness. If social media provides a quick channel for communication, respondents are likely to continue using it, especially if they can use the Facebook and Twitter apps on their smartphones. Their positive response regarding their abilities to learn how to use social media effectively and become skilful could explain why they don't lack confidence in using it. The higher percentage of respondents using Facebook, Twitter, video and podcasts may indicate respondents' perceived ease of use toward these social media platforms. They do not hesitate to use social media platforms and other new technologies in the workplace that are easy to use. Individuals have chosen to use social networking sites because of enjoyment or pleasure associated with using those sites (Hart et al. 2008). In this study, the results reveal the positive association of perceived ease of use with perceived enjoyment, which is consistent with previous studies on perceived ease of use and perceived enjoyment (Davis et al. 1992; Teo et al. 1999). Perceived enjoyment plays an important role for users' acceptance of social networking sites (Rosen & Sherman 2006).

Challenges in using social media for professional work

Contrasting with past research, participants in this study did not indicate facing any challenges with using social media (Rhoades & Aue 2010; Troxel 2010). Unlike Abrams and Sackmann's 2014 study, these participants disagreed that they lacked confidence for using social media or needed training. This finding also differs from Rhoades and Aue (2010) that found agricultural communicators were still figuring out how to use social media. These findings may indicate an increase in the adoption of technologies by a larger segment of agricultural communicators since the previous study was conducted. Respondents were neutral when asked about the privacy concerns of users on their organization's social media platforms. This finding could indicate that participants are not concerned or feel little or no threat about their users' privacy when using social media platforms for work.

Recommendations

This study provided important insights into extant use of social media platforms and related devices by agricultural communicators who are mainly farm broadcasters. The findings should not be generalized to all types of agricultural communicators but may be relevant to explain extant use of social media in other professional roles, for instance agricultural communicators working in extension agencies, public relation and other media organizations. As social media innovations emerge, agricultural communicators must be able to adapt and compete with others, such as anti-agriculture activists who may use these social media platforms to further their own cause. Communication channels, such as video, podcasts and social media platforms (such as Pinterest and Instagram) should be increasingly used by agricultural communicators to engage with various audiences. Agricultural communicators should continue to use Facebook and Twitter to deliver agricultural information to communicators/journalists, helping to increase political and public understanding of the agricultural industry. Rather than using social media for one-way communication, agricultural communicators should engage more with their followers by asking questions, responding to their followers' comments, or asking their followers to contribute videos and photos about agricultural issues. Although video-based platforms are used for disseminating information, there is an opportunity to use video more actively, such as posting original video materials and stimulating discussion about relevant topics. The farm broadcasters in this study should consider how to use Facebook video to produce authentic stories, livestream events from their smartphones, or deliver brief recaps of their daily or weekly stories to their online viewers.

Rogers (2003) suggests investigating the diffusion of technology as a cluster of innovations rather than individual entities, so this study should be replicated with other groups of agricultural communicators to discover their social media use and how they engage stakeholders. Additional

research is needed to observe agricultural communicators' use of social media and adoption of technologies as new platforms continue to emerge, including challenges, benefits, and what they are learning by using social media. In addition to studying the factors in the technology acceptance model, other factors influencing social media use, such as subjective norms, job relevance, service costs, and network externalities, should also be explored by researchers. The adoption or non-adoption of social media platforms would be better understood by comparing social media tool use by demographic and workplace characteristics of agricultural communicators. Further studies should look at how agricultural stakeholder groups want to receive information and what information they may want to share.

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