

Agriculturists' Personal and Business Use of Online Communication Tools

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Abstract

New programs and efforts are being promoted to help American farmers and ranchers succeed in their efforts, both in their daily operations and in their attempts to reach consumers. Online communication tools may be one way agriculturists can share their stories and market directly to these audience members, but much is unknown regarding the extent to which these tools are being implemented. The purpose of this study was to determine agriculturists' current use of online communication tools for both personal and business purposes. The target population for this study was members of organizations that serve young and/or beginning farmers and ranchers in three states. An online survey was administered electronically to members of seven organizations, and 185 completed questionnaires were analyzed. The findings indicated websites and Facebook are the commonly used online communication tools for personal and business use. Many tools are not used at all for either purpose. A significant correlation was found between the use of online communication tools in personal and business settings. Additional research is needed to further explore agriculturalists' use of these tools for both purposes.

Key Words

Social media, online communication, farmers, ranchers

Introduction and Need for Study

During the past century, the U.S. population has moved from more rural areas to fast-growing urban centers. Since 1900, the number of American farms has decreased by 63% while the average size of remaining farms increased by 67% (Dimitri, Effland, & Conklin, 2005). Now, less than 2% of Americans are engaged in farming as their primary profession. Currently, more than 3 million farmers operate more than 2 million farms in the United States (National Agricultural Statistics Service [NASS], 2014a).

To encourage the growth of American agriculture, the U.S. Department of Agriculture offers exclusive programs to those designated as beginning farmers or ranchers (Ahearn & Newton, 2009). According to the USDA definition, "beginning farmers or ranchers" must have less than 10 years of farming experience. The 2012 Census of Agriculture identified 522,058 farmers or ranchers who have been on their current operation less than 10 years, which was down 20% from 2007 (NASS, 2014b). Despite the drop in overall numbers, at least a quarter of all farm operators can be considered a beginning farmer or rancher, and these farms tend to have younger operators than the national average age of farmers (58.3 years). The average age for those on their farms five years or less was 46.9 years. For those with six to 10 years of experience on their farms, the average age was 50.8 years (NASS, 2014b).

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The American Farm Bureau Federation (AFBF) also has a program to support farmers and ranchers who are younger, specifically between the ages of 18 and 35. The AFBF Young Farmers & Ranchers program has the goal to help this generation succeed in their agricultural pursuits. The 2012 Census of Agriculture identified that of farmers with one to five years of experience, 24% less than 35 years old, and 14% of beginning farmers and ranchers with six to 10 years of experience were less than 35 years old (NASS, 2014b).

Agriculturalists must continue to explore innovative technologies and new ways to interact with potential consumers. One way to accomplish this is the use of direct marketing, which includes social networking, email newsletters, direct mail pieces, online commercials, and a website or blog. These pieces are ideal for smaller businesses that aim to speak directly to the client or potential customer and eliminate the middleman. It also is cheaper overall and allows business owners to have more control over their messages (Bullock, 2011).

Many smaller-scale or alternative farmers tend to utilize direct marketing techniques to promote their business or products. Alternative agriculture refers to operations that produce some sort of “nontraditional crop, livestock, or other farm product; service, recreation, tourism, food processing, forest/woodlot, or other enterprise based on farm and natural resources; or unconventional production system such as organic farming or aquaculture using direct marketing or other entrepreneurial marketing strategy” (Gold, 2007, para. 10). Abrams and Sackmann (2014) found alternative farmers in Illinois spent most of their time online to find information about farming, to interact with current or potential customers, and to find customers or potential customers.

According to a 2013 AFBF online survey of young farmers and ranchers, 92% use a computer in their farming operation and 94% have access to the Internet, with nearly 80% reporting regular use of mobile devices such as tablets and smart phones (AFBF, 2013). In the 2015 AFBF survey of young farmers and ranchers, the majority (75%) considered communicating with consumers their responsibility and they use several methods to accomplish this, including social media platforms (AFBF, 2015). Emerging online media, sometimes referred to as new media, encompass information distributed over the Internet, including websites, streaming audio and video, and social media (Ruggiero, 2000). Nearly three-quarters (74%) of the young farmers and ranchers use Facebook, 23% use Twitter, 19% have a farm webpage or blog, and 14% post videos of their farms or ranches to YouTube.

Hoffman (2009) said utilizing social media in agricultural endeavors has become a requirement, not an option, and by using these tools, farmers and ranchers have the potential to impact the public’s perception of agriculture. “Consumers are more willing to trust farmers than companies” (Wisconsin State Farmer, 2011, para. 14), so farmers and ranchers should be encouraged to connect with customers and consumers (Hoffman, 2009). Doerfert, Graber, Meyers, and Irlbeck (2012) recommended the Internet and social media should be closely monitored and reevaluated as their role evolves within the agricultural industry.

Literature Review/Theoretical Framework

In the past 20 years, the media landscape has changed drastically. Media users now have many more choices as to where, when, and how to obtain information. In 2013, 74.4% of American households had access to the Internet (File & Ryan, 2014). Comparatively, 52% of those in rural areas have access to the Internet (Pew Research Center, 2004), while 67% of those living in urban areas are online. Also, rural users are shown to be participating in many of the same online activities as their urban counterparts, including using email, using search engines, and pursuing hobbies. Most Americans (59%) access the Internet via a wireless device (Smith, 2010). The most popular tool is

a laptop computer, which 47% of adults have used, and 40% of all adults use their smart phone to go online (Smith, 2010). Age is not proving to be a factor inhibiting online activity. Zickuhr and Madden (2012) found 53% of seniors over the age of 65 use the Internet or email in some capacity. However, social media have a greater appeal to younger audiences (Telg & Barnes, 2012), with 75% of 18- to 24-year-olds and 57% of 25- to 34-year-olds currently utilizing some sort of social media outlet (Lenhart, 2009).

Duggan and Brenner (2013) said 67% of Internet users currently use some sort of social media tool. Social media sites are “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system” (Boyd & Ellison, 2007, p.1). Social media technologies allow user-generated content to not only be shared boundlessly but also allow for multiple influences on a community of learning (Pfeil, Arjan, & Zaphiris, 2009). When users are able to read, respond, and interact with comments posted by other users, these tools usually result in greater engagement, improved retention, and a higher likelihood of behavior change.

Social media allow companies of all sizes and structures to engage in timely and direct end-consumer contact at relatively low cost and higher levels of efficiency than can be achieved with more traditional communication tools (Kaplan & Haenlein, 2010). Unfortunately, this can be very time consuming for the expert who is facilitating these interactions (Anderson-Wilk, 2009). Typically, agricultural organizations operate with a one-person communications staff with small budgets, so it makes it more difficult for these organizations to explore new technological innovations (Bullock, Lockaby, & Akers, 2002). To maintain a successful social media presence, an organization or group must have an active and committed group of supporters (Rigby, 2008).

The theoretical framework for this study drew upon three theories: Rogers’ (2003) diffusion of innovations theory, the technology acceptance model (Davis, 1989), and uses and gratifications theory (Katz, Blumler, & Gurevitch, 1973). Rogers’ (2003) diffusion of innovations theory explains how new ideas, techniques or items are dispersed through a series of channels, following a strict sequence of adopters: innovators, early adopters, early majority, late majority, and laggards. The theory focuses on the likelihood of adoption for an innovation based on a number of factors, including evaluation of the innovation’s attributes: relative economic or social advantage, compatibility with existing values, complexity of the idea, trialability, and observability.

This theory has been applied in a variety of disciplines (Rogers, 2003). More recently, diffusion of innovations has been cited in numerous studies regarding the adoption of emerging online media. The theory has been used to identify who is utilizing specific technologies (Peng & Mu, 2011) as well as why some are leaving specific platforms in favor of others (Coursaris, Yun, & Sung, 2010). The adoption rates of social media is a topic of particular interest, especially among specific groups, including university communicators (Kelleher & Sweetser, 2012), nonprofit organizations (Waters, 2010), and online election campaigns (Gulati & Williams, 2011).

Within agricultural communications, Rhoades and Aue (2010) found agricultural editors and broadcasters could be classified in several adopter categories in terms of their social media use when compared to traditional media. It was determined that it was important for users to frequently update and interact using these tools or, as Rogers (2003) suggested, they may not see the full benefit of utilizing these innovations. Through a series of focus groups, Telg and Barnes (2012) found members of Florida’s Young Farmers & Ranchers program did not implement social media tools within the organization because they did not agree on Rogers’ (2003) perceived attributes of innovation. The

researchers suggested the organization develop a better social media strategy to help successfully support the organization through the organizational change process to more thoroughly integrate social media in their communication efforts.

An additional theory in this framework is the technology acceptance model, which is based on the Theory of Reasoned Action (Fishbein & Ajzen, 1975). This theory examines how attitudes and beliefs toward technology can influence eventual decisions to use the particular technology (Davis, 1989). Additionally, various external factors have the potential to influence behavior decisions (Davis, 1993). Researchers have utilized this theory to study adoption of technological advances such as email, voicemail, word processing, and the Internet (Lederer, Maupin, Sena, & Zhuang, 2000). Lee, Kozar, and Larsen (2003) said more research is needed to test the technology acceptance model with multi-user systems, such as social media and other online communication tools. Additionally, as new online communication tools develop, it is vital to test the model for these new tools to ensure vitality and usefulness of the model in the face of innovation. Irani (2000) established the theory's usefulness in agricultural communications and Internet applications and advocated for more application of the model in the agricultural industry.

The third theory in this study's theoretical framework was uses and gratifications theory (Katz, Blumler, & Gurevitch, 1973), which addresses how people choose particular media to fulfill certain needs they expect to be met (Joinson, 2008). This idea also extends to groups, businesses, and society as a whole. Although typically used to address choices in traditional media such as print, radio, and television, the theory has been recently extended to types of electronic media, including social media. Due to this shift, Bumgarner (2007) insisted the role this theory plays in the lives of people is even more relevant than in previous instances. The uses and gratifications theory serves as a useful explanation for why people leave traditional media in favor of emerging online media — these new forms of media are filling the same social and psychological needs (Ruggiero, 2000). Many uses and gratifications of emerging online media are very similar to those of long-standing media types (Eighmey & McCord, 1998). Users still have a desire to learn about what is going on around them and, in some cases, simply entertain themselves using either new or older media tools. Although general media use of agriculturalists has been researched focusing mainly on traditional media sources (Doerfert et al., 2012; Ruth-McSwain, 2008), there is yet to be extensive research focusing on the social media uses and gratifications of this distinct set of users. Additional research is necessary to further explore how and why agriculturists use emerging media.

Purpose/Research Questions

The purpose of this study was to determine agriculturists' use of online communication tools. The following research questions were used to achieve this purpose:

1. What is the extent of respondents' personal use of online communication tools?
2. What is the extent of respondents' business use of online communication tools?
3. What relationship exists between online communication tool use for personal and business purposes?

Methods

To answer the research questions, researchers used a quantitative, descriptive online survey research design. Online survey methodology was appropriate because of trying to assess the online communication habits of farmers and ranchers, not simply if they were online or not, which previous studies

have already determined (AFBF, 2015; NASS, 2014a.). Abrams and Sackmann (2014) used this research design to determine the use and influence of online communication tools on Illinois farmers' social capital and business viability.

Qualtrics survey software was used to administer an online instrument to a sample of farmers in three states. These states were chosen based on participation in a USDA grant project to assist beginning farmers and ranchers in their online marketing needs. Due to the grant's purpose, specific agricultural organizations were purposively selected within each state that represented members who could benefit most from a direct-to-consumer marketing program to help them increase awareness of a product or service they provide. These organizations typically served beginning and/or younger farmers and ranchers. Additionally, each of the organizations had a member database through which a program director could contact the members to distribute the survey link. Members of seven organizations were surveyed for use in this research.

Questions for this instrument were modified from an instrument used to assess social media use and knowledge (Abrams & Baker, 2012). The questionnaire consisted of four sections measuring agriculturists' current use of social media tools; self-perceived levels of importance and competence completing various tasks using online communication tools; potential barriers and motivations for attending social media training; and demographic questions. The updated questionnaire was evaluated by a panel of experts consisting of agricultural education and communications faculty representing each of the participating states. This manuscript reports the results of the agriculturists' current use of online communication tools and demographics. These online communications tools were selected based on popularity of use. Website, Facebook, Google+, Twitter and YouTube were listed individually. Within the response options that represented a categories of communication tool options, respondents were given examples – Photo Sharing Website (i.e. Flickr, Shutterfly), Blogging Website (i.e. WordPress, Blogger), Social Bookmarking (i.e. Digg, StumbleUpon, Pinterest), and Social Media Management Tool (i.e. HootSuite, Tweetdeck). Respondents also could provide other responses if they used something that was not listed.

Each state had a separate time period for its survey administration, staggered across a four-month period from July to October 2012. Qualtrics survey software stored the survey and all the responses securely. A representative for each organization sent each round of emails with the survey link to individual members of the organization. In total, 286 respondents started the questionnaire, but after examination, 101 had to be removed due to incompleteness resulting in 185 usable responses from all three states (64.7% completion rate). It is not possible to calculate a response rate for the survey because researchers were not provided with a total number of members or list of those emailed the survey link for the various organizations.

The data from each set of surveys were exported into SPSS® version 20.0 for Windows™. To determine similarity between the respondents across multiple states, crosstabulations, chi-square, and ANOVAs were used to compare demographic characteristics. Frequencies, standard deviations, and means were calculated for the entire group of respondents.

Results

More males ($n = 100, 54.1\%$) responded to the study than females ($n = 71, 38.4\%$); 14 did not provide a response for gender. Respondents also were asked to identify their year of birth. Of the 169 who responded to this question, the mean age was 39 years ($SD = 13.74$), and the median age was 33. The oldest respondent was 90 years old, and the youngest was 18.

Various agricultural industries were represented in the group of respondents. The two most frequently selected types of operations were cattle production ($n = 78$, 42.2%) and grain and oilseed farming ($n = 76$, 41.1%). The least frequently indicated type of agricultural operations were horticulture ($n = 10$, 5.4%) and dairy cattle and milk production ($n = 8$, 4.3%). Respondents were able to select more than one type of operation, and the majority ($n = 112$, 66.7%) did select two or more of the listed operation types while only 33.3% ($n = 56$) identified only one of the operation types.

The majority of respondents ($n = 107$, 57.9%) had owned their operation for less than 10 years, which is the USDA's classification of a beginning farmer or rancher. Many ($n = 54$, 29.2%) indicated they had owned their agricultural operation from one to five years. The fewest amount of respondents had owned their operation for between 16 to 20 years ($n = 9$, 4.9%). When asked if their operation was in any part classified as alternative by the USDA, the majority of respondents ($n = 108$, 58.4%) said their operation was in no part classified as alternative, while 19.5% ($n = 36$) said their entire operation was alternative and 12.7% ($n = 21$) said only part of their operation carried alternative designation. The number of respondents engaged in some type of direct-to-consumer marketing was very similar, although more of the respondents ($n = 92$, 49.7%) were not involved in any direct-to-consumer marketing while 41.6% ($n = 77$) did market to their consumers in this way.

Respondents also were asked to indicate what type of electronic devices they owned that had some sort of Internet access. The most common type of electronic device respondents owned with Internet access was a laptop ($n = 154$, 83.3%), but more than half of respondents also owned some brand of smartphone ($n = 120$, 64.9%) and a desktop computer ($n = 104$, 56.2%). Respondents could select more than one type of device, and the majority of respondents ($n = 145$, 85.9%) did own more than one. Only 14.1% ($n = 26$) indicated they only owned one device.

RQ 1: What is the extent of respondents' personal use of online communication tools?

Table 1 displays the respondents' frequency of use for several popular online communication tools for personal use. The most frequently utilized online communication tool for personal reasons was websites, with 56.2% ($n = 95$) of respondents indicating they use the tool at least once daily. Facebook also was indicated as a frequently utilized tool, with 47.3% ($n = 80$) reporting daily use of the social media site. More than a third of respondents ($n = 65$, 38.5%) also indicated using YouTube at least once each month for personal reasons. Other online communication tools respondents identified for personal use included AgChat, email, Kickstarter.com, LinkedIn, and FourSquare.

For all of the other tools suggested, either the majority of respondents, or close to the majority, indicated they never used the tool for personal reasons. These included Google+ ($n = 75$, 44.1%), Twitter ($n = 128$, 77%), photo sharing websites ($n = 109$, 61.7%), blogging websites ($n = 117$, 69.6%), social bookmarking sites ($n = 122$, 72.2%), and social media management sites ($n = 158$, 94.6%).

Table 1
Online Communication Tool Preference for Personal Use

Tool	Do Not Use		Monthly		Weekly		Daily	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Website ^b	35	20.7	13	7.7	26	15.4	95	56.2
Facebook ^b	40	23.8	14	8.3	35	20.7	80	47.3
Google+ (Plus) ^a	75	44.1	11	6.5	33	19.4	51	30.0
Twitter ^c	128	77.1	18	9.7	10	6.0	10	6.0
YouTube ^b	49	29.0	65	38.5	43	25.4	12	7.1
Photo Sharing Websites ^d	103	61.7	46	27.5	10	6.0	8	4.8
Blogging Website ^c	117	69.6	24	14.3	18	10.7	9	5.4
Social Bookmarking ^a	122	72.2	20	11.8	17	10.1	10	5.9
Social Media Management ^d	158	94.6	4	2.4	4	2.4	1	0.6
Other ^f	88	88.0	5	5.0	0	0.0	7	7.0

Note. Frequency percentages are calculated for the number of responses for each tool, respectively. ^a*n* = 170, ^b*n* = 169, ^c*n* = 168, ^d*n* = 167, ^e*n* = 166, ^f*n* = 100.

RQ2: What is the extent of respondents' business use of online communication tools?

Table 2 displays the respondents' frequency of use for several popular online communication tools for business purposes. In terms of use for their agricultural operations, websites were the only tool at least one third of respondents utilized every day for business purposes (*n* = 63, 37.3%). For all the other tools, a majority or close to a majority indicated they did not use the tools at all. A few did indicate they used "other" communication tools for their agricultural business, including email, LinkedIn, cattlerange.com, and Mailchimp.

Table 2
Online Communication Tool Preference for Use in Agricultural Operations

Tool	Do Not Use		Monthly		Weekly		Daily	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Website ^b	47	27.8	21	12.4	38	22.5	63	37.3
Facebook ^b	77	45.3	21	12.4	32	18.8	40	23.5
Google+ (Plus) ^a	99	59.3	16	9.6	27	16.2	25	15.0
Twitter ^c	141	83.9	10	6.0	9	5.4	8	4.8
YouTube ^b	100	59.5	46	27.4	17	10.1	5	3.0
Photo Sharing Websites ^d	144	86.2	16	9.6	3	1.8	4	2.4
Blogging Website ^c	126	75.9	23	13.9	11	6.6	6	3.6
Social Bookmarking ^a	148	88.6	15	9.0	1	0.6	3	1.8
Social Media Management ^d	158	95.2	6	3.6	0	0.0	2	1.2
Other ^f	103	92.8	2	1.8	2	1.8	4	3.6

Note. Frequency percentages are calculated for the number of responses for each tool, respectively. ^a*n* = 170, ^b*n* = 169, ^c*n* = 168, ^d*n* = 167, ^e*n* = 166, ^f*n* = 111.

RQ 3: What relationship exists between online communication tool use for personal and business purposes?

Cramer's V was calculated to determine statistical significance of the relationship between personal and business use of each online communication tool. Cramer's V ranges from 0 to 1.0, with values closer to 1.0 indicating a stronger significance (Morgan et al., 2001). Cramer's V values close to .2 indicate a small effect size, values close to .5 indicate a medium effect size, and values closer to .8 indicate a large effect size. If a value shows a high level of significance, this means the strength of the relationship is significant (Morgan et al., 2001).

Combined results for personal and business use as well as Cramer's V values are reported in Table 3. Looking at these results, all effect sizes would be considered a medium effect size except for social media management tools and blogs. Social media management tools had a small effect size, while blogs had a large effect size.

Table 3
Relationships Between Online Communication Tool Frequency of Use for Personal or Agriculture Use

Tool	Daily		Weekly		Monthly		Never		Cramer's V	p								
	Personal n	Ag %	Personal n	Ag %	Personal n	Ag %	Personal n	Ag %										
Website	95	56.2	63	37.3	26	15.4	38	22.5	13	7.7	21	12.4	35	20.7	47	27.8	.50	.00
Facebook	80	47.3	40	23.5	35	20.7	32	18.8	14	8.3	21	12.4	40	23.8	77	45.3	.44	.00
Google+	51	30.0	25	15.0	33	19.4	27	16.2	11	6.5	16	9.6	75	44.1	99	59.3	.52	.00
YouTube	12	7.1	5	3.0	43	25.4	17	10.1	65	38.5	46	27.4	49	29.0	100	59.5	.50	.00
Twitter	10	6.0	8	4.8	10	6.0	9	5.4	18	9.7	10	6.0	128	77.1	141	83.9	.50	.00
Social Bookmarking	10	5.9	3	1.8	17	10.1	1	0.6	20	11.8	15	9.0	122	72.2	148	88.6	.46	.00
Blogging Website	9	5.4	6	3.6	18	10.7	11	6.6	24	14.3	23	13.9	117	69.6	126	75.9	.70	.00
Photo Sharing Websites	8	4.8	4	2.4	10	6.0	3	1.8	46	27.5	16	9.6	103	61.7	144	86.2	.50	.00
Other	7	7.0	4	3.6	0	0.0	2	1.8	5	5.0	2	1.8	88	88.0	103	92.8	.58	.00
Social Media Management	1	0.6	2	1.2	4	2.4	0	0.0	4	2.4	6	3.6	158	94.6	158	95.2	.33	.00

Conclusions/ Implications/Recommendations

Previous authors have stated the need for agriculturists to explore the use of online communication tools (Doerfert et al., 2012; Hoffman, 2009; Telg & Barnes, 2012). In the current study, the researchers sought to determine the extent to which agriculturists use online communication tools for personal and business purposes with specific emphasis on those who may be classified as beginning farmers or ranchers. The average age of respondents in this study was 39 years old, which is lower than the average age of all U.S. farm operators and beginning farmers and ranchers (NASS, 2014a). However, this study did not use a random sample of U.S. farmers and ranchers and actually selected organizations that served younger and/or beginning agriculturists. In fact, the majority of respondents had owned their operation for 10 years or fewer ($n = 107, 57.9\%$) and thus would be classified by the USDA as a beginning farmer and rancher.

A large number of respondents ($n = 145, 85.9\%$) owned more than one type of electronic device with Internet-access capability. This is slightly lower than statistics reported by the AFBF (2013), which indicated 92% of all young farmers and ranchers utilize a computer for their operation, with most having access to high-speed Internet capabilities. However, the AFBF survey was limited to those under the age of 35, while this research included agriculturists of any age, with a varying amount of on-farm experience.

In regard to the study's research question one, it was anticipated respondents would use a wide range of online communication tools frequently for personal reasons, such as to interact with friends and family. However, respondents used only websites, Facebook, and YouTube with any regularity. All remaining tools were never used or were used very infrequently. Only 56.2% ($n = 95$) of the respondents used one of the most basic tools, websites, on a daily basis. In fact, about 20% of respondents ($n = 35$) indicated they did not use websites at all. Almost half indicated they employed Facebook for personal reasons on a daily basis ($n = 80, 47\%$), while nearly 40% ($n = 65, 38.5\%$) reported visiting YouTube at least once each month. Not surprisingly, those tools with more popularity for personal use are more established and popular in mainstream culture, such as Facebook. This supports Rogers' (2003) idea that people are more likely to use tools that have been tested and approved by friends, family, and peers. Diffusion of innovations follows a distinct curve, where more people adopt a new innovation or technology as a function of time. Compared to many of the other online communication tools included in this study, websites and Facebook are the oldest available tools and have the most active users. The popularity of websites and Facebook is consistent with research identifying a unique audience for these two popular online communication tools (AFBF, 2015) and findings that agriculturists are actively engaging in social media.

Uses and gratifications theory also helps explain why these tools may be the most popular for personal use. Websites are a very general type of tool used for a number of reasons. Respondents could be using websites for e-commerce purposes or even to look up menus for their favorite restaurants. Facebook is used as a tool to socialize and connect with friends and family. Other tools, like Twitter, social media management tools, or blogs, have a reputation as being more for business and may not be meeting as many personal needs for these respondents. They also are selecting the tools that have more potential for personal and entertainment values.

Respondents may be engaging in particular social media platforms as a result of a tool being popular among their acquaintances. If an agriculturist's peers favor a certain form of social media, the technology acceptance model (Davis, 1989) suggests the farmer or rancher may be more likely to adopt the same technology. Viewing others using technology could suggest to a potential user that not only is the tool useful, but it is also manageable to use, both of which have a direct correlation

to the farmer or rancher making the decision to adopt a particular technology. Diffusion of innovations theory termed this phenomenon as observability, which is a positive influence on adoption rates (Rogers, 2003)

The second research question sought to determine the extent of online communication tools for the respondents' agricultural operations. As in their use for personal reasons, websites were the most frequently used tool each day for business purposes ($n = 63, 37.3\%$), but fewer respondents indicated using websites on a daily basis for the business than for personal reasons. The only other tool with a significant amount of daily use for business was Facebook ($n = 40, 23.5\%$), but almost half of the respondents indicated not using Facebook in any way for their business ($n = 77, 45.3\%$). In fact, all of the tools except for websites and Facebook had at least a majority, if not almost all respondents, indicate they did not use the tool at all for business purposes. In total, seven of the nine given online communication tools were not being used by a majority of agricultural producers for business purposes.

Kaplan and Haenlein (2010) said social media can be used by companies of all sizes and structures to engage in customer relationships and at a lower cost than traditional media. Currently, it seems not very many agricultural producers use these online communication tools for their businesses. In the diffusion of innovations theory (Rogers, 2003), adoption is a function of time and influenced by innovation attributes such as trialability, observability, and compatibility. Following Rogers' curve of diffusion, these tools may still be in the initial stages of adoption. Although these tools are free and have easy availability to be experimented with, the producers in this survey may not have seen these tools utilized in a professional, business manner by peers or competitors. If they are not comfortable utilizing these tools for personal reasons, it is unlikely they would be interested in or committed to utilizing the same tools in a professional setting.

Respondents might have adopted a technology because of a recommendation from a friend or viewing a competitor's usage, which supports the technology acceptance model's idea that perceived usefulness and ease of use influence actual use of a particular technology (Irani, 2000). However, they will not begin or continue use of a tool unless they have identified the direct benefits the online communication tool will have for their business. An important aspect of diffusion of innovations is relative advantage, meaning potential users will not change their usage patterns unless they see the innovation as being better in some way to their previous tool or method (Rogers, 2003). Assuming these respondents have successful businesses, they have been using a particular set of tools or skills to market their business. According to uses and gratifications theory (Katz, et al., 1973), if they do not see value or gratifications in altering their marketing strategy, they have no incentive to make these alterations. This demonstrates that for many, these online communication tools have no relative advantage over what they have already been doing to market their agricultural businesses.

Overall, there was a significant correlation between personal and business use of each online communication tool at every frequency of use. Those who are utilizing a specific tool more frequently for personal reasons are also utilizing the same tool for business purposes, and vice versa. In the same token, if they are not using a tool in their personal life, they are unlikely to be exploring use of the same tool in a business setting. Abrams and Sackmann (2014) also found an association between personal and business social media use among alternative farmers in Illinois.

When considering which devices respondents were using to access these tools, more than three-quarters of all participants owned some sort of a laptop or other mobile device to access the Internet. From this information, it is evident agriculturists have widespread access to online communication tools, regardless of whether they are choosing to utilize them. The non-adoption of these online communication tools is an area that should be researched more thoroughly.

It would be beneficial to complete more qualitative research using in-depth interviews or focus groups to thoroughly explore why agriculturists select certain online communication tools and how they are used. This study did not ask respondents to describe their use of online communication tools and this could vary from looking for information to actively creating and posting content. Additionally, respondents indicated they use other tools than the ones listed on the questionnaire. A qualitative approach would help identify what these tools are and perhaps any unique aspects they provide agriculturists.

This study is limited in its use of a non-probability sample. This study should be replicated with a larger, random sample of U.S. farmers and ranchers. This would improve the generalizability of the findings. Research should be conducted in additional states and agricultural industries not adequately represented in this survey to determine if agriculturists in those states and industries follow the same patterns of online communication tool usage as those reported in this data. Comparing online communication tool use by age, gender, or other relevant characteristics also would provide additional insight into the adoption or non-adoption of these tools.

Finally, further inquiry should be made into the trend of those utilizing these tools for personal purposes being more likely to utilize online communication tools for professional reasons. This is a pattern not adequately explored in prior literature. It could be difficult for farmers and ranchers to make a clear distinction between the use of online communication tools for personal and business purposes because for many, these are one and the same. Agriculturists are often encouraged to share stories and experiences of their livelihood, and this request requires them to “blur the lines” between what is personal and what is professional information. This may be both an incentive and barrier for agriculturists to become more active communicating online and deserves to be further explored in subsequent research.

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