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An Investigation of the Barriers that Influence Extension Employees' Attitudes toward Social Media Use at Mississippi State University

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By

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Many Extension organizations in the United States utilize social media to communicate with clients and deliver Extension educational programs. The purpose of this study was to investigate what social media platform Extension employees were using as a communication tool to deliver educational programs, and to examine factors influencing Extension employees' attitudes toward using social media with Mississippi State University Extension. The study followed a descriptive correlational design, using a researcher- developed questionnaire. Data were collected via Qualtrics. A total of 170 Extension faculty and agents responded to the questionnaire. Most of respondents were Extension agents, white, with an almost equal percentage of male and female. Their age ranged from less than 25 to over 65 years old, and 51.2% were in age range from 25 to 44 years old (f = 87). Facebook and Twitter were the most-used social media platforms by Extension faculty and agents. Based on 135 usable responses of social media users, two principal component analyses were conducted. The result of principal component analyses on organizational and social media scales revealed five components that influence social media use. These five variables were named social media characteristics,

clients' interest and skills, graphic skills, organizational support, and availability of equipment and Internet. The results revealed that Extension specialists' and agents social media users (M = 4.08, SD = 0.78) and nonusers (M = 3.56, SD = 0.70) have a positive (in range of agree) attitude toward using social media in Extension. Social media users have a positive (in range of agree) perceived usefulness of social media in Extension (M = 3.84, SD = 0.71). Participants' Facebook self-efficacy was in the range of agree (M = 3.63, SD = 0.83), and their Twitter self-efficacy was in range neither agree nor disagree (M = 3.30, SD = 0.89). Perceived usefulness, clients' interest and skills, and social media characteristics were the significant factors that influenced Extension specialists' and agents attitudes toward social media with Mississippi State University Extension.

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CHAPTER I

INTRODUCTION

The introduction of social media platforms has expedited the communication process in everything people do (Ellison & Boyd, 2008). These sites enable individuals to create a personal or professional profile to share various types of content, such as news, photos, videos, or audio (Khang, Han, & Ki, 2014). Social media platforms, such as Facebook, Twitter, YouTube, and Instagram, have enhanced the way people communicate with each other.

Drury (2008) defined social media as "online resources that people use to share content: video, photos, images, text, ideas, insight, humor, opinion, gossip, news" (p. 1). Lee (2010) noted that social media has become vastly popular for common people. This is because social media allows individuals to deliver content or interact with it. Many organizations, such as healthcare, higher education, and government agencies, utilize social media as a communication tool (Antheunis, Tates, & Nieboer, 2013; Waters, Burnett, Lamm, & Lucas, 2009).

Recently, Cooperative Extension has utilized social media to build relationships with clientele and to deliver educational programs, but this utilization is still not on a large scale (Hopkins, 2013; Lewis, 2014). Extension's purpose is to provide clientele with the knowledge and skills essential for solving farm, home, and community issues. All

Extension programs are educational in scope, using research findings generated primarily from the U.S. Department of Agriculture and the land-grant universities (MSU, n.d.).

There are many barriers that cause low adoption rates in reference to social media and reduce the chance for Extension employees to use this media effectively (Newbury, Humphreys, & Fuess, 2014). These barriers are linked to the organization (Reuter, Ludwig, Kaufhold, & Sprelhfer, 2016), the social media itself (Ellahi & Bokhari, 2013), and individual characteristics (Hopp & Gangadharbatla, 2016). Social media is important for Extension as a communication tool because it provides Extension professionals the ability to reach new audiences in a shorter time (Mains, Jenkins-Howard, & Stephenson, 2013). In addition, social media may aid with traditional methods to meet Extension's mission of increasing knowledge, changing behavior, and evaluating the impacts of their educational programs (Gharis, Bardon, Evans, Hubbard, & Taylor, 2014). Unfortunately, there is limited research on the usage of social media within Cooperative Extension as a communication tool to deliver educational programs and as real and perceived barriers that face Cooperative Extension when utilizing social media. In addition, there are no studies about factors influencing Extension employees' attitudes toward using social media in Extension.

Statement of the Problem

Extension personnel have started to implement social media platforms to communicate with clientele on the national, state, and local levels. Social media can be a powerful and effective communication tool for Extension to deliver educational programs and build relationships with its clientele (Mains et al., 2013). There is limited research on the usage of social media for Cooperative Extension. However, a recent study by

Kluchinski, Kinsey, Komar, and McDonnell (2010) exhibited the adoption of social media by agricultural and natural resources management Extension professionals. Extension educators are utilizing social media platforms, such as Facebook and Twitter, in youth development programs (McClure, Buquoi, Kotrlik, Machtmes, & Bunch, 2014). Rhoades, Thomas, and Davis (2009) revealed that the majority of pages on Facebook and Myspace sites were for 4-H (96.5%) compared to general Extension (3.5%). This shows that Extension agents use social media more to communicate with youth, catering to the idea that young people utilize social media more than their elders do.

Studies have exhibited some identifiable barriers influencing the adoption of social media by Extension professionals. These barriers include organizational structure (Seger, 2011), training, control, time, and money (Diem, Gamble, Hino, Martin, & Meisenbach, 2009; Newbury et al., 2014), technical support (Redmann & Kotrlik, 2004), the characteristics of social media (Chan-Olmsted, Cho, & Lee, 2013), demographic characteristics (Kotrlik & Redmann, 2005), and self-efficacy (Hopp & Gangadharbatla, 2016). These barriers have an impact on an individual's attitude toward technology usage (Forlin, Loreman, Sharma, & Earle, 2009; Goktas, 2012; Papanastasiou & Angeli, 2008; Shen & Chuang, 2010; Yi & Venkatech, 1996).

Recently, Mississippi State University Extension adopted a strategy to utilize social media to communicate with clients and provide information. In the Mississippi State University Extension Staffing Plan, the fifth program planning strategy includes "use new electronic methodologies to reach audiences" (MSUE, 2017, p.8). However, no studies were found that had investigated the attitudes of Mississippi State University Extension employees toward social media usage, current usage of social media platforms,

the barriers of utilizing social media, and Extension employees' social media self-efficacy. In addition, there was a shortage in the studies on the factors that influence Extension employees' attitudes toward social media. This gap in research motivated the researcher to embark on this study.

Background of the Problem

Social media has become an important part of most organizations and individuals' daily routine as it provides a significant method of communicating (Lovejoy, Waters, & Saxton, 2012; Waters et al., 2009). Many researchers have found that social media usage among Americans for personal and professional means are high (Ellison, Steinfield & Lampe, 2007; Lenhart, Purcell, Smith, & Zickuhr, 2010). In addition, many organizations have used social media to distribute main events, trends, and decisions to inform the public (Auer, 2011).

Social media consists of numerous platforms of electronic communication channels (Shuman & Friedman, 2013). Social media offers methods to create online communities to share information, ideas, personal messages, and other visual content. Currently, major active social media platforms are Facebook, Twitter, LinkedIn, YouTube, Pinterest, and Instagram. These platforms have a high percentage of Internet users (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015). In 2014, 71% of Internet users were on Facebook. Social media users increased by 5% in 2014 compared to 2013, and the percentage of users have grown from 18 to 23% on Twitter, 17 to 26% on Instagram, 21 to 28% on Pinterest, and from 22 to 28% on LinkedIn.

Researchers believe that social media is a significant tool for non-formal education as well (Lee, 2013). Mississippi State University (MSU) Extension has been providing non-formal education to citizens beginning in 1915 (MSU, 2015). Extension has offices in all 82 counties, delivering programs based on community needs. The Mississippi State University Extension Staffing Plan adopted in 2012 identifies the roles of Extension faculty and agents. In the staffing plan, the roles of Extension faculty were "planning and designing educational programs, developing educational resources, supporting the marketing, delivery, and evaluation of programs, fostering and maintaining important relationships" (MSUE, 2017, p. 10). In addition, Extension faculty provide "leadership for curriculum development and in-service training for Extension agents" (p. 10). County Extension agents are to conduct county needs assessment and deliver programs in four major educational program areas. The four program areas are an agriculture and natural resources, family and consumer sciences, community resource development, and 4-H youth development (MSUE, 2017). Today, Extension faces many challenges to continue its roles, such as decreased state and federal funding, changing agricultural demographics, and improving communication technologies (Al-Kaisi, Elmore, Miller, & Kwaw-Mensah, 2015). These obstacles have an impact on Mississippi State University Extension (Kushla, Gordon, & Londo, 2015).

Social media provides an inexpensive, timely, and available method for Extension professionals to use as a communication tool (Mains et al., 2013). In addition, social media is friendly, easy to understand, and easy to use by Extension workers (Lewis, 2014). Social media is a powerful instrument when used appropriately and efficiently in education and advertising programs. Londo et al. (2009) presented that using online

interactive video to deliver programs saves almost 21,000 miles traveled, $9,200 in mileage costs, and 460 hours of travel time when compared to traditional face-to-face presentations. To continue Extension's non-formal educational roles, Extension professionals need to communicate with large audiences through more efficient and cost-effective methods. Using social media with traditional Extension methods may aid Extension in meeting its mission of increasing knowledge, changing behavior, and evaluating the impacts of their educational programs (Gharis et al., 2014).

Studies have revealed the adoption of social media among Extension workers (Hopkins, 2013; Lewis, 2014). In Arizona, a study exhibited that the most used social media platform among Extension employees was Facebook (Hopkins, 2013). Furthermore, most Extension workers had never used Twitter, Blogs, and Podcasts. A study with the Texas A&M AgriLife Extension Service stated that the majority of Extension staffs do not claim to use Facebook for professional purposes (Lewis, 2014). Several studies indicated some barriers affecting social media adoption in Extension organizations. These barriers are related to three large categories pertaining to the organization, social media, and individual employees. They include demographic characteristics (Kotrlik & Redmann, 2005), social media characteristics (Chan-Olmsted et al., 2013), self-efficacy (Hopp & Gangadharbatla, 2016), organizational structure (Seger, 2011), time, money, training, control, the fear of losing traditional clientele (Diem et al., 2009; Newbury et al., 2014), and technical support (Redmann & Kotrlik, 2004).

Purpose of the Study and Objectives

The purpose of this descriptive-correlational study was to investigate what social media platform Extension employees were using as a communication tool to deliver educational programs, and to examine factors affecting Extension employees attitude toward using social media with Mississippi State University Extension.

The four objectives for this study included the following:

1. Describe the Extension employees' personal and professional characteristics.
2. Determine the usage of social media platforms, Extension employees' attitudes toward using social media, perceived usefulness, and social media self-efficacy.
3. Identify different factors affecting the use of social media by Extension employees.
4. Examine the relationships between Extension employees' attitude toward social media and the following selected variables: Extension employees' social media usage, the barriers, the personal and professional characteristics, perceived usefulness, and self-efficacy.

Significance of the Study

This study will be the first study pertaining to the use of social media among Extension employees and the barriers that are influencing Extension employees' attitudes toward social media use at Mississippi State University Extension Service. The results from this study will benefit Extension leaders and decision makers on the use of social media to find solutions for the factors that may influence the Extension employees' attitudes toward using social media in Mississippi to increase the use and adoption of social media. Furthermore, this study will add variables as barriers that affect Extension employees' attitudes toward social media use to the technology acceptance model (TAM). Some researchers consider the absence of the barriers lacking in the model.

Limitations

This study faced many limitations. The first limitation was that the results from this study could only be generalized to the target population (Extension specialists and agents with Mississippi State University who responded). The findings cannot be generalized beyond the state of Mississippi because of the possibility of distinct characteristics of Extension employees and their Extension organizations. Furthermore, Extension associates did not include in this study, and they are a large group of Extension employees. The second limitation was that the small number of Extension faculty participated in this study compared to Extension agents provides a difficulty to compare the two groups. In addition, the small number of social media nonusers may have influenced the results of the relationships between attitudes toward social media and the study variables. Third, the survey developed for this study was very long and some participants quit completing the questionnaire before reaching the last part. Furthermore, the survey focused on social media users by only allowing them to complete self-efficacy and perceived usefulness scales. Social media nonusers' responses on these two scales were not considered. From that, there were no data to identify social media nonusers' self-efficacy and perceived usefulness. The self-efficacy scale was specific for Facebook and Twitter self-efficacy, and it did not measure the general social media self-efficacy. This might influence the result of the relationships between Facebook and Twitter self-efficacy and Extension employees attitude toward using social media.

Assumptions

This study made some basic assumptions. The first assumption was that the participants would provide honest and accurate responses to the study questionnaire. The second assumption was that Extension employees would complete the survey within the period of this study. The third assumption was that all Extension employees had access to high speed Internet in their workplaces and homes. The last assumption was that this study would not lose any participants due to retirement or job change.

Definitions of Terms

This section provides definitions for the terms that were used in this research. The following is a list of terms and their definitions from the literature:

- **Cooperative Extension:** A functioning educational system in a non-formal setting that utilizes differing resources from the USDA, land-grant systems and government funded county offices to assist local citizens by utilizing research based knowledge and programs (Seevers, Graham, Gamon, & Conklin, 2007).
- **Extension faculty/ specialists:** They "are the acknowledged resource persons within Mississippi State University Extension. Faculty/specialists are a vital link between the university, field agents, and various stakeholder groups requiring highly specialized and qualified expertise." They "provide leadership for training and development for Extension Agents, Area Agents, and Regional Specialists placing emphasis on equipping these personnel for delivering effective educational programming" (MSU, 2017, p. 34).
- **Extension agent:** A paid university employee "responsible for providing leadership in the development, implementation, and evaluation of a comprehensive education program in the area of Family and Consumer Sciences (FCS) or Agriculture and Natural Resources (ANR)." All agents are "responsible for 4-H and Community Resource Development activities" (MSU, 2017, p. 29).
- **MSU:** An abbreviation for Mississippi State University.

- **Communication tool:** An information means that is utilized to communicate with an individual or group (Mains et al., 2013). Examples of communication tools include pen and paper, computer, telephone, and social media.

- **Social media platform:** "Web-based services that allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connection and those made by others within the system" (Boyed & Ellison, 2007, p. 211). Social media platforms include Facebook, Twitter, LinkedIn, YouTube, Pinterest, and numerous others.

- **Social media barriers:** The factors that are related to social media characteristics and impact social media utilization by employees (Ellahi & Bokhari, 2013).

- **Organizational barriers:** The factors that are related to the organization and influence the employees' attitudes toward social media usage (Reuter et al., 2016). Examples of these factors are organizational structure, training, technical support, time.

- **Individual barriers:** The factors that are related to individual characteristics and effect the individual decision to use social media, such as age, gender, years of professional experience, self-efficacy (Hopp & Gangadharbatla, 2016).

- **Self-efficacy:** "People's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses" (Bandura, 1986, p. 391).

- **Attitude:** "The beliefs, feelings, and action tendencies of an individual or groups of individuals toward objects, ideas, and people" (Lewis & Gibson, 2008, p. 60).

- **Perceived usefulness:** "The degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320).

CHAPTER II

REVIEW OF LITERATURE

The use of social media has grown tremendously among all age groups in the last decade (Andrew, 2015). Social media platforms are Internet and mobile-based tools used to share information, interact, and build relationships among individuals. Lewis (2010) stated that social media serves as a "label for digital technologies that allow people to connect, interact, produce and share content" (p. 2).

This chapter provides research literature that offers an overview of social media, Cooperative Extension and Extension programs, and social media in Extension. In addition, this chapter addresses the theoretical framework and barriers that affect social media use.

Social Media

Social media can be defined as "any interactive communication channel that allows for two-way interaction and feedback" (Kent, 2010, p. 645). Belch (2015) defined social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and that allows the creation and exchange of user-generated content" (p. 507).

Currently, the major active social media platforms are Facebook, Twitter, YouTube, Pinterest, and Instagram (Duggan et al., 2015). Facebook, which emerged in 2004 (Boyd & Ellision, 2007), provides users with an interactive Web page format for

sharing information, photos, articles, and Web links (Kinsey, 2010). This platform allows for easy message posting that can be shared with other users in small or large communities. It also allows a platform to post photos and videos for interested audiences. Twitter is a micro-blogging application started in 2006. The unique feature of Twitter is that it allows users to broadcast messages of limited characters (Lovejoy et al., 2012).

YouTube is a video-sharing platform founded in 2005 where users can upload, watch, and share videos. Pinterest, Instagram, and Snapchat were initiated following the previously mentioned media sites. Pinterest has been one of the most popular social media platforms since its launch in 2010 (Grote-Garcia & Vasinda, 2014) It is a photo-sharing site and allows people to share photos they find interesting. Instagram, also launched in 2010, is the most popular photo-sharing app as it allows people to share photographs with others (Salomon, 2013). Additionally, Snapchat has been another popular social media platform since its inception in 2011 (Bright, Kleiser, & Grau, 2015). It is a photo-sharing app that allows users to send photos or short videos, so-called snaps, which disappear after a few seconds.

According to Andrew (2015), the demographic characteristics of social media users have changed during the past decade. Social media usage among American adults increased by 58% in 2015 compared to 2005. In 2015, American adults who used social networking sites was nearly two-thirds (65%) of the population. In addition, social media usage was strongly associated with a user's age. The majority of social media users (90%) were young adults ages 18 to 29 years old. The use of social media among the age group of 30 to 49 years old in 2015 was 77%. For the same year, users 65 years and older have increased by 35%. In 2015, the social media usage for women was 68% and 62%

for men. The change in demographic characteristics of social media users may aid Extension organizations to expand their reach of diverse audiences.

Cooperative Extension and Extension Programs

A significant part of all land-grant universities is Cooperative Extension (MSU, n.d.). It is a partnership between land-grant universities and the U.S. Department of Agriculture to provide for cooperative agricultural extension work. Today, the Extension Service provides research and non-formal education programs "traditional Extension" or "reaching out" to meet public needs. In Mississippi, county and regional extension offices provide educational programs on the local level (MSU, n.d.). Mississippi State University Extension has been working with farmers and agribusiness owners for over 100 years by providing practical and research-based education programs (MSU, 2014).

MSU Extension offers applied, research-based educational content for all Mississippians to help problem solving, skill development and to aid in building a better future. The four major program areas covered through Extension are agriculture and natural resources, family and consumer sciences, community resource development, and 4-H and youth development (MSU, n.d.). From these major programs, specific subjects or efforts emerge to receive emphasis for needed periods. The following section provides a brief description for each program area within the Mississippi State University Extension Service.

The agriculture and natural resources program area is the largest program in Mississippi that supports the economy (MSU, n.d). Agriculture and forestry accounts for up to one-third of the state's gross economic product. The value of agriculture and forestry production in Mississippi was $7.4 billion in 2015 (MSU, 2015). Mississippi has

abundant and diverse natural resources. These include streams, ponds, rivers, forestlands, farmlands, and wetlands, wildlife, and fisheries. In this program area, community needs are met through research and education. These Extension programs help Mississippi farmers provide food and fiber products from quality forest and farm commodities. Extension programs also aid in safer food supplies for the consumers and increase new value-added products. Additionally, outside entities, such as state agency partners and stakeholders and citizens of all ages, work with MSU Extension to study, manage, explore and conserve the states abundant natural resources while utilizing them for the benefit of all.

The family and consumer sciences program area provides parenting education programs and materials for children and families as well as childcare centers, financial, clothing, etc. (MSU, n.d.). In addition, MSU Extension disseminates science-based information pertaining to all Mississippians so that positive decisions can be concluded related to health and wellness. Nutrition education provided through MSU Extension is based upon two federally funded programs descripted specifically for nutrition education. These two programs are known as the Expanded Food and Nutrition Education Program (EFNEP) and the Family Nutrition Program (FNP). These are nationally recognized as the SNAP-ED or Supplemental Nutrition Assistance Program-Education project. ServSafe is another program offered. It provides training related to working personnel involved in state restaurants, school cafeterias, and other food related businesses. The TummySafe program offers food safety training for those who are involved in child-care centers.

Community resource development is the third educational program area in MSU Extension (MSU, n.d). This program area mission "is to strengthen the capacity of citizens, organizations, and governments within the State of Mississippi to understand community change and identify opportunities to improve their social and economic well-being. Educational and technical assistance programs are tailored to specific needs of the community, association, organization, or business" (MSUE, 2017, p. 3)

The fourth Extension program area is 4-H youth development. Traditionally, 4-H programs for youth have been focused on agricultural production activities (MSU, n.d). The important goal related to all youth programming in agriculture and non-agriculture is youth development. MSU 4-H offers programming and growth opportunities that incorporate the heads, hearts, hands and health of the youth of Mississippi. This enables Mississippi's youth to learn and apply important elements gained through MSU 4-H: belonging, mastery, independence and generosity.

Social Media in Extension

Social media platforms are becoming beneficial methods of communication to build public relationships in organizations (Curtis et al., 2010). These platforms provide a unique method for Extension professionals to meet the needs of their clients. In addition, Extension can use social media to increase advertisement of their Extension educational programs to reach a larger audience. Extension professionals can advertise programs by posting messages and images on their personal or professional pages (Mains et al., 2013). In utilizing social media, many organizations were not successful in publicizing their public relations efforts (Waters et al., 2009). Most organizations were only using Facebook to disseminate information about their organization, and the organizational

information included photographs, links to external news stories, and contact e-mail addresses to encourage involvement in the organization.

Organizations need to work more on improving their information distribution and involvement strategies on the social media platforms. Rader (2011) stated that Extension sites on the Internet are not popular, and Extension needs to find new methods to make their websites popular. The methods most widely available are social media platforms. They are available and easy to use, cost effective, and popular among all ages (Strong & Alvis, 2011). Using social media can aid to generate traffic to Extension professionals' websites and introduce them to the public (Mains et al., 2013).

Extension organizations have encouraged their professionals to use social media to reach and educate their clientele. However, there remains a low rate of usage of social media by those employed by Extension. Those who utilize social media in Extension the most are 4-H Extension professionals (Rhoades et al., 2009). The social networking sites, Facebook and Myspace, are the most popular networking sites among 4-H workers with the majority of users utilizing Facebook. Social media is used to offer meeting information, announcements related to current events, 4-H project descriptions and provide educational content in the field of agriculture. In Tennessee, a study conducted by Bowen, Stephans, Childers, Avery, and Stripling (2013) showed an 84% social media utilization by local 4-H program leaders for their county programs. The most frequently used social media platforms were Facebook, Twitter, and YouTube. This use may be related to the fact that 4-H programs serve youth, and they use technology more than older generations.

Extension educators across the southeast have utilized social media in their educational programs. In Louisiana, Mississippi, and Tennessee, Extension educators utilized some technology in youth development programing, such as Facebook and Twitter (McClure et al., 2014). Facebook usage among 4-H agents was 75%. However, another popular social media, Twitter, was used by less than 25% of those involved in 4-H education. Kluchinski et al. (2010) found the use of social networks by Agricultural and Natural Resource Management Extension professionals was 21%. In addition, recent studies have exhibited that the University of Arizona and Texas A&M AgriLife Extension Services were not using social media in a large level of professional purpose (Hopkins, 2013; Lewis, 2014). At the University of Arizona Extension Service, Hopkins (2013) showed that the most widely used social media platform among Extension employees was Facebook. In this study, the majority of Extension workers never use Twitter, Blogs, and Podcasts. A study in Texas A&M AgriLife Extension Service by Lewis (2014) indicated that most Extension workers did not use social media for professional purposes.

From the literature presented, using social media is important for Extension organizations, but many Extension organizations still have not implemented the use of social media platforms. Extension can use social media in many ways: to advertise educational programs, distribute announcements about events and programs, and reach more clients. Extension organizations need to enhance their usage of social media and increase its implementation.

Theoretical Framework

This research will be guided by Technology Acceptance model (Venkatesh, Morris, & Davis, 2003) and the Social Cognitive Theory (Bandura, 1986). The following sections will describe both.

Technology Acceptance Model (TAM)

The Technology Acceptance Model is used to describe technology acceptance and adoption (Davis, 1986). It is the most broadly used model related to user acceptance and usage (Tsai, 2014). In 1986, Davis developed the Technology Acceptance Model, adapting it from the Theory of Reasoned Action. This model provides a basis for finding the impact of external factors on inner beliefs, attitudes, and intentions (Davis, Bagozzi, & Warshaw, 1989). The factors that influence the technology adoption or use in this model are the perceived ease of use and perceived usefulness. Figure 1 shows the technology acceptance model.

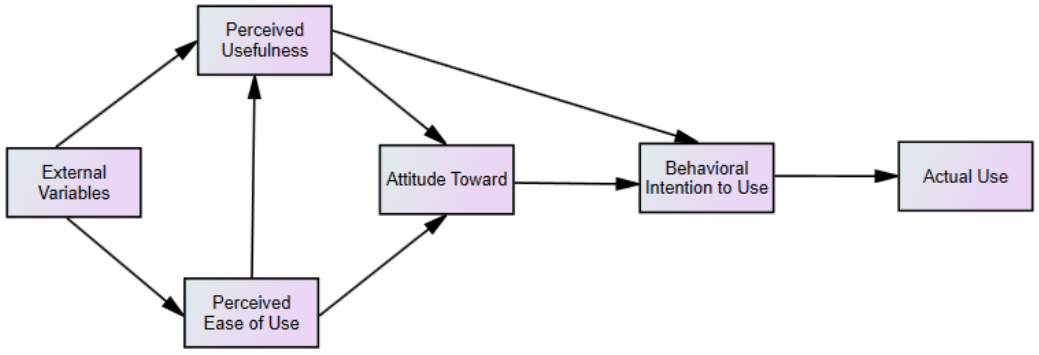

Figure 1 Technology acceptance model

One of the most utilized models in social media studies is the Technology Acceptance Model (Ngai, Tao, & Moon, 2015). This model has been used to study perceived ease of use and perceived usefulness of technologies in relation with individuals attitude toward using and the actual use behavior of the technology (Davis, 1989). In the original model, perceived ease of use and perceived usefulness beliefs were influenced by the system design characteristics, and perceived ease of use has a direct influence on perceived usefulness. Davis (1993) found that the system characteristics influenced the attitude toward using the system directly, and that led to the elimination of the attitude from the original model. Removing the attitude variable eliminated the influence of the system characteristics on the attitude.

Over time, the technology acceptance model (TAM) extended to include more variables by researchers. Taylor and Todd (1995) linked the predictors of Planned Behavior Theory with perceived usefulness and ease of use. Perceived usefulness, compatibility and perceived ease of use impact attitude along with peer and superior influence affected by the common belief structure. The control belief structure in the model is impacted by self-efficacy and facilitating conditions. Venkatesh and Davis (2000) developed TAM2, and they added images, job relevance, output quality, result demonstrability, intension to use, experience, and voluntariness in the model (Wu, Chou, Weng, & Huang, 2011).

Venkatesh et al. (2003) created the Unified model of Acceptance and Use of Technology (UTAUT). The researchers united eight theories and models to develop a unification model. These are reasoned action, technology acceptance, the motivational model, planned behavior, technology acceptance-planned behavior, the model of PC

utilization, innovation diffusion theory, and social cognitive theory. UTAUT contains actual use, intention, performance expectancy, effort expectancy, social influence and facilitating conditions with four moderators of gender, age, experience and voluntariness of use. Venkatesh and Bala (2008) founded TAM3 model and they added computer self-efficacy, perception of external control, computer anxiety, computer playfulness, perceived enjoyment, and objective usability. It built on individual differences, system characteristics, social influence and facilitating conditions (Howard, Marshall, & Swatman, 2010; Venkatesh & Bala, 2008). The perceived ease of use is structured by computer self-efficacy, computer playfulness, computer anxiety, perception of external control, perceived enjoyment and objective usability, and the perceived usefulness is structured by subjective norms, job relevance, result demonstrability, and image.

The new extension of the unified model of acceptance and use of technology was developed by Venkatesh and his team (Venkatesh, Thang, & Xu, 2012). This model included the independent variables of UTAUT, but added three more variables: hedonic motivation, price value, and habit. It involved age, gender, and experience. The Technology Acceptance Model is accepted by researchers to be powerful, valid and highly reliable, and can be utilized in many situations (Legris, Ingham, & Collerette, 2003; Sharma & Chandel, 2013). However, the TAM is noted to as simple to use, but it does provide several drawbacks, including the lack of significant variables (Bogozzi, 2007). According to Taylor & Todd (2001), the TAM lacks consideration for all barriers that influence adoption of a particular technology. Still, researchers have commented that the TAM adopts unidirectional causal relationships from the principal variables included in the model. Conversely, the social cognitive theory states that environmental factors,

personal factors, behaviors are determined reciprocally (Bandura, 1986). Table 1 shows how the Technology Acceptance Model was developed.

Table 1 The technology acceptance model development with the time

Component	TAM-TBB	TAM_2	UTAUT	TAM_3	$UTAUT_2$
Behavior intention	×			×	×
Actual or Use Behavior	×	×	×	×	×
Attitude	×				
Perceived Usefulness	×	×		×	
Ease of Use	×	×		×	
Subjective norms	×	×		×	
Images		×		×	
Peer influence	×				
Superior's influence	×				
Perceived behavioral	×				
Self-efficacy	×			×	
Facilitating conditions	×				
Compatibility	×				
Job relevance		×		×	
Output quality		×		×	
Result demonstrability		×		×	

Note: TAM-TBB = Combined Theory of Planned Behavior with Technology Acceptance Model (Taylor and Todd, 1995), TAM_2 = Extension of TAM (Venkatesh and Davis, 2000), UTAUT = Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003), TAM_3 = Technology Acceptance Model (Venkatesh and Bala, 2008), $UTAUT_2$ = Extending Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2012).

(table continues)

Table 1 (continued)

Component	TAM-TBB	TAM_2	UTAUT	TAM_3	$UTAUT_2$
Experience		×			
Voluntariness		×	×	×	
Intension to use		×	×		
Performance expectancy			×		×
Effort expectancy			×		×
Social influence			×		×
Facilitating condition			×		×
Age			×		×
Gender			×		×
Experience			×	×	×
Perceptions of EC				×	
Computer Anxiety				×	
Computer Playfulness				×	
Perceived Enjoyment				×	
Objective Usability				×	
Hedonic Motivation					×
Price Value					×
Habit					×

Note: TAM-TBB = Combined Theory of Planned Behavior with Technology Acceptance Model (Taylor and Todd, 1995), TAM_2 = Extension of TAM (Venkatesh and Davis, 2000), UTAUT = Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003), TAM_3 = Technology Acceptance Model (Venkatesh and Bala, 2008), $UTAUT_2$ = Extending Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2012), EC = External control.

Social Cognitive Theory (SCT)

Albert Bandura developed the Social Cognitive Theory in 1986. This theory favors environmental influences consisting of social pressures or other distinctive characteristics that are situational, cognitive and factors of personal nature and reciprocally determined behavior (Compeau & Higgins, 1991). These personal factors contain personality and demographic characteristics. Environments are selected by individuals according to where they live or work, and individuals are influenced by those settings. Additionally, certain behaviors in specific situations are impacted by environmental or situational characteristics, which in turn are affected by behavior. Cognitive and personal factors influence behavior, thus causing impacts on those same factors (Compeau & Higgins, 1991). Figure 2 shows the Social Cognitive Theory.

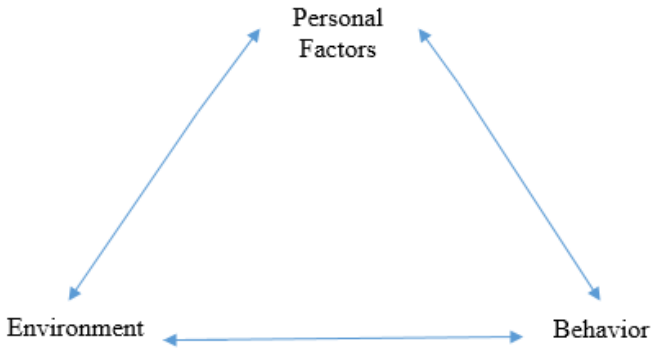

Figure 2 Social cognitive theory

The Social Cognitive Theory consists of two sets of expectations that are major cognitive factors driving behavior. Outcomes and self-efficacy expectations are directly related to these expectations. When viewing outcome expectations, an individual is more likely to display behaviors that he or she understands to result in valued outcomes

compared to behaviors he or she believes will have an outcome contradicting favorable consequences. Another set of expectations is that of self-efficacy where one's thoughts pertain to his or her own ability to conduct a specific behavior (Compeau & Higgins, 1991). According to Bandura (1986), self-efficacy is "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 391). There is similarity between the concepts of outcome and self-efficacy expectations with perceived usefulness and perceived ease of use (Monsuwe, Dellaert, & Ruyter, 2004).

The Study Framework

The conceptual framework developed for this study is drawn from the social cognitive theory and the model of technology acceptance. There exist similarities in components affecting behavior in these theory and model. These components consist of outcome and self-efficacy expectations in the social cognitive theory, and the perceived usefulness and perceived ease of use in the technology acceptance model (Bandura, 1982). In addition, demographic characteristics are a component of determining behavior from the social cognitive theory, such as gender, age, and experience. These variables play an important role in explanation actual use in the technology acceptance model (Colley & Comber, 2003; Losh, 2004; Venkatesh & Davis, 2000).

This modified model will be utilized perceived usefulness, actual use, personal and professional factors (i.e., age, gender, years of experience in the profession, and social media self-efficacy), organizational factors, and social media factors. These variables will be connected directly with attitude (Figure 3). Yang and Yoo (2003) suggested that attitude may have important effects on system use, and it is important to be

reconsidered in the TAM. The attitude refers to the effect of positive or negative feelings of individuals in performing a certain behavior (Shroff, Deneen, & Ng, 2011). This model ignores perceived ease of use because its influence on attitude will occur through perceived usefulness. Guritno and Siringoringo (2013) found that perceived usefulness influences the attitudes towards usability stronger than perceived ease of use.

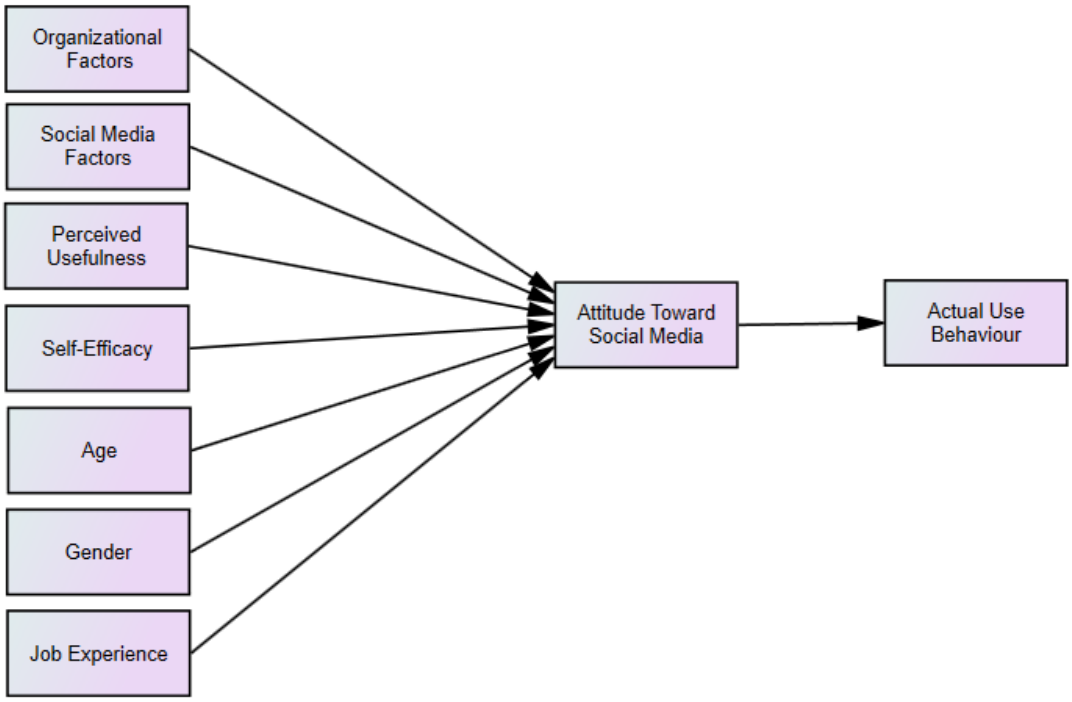

Figure 3 The conceptual model for the study

Barriers Affecting Social Media Use

Studies revealed several barriers influencing Extension professionals' decisions to use social media (Dim, Hino, Martin, & Meisenbach, 2011). These barriers are interrelated, and they relate to individual, organization, and social media factors. The successful implementation and adoption of social media depend on these three factors. These three factors can affect Extension workers attitudes toward using social media for professional purposes.

Individual Factors

This section provides information for individual differences that concede importance on technology acceptance, and their relationships with attitude. These factors are demographic characteristics and self-efficacy.

Demographic characteristics

Demographic characteristics, such as age, gender, and years of profession, can be considered as a barrier in the use of social media.

Gender

Goh (2011) found that there is a significant difference between males and females toward using technologies. Males were found to have high levels of satisfaction with technology and desired less training with enterprise planning software compared to females (Bradley & Lee, 2007). Yet, studies have determined differences pertaining to how both males and females relate to and utilize new technology. Czaja et al. (2006) stated that the females studied have more negative feelings and attitudes about technology.

Concurrently, men use Facebook less than women and value Facebook less than women (Heinz et al., 2013). Mazman and Usluel (2011) found that significant differences were found between genders in social media use. Peng, Tsai, and Wu (2006) indicated that there are gender differences in university students' attitudes toward the Internet. Male students demonstrated Internet attitudes that are more positive than those of their female peers (Peng et al., 2006). Papanastasiou and Angeli (2008) noticed that there were significant gender differences on teachers' technology usage. However, another study reported that there is not a gender or age difference on computer attitudes by pre-service teachers (Teo, 2008). Gerlich, Browning, and Westermann (2010) found no differences between males and females toward social media usage. Bain and Rice (2006) to determine if gender had a major role on students' attitudes related to usage of technology conducted a study. Their findings showed that there was no significance between gender in attitudes, perceptions, and usage of computers. Naaz (2012) found no significant difference between gender and the attitudes of teachers toward technology.

Age

The second most important demographic characteristic in the usage of newer technology was age. Studies have shown a major difference in the incorporation of social media among different age groups. Holt, Shehata, Stromback, & Ljungberg, (2013) also suggested major differences in social media usage in different age groups. The older generation has not been utilizing the Internet as long as the younger generation and they use it with less frequency (Olson, O'Brien, Rogers, & Charness, 2011). Additionally, the older generation is also less adept when using modern devices, such as phones, computers, and tablets.

The most common usage of the Internet is that of search engines such as Google (Purcell, Brenner, & Rainie, 2012). Younger adults and primarily college students make up the largest volume of those who use search engines. Those who are under the age of 50 are most likely to use search engines while those who are older than 50 are less likely to do the same. Van Volkom, Stapley, and Malter (2013) noted that adults 30 and older are less likely to use Facebook when compared to the 19-29 age group. The influence of age on teachers' attitude is not clear. A study conducted by Ellins and Porter (2005) reported no significant impact of teachers' age on attitudes. While another study suggested that training enhanced the attitudes of younger teachers (Forlin et al., 2009), Porter and Donthu (2006) found that indicated age, education, income and race each hold different beliefs pertaining to the Internet. This also influences a consumer's attitude toward Internet usage.

Years in the profession

There is a relationship between the years in a career and the use of social media. Research by Kinsey (2011) evaluated the different uses of technology by educators and found that 46% of 0-10 year educators use social media, and only 14% of educators who served 11-20 years in the career use social media. These results showed that the increase of years in the career could affect the use of technologies. The results also showed that teachers who are just beginning their career are utilizing more technology for communication and social networking more frequently than those who have been teaching longer (DeSantis & Rotigel, 2014). Older workers with a higher career stage were more strongly influenced by the attitude toward using the technology more than younger workers (Morris, & Venkatesh, 2000).

Self-efficacy

Another individual factor that can affect the use of social media is self-efficacy. Self-efficacy has a significant effect on the use of technology (Livingstone & Helsper, 2009). Bandura (1977) noted that self-efficacy is a direct relation to one's own self-confidence. This affects one's ability to successfully perform tasks. Additionally, a lack of confidence can become a barrier to the acceptance of technology (Zaltman & Duncan, 1977). Hsu and Chiu (2004) stated that Internet self-efficacy provides an integral role in explaining the consumers' choices in electronic service. Additionally, self-efficacy influenced industry networks use (Ozgen & Baron, 2007). A study resulted that the number of online friends, amount of profile detailed, and which personal photo is used depended on self-efficacy (Kramer & Winter, 2008).

The association among self-efficacy and attitude related to computer use and/or the Internet has been debated in numerous research studies (Celik & Yesilyurt, 2013; Smoarkola, 2008). The outcomes of earlier studies discovered that computer user attitudes have a positive correlation with their computer self-efficacy. In addition, these with higher Internet self-efficacy displays a positive attitude toward the Internet. Educators self-efficacy of the internet and beliefs pertaining to web-based learning serve as dominant predictors in relation their attitudes of Web-based professional development (Kao & Tsai, 2009). This acceptance, related to the positive consequences of using Web-based learning, implies the importance linked with the same favorable attitudes toward Web-based (Kao & Tsai, 2009). Yi and Venkatech (1996) stated that self-efficacy has a significant influence on users' technology-adoption attitudes. Shen and Chuang (2010) found that self-efficacy, perceived ease of use, and perceived usefulness influenced

attitudes. Teachers' self-efficacy enhanced with teaching experience, and that affects their attitudes toward technology use (Rohaan, Taconis, & Jochems, 2012).

Organizational Factors

Organizational structure is one of the most important factors that influences the use of social media (Picazo-Vela, Gutierrez-Martinez, & Luna-Reyes, 2012). Providing managers support, technical support, and training for employees are important to utilize social media.

In Extension organizations, there are many barriers affecting the use of social media. A study conducted by Newbury et al. (2014) on Wisconsin and New York Extension educators showed that there are some barriers facing Extension toward using social media. These barriers included access to the Internet, time, regulations, costs and profits, problems with access, and peer use. The most important barriers were the amount of time it takes to maintain the content and a lack of control over it. In New Jersey, a study on agricultural and natural resource management Extension personals revealed that the barriers reduced Extension professional chances to use Web 2.0 for professional purposes (Kluchinski et al., 2010). This study showed the barriers were lack of time to learn the technology and the knowledge about using Web 2.0 technologies.

Extension workers may feel there are no benefits of using social media due to the lack of time or losing traditional clientele, and that may influence their attitude toward social media usage. Dim et al. (2011) uncovered large scale misunderstandings as they related to technology that has influenced educators use of technology. These barriers involved an unease toward losing clientele, a lack of interest or ability of served personnel to understand technology, and the doubt that technology use compared to

traditional programming would diminish funding. Extension employees have upheld that personal contact and interactions with clientele are significant to the success of implementation of educational programs (Seger, 2011).

Extension professionals may have difficulty choosing which social media platform is appropriate to use. Aarons, Hurlburt, and Horwitz (2011) commented that staffs in organizations could potentially struggle knowing, weighing, or choosing technology that is applicable to utilize. In addition, their decision to use technology is limited by organizational factors, such as hierarchy, culture, and values. Kim and Lee (2006) considered the influence that organizational and information technology had on perceptions of employees related to using technology through different systems. They found performance-based reward systems, social networks and overall use of information technology by employees were at high levels of use. The barriers that affect social media utilization were organizational strategies and capacities, and they played important roles in the use of Twitter and Facebook (Nah & Saxton, 2012).

Sago (2013) studied different factors related to the impacts of the acceptance and regularity of using Facebook, Twitter, Pinterest, and Google+ with undergraduate university students. The study found that there was a correlation between using social media and its perceived usefulness and enjoyment. Davis (1986) noted that those who utilized a specific system do so because they believe it will increase their overall job performance. Throughout organizations, administrative support plays an integral role in satisfaction of the user and technologies perceived usefulness (Chen & Hsiao, 2012). Still, organizational barriers play an integral role on extension professionals attitude as it relates to the use of social media. To compensate for this, Extension employees attitude

regarding the use of social media can be altered through training. Igbaria, Guimaraes, Davis (1995) also claim that training in social media correlates a direct effect on perceived usefulness. Yet, an additional study also suggested that education in using social media improved teachers' attitudes (Forlin et al., 2009). Perceived usefulness was defined as the individual's perception that using the new technology will enhance or improve his or her performance (Davis, 1989, 1993). Applying this definition to the context of social media use in Extension, usefulness refers to the degree to which Extension workers believe using social media as a communication tool to deliver their extension programs will improve their job performance and enhance the outcomes of their educational programs (Monsuwe et al., 2004).

The effect of organizational factors or barriers can occur when the Extension professionals perceive a lack of training, technical and manager supports, control, and complex organizational structure, then they may develop negative attitudes toward using social media. Training can enhance the attitudes of an organization's employees toward utilizing technology. Extension professionals who have a chance to learn how to use social media through workshops, webinars, courses, and other colleagues may have a positive attitude toward social media and subsequently, adopt social media in Extension programming.

Social Media Factors

Social media characteristics are the third barrier that influences the use of social media platforms by individuals and organizations. Social media are provided by different platforms with various attributes containing communication formats. There are five

general characteristics that various social media share. These are participation, openness, conversation, community, and connectedness (Mayfield, 2008).

Social media platforms are tools to connect users, and they are dependent based upon the differing types of media software. Additionally, the different branches of social media provide dissimilar serves such as photos on Flickr, videos at YouTube, tweets on Twitter, career professionals as LinkedIn, and people at Facebook (Hansen, Shneiderman, & Smith, 2010). The systems offered through social media perform different mediums of control concerning each system basic elements. This includes limiting the user's ability to edit, invite, subscribe to, create, read and lastly, share content (Hansen et al., 2010).

As stated by Brandtzaeg and Heim (2008), the third largest reason for social media platform abandonment are usability issues. Aware of this issue, applicators have built in a unique characteristic of continuously added features (Wang, Xu, & Chan, 2015). Evolving features do prove to be an attraction to users; however, knowledgeable skills are essential for those users to maintain advancements. Previous studies have shown that the lack of usability, in addition to improved updates and features within social media, is the largest single reason for patrons to abandon social media (Brandtzaeg & Heim, 2008).

Social media factors may play an important role in the use of these platforms, and their impact on Extension workers attitude toward the use. With Technology Acceptance Model (TAM), Shin and Kim (2008) performed a study to understand Web 2.0 features that impact usage. Their study also showed that factors in Web2.0 altered the attitudes of users. Attitude in regards of using technology relates to an individual's overall affective reaction to using a system (Venkatesh et al., 2003).

Porter and Donthu (2006) showed that the largest barrier to using social media is related to system access. This was correlated with the users' perceptions involving the level of difficulty of usage and the users views of its usefulness. Swanson (1982) provided that potential users will select and use information reports based on a tradeoff between perceived information quality and associated cost of access. Social media characteristics can generate positive or negative attitude toward using social media. Social media complex software may lead to a negative attitude toward social media usage. Several studies have found that the software characteristics influenced users' attitudes (Davis, 1993; Shin & Kim, 2008).

Summary

The use of social media has increased in the last decade due to the fast development in technology. Social media provides new communication methods to connect people, and it is a beneficial method for Extension to utilize. Social media is defined as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and that allows the creation and exchange of user-generated content" (Belch, 2015, p. 507).

Recently, some Extension professionals have used social media in their educational programs. Those who utilize social media in Extension the most are 4-H Extension professionals (Rhoades et al., 2009). Facebook and Myspace are the most popular social media platforms among 4-H workers. They used social media to offer meeting information, announcements related to current events, 4-H project descriptions and provide educational content in the field of agriculture.

Some Extension workers do not utilize social media in their educational programs. Furthermore, there is little interest to use social media in some university extension services, such as the university of Arizona and Texas A&M Extension Services (Hopkins, 2013; Lewis, 2014). These differences in the use of social media among Extension professionals due to many factors, such as individual's, organizational, and social media characteristics.

To understand the forces that led to these differences, this study is guided by the social cognitive theory and the technology acceptance model. There is a similarity between these theory and model, and this similarity is displayed in the likeness in the meaning of their components (Monsuwe et al., 2004). For that, this research combined the social cognitive theory and the technology acceptance model, and it assumes that the barriers have an influence on Extension employees' attitudes toward use or reject social media (Bain & Rice, 2006; Ellins & Porter, 2005). These barriers are individuals, organizational, and social media characteristics.

CHAPTER III

RESARCH METHODS

The purpose of this study was to investigate what social media platforms Extension employees were using as a communication tool to deliver educational programs, and to examine factors affecting Extension employees' attitudes toward using social media with the Mississippi State University Extension.

This chapter provides an outline of the research design, the population of the study, instrumentation procedures, data collection procedures, and data analysis.

Research Design

This study employed a correlational design using a cross-sectional survey methodology (Fraenkel, Wallen, & Hyun, 2014). A correlational study is used to examine the relationship between two or more variables (Ary, Jacobs, Razavieh, & Sorensen, 2010). The purpose of this design was to examine the relationships between the independent variables (i.e., personal and professional characteristics, barriers affecting the use of social media, perceived usefulness, social media self-efficacy (Facebook and Twitter) and the dependent variable (i.e., Extension professionals' attitudes toward using social media). In addition, this technique was to study the relationships between the dependent variable of Extension professionals attitude with the independent variable of social media actual use.

Population of the Study

The target population for this study was the entire work force of Extension in the state of Mississippi in the year 2017. The census of this study was all Extension faculty and agents with Mississippi State University Extension. According to Ms. Lisa Clardy, Mississippi State University Extension Program Manager, the population size of Extension professionals (Extension faculty and agents) with the Mississippi State University Extension was 290 Extension specialists and agents in July 2017 (L. Clardy, personal communication, July 31, 2017). The professional email addresses of Extension employees were collected from the official Website of Mississippi State University Extension.

The researcher gained an approval to conduct the current study with Extension employees from Dr. Gary Jackson, Director of the Mississippi State University Extension (Appendix A).

Instrumentation Procedures

The study was comprised of one survey instrument containing six sections. Appendix B includes a copy of the questionnaire used in this study.

Part one contained nine questions asking participants about social media use. These questions included social media platforms, experience of using social media, hours spent on social media updating posts, number of changes or edits, number of times checking for updates (Davis, 2009), methods of learning social media, latest training-workshop (year, topic, and location) if attended, the primary source(s) to connect social media, purpose(s) of using social media for work-related responsibilities (Gharis et al., 2014; Hill, 2014; Reuter et al., 2016).

Part two was comprised of two questions asking Extension employees about which social media platforms they were most comfortable using for work-related activities and 17 Likert-type statements asking Extension faculty and agents to indicate their agreement on the statements regarding their level of self-efficacy with social media platforms in their Extension efforts. Statements for this part of the questionnaire were based on a review of literature from preceding studies that examine social media self-efficacy (Bright et al., 2015; Hopp & Gangadharbatla, 2016; Horzum & Aydemir, 2014; Lin, Hung, & Chen, 2009; Reuter et al., 2016; Shang, Wu, & Li, 2017; Sheng-Yi, Shin-Ting, Da-Chain, & Hwang, 2012; Smock, Ellison, Lampe, & Wohn, 2011; Wang et al., 2015; Yi & Hwang, 2003).

Part three consisted of eight Likert-type statements for Extension faculty and agents to specify their perception of social media usefulness in their Extension efforts. These statements were adopted after reviewing previous studies (Shang et al., 2017; Taylor & Todd, 1995; Teo, 2001; Wang et al., 2015; Yi & Hwang, 2003). The scale of measurement utilized for the Likert-type statements in part two and three was 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, and 5 = Strongly Agree.

Part four in the questionnaire consisted of 37 Likert-type statements for participants to indicate the effect of each barrier on social media use in their Extension efforts. The statements for this part were adopted from previous studies (Antonopoulou, Killian, & Forrester, 2017; Diem et al., 2011; Gharis et al., 2014; Hill, 2014; Hutchison & Reinking, 2011; Kitching, Winbolt, MacPhail, & Ibrahim, 2015; Kluchinski et al., 2010; Reuter et al., 2016; Zayim, Yildirim, & Saka, 2006). The scale of measurement utilized

for the Likert-type statements was 1 = No Effect, 2 = Minor Effect, 3 = Neutral, 4 = Moderate Effect, and 5 = Major Effect.

The fifth part consisted of seven statements measuring participants attitude toward social media using a five-point Likert-type scale. The scale was 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, and 5 = Strongly Agree. The statements in this scale were adopted from previous research studies (Reuter et al., 2016; Taylor & Todd, 1995).

Part six of the questionnaire pertained to personal and professional characteristics. The instrument contained questions inquiring of gender, age, highest level of education, geographic region, race, ethnicity, program area(s) of Extension, years of professional experience, type of clients (P, Poindexter, personal communication, June 28, 2017), and current job title. In addition, this part included a question about the preferred method of learning how to use social media.

The questionnaire was assessed for content validity by a panel of experts. Three experts in social media reviewed the questionnaire for content validity. One of the experts was from the agricultural communications department, Mississippi State University Extension. The other experts had expertise in social media use in Extension. Based on the feedback received from the panel of experts, minor changes were made in the wording of some questions, and three statements to the barriers scale and two statements to self-efficacy scale were added. The three statements added to the barriers scale were “Lack of ability to create quality graphics,” “Lack of ability to take quality photos,” and “Lack of ability to create videos.” The two statements added to the self-efficacy scale were “I am

able to take quality photos and videos to use with," and "I am able to create graphics and edit videos to use with."

After the questionnaire was assessed for content validity, the researcher submitted a proposed plan outlining the data collection process and all related materials to the Mississippi State University Institutional Review Board. Approval from the Mississippi State University Institutional Review Board for the Protection of Human Subjects in Research (IRB) was received on July 27, 2017 (approval protocol number IRB-17-396). The study was approved as exempt research with the target population of adult age (Appendix C).

A pilot study was conducted to determine face validity and reliability with Alabama Cooperative Extension System employees. The participants were selected randomly to represent the target population of the study. Twenty-five Extension employees were selected based on their demographic characteristics, but care was taken to ensure that the participants were selected to represent the various dimensions that are important to the study in terms of age, gender, race, professional experience, and geographical location to represent Extension employees with Mississippi State University Extension. The pilot study was conducted between August 1 and August 22, 2017. Nine Extension employees participated in the pilot study (equivalent to 36% response rate) and one rejected the invitation to participate. The researcher decided not to rely on the pilot study to determine reliability due to the small sample size. For pilot studies in survey research, the recommended sample size is from 10 to 30 participants from the population of interest (Hill, 1998). Johanson and Brooks (2010) suggested 30 participants is a

reasonable minimum recommendation for a pilot study if the purpose is preliminary survey or scale development.

Data Collection Procedures

In this study, the data was collected through an online questionnaire because the study population was widely distributed geographically (Sue & Ritter, 2012). Millar and Dillman (2011) used an online survey with "a population that has complete access to the Internet and is believed to be highly Web literate" (p. 250). Extension specialists and agents have access to the Internet in their job places, and Mississippi State University Extension provides them with professional email addresses.

An electronic version of the questionnaire was sent via email using Qualtrics.com. A written consent form was included at the beginning of the questionnaire, informing Extension faculty and agents of the study's purpose, their rights as participants, and the researcher's and the major advisor's contact information if they had questions. In addition, the consent form contained consent and reject radio buttons. The questionnaire was sent to all 290 Extension faculty and agents included in the population.

Data collection took approximately one month. The period of collecting the data was between August 21, 2017 to September 20, 2017. The first questionnaire sent out via Qualtrics.com on August 21, 2017 to all Extension faculty and agents with the Mississippi State University Extension. After three days, the first friendly reminder was sent out on August 24, 2017. After another four days, a second reminder was emailed via Qualtrics to Extension employees who had not responded on August 28, 2017. After another two days, a third reminder email was sent out on August 31, 2017. The fourth reminder was

sent September 5, 2017. The fifth reminder was a personal link sent out September 8, 2017. The sixth reminder was an anonymous link sent out on September 11, 2017. The data file was downloaded on September 20, 2017. One-hundred seventy responses were gathered during the collection period (58.6% response rate). No Extension employees declined to participate in this study. Fifteen surveys were eliminated from statistical analyses and deemed unusable due to lack of complete responses.

Nonresponse error is a threat to external validity of research. "This type of error exists to the extent that people included in the sample fail to provide usable responses and are different than those who do on the characteristics of interest in the study" (Linder, Murphy, & Briers, 2001, p. 44). This study compared early to late respondents to address nonresponse error (Linder et al., 2001). Researchers believe that late respondents are identical to non-respondents. Successive waves were used to determine the late responses, and a minimum of 30 responses were recommended in each wave. In this study, of the 135 useable surveys of social media users, 93 (68.9%) of the respondents were classified as early, and 42 (31.1%) of the respondents were classified as late respondents. Nonusers data did not use to compare early and late respondents (n = 20).

Early and late respondents were compared on their responses in attitudes toward social media and perceived usefulness scales in the study to determine if any statistical significant differences occurred between the two groups. An independent *t*-test was conducted to compare the means of the early and late respondents on each scale. No significant difference was found between early ($M = 4.26$, $SD = .67$) and late respondents ($M = 4.19$, $SD = .650$) in their attitude toward social media, $t(133) = .548$, $p > .05$ (two-tailed). In addition, there was no significant difference between early ($M = 3.88$, $SD =$

.65) and late respondents (M = 3.82, SD = .80) in perceived usefulness, $t(133) = .434$, $p >$ .05 (two-tailed). From that, the results of this study can be generalized to the study population.

Data Analysis

The data set was analyzed using SPSS (Statistical Package for Social Sciences, version 24) and Factor program, version 10.5.03 (Lorenzo-Seva & Ferrando, 2006). Before conducting any analysis on the data set, the researcher screened the data set after downloading the data file from Qualtrics to gather more understanding and ensure accuracy of the data set for further analysis (Tabackhnick & Fidell, 2007). Data range, measures of central tendency, and the variability of each item calculated on the four scales in the study to ensure the parameters within the exact range. The result demonstrated that the data was within the valid values range in the data set.

After screening the data, descriptive statistics, such as frequencies and percentages, were used to summarize the data of participants demographic characteristics. Descriptive statistics were applied to the total participants in this study (N = 170) without eliminating incomplete surveys. Next, the data were collapsed into two groups for all analysis, which were "social media nonuser" and "social media user" for ease of explanation. Descriptive statistics, including frequencies and percentages, were applied on social media use data. Frequencies were used to summarize the attitudes toward social media and organizational and social media barriers data for social media users and nonusers. For social media users, perceived usefulness, social media self-efficacy (Facebook, Twitter, and Instagram) was summarized using frequencies.

Before conducting the principal component analysis on the items of the four subscales, the researcher checked the data set for missing data and normality (Tabachnick & Fidell, 2007). Missing data and the pattern of missing data were checked in each variable in the questionnaire. The questionnaire did have a 58.6% completion rate; of the 170 respondents who started the questionnaire, 155 provided instruments complete enough to be analyzed for the study. Fifteen responses were eliminated from the study and deemed unusable due to the amount of missing data. Questionnaires containing greater than 5% of missing data points were eliminated (Tabachnick & Fidell, 2007). The missing data was judged to be missing at random. These missing data points were randomly distributed all over the data set. The missing data in items was minimal, and items did not contain missing values more than the recommended criterion of 5%. Researchers suggested using conservative process for missing data less than 5% (Tabachnick & Fidell, 2007). For the incomplete data points in the barriers, attitude, self-efficacy, and perceived usefulness scales, the researcher imputed missing data at random (Hair, Black, Babin, & Anderson, 2010). SPSS was used to impute the missing responses less than 5%, and the method of imputation was linear trend at point. Only 22 missing data points were imputed in the study data set.

Most of the statistical procedures, including correlation, regression, t-tests, analysis of variance, and discriminant analysis, assume the data follows a normal distribution (Field, 2009). Principal component analysis does not assume the data are normal, but the solution produced from principal component is accurate when the data are normally distributed (Tabachnick & Fidell, 2007). Normality was examined through inspection the skewness and kurtosis values for all 17, 7, 8, and 37 items in the four

scales of Facebook self-efficacy, attitude toward social media, perceived usefulness, and the organizational and social media barriers scales. Absolute values of 3.0 for skewness and kurtosis were employed as a cutoff value based on the recommendation of Kline (2011) and Blaikie (2003). DeVellis (2003) and Field (2009) recommended eliminating items that have high skewness and kurtosis from new developed scales (DeVellis, 2003; Field, 2009). The individual values of skewness for all items in the attitude, perceived usefulness, Facebook self-efficacy, and the barriers scales were in the range ± 3, but some items in the attitude and Facebook self-efficacy had kurtosis values outside the recommended range ± 3. None of the variables in the barriers and perceived usefulness scales had a kurtosis value greater than or less than 3. The items with high kurtosis were excluded from principal component analysis.

The total omitted variables from principal component analysis was 13 items, 10 items from Facebook self-efficacy scale, and three that belonged to attitude toward social media scale. The statements for these variables were "I have the necessary skills to use Facebook," "I am able to edit a profile on Facebook," "I am able to change my privacy settings on Facebook," "I am effectively able to communicate with my clients on Facebook," "I am able to invite, add, and delete friends or followers on Facebook," "I am able to create a photo album, as well as upload photos, videos, and other files formats on Facebook," "I can respond and add comments to messages or articles by clients on Facebook," and "I am able to send private messages on Facebook." These statements were excluded because they had high kurtosis values. Two statements were excluded because they were irrelevant for Facebook self-efficacy scale, and these statements were "I am able to take quality photos and videos to use with Facebook" and "I am able to

create graphics and edit videos to use with Facebook." The three attitude statements were "Using social media to distribute announcements about Extension programs and events is a great idea," "using social media is a good strategy to offer updated information to clients," and "Extension should use social media to attract potential clients."

Principal components analyses were conducted on the data of social media users only. Two principal components analyses with polychoric correlations were conducted on the data of the four scales using Factor program version 10.5.03 (Lorenzo-Seva & Ferrando, 2006). The first principal component analysis was applied on attitudes toward using social media, perceived usefulness, and Facebook self-efficacy data (n = 94). The second principal component analysis was conducted on the data of organizational and social media scale (n = 135).

After conducting principal component analysis, Cronbach alpha values were calculated for the eight subscales in the study. Perceived usefulness, Facebook self-efficacy, Twitter self-efficacy, and attitudes toward social media subscales Cronbach alpha values were .924, .908, .916, and .878, respectively. Cronbach alpha values for organizational and social media barriers subscales social media characteristics, organizational support, graphic skills, clients' interest and skills, availability of equipment and the Internet were .862, .914, .878, .814, and .849, respectively.

Descriptive statistics including frequencies, percentages, means, and standard deviations, were conducted on the subscales data. Point-biserial correlation, Pearson product moment correlation, Spearman's rho correlation, and Eta (η) were calculated to examine the relationships between study variables. One-way analysis of variance (ANOVA) and independent-samples *t*-test were used to compare the means between the

study variables. Two multiple regression analyses were utilized to assess the effect of the study variables on Extension specialists' and agents attitudes toward using social media in Extension.

Point-biserial correlation coefficients (r_{pb}) were conducted to assess the relationships between participants' gender and their attitudes toward using social media in Extension (Leong & Austin, 2006). Person product-moment correlation coefficients (r) were calculated to examine the relationships between attitude toward social media and perceived usefulness, social media self-efficacy (Facebook and Twitter), social media characteristics, organizational support, clients' interest and skills, availability of equipment and the Internet, and graphic skills (Leong & Austin, 2006).

Spearman's rho correlation coefficients (r_s) were utilized to assess the relationships between participants' attitudes toward using social media in Extension and their age, education level, years in the profession, social media use, and social media experience (Argyrous, 2011). Eta (η) was calculated to determine the relationships between attitude toward social media and geographical location (Leong & Austin, 2006). Eta values were calculated using the one-way analysis of variance (ANOVA). The independent-samples *t*-test was used to compare the mean score of attitude toward social media between Extension faculty and agents (current MSU-E position). In addition, an independent-samples *t*-test was used to compare the means of social media users' and nonusers' attitudes toward using social media. Furthermore, discriminant function analysis was applied on participants' demographic characteristics to assess the group memberships from perceived usefulness, attitude toward social media, Facebook self-

efficacy, social media characteristics, organizational support, graphic skills, clients' interest and skills, and the availability of equipment and the Internet.

Multiple regression analysis was conducted to evaluate the joint relationships of the variables of interest to attitude toward social media. The variables of interest were personal and professional characteristics, perceived usefulness, the availability of equipment and Internet, organizational support, clients' interest and skills, graphic skills, and social media characteristics. In addition, a backward multiple regression analysis was used to predict the attitude of Extension faculty and agents from perceived usefulness, availability of equipment and the Internet, organizational support, clients' interest and skills, graphic skills, and social media characteristics.

The strength of relationships was assessed using Davis' (1971) coefficient conventions: r = .00 to .09 (Negligible), r = .10 to .29 (Low), r = .30 to .49 (Moderate), r = .50 to .69 (Substantial), and r = .70 to 100 (Very Strong). The effect size of the correlation coefficient r classified as small (r =.10), medium (r =.30), or large (r =.50) (Cohen, 1988). For the independent-samples t-test, the effect size was interpreted as small (*Cohen's d* = .20), medium (*Cohen's d* = .50), or large (*Cohen's d* = .80). The one-way analysis of variance effect size (η^2) was classified as small (η^2 = .01), medium (η^2 = .06), and large (η^2 = .14) (Cohen, 1988). Alpha value of less than .05 was considered statistically significant for all analyses.

CHAPTER IV

RESULTS AND FINDINGS

The purpose of this study was to investigate what social media platform Extension employees were using as a communication tool to deliver educational programs, and to examine factors influencing Extension employees' attitudes toward using social media with Mississippi State University Extension.

This chapter involves four sections, and these parts addressed the four objectives that guided this study. The first objective was to describe the personal and professional demographic characteristics of Extension employees with Mississippi State University Extension. The second objective was to identify social media use, Extension employees' attitudes toward using social media, perceived usefulness, and social media self-efficacy.

The third section was about the third objective of this study, identifying different factors affecting the use of social media by Extension employees with Mississippi State University Extension. The fourth section contained the relationships between Extension employees' attitudes and the following selected variables: Extension employees' social media usage, the personal and professional characteristics, perceived usefulness, self-efficacy, social media characteristics, graphic skills, organizational support, clients' interest and skills, and availability of equipment and the Internet.

Demographic Characteristics

The first objective in this study was to describe the demographic characteristics of Extension faculty and agents with Mississippi State University Extension who responded to the survey. The personal and professional characteristics for Extension faculty and agents included gender, age, race and ethnicity, highest level of education, years in the profession, current MSU-E position, area(s) of Extension programs, type of clients, and geographic region.

Gender

The gender of Mississippi State University Extension faculty and agents is described in Table 2. Approximately 47% (f = 80) of the respondents indicated they were male and 45.8% (f = 78) indicated they were female. Almost 7% (f = 12) did not report their gender.

Table 2 Gender of Extension faculty and agents with Mississippi State University

Gender	f	%
Male	80	47.1
Female	78	45.8
Not reported	12	7.1
Total	170	100

Age Groups

Table 3 shows the frequencies and the percentages of respondents' age groups for the 170 participants. The age of participants ranged from under 25 years of age to over 65 years of age. The largest percentages (25.9%, $f = 44$) of participants were 35-44 years old, and 25-34 years old (25.3%, $f = 43$). There were three participants in the age group 65 or over (1.8%, $f = 3$). Only 0.6% of participants were under 25 years old ($f = 1$).

Table 3 Age groups of Extension faculty and agents with Mississippi State University

Age Group	*f*	%
65 or Over	3	1.8
55-64	32	18.8
45-54	37	21.8
35-44	44	25.9
25-34	43	25.3
Under 25	1	0.6
Not reported	10	5.8
Total	170	100

Race and Ethnicity

Table 4 presents the race and ethnicity of Extension faculty and agents who responded. Over three-fourths of the participants (77%, $f = 131$) were white. Only 9.4% ($f = 16$) were African-American, and less than 1% ($f = 1$) were Native Hawaiian or other Pacific Islander and American Indian or Alaskan Native. Over 87% ($f = 148$) of

respondents indicated they were not of Hispanic-Latino ethnicity while the remaining respondents did not indicate their ethnicity.

Table 4 Race and ethnicity of Extension faculty and agents with Mississippi State University

	f	%
Race		
White	131	77.0
African-American	16	9.4
Native Hawaiian or other Pacific Islander	1	0.6
American Indian or Alaskan Native	1	0.6
Other	1	0.6
Asian	0	0.0
Not reported	20	11.8
Ethnicity		
Not Hispanic-Latino	148	87.1
Not reported	22	12.9
Total	170	100

Educational Level

Participants were asked to specify their highest level of education completed. Most respondents held a Master's degree 48.8% (*f* = 83). There were 33.5% (*f* = 57) who had earned a doctorate. Only 1.2% (*f* = 2) held a specialist degree and 10.6% (*f* = 18) of participants held a bachelor's degree. These data are reported in Table 5.

Table 5 Participants' educational level

Educational Level	*f*	%
Doctoral degree	57	33.5
Educational specialist	2	1.2
Master's Degree	83	48.8
Bachelor's degree	18	10.6
Not reported	10	5.9
Total	170	100

Current MSU-E Position

Table 6 presents the frequencies and percentages of responding Extension employees current MSU-E positions. The majority of respondents were Extension agents (58.2%, $f = 99$). The largest participants of faculty members were assistant professors (11.8%, $f = 20$) and professor (10.6%, $f = 18$).

Table 6 Participants' current position with Mississippi State University

Current position	*f*	%
Professor	18	10.6
Associate Professor	11	6.5
Assistant Professor	20	11.8
Extension Instructor	10	5.9
Extension Agent	99	58.2
Not Reported	12	7.0
Total	170	100

Program Area

The frequencies and percentages of Extension faculty and agents program responsibilities are presented in Table 7. Participants could have more than one program responsibilities. Most participants had program responsibilities in Agricultural and Natural Resources (54.7%, $f = 93$), followed by 4-H Youth Development (52.4 %, $f = 89$). Approximately one-third of the respondents had programmatic responsibilities in Community Resource Development (37.6%, $f = 64$) and Family and Consumer Sciences (32.9%, $f = 56$).

Table 7 Program area of participants with Mississippi State University (N = 170)

Program Area	*f*	%
Agriculture and Natural Resources	93	54.7
4-H Youth Development	89	52.4
Community Resource Development	64	37.6
Family and Consumer Sciences	56	32.9

Note: Participants could select more than one program area.

Years in the Profession

The number of years respondents worked in Extension is presented in Table 8. The largest percentage of participants had worked for 5 years or less (27.7%, *f* = 47). Approximately 23% of respondents worked 6 to 10 years with Mississippi State University Extension (*f* = 39). Only 4.7% of those who reported had more than 25 years of experience with Mississippi State University Extension (*f* = 8).

Table 8 Years in the profession of participants with Mississippi State University

Years	*f*	%
More than 30 years	3	1.8
26-30 years	5	2.9
21-25 years	20	11.8
16-20 years	16	9.4
11-15 years	18	10.6
6-10 years	39	22.9
5 years or less	47	27.7
Not reported	22	12.9
Total	170	100

Type of Clients

Participants were asked to identify the clients they serve in Mississippi (Table 9). The five groups most served by Extension faculty and agents were Youth (70%, $f = 119$), Families (62.9%, $f = 107$), Local Government (47.6%, $f = 81$), Livestock Farmers (47.1%, $f = 80$), and Agronomic Farmers (45.9%, $f = 78$). The five least served groups included Forest owners (40.6%, $f = 69$), Master Gardeners (36.5%, $f = 62$), Industry Personnel (32.9%, $f = 56$), Wildlife and Fisheries (32.9%, $f = 56$), and Law Enforcement (22.4%, $f = 38$). Only 10% of participants reported other types of clients differed from that provided in the questionnaire ($f = 17$). The list of other clients included Adult Volunteers, Arborists and Foresters, Extension agents, and School Officials and

Teachers. The complete list of the other clients provided by respondents is displayed in Appendix D.

Table 9 Client types served by Extension faculty and agents with Mississippi State University (N = 170)

Type of Clients	*f*	%
Youth	119	70.0
Families	107	62.9
Local Government	81	47.6
Livestock Farmers	80	47.1
Agronomic Farmers	78	45.9
Small Business Owners	74	43.5
Homemakers	73	42.9
Forest Owners	69	40.6
Master Gardeners	62	36.5
Industry Personnel	56	32.9
Wildlife and Fisheries	56	32.9
Law Enforcement	38	22.4
Other	17	10.0

Note: Participants could select more than one type of client.

Geographic Region

Extension faculty and agents were asked to indicate which geographic region they currently serve. Over one-fourth of the respondents serve in the entire state of Mississippi ($f = 44$). An equal percentage serve the Northeast Region, Costal Region, or the Central Region (17.6%, $f = 30$). Only 14.8% ($f = 25$) serve the Delta Region (Table 10).

Table 10 Geographic regions in Mississippi where Extension faculty and agents served

Geographic Region	*f*	%
The entire state	44	25.9
Northeast Region	30	17.6
Coastal Region	30	17.6
Central Region	30	17.6
Delta Region	25	14.8

Note: Participants could work in more than one region.

Summary

Most of participants were Extension agents, whites, with an almost equal percentage of male and female employees. Their age ranged from under 25 to 65 or over years old, with the majority was in age range between less than 25 and 44 years old. Most participants had program responsibilities in Agricultural and Natural Resources and 4-H Youth Development. Extension faculty and agents had work experience from less than 5 years to 10 years with the Mississippi State University Extension, and they serve Youth, Families, Livestock Farmers, Local Government, and Agronomic Farmers.

Social Media, Self-Efficacy, Perceived Usefulness, and Attitude

The second objective sought to identify which social media platforms Extension employees currently use, self-efficacy, perceived usefulness of social media platforms and Extension employees' attitudes toward social media. This section is organized in five parts, and these are social media, social media self-efficacy, perceived usefulness, and attitude toward social media scales. The last part is the principal component analysis of the three scales mentioned above.

The social media section includes social media platforms, demographic characteristics of social media users and nonusers, experience of using social media, the frequency of social media use, methods of learning social media, primary source to connect social media for job-related responsibilities, the purpose of using social media, and the preferred method of learning to use social media. In addition, year, location, and topic of latest training-workshop attendees were included.

Social media self-efficacy section included platforms that participants felt comfortable using, and those were Facebook, Instagram, Google+, Twitter, and Plurk. The statements of self-efficacy scale were applied on the five previous social media platforms. Social media self-efficacy scale contained 17 statements measuring social media self-efficacy. The perceived usefulness scale contained eight statements measuring Extension faculty and agents' perceptions of social media usefulness in Extension. Attitudes toward social media scale contained seven statements to measure the participants' attitudes toward using social media in Extension.

The responses of the five-point Likert-type scale were treated as ordinal and interval data after summation of the individual items for each scale.

Social Media

This section provided the results of the questions in the survey about social media platforms, demographics of social media users and nonusers, social media experience, the frequency of social media use, methods of learning social media, primary source(s) to login social media, purpose(s) of using social media, and the preferred method of learning how to use social media. In addition, year, location, and topic of latest training-workshop attendees were included.

Social Media Platforms

As shown in Table 11, the most utilized social media platform used by participants was Facebook (76.5%, $f = 130$). Twitter came in second, being used by 42.4% of Extension faculty and agents ($f = 72$). The third highest percentage was Instagram with 25.9% ($f = 44$). YouTube, Blogs, eXtension, Pinterest, and Snapchat where with 21.2% ($f = 36$), 12.9% ($f = 22$), 11.2%, 11.2%, and 11.2% ($f = 19$) of participants using these platforms, respectively. Ten percent of Extension faculty and agents ($f = 17$) selected LinkedIn as a social media platform that they utilized for professional purposes. The lowest percentages of social media platforms utilized by participants were Google+, Vimeo, Periscope, and Vine with 5.3% ($f = 9$), 2.9% ($f = 5$), 2.4% ($f = 4$), and 1.2% ($f = 2$), respectively.

Extension faculty and agents did not use Flicker, Plurk, Tumblr, Tvinci, or VideoJug. In addition, the result showed that 12.9% ($f = 22$) of participants did not use any type of social media for professional purposes. Some respondents identified other sites not included in the questionnaire (3.5%, $f = 6$), and these sites did not fit the

definition of social media platforms provided in the questionnaire. These sites included Dropbox, Email, Remind, online forum, and Yahoo groups (Appendix E).

Table 11 Social media platforms utilized by the study participants (N = 170)

Social Media Platform	*f*	%
Facebook	130	76.5
Twitter	72	42.4
Instagram	44	25.9
YouTube	36	21.2
Blogs	22	12.9
eXtension	19	11.2
Pinterest	19	11.2
Snapchat	19	11.2
LinkedIn	17	10.0
Google +	9	5.3
Vimeo	5	2.9
Periscope	4	2.4
Vine	2	1.2
Flicker	0	0.0
Plurk	0	0.0
Tumblr	0	0.0
Tvinci	0	0.0
VideoJug	0	0.0
Other	6	3.5
Do not use social media	22	12.9

Note: Participants could select more than one social media platform.

Demographic Characteristics

A summary of participants demographic characteristics for social media users and nonusers is provided in the following parts.

Social Media Users

From the 148 social media users, 45.3% ($f = 67$) were male and 48% ($f = 71$) were female. The majority of social media users were white (77.7%, $f = 115$). They were in age groups 25 to 34 (25%, $f = 37$), 35 to 44 (27% or $f = 40$), 45 to 54 (22.3%), and 55 to 64 (18.2%, $f = 27$). Other demographics characteristics for social media users located in Appendix F. These demographic characteristics included educational level, current MSU-E position, program area of Extension, years in the profession.

Social Media Nonusers

From the twenty-two participants who did not use social media, 59.1% ($f = 13$) were male and 31.8% ($f = 7$) were female. The majority were in age groups 25 to 34 (27.3%, $f = 6$), 35 to 44 (18.2%, $f = 4$), 45 to 54 (18.2%, $f = 4$), and 55 to 64 (22.7%, $f = 5$). Most of social media nonusers were white (72.7%, $f = 16$) or African-American percentage was 4.6% ($f = 1$). Other demographics characteristics for social media nonusers can be found in Appendix F. These demographic characteristics included educational level, current MSU-E position, program area of Extension, and years in the profession.

Social Media Experience

Participants who used social media were asked to indicate how many years they had using social media for work-related activities (Table 12). Fifty percent of respondents ($f = 74$) had 3-6 years of experience using social media. Next, 23.7% ($f = 35$) of participants had 7-10 years of experience followed by 20.9% ($f = 31$) who had 0-2 years of experience.

Table 12 Participants' experience of using social media for work-related activities

Years of Experience	*f*	%
More than 15	1	0.7
11-15	7	4.7
7-10	35	23.7
3-6	74	50.0
0-2	31	20.9
Total	148	100

Note: Participants should select only one choice.

Social Media Actual Use

Extension faculty and agents were asked questions regarding their weekly and daily use of social media. The number of hours per week participants spent updating posts on their social media accounts is presented in Table 13. Most of respondents spent from 0 to 2 hours each week updating posts on their social media accounts (71.6%, $f = 106$). Approximately 22% ($f = 32$) of participants spent 3 to 6 hours per week updating their social media accounts, and almost 5% ($f = 7$) of Extension faculty and agents used

between 7 to 10 hours each week updating their social media accounts. Nearly 1% ($f = 1$) of participants spent 11 to 15 or more than 15 hours per week updating social media accounts.

Table 13 Hours per week spent updating posts in social media accounts

Hours/week	*f*	%
More than 15	1	0.7
11-15	1	0.7
7-10	7	4.7
3-6	32	21.6
0-2	106	71.6
Not reported	1	0.7
Total	148	100

Note: Only one choice could be selected.

Most participants performed 0 to 2 changes or edits per week on social media accounts (78.4%, $f = 116$). Almost 19 % ($f = 27$) of respondents performed 3 to 6 changes or edits peer week on their accounts, and 2% ($f = 3$) of Extension faculty and agents made 7 to 10 changes or edits per week on their social media accounts. Participants who achieved more than 15 changes or edits per week were the lowest percentage (0.7%, $f = 1$). The number of changes or edits made by respondents per week was presented in Table 14.

Table 14 Number of changes/edits participants performed per week in social media accounts

Changes/edits	*f*	%
More than 15	1	0.7
11-15	0	0.0
7-10	3	2.0
3-6	27	18.2
0-2	116	78.4
Not reported	1	0.7
Total	148	100

Note: Only one choice could be selected.

The number of times per day Extension faculty and agents checked for updates conducted by peers or clients on their social media sites presented in Table 15. The highest percentage was for 0 to 2 times per day (67.5%, $f = 100$). Almost one fourth ($f = 34$) of the participants checked for updated material on their accounts for 3 to 6 times per day. Approximately 6% ($f = 9$) of respondents who checked for updates 7 to 10 times per day. The categories of 11 to 15 times checked for updates and more than 15 times per day held the lowest percentage (0.7%, $f = 1$).

Table 15 Number of times per day participants checked for updates on social media accounts

Times per day	*f*	%
More than 15	1	0.7
11-15	1	0.7
7-10	9	6.1
3-6	34	23.0
0-2	100	67.5
Not reported	3	2.0
Total	148	100

Note: Only one choice could be selected.

Methods of Learning Social Media

Extension faculty and agents with Mississippi State University used many methods to learn how to use social media for professional purposes. Table 16 presents how respondents indicated they learned to use social media for professional purposes. The most frequently used method was "self-study" (70.3%, $f = 104$). "On-the-job experience" was the second performed method (68.9%, $f = 102$) of participants. More than 53.4% ($f = 79$) utilized "Interaction with other professionals" to learn how to use social media for work-related activities. "Attending training-workshop" was utilized by 50.7% ($f = 75$) of respondents. Other methods provided by Extension faculty and agents included learning from personal accounts, other organizations social media accounts, and youth. The list of other methods to learn how to use social media for professional purposes provided in Appendix E.

Table 16 Methods of learning social media used by participants (n = 148)

Method	*f*	%
Self-study	104	70.3
On-the-job experience	102	68.9
Interaction with other professionals	79	53.4
Attending training-workshop	75	50.7
Other	3	2.0

Note: Participants were asked to select all methods that apply.

Participants were asked to provide the latest year, topic, and location if they attended a training or workshop. The results showed that 16.9% (*f* = 25) of respondents attended training in 2015, 12.8% (*f* = 19) in 2016, and 5.4% (*f* = 8) in 2017. Appendix E presents the frequencies and the percentages of the latest years of attending training or workshop.

The frequencies and percentages of the topics that provided by respondents about the latest training or workshop they attended is presented in Appendix E. Most of the topics provided by participants related to specific training in social media. The highest percentage of respondents gained training in using social media in Extension (30.4%, *f* = 45). Other topics provided were in agricultural communication, marketing Extension programs, and marketing by social media. Most respondents gained their training in Mississippi, and a small percentage got their training in other states, such as Texas, Wisconsin, and Florida. The frequencies and percentages of the latest training locations presented in Appendix E.

Devices Used to Login Social Media

The devices that participants used to connect or login to their accounts on social media varied (Table 17). Smartphones were the most frequent devices used to connect to social media (87.2%, *f* = 129). Public-work computers (laptop, desktop) were second (72.3%, *f* = 107). iPads and personally-owned computers (laptop, desktop) were the lowest percentages with 21.6% (*f* = 32) and 17.6% (*f* = 26), respectively.

Table 17 The devices participants used to connect social media (n = 148)

Source	*f*	%
Smartphone	129	87.2
Public-work computer (laptop, desktop)	107	72.3
iPad	32	21.6
Personally-owned computer (laptop, desktop)	26	17.6
Other	1	0.7

Note: Participants were asked to select all devices that apply.

Preferred Methods

Table 18 presents the ranking of training preferences of participants. Extension faculty and agents were asked to rank their preferred methods to learn how to use social media. The most preferred type of training for the respondents was "Face-to-face training or workshop" (31.2%, *f* = 53). Ranked number 2 was "Online training" (36.5%, *f* = 62), followed by "Self-study" at 28.8% (*f* = 49). Participants provided other preferred methods to learn how to use social media. Other preferred methods were interactive videos, study

tours, consulting/monitoring from instructor, and help line or resource contact dedicated to assist. The complete list of other preferred method located in Appendix E.

Table 18 Participants preferred methods to learn how to use social media (N = 170)

Method	Rank	*f*	%
Face-to-face training/ workshop	1	53	31.2
Online training	2	62	36.5
Self-study	3	49	28.8
Other	4	9	5.3

Note: Participants were asked to rank their preferred methods.

Purposes of Using Social Media

The purposes of using social media platforms by participants are presented in Table 19. The highest five selected purposes of using social media platforms were "To share information with clients" (95.3%, *f* = 141), "To distribute announcements to clients about upcoming events and programs" (89.2%, *f* = 132), "To generate interest in Extension programs" (78.4%, *f* = 116), "To share different files, such as videos, photos, audios, and other formats with clients" (52.7%, *f* = 78), and "To enhance interaction between Extension professionals and clients" (44.6%, *f* = 66). The least selected purposes of using social media by Extension employees were "To request information and resources from clients" (18.9%, *f* = 28), "To deliver Extension programs" (16.9%, *f* = 25), "To collect information about clients" (11.5%, *f* = 17), "To assess Extension educational programs impacts" (11.5%, *f* = 17), and "To enhance collaboration between researchers and clients" (11.5%, *f* = 17).

Table 19 The purposes of using social media by participants in Mississippi (N = 148)

Purpose	*f*	%
To share information with clients	141	95.3
To distribute announcements to clients about upcoming events and programs	132	89.2
To generate interest in Extension programs	116	78.4
To share different files, such as videos, photos, audios, and other formats with clients	78	52.7
To enhance interaction between Extension professionals and clients	66	44.6
For two-way communication with clients	64	43.2
To communicate client success stories	60	40.5
To recruit volunteers	58	39.2
To drive traffic to Extension websites	55	37.2
To request information and resources from clients	28	18.9
To deliver Extension programs	25	16.9
To collect information about clients	17	11.5
To assess Extension educational programs impacts	17	11.5
To enhance collaboration between researchers and clients	17	11.5
None of the above	3	2.0
Other	0	0.0

Note: Participants were asked to select all purposes that apply.

Summary

Most of participants utilized social media (87%) with them having 3 to 10 years of experience in using social media. They used Facebook and Twitter the most, and they used their smartphones and public-work computers (laptop desktop) to login to social media accounts. The majority of respondents spent 0 to 2 hours each week updating posts on social media accounts, performed 0 to 2 changes or edits per week, and checked 0 to 2 times per day for updates conducted by peers or clients on social media. They use social media to share information with clients, distribute announcements to clients about upcoming events and programs, generate interest in Extension programs, share different files, such as videos, photos, audios, and other formats with clients, and enhance interaction between Extension professionals and clients. "Self-study," "On-the-job experience," "Interaction with other professionals," and "Attending training-workshop" were the methods used by participants to learn how to use social media for work related responsibilities. Some Extension faculty and agents attended training or workshop to use social media in Extension between 2015 and 2017. Most of these training workshops were in Mississippi. For future training, Extension employees prefer Face-to-face training or workshop to learn how to use social media.

Social Media Self-Efficacy

Participants were asked to select which social media platform they were comfortable using for work-related activities from five social media platforms. Three of the platforms provided were identified in the social media guidelines for the Mississippi State University (MSU, 2015), and those were Facebook, Instagram, and Twitter. The results showed that the most frequently picked platform was Facebook (70.2%, $f = 104$). Twitter was the second social media platform selected (25.7%, $f = 38$). Only (1.4%, $f = 2$) of respondents selected Instagram, and none of Extension faculty and agents chose Google+ and Plurk (Table 20).

Table 20 Social media platforms participants felt comfortable to use

Social Media Platform	*f*	%
Facebook	104	70.2
Twitter	38	25.7
Instagram	2	1.4
Google +	0	0.0
Plurk	0	0.0
Did not respond	4	2.7
Total	148	100

Note: Participants were asked to select one social media platform only.

Facebook, Twitter, and Instagram Self-Efficacy

Frequencies for the 17 statements of social media self-efficacy (Facebook, Twitter, and Instagram) are presented in Table 21. The statements were ordered according to the highest "Strongly Agree" statement for Facebook. The five highest frequency statements of Facebook self-efficacy that participants strongly agreed with were "I am able to edit a profile on Facebook" ($f = 49$), "I have the necessary skills to use Facebook" ($f = 48$), "I am able to send private messages on Facebook" ($f = 48$), "I can respond and add comments to messages or articles by clients on Facebook" ($f = 47$), and "I am able to change my privacy settings on Facebook " ($f = 46$). On the other hand, the five lowest frequency statements respondents strongly agreed with were "I am able to conduct discussions using Facebook" ($f = 21$), "I am able to use advanced features such as 360 photos and videos on Facebook" ($f = 20$), "I am able to figure out how to use annual new updated tools in Facebook" ($f = 18$), "I am able to create graphics and edit videos to use with Facebook" ($f = 18$), and "I am able to export my account content (to create a backup) on Facebook" ($f = 12$).

Regarding Twitter self-efficacy, the five highest frequency statements were "I am able to edit a profile on Twitter" ($f = 20$), "I am able to invite, add, and delete friends or followers on Twitter" ($f = 20$), "I have the necessary skills to use Twitter" ($f = 18$), "I can respond and add comments to messages or articles by clients on Twitter" ($f = 17$), and "I am able to send private messages on Twitter" ($f = 15$). The five lowest frequency statements for Twitter self-efficacy participants selected were "I am able to figure out how to use annual new updated tools in Twitter" ($f = 7$), "I am able to conduct discussions using Twitter" ($f = 6$), "I am able to use advanced features such as 360 photos

and videos on Twitter" ($f = 6$), "I am able to create graphics and edit videos to use with Twitter" ($f = 3$), and "I am able to export my account content (to create a backup) on Twitter " ($f = 2$).

Table 21 The frequencies of participants' Facebook (n = 104), Twitter (n = 38), and Instagram (n = 2) self-efficacy in Mississippi

Item statement	Social Media Platform	Frequency of Responses					
		NR	SD	D	N	A	SA
I am able to edit a profile on….							
	Facebook	1	1	2	4	47	49
	Twitter	0	0	1	1	16	20
	Instagram	0	0	0	0	1	1
I have the necessary skills to use….							
	Facebook	1	1	1	4	49	48
	Twitter	0	0	0	2	18	18
	Instagram	0	0	0	0	1	1
I am able to send private messages on…							
	Facebook	1	1	1	4	49	48
	Twitter	0	1	4	3	15	15
	Instagram	0	0	2	0	0	0
I can respond and add comments to messages or articles by clients on…							
	Facebook	2	1	1	4	49	47
	Twitter	0	0	4	2	15	17
	Instagram	0	0	0	0	1	1

Scale: NR = No Response, SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree.

(table continues)

Table 21 (continued)

Item statement	Social Media Platform	Frequency of Responses					
		NR	SD	D	N	A	SA
I am able to change my privacy settings on...							
	Facebook	1	1	1	8	47	46
	Twitter	0	0	2	3	18	15
	Instagram	0	0	0	0	1	1
I am able to invite, add, and delete friends or followers on…							
	Facebook	1	1	2	5	50	45
	Twitter	0	0	2	2	14	20
	Instagram	0	0	0	0	1	1
I am effectively able to communicate with my clients on…							
	Facebook	1	1	2	6	51	43
	Twitter	0	0	2	5	18	13
	Instagram	0	0	0	0	1	1

Scale: NR = No Response, SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree.

(table continues)

Table 21 (continued)

Item statement	Social Media Platform	Frequency of Responses					
		NR	SD	D	N	A	SA
I am able to create a photo album, as well as upload photos, videos, and other files…							
	Facebook	1	2	4	5	50	42
	Twitter	0	2	5	2	14	15
	Instagram	0	0	0	0	1	1
I am able to use chat feature to communicate with clients on….							
	Facebook	2	2	8	13	41	38
	Twitter	0	3	8	8	12	7
	Instagram	0	0	2	0	0	0
I am able to take quality photos and videos to use with….							
	Facebook	1	3	0	7	55	38
	Twitter	0	1	0	4	20	13
	Instagram	0	0	0	0	1	1

Scale: NR = No Response, SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree.

(table continues)

Table 21 (continued)

Item statement	Social Media Platform	Frequency of Responses					
		NR	SD	D	N	A	SA
I am capable of using available tools on….							
	Facebook	1	1	4	11	50	37
	Twitter	0	0	4	4	19	11
	Instagram	0	0	0	0	1	1
I am confident explaining to others how to use….							
	Facebook	2	2	9	18	52	21
	Twitter	0	1	3	11	17	6
	Instagram	0	0	0	0	1	1
I am able to conduct discussions using...							
	Facebook	2	5	10	21	45	21
	Twitter	1	4	6	10	11	6
	Instagram	0	0	1	0	1	0

Scale: NR = No Response, SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree.

(table continues)

Table 21 (continued)

Item statement	Social Media Platform	Frequency of Responses					
		NR	SD	D	N	A	SA
I am able to use advanced features such as 360 photos and videos on….							
	Facebook	1	5	23	28	27	20
	Twitter	1	4	8	9	10	6
	Instagram	0	0	1	0	0	1
I am able to figure out how to use annual new updated tools in….							
	Facebook	1	2	20	22	41	18
	Twitter	0	3	6	7	15	7
	Instagram	0	0	0	0	1	1
I am able to create graphics and edit videos to use with…							
	Facebook	2	5	22	24	33	18
	Twitter	0	4	8	13	10	3
	Instagram	0	0	0	0	1	1
I am able to export my account content (to create a backup) on...							
	Facebook	1	9	38	25	19	12
	Twitter	0	4	13	15	4	2
	Instagram	0	0	2	0	0	0

Scale: NR = No Response, SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree.

Perceived Usefulness

The frequencies of responses for each of the eight perceived usefulness statements for participants' social media usefulness are presented in Table 22. The statements ordered according to the response category "Strongly Agree". The top three rated statements respondents strongly agreed with were "Overall, I find social media useful within the Extension Service" (f = 53), "Using social media makes it easier to distribute information to my clients" (f = 45), and "Using diverse platforms of social media allows broader distribution of information to reach more clients" (f = 38). The lowest rated statements, participants strongly agreed with were "Using social media improves my work performance" (f = 25), "Using social media increases my work productivity" (f = 21), and "Using social media makes it easier to discuss important topics with my clients" (f = 19).

Table 22 The frequencies of participants' perceptions of social media usefulness (n = 148)

Item Statement	Number of Responses					
	NR	SD	D	N	A	SA
Overall, I find social media useful within the Extension Service.	2	1	1	19	72	53
Using social media makes it easier to distribute information to my clients.	3	1	6	18	75	45
Using diverse platforms of social media allows broader distribution of information to reach more clients.	2	2	5	28	73	38
Using social media allows for direct interactivity with stakeholders and clients.	2	2	13	30	67	34
Using social media saves me time and effort in communicating with stakeholders and clients.	2	1	17	32	63	33
Using social media improves my work performance.	2	1	5	45	70	25
Using social media increases my work productivity.	2	1	13	52	59	21
Using social media makes it easier to discuss important topics with my clients.	3	3	18	45	60	19

Scale: NR = No Response, SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree.

Attitude toward Social Media

The frequencies of responses for each of the seven attitude statements for social media users and nonusers are presented in Table 23. The statements were ordered according to the highest response category "Strongly Agree" for social media users. The highest rated statement by users ($f = 75$) and nonusers ($f = 6$) was "Using social media to distribute announcements about Extension programs and events is a great idea."

The highest rated statements by social media users were "Using social media is a good strategy to offer updated information to clients" ($f = 70$), and "Using social media as a communication tool is a great idea in Extension" ($f = 68$). The lowest frequency statements, social media users strongly agreed with "Social media is an effective tool for building stronger relationships with clients" ($f = 55$), "Social media is a good tool to gain feedback about Extension programs from clients" ($f = 45$), and "Social media platforms are good for gaining information from clients" ($f = 43$).

For social media nonusers, the second and third highest frequency statements were "Extension should use social media to attract potential clients" ($f = 4$) and "Using social media is a good strategy to offer updated information to clients" ($f = 3$). On the other hand, "Social media is an effective tool for building stronger relationships with clients" ($f = 2$) was the lowest statement selected by participants who did not use social media.

Table 23 The frequencies of participants' attitudes toward social media for social media users (n = 148) and nonusers (n = 22)

Item Statement		Frequency of Responses					
		NR	SD	D	N	A	SA
Using social media to distribute announcements about Extension programs and events is a great idea.	User	10	1	0	2	60	75
	Nonuser	2	0	0	2	12	6
Using social media is a good strategy to offer updated information to clients.	User	10	1	1	8	58	70
	Nonuser	2	0	2	1	14	3
Using social media as a communication tool is a great idea in Extension.	User	9	1	0	12	58	68
	Nonuser	2	0	0	6	11	3
Extension should use social media to attract potential clients.	User	11	1	0	9	63	64
	Nonuser	2	0	1	3	12	4
Social media is an effective tool for building stronger relationships with clients.	User	10	1	5	28	49	55
	Nonuser	2	0	2	8	8	2
Social media is a good tool to gain feedback about Extension programs from clients.	User	10	4	9	29	51	45
	Nonuser	2	0	2	10	5	3
Social media platforms are good for gaining information from clients.	User	10	2	8	29	56	43
	Nonuser	2	0	1	12	4	3

Scale: NR = No Response, SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree.

Principal Component Analysis

The 19 items of Facebook self-efficacy, perceived usefulness, and attitude toward using social media were subjected to principal component analysis (PCA) using Factor program, version 10.5.03 (Lorenzo-Seva & Ferrando, 2006). The purpose of using principal component analysis was to reduce the number of items and to assess the structure of the three scales of Facebook self-efficacy, perceived usefulness, and attitude toward social media.

Principal component analysis is a multivariate method of analysis and has been used widely in social sciences studies. Providing fast solutions and handling large numbers of variables are some of the advantages of using principal component analysis (Gaskin & Happell, 2014). Principal component analysis helps reduce the number of variables into smaller sets of linear combinations and extracts all the variance from the variables in the data sets. The first component obtains the highest variance and the last component extracts the smallest variance in this technique (Tabachnick & Fidell, 2007).

Principal component analysis is a large-sample size procedure. To conduct principal component analysis, the sample size should be more than 50 participants, but 100 participants or more are preferred (Hair et al., 2010). In this study, the sample size for the three scales was 94 participants, and it was equal to Facebook self-efficacy participants. The sample size was close to the preferred sample size 100 participants and more than 50 participants.

The present study utilized the Likert-type scale to measure the variables in the attitude toward social media, perceived usefulness, and Facebook self-efficacy scales. Consequently, the variables resulting from the three scales were ordinal. For ordinal data,

several researchers recommended polychoric correlations to produce the correlation or covariance matrix with principal component analysis (Flora & Curran, 2004; Joreskog & Moustaki, 2001).

Polychoric correlation was used to examine the association between variables that are continuous but were measured on an ordinal scale such as Likert-type scales (Olsson, 1979). Researchers agree on the fact that polychoric correlation is a more appropriate method to examine associations between categorical variables when the skewness or kurtosis absolute value more than 1 (Garrido, Abad, & Ponsoda, 2013; Gaskin & Happell, 2014; Muthen & Kaplan 1985). Parallel analysis with polychoric correlations and the mean eigenvalue criterion performed well with the Likert scale data (Gaskin & Happell, 2014).

The researcher conducted parallel analysis and polychoric correlation with a minimum rank factor analysis method (MRFA) to check the data suitability for principal component analysis and to decide the number of factors to retain. Timmerman and Lorenzo-Seva (2011) advised to use parallel analysis and polychoric correlation with minimum rank factor analysis (MRFA) method as a first step before using principal component analysis to test the data suitability and to decide the number of factors to retain.

Data Suitability

Among the several criterions used to assess the suitability of the data set for principal component analysis, some methods were selected to conduct in this research. The standards chosen were the strength of the relationship among variables, Bartlett's test, and the Kaiser-Meyer-Olkin (KMO) test (Pallant, 2007).

The strength of the intercorrelations among the variables is used to check the suitability of data for principal component analysis. Principal component analysis is suitable if there are relationships among the variables in the data set. The relationships among the variables can be assessed through visual inspection of the correlation matrix. For principal component analysis, the recommended correlation coefficient is greater than .3. However, if many correlation coefficient values less than .3 are found in the correlation matrix, principal component analysis is not suitable (Tabachnick & Fidell, 2007).

Bartlett's test of sphericity can be used to decide if principal component analysis is appropriate for the data set. It is a statistical test for the total significance of all correlations within the correlation matrix (Hair et al, 2010). This test compared the observed correlation matrix to the identity matrix. Bartlett's test is used to test the null hypothesis that the correlation matrix is an identity matrix. If Bartlett's test of sphericity is significant ($p < .05$), the principal component analysis is considered suitable. The Kaiser-Meyer-Olkin (KMO) is another test needed to measure sampling adequacy. This statistical test calculated the complete correlation matrix and individual item. The value of this test is varying between 0 and 1, and the value closer to 1 is better. For the individual item or the total matrix, values above .50 are suitable (Hair et al., 2010).

The result of the polychoric correlation matrix for the study variables revealed the presence of many correlation coefficients of .3 and above. The Bartlett's test of sphericity result was statistically significant (Bartlett's statistic = 1361.5, df = 171, $p < .001$). This result indicated that the correlation matrix was not an identity matrix and all items were correlated (Field, 2009). According to Field (2009), the Kaiser-Meyer-Olkin (KMO)

"values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb" (p. 647). Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy for the study data revealed that the value of the KMO was .869, and this value was considered great to utilize factor analysis. According to the results, the data set in this study was apt to conduct factor analysis. After inspecting the data suitability, the researcher should utilize methods to decide about the number of factors to retain.

Retaining

Some methods were utilized to assist in the decision regarding the number of components to retain in this research. These included Kaiser's criterion, scree test, and parallel analysis. The first method was to decide on the number of components is the use of Kaiser's criterion, known as the eigenvalue rule. Eigenvalue is the total of squared loadings for the factor and is referred to as the latent root (Hair et al., 2010). The amount of the total variance explained by a specific factor is represented by the eigenvalue of factor. Factors with an eigenvalue of 1.0 or more are retained for further examination. From the result of the second round, there were three components with eigenvalues greater than 1 (Appendix G).

A second approach to decide on the number of components is the utilization of Catell's scree test (Pallant, 2007). This graph illustrates both the eigenvalues and the component numbers. This method involves plotting each of the eigenvalues of the factors and inspecting the plot to find the point when the curve forms an elbow and turns flat. All factors above the elbow in the plot are recommended to be retained. Those factors contributed the most variance explained in the data set. An inspection of the scree plot of

the study data revealed a clear break after the fourth component, but the fourth component had an eigenvalue less than 1 (Figure 4). By using Catell's (1966) scree test, it was decided to retain three components for further investigation.

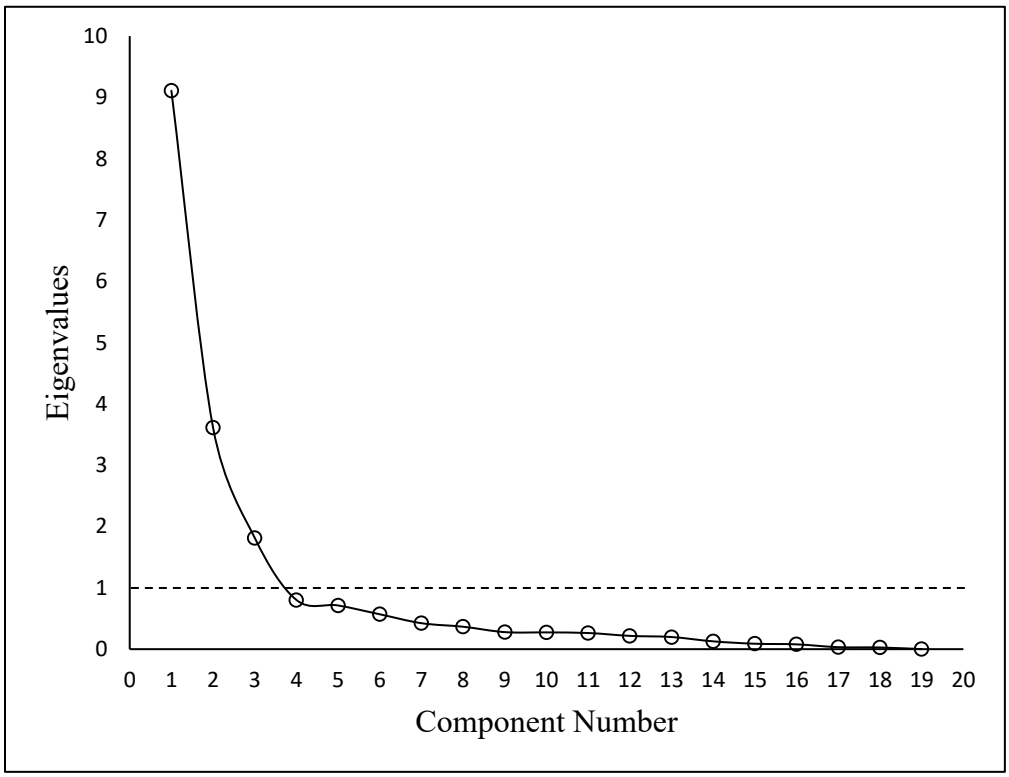

Figure 4 Scree plot for the three-component solution

The third method used to decide on the number of components is parallel analysis. This method was proposed by Horn (1965) and has been shown to be the most accurate with both Kaiser's criterion and Catell's scree test to identify the correct number of components to retain (Hubbared & Allen, 1987; Zwick & Velicer, 1986). The results of parallel analysis supported the result of scree plot test, which showed only three components with eigenvalues exceeding the corresponding criterion values for a

randomly generated data matrix of the same size (19 variables x 94 respondents). The results of parallel analysis are located in in Appendix G.

Extraction and Rotation Methods

To extract the number of advising components, the components should be extracted and rotated. Principal component analysis was the extraction method with polychoric correlations. Rotation can help select the accurate number of components to retain, and it can aid the interpretation of the solution. The oblique rotation method was utilized in this study as a rotation method. Oblique rotation produces factors that are correlated, and this method of rotation is recommended for social sciences because social sciences studied variables correlated with each other. There are several methods for oblique rotation, and the most popular methods are direct oblimin and promax (Gaskin & Happell, 2014). In this study, the rotation method used was direct oblimin.

Table 24 shows the factor loadings, eigenvalues, percent of variance, and Cronbach's alpha for the three factors after extracted and rotated. The three components solution explained 76.51% of the total variance. Component 1 explained 47.94%, component 2 explained 19.02%, and component 3 explained 9.56%. The three components showed many strong loadings and all variables loading substantially on only one component (Table 24). The Cronbach's alpha for the three factors ranged from .878 to .924. This shows that the values of reliability are above the recommended value of 0.7 (Henseler et al., 2009).

Table 24 Factor loadings after rotation of the three factors, eigenvalues, percent of variance explained, and Cronbach's alpha

Item Statement	Rotated Factor Loading		
	Factor 1	Factor 2	Factor 3
Factor 1: Perceived Usefulness			
Using social media increases my work productivity.	**0.901**	-0.048	0.003
Overall, I find social media useful within the Extension Service.	**0.900**	0.049	0.019
Using social media improves my work performance.	**0.874**	-0.103	0.063
Using diverse platforms of social media allows broader distribution of information to reach more clients.	**0.848**	0.053	-0.046
Using social media makes it easier to distribute information to my clients.	**0.841**	-0.064	0.036
Using social media saves me time and effort in communicating with stakeholders and clients.	**0.838**	0.054	0.043
Using social media allows for direct interactivity with stakeholders and clients.	**0.788**	0.095	-0.037
Using social media makes it easier to discuss important topics with my clients.	**0.784**	0.086	0.115

Note: Factor loading > .40 appear in bold. Method of rotation: Direct Oblimin.

(table continues)

Table 24 (continued)

Item Statement	Rotated Factor Loading		
	Factor 1	Factor 2	Factor 3
Factor 2: Facebook Self-efficacy			
I am able to use chat feature to communicate with clients on Facebook.	0.019	**0.879**	-0.159
I am able to figure out how to use annual new updated tools in Facebook.	-0.062	**0.877**	0.185
I am able to use advanced features such as 360 photos and videos on Facebook.	-0.172	**0.865**	0.125
I am able to conduct discussions using Facebook.	0.102	**0.859**	-0.111
I am confident explaining to others how to use Facebook.	0.174	**0.815**	-0.087
I am capable of using available tools on Facebook.	.122	**0.799**	-0.047
I am able to export my account content (to create a backup) on Facebook.	-.016	**0.720**	0.206

Note: Factor loading > .40 appear in bold. Method of rotation: Direct Oblimin.

(table continues)

Table 24 (continued)

Item Statement	Rotated Factor Loading		
	Factor 1	Factor 2	Factor 3
Factor 3: Attitude Toward Social Media			
Social media platforms are good for gaining information from clients.	-0.011	0.049	**0.958**
Social media is an effective tool for building stronger relationships with clients.	0.103	0.025	**0.891**
Social media is a good tool to gain feedback about Extension programs from clients.	-0.004	-0.052	**0.885**
Using social media as a communication tool is a great idea in Extension.	0.105	-0.014	**0.815**
Eigenvalues	9.11	3.61	1.82
% of variance	47.94	19.02	9.56
Cronbach's alpha	.924	.908	.878

Note: Factor loading > .40 appear in bold. Method of rotation: Direct Oblimin.

After achieving the factor solution, it is necessary to name the component depending on their item content and the size of the item factor loadings. The three subscales were named before conducting the principal component analysis. The three factors were named as the following:

Factor 1: Perceived Usefulness: this factor is about the respondent's beliefs or perceptions related to the usage of social media to improve performance and productivity in workplace, save time and effort, create an easy way to discuss topics, direct interactivity with stakeholders and clients, and broaden distribution of information.

Factor 2: Facebook Self-efficacy: this factor contains items related to the individual's self-evaluation about his or her ability and capability to use Facebook tools, create a backup, utilize its advanced tools, use chat features, conduct discussions on Facebook, and explain how to use Facebook to others.

Factor 3: Attitude Toward Using Social Media: this factor involves statements related to participants' attitudes to use social media for professional purposes, such as communication tool, gain information, build relationships, and gain feedback about programs.

The polychoric intercorrelation matrix for the three factors is presented in Table 25. The results showed that there was a substantial positive relationship between perceived usefulness and attitude toward using social media (r = .509). A low positive relationship was found between Facebook self-efficacy and attitude toward using social media (r = .175). In addition, there was a moderate relationship between Facebook self-efficacy and perceived usefulness (r = .386).

Table 25 Polychoric intercorrelation matrix for the three factors

Factor	1	2	3
1. Perceived usefulness	1.00		
2. Facebook self-efficacy	.386	1.00	
3. Attitude toward using social media	.509	.175	1.00

Subscales Total

The results of the principal component analysis for the three scales of perceived usefulness, Facebook self-efficacy, and attitude toward using social media indicate that it is appropriate to create a sum score for each of the three subscales.

Overall Perceived Usefulness

The eight perceived usefulness scale statements after principal component analysis frequencies and percentages are presented in Table 26. These statements measured participants' perceptions of the usefulness of social media. Most respondents agreed that social media useful in Extension (48.9%, $f = 66$), increased work productivity (39.3%, $f = 53$), improved work performance (46.7%, $f = 63$), allowed broader distribution of information (51.1%, $f = 69$), made it easier to distribute information to clients (51.1%, $f = 69$), saved time and effort (42.2%, $f = 57$), allowed direct interactivity (44.5%, $f = 60$), and made it easier to discuss important topics (40%, $f = 54$). Overall, Extension faculty and agents agreed social media useful within Extension work ($M = 3.84$, $SD = 0.71$).

Table 26 Participants' perceptions of the usefulness of social media (n = 135)

Item Statement	Responses Frequency/ Percentage				
	SD	D	N	A	SA
Using social media increases my work productivity.	1/ 0.7	12/ 8.9	49/ 36.3	53/ 39.3	20/ 14.8
Overall, I find social media useful within the Extension Service.	1/ 0.7	1/ 0.7	17/ 12.7	66/ 48.9	50/ 37.0
Using social media improves my work performance.	1/ 0.7	4/ 3.0	42/ 31.1	63/ 46.7	25/ 18.5
Using diverse platforms of social media allows broader distribution of information to reach more clients.	2/ 1.5	4/ 3.0	25/ 18.5	69/ 51.1	35/ 25.9
Using social media makes it easier to distribute information to my clients.	1/ 0.7	6/ 4.4	17/ 12.7	69/ 51.1	42/ 31.1
Using social media saves me time and effort in communicating with stakeholders and clients.	1/ 0.7	17/ 12.7	28/ 20.7	57/ 42.2	32/ 23.7
Using social media allows for direct interactivity with stakeholders and clients.	2/ 1.5	13/ 9.6	28/ 20.7	60/ 44.5	32/ 23.7
Using social media makes it easier to discuss important topics with my clients.	3/ 2.2	18/ 13.3	42/ 31.2	54/ 40.0	18/ 13.3
M					3.84
SD					0.71

Scale: NR = No Response, SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree. The mean score for perceived usefulness was interpreted using 1 to 1.5 (Strongly Disagree), 1.51 to 2.5 (Disagree), 2.51 to 3.50 (Neither Agree nor Disagree), 3.51 to 4.50 (Agree), and 4.51 to 5 (Strongly Agree).

Overall Social Media Self-Efficacy

The frequencies and percentages of the seven statements of Facebook self-efficacy resulted from principal component analysis is presented in Table 27. Most of Extension faculty and agents agreed that they were able or capable to use chat feature to communicate with clients (39.4%, $f = 37$), figure out how to use annual new update tools (38.3%, $f = 36$), conduct discussions (44.7%, $f = 42$), explain to others how to use Facebook (51.1%, $f = 48$), and use available tools on Facebook (47.8%, $f = 45$). However, most participants disagreed that they could export their account content (to create a backup) on Facebook (39.4%, $f = 37$). The majority of Extension employees selected nether agree nor disagree for use advanced features such as 360 photos and videos (28.7, $f = 27$). The overall mean of Extension faculty and agents Facebook self-efficacy was in the agree range ($M = 3.63$, $SD = 0.83$).

Table 27 Participants' Facebook self-efficacy (n = 94)

Item Statement	Responses Frequency/ Percentage				
	SD	D	N	A	SA
I am able to use chat feature to communicate with clients on Facebook.	1/ 1.1	8/ 8.5	13/ 13.8	37/ 39.4	35/ 37.2
I am able to figure out how to use annual new updated tools in Facebook.	2/ 2.1	18/ 19.1	20/ 21.4	36/ 38.3	18/ 19.1
I am able to use advanced features such as 360 photos and videos on Facebook.	4/ 4.3	22/ 23.4	27/ 28.7	21/ 22.3	20/ 21.3
I am able to conduct discussions using Facebook.	4/ 4.3	9/ 9.5	20/ 21.3	42/ 44.7	19/ 20.2
I am confident explaining to others how to use Facebook.	2/ 2.1	8/ 8.5	16 17.0	48/ 51.1	20/ 21.3
I am capable of using available tools on Facebook.	1/ 1.1	4/ 4.3	10/ 10.6	45/ 47.8	34/ 36.2
I am able to export my account content (to create a backup) on Facebook.	7/ 7.4	37/ 39.4	22/ 23.4	16/ 17.0	12/ 12.8
M					3.63
SD					0.83

Scale: NR = No Response, SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree. The mean score for Facebook self-efficacy was interpreted using 1 to 1.5 (Strongly Disagree), 1.51 to 2.5 (Disagree), 2.51 to 3.50 (Neither Agree nor Disagree), 3.51 to 4.50 (Agree), and 4.51 to 5 (Strongly Agree).

For Extension faculty and agents who felt comfortable using Twitter, the seven statements of Twitter self-efficacy frequencies and percentages are presented in Table 28. Most respondents agreed that they were able or capable to use the chat feature (33.4%, f = 12), figure out how to use annual new updated tools (41.7%, f = 15), use advanced features such as 360 photos and videos (27.8%, f = 10), conduct discussions (30.5%, f = 11), explain to others how to use Twitter (47.2%, f = 17), and use available tools (52.8%, f = 19). However, most of Extension faculty and agents neither agreed nor disagreed that they could export their account content (to create a backup) on Twitter (41.7%, f = 15). Overall, participants mean scale for Twitter self-efficacy was in the range of neither agree nor disagree (M = 3.3, SD = 0.89).

Table 28 Respondents' Twitter self-efficacy (n = 36)

Item Statement	Responses Frequency/ Percentage				
	SD	D	N	A	SA
I am able to use chat feature to communicate with clients on Twitter.	3/ 8.3	8/ 22.2	7/ 19.4	12/ 33.4	6/ 16.7
I am able to figure out how to use annual new updated tools in Twitter.	3/ 8.3	6/ 16.7	7/ 19.4	15/ 41.7	5/ 13.9
I am able to use advanced features such as 360 photos and videos on Twitter.	4/ 11.1	8/ 22.2	9/ 25.0	10/ 27.8	5/ 13.9
I am able to conduct discussions using Twitter.	4/ 11.1	6/ 16.7	10/ 27.8	11/ 30.5	5/ 13.9
I am confident explaining to others how to use Twitter.	1/ 2.8	3/ 8.3	11/ 30.6	17/ 47.2	4/ 11.1
I am capable of using available tools on Twitter.	0/ 0.0	4/ 11.1	4/ 11.1	19/ 52.8	9/ 25.0
I am able to export my account content (to create a backup) on Twitter.	4/ 11.1	13/ 36.1	15/ 41.7	4/ 11.1	0/ 0.0
M					3.30
SD					0.89

Scale: NR = No Response, SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree. The mean score for Twitter self-efficacy was interpreted using 1 to 1.5 (Strongly Disagree), 1.51 to 2.5 (Disagree), 2.51 to 3.50 (Neither Agree nor Disagree), 3.51 to 4.50 (Agree), and 4.51 to 5 (Strongly Agree).

Overall Attitude Toward Social Media

The results of the principal component analysis produced four statements for Extension specialties' and agents attitudes toward social media. The four statements of social media users and nonusers attitude toward social media frequencies and percentages are presented in Table 29. Most respondents who use social media agreed or strongly agreed that social media are good for gaining information (39.3%, $f = 53$), an effective tool for building stronger relationships (40.7%, $f = 55$), a good tool to gain feedback about Extension programs (35.5%, $f = 48$), and using social media as a communication tool in Extension is a good idea (49.6%, $f = 67$). The overall attitude toward social media for Extension faculty and agents who use social media was in agree range ($M = 4.08$, $SD = 0.78$).

For Extension participants who did not use social media, most faculty and agents agreed or strongly agreed that using social media as a communication tool is a great idea in Extension (55%, $f = 11$) and effective tool for building relationships with clients (40%, $f = 8$). Most of participants neither agreed nor disagreed that social media is a good tool to gain feedback (50%, $f = 10$) and information from clients (60%, $f = 12$). Overall, Extension specialists' and agents (nonusers) attitudes toward using social media was in agree range ($M = 3.56$, $SD = 0.70$).

Table 29 Social media users' (n = 135) and nonusers (n = 20) attitudes toward using social media in Extension

Item Statement	Social Media	Responses (*f*/ %)				
		SD	D	N	A	SA
Social media platforms are good for gaining information from clients.	Users	2/ 1.5	8/ 5.9	30/ 22.2	53/ 39.3	42/ 31.1
	Nonusers	0/ 0.0	1/ 5.0	12/ 60.0	4/ 20.0	3/ 15.0
Social media is an effective tool for building stronger relationships with clients.	Users	1/ 0.7	5/ 3.7	28/ 20.7	46/ 34.2	55/ 40.7
	Nonusers	0/ 0.0	2/ 10.0	8/ 40.0	8/ 40.0	2/ 10.0
Social media is a good tool to gain feedback about Extension programs from clients.	Users	4/ 3.0	9/ 6.7	29/ 21.5	48/ 35.5	45/ 33.3
	Nonusers	0/ 0.0	2/ 10.0	10/ 50.0	5/ 25.0	3/ 15.0
Using social media as a communication tool is a great idea in Extension.	Users	1/ 0.7	0/ 0.0	12/ 8.9	55/ 40.8	67/ 49.6
	Nonusers	0/ 0.0	0/ 0.0	6/ 30.0	11/ 55.0	3/ 15.0
M	Users					4.08
SD						0.78
M	Nonusers					3.56
SD						0.70

Scale: NR = No Response, SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree. The mean score for attitude toward using social media was interpreted using 1 to 1.5 (Strongly Disagree), 1.51 to 2.5 (Disagree), 2.51 to 3.50 (Neither Agree nor Disagree), 3.51 to 4.50 (Agree), and 4.51 to 5 (Strongly Agree).

An independent-samples *t*-test was conducted to assess the differences between social media users and nonusers in their attitudes toward using social media. The result of the independent-samples *t*-test revealed that there was a significant difference in the mean scores of attitude toward using social media between social media users (M = 4.08, SD = .78) and nonusers (M = 3.56, SD = .70), $t(153) = -2.80$, $p = .006$, *Cohen's d* = .69. There was a medium effect size (d = .69). The result of independent-samples *t*-test is presented in Table 30.

Table 30 Differences of participants' attitudes toward using social media in Extension in terms of using social media (n = 155)

Social Media	*n*	*M*	*SD*	*t*	*df*	*p (two-tailed)*	*Cohen's d*
Users	135	4.08	.78	-2.80	153	.006	.69
Nonusers	20	3.56	.70				

Summary

Extension faculty and agents felt comfortable using Facebook and Twitter, but the social media platform participants felt most comfortable with using Facebook. Participants were in agree rang for Facebook self-efficacy, and Twitter self-efficacy was in range of neither agree nor disagree. Extension faculty and agents were in agree range for social media usefulness. In addition, social media users and nonusers were in agree range or positive attitude toward using social media in Extension. A significant difference was found between social media users' and nonusers attitudes toward using social media in Extension.

Factors Affecting Social Media Use

Objective three sought to identify different factors affecting the use of social media by Extension faculty and agents. The organizational and social media barriers scale contained 37 statements; those statements reflected the most common barriers that affect the use of social media in Extension organizations.

Organizational and social media scale utilized 5-point Likert scale ranging from 1 (No Effect) to 5 (Major Effect). For the individual item, the frequency as descriptive statistics was reported. Principal component analysis with polychoric correlation was applied on the 37 items of the scale. The total responses to the five-point Likert scale for the five components resulted from principal component analysis were treated as interval data. The mean and standard deviation for each subscale was reported. The mean score for the five factors was interpreted using 1 to 1.5 (No Effect), 1.51 to 2.5 (Minor Effect), 2.51 to 3.50 (Neutral), 3.51 to 4.50 (Moderate Effect), and 4.51 to 5 (Major Effect).

Social Media Users

Table 31 shows the frequencies of responses for each of the 37 organizational and social media barriers statements for social media users before eliminating missing data. The statements were arranged according to the response category "Major effect". The five highest frequency statements were "Lack of a reward structure to recognize Extension employees for using social media" ($f = 21$), "Lack of organizational plan to use social media" ($f = 18$), "Lack of adequate Internet access" ($f = 16$), "Lack of high-speed Internet access" ($f = 16$), and "Lack of organizational standards for social media account" ($f = 12$). However, the five lowest frequency statements were "Fear of losing or alienating current clients" ($f = 3$), "Unreliability of social media platforms from the client's point of view" ($f = 3$), "Lack of online communication skills" ($f = 2$), "Lack of ability to take quality photos" ($f = 2$), and "Available social media platforms do not fit Extension needs" ($f = 0$).

Table 31 The frequencies of participants' perceptions of organizational and social media barriers affecting social media users (n = 148)

Item Statement	Frequency of Responses					
	NR	NE	ME	N	MOE	MAE
Lack of a reward structure to recognize Extension employees for using social media.	4	41	18	40	24	21
Lack of organizational plan to use social media.	5	39	22	38	26	18
Lack of adequate Internet access.	4	55	30	15	28	16
Lack of high-speed Internet access.	4	53	23	18	34	16
Lack of organizational standards for social media account.	5	48	18	33	32	12
Lack of interest from clients to use social media.	5	34	31	39	28	11
Number and type of commercial advertisements on social media platforms.	6	40	28	41	22	11
Lack of understanding on copyright issues.	4	45	24	41	24	10
Lack of interest to use social media.	4	55	25	29	25	10
Lack of time to prepare and update content for social media.	5	32	26	27	48	10
Lack of time to learn about updated tools on social media.	6	37	34	32	29	10

Note: NR = No Response, NE = No effect, ME = Minor effect, N = Neutral, MOE = Moderate effect, MAE = Major effect.

(table continues)

Table 31 (continued)

Item Statement	Frequency of Responses					
	NR	NE	ME	N	MOE	MAE
Lack of ability to create quality graphics.	5	37	26	30	40	10
Legal and confidentiality risks to the Extension organization.	4	41	24	39	31	9
Lack of organizational technical support.	4	66	23	26	20	9
Fear of posting something incorrect or unprofessional.	5	42	32	29	31	9
Not knowing which social media platform is preferred by clients.	5	30	25	35	44	9
Clients lack skills to use social media.	5	22	26	31	56	8
Insufficient privacy and security options.	5	49	31	39	16	8
Lack of necessary knowledge and skills for using social media effectively.	5	43	28	27	38	7
Lack of organizational administrative support.	4	64	21	31	21	7
Inadequate training opportunities on social media platforms.	5	44	16	30	46	7
Changing social media platforms popularity.	7	32	28	47	27	7

Note: NR = No Response, NE = No effect, ME = Minor effect, N = Neutral, MOE = Moderate effect, MAE = Major effect.

(table continues)

Table 31 (continued)

Item Statement	Frequency of Responses					
	NR	NE	ME	N	MOE	MAE
Fear of losing Extension program-funding.	6	66	21	39	10	6
Exposure to computer viruses.	4	54	31	35	18	6
Composition and demographics of Extension Service clients.	4	41	28	33	36	6
Lack of ability to create videos.	5	47	33	27	31	5
Lack of knowing about policies on appropriate use of social media.	4	51	24	35	29	5
Lack of computers or equipment for Extension agents in their Extension offices.	4	73	27	23	16	5
Number of characters of content that can be created.	5	49	31	41	18	4
Lack of specific method(s) to archive social media posts and reports.	5	44	22	43	30	4
Social media interface layout and its navigation system.	5	57	25	38	20	3
Lack of guidelines and monitoring in social media services.	4	51	24	39	27	3
Fear of losing or alienating current clients.	4	63	29	37	12	3

Note: NR = No Response, NE = No effect, ME = Minor effect, N = Neutral, MOE = Moderate affect, MAE = Major Affect.

(table continues)

Table 31 (continued)

Item Statement	Frequency of Responses					
	NR	NE	ME	N	MOE	MAE
Unreliability of social media platforms from the client's point of view.	5	51	25	44	20	3
Lack of online communication skills.	4	52	36	39	15	2
Lack of ability to take quality photos.	5	58	36	28	19	2
Available social media platforms do not fit Extension needs.	5	56	27	46	14	0

Note: NR = No Response, NE = No effect, ME = Minor effect, N = Neutral, MOE = Moderate effect, MAE = Major effect.

Social Media Nonusers

The frequency of responses for each of the 37 organizational and social media barriers statements for social media nonusers is presented in Table 32. The statements were organized according to the response category "Major effect". The five highest frequencies statements were "Lack of time to prepare and update content for social media" ($f = 9$), "Lack of necessary knowledge and skills for using social media effectively" ($f = 6$), "Composition and demographics of Extension Service clients" ($f = 6$), "Lack of interest to use social media" ($f = 5$), and "Lack of interest from clients to use social media" ($f = 5$). On the other hand, the five lowest frequency ($f = 0$) statements were "Lack of guidelines and monitoring in social media services," "Lack of knowing about policies on appropriate use of social media," "Lack of computers or equipment for Extension agents in their Extension offices," Lack of adequate Internet access," and "Fear of losing Extension program-funding."

Table 32 The frequencies of participants' perceptions of organizational and social media barriers affecting social media nonusers (n = 22)

Item Statement	Frequency of Responses					
	NR	NE	ME	N	MOE	MAE
Lack of time to prepare and update content for social media.	2	4	2	1	4	9
Lack of necessary knowledge and skills for using social media effectively.	2	8	0	2	4	6
Composition and demographics of Extension Service clients.	3	11	2	0	0	6
Lack of interest to use social media.	2	5	5	2	3	5
Lack of interest from clients to use social media.	2	7	2	4	2	5
Lack of time to learn about updated tools on social media.	2	8	1	2	4	5
Clients lack skills to use social media.	2	9	1	2	5	3
Not knowing which social media platform is preferred by clients.	2	7	1	1	8	3
Unreliability of social media platforms from the client's point of view.	2	13	2	0	3	2
Exposure to computer viruses.	3	13	0	1	3	2
Inadequate training opportunities on social media platforms.	2	8	6	2	2	2

Note: NR = No Response, NE = No effect, ME = Minor effect, N = Neutral, MOE = Moderate effect, MAE = Major effect.

(table continues)

Table 32 (continued)

Item Statement	Frequency of Responses					
	NR	NE	ME	N	MOE	MAE
Changing social media platforms popularity.	2	8	7	3	0	2
Fear of posting something incorrect or unprofessional.	2	10	4	2	2	2
Lack of online communication skills.	2	11	3	2	2	2
Number of characters of content that can be created.	2	11	3	3	1	2
Social media interface layout and its navigation system.	2	12	1	2	3	2
Lack of high-speed Internet access.	3	16	1	1	0	1
Lack of a reward structure to recognize Extension employees for using social media.	3	11	2	1	4	1
Lack of organizational standards for social media account.	2	8	4	3	4	1
Fear of losing or alienating current clients.	2	14	2	1	2	1
Lack of specific method(s) to archive social media posts and reports.	2	12	2	2	3	1
Available social media platforms do not fit Extension needs.	2	13	2	2	2	1

Note: NR = No Response, NE = No effect, ME = Minor effect, N = Neutral, MOE = Moderate effect, MAE = Major effect.

(table continues)

Table 32 (continued)

Item Statement	Frequency of Responses					
	NR	NE	ME	N	MOE	MAE
Lack of ability to create quality graphics.	2	9	2	4	4	1
Lack of ability to take quality photos.	2	12	1	4	2	1
Lack of ability to create videos.	2	9	1	4	5	1
Number and type of commercial advertisements on social media platforms.	2	11	2	3	3	1
Insufficient privacy and security options.	2	10	2	4	3	1
Lack of understanding on copyright issues.	2	13	5	1	1	0
Legal and confidentiality risks to the Extension organization.	2	14	2	2	2	0
Lack of organizational technical support.	2	11	4	2	3	0
Lack of organizational administrative support.	2	14	2	3	1	0
Lack of organizational plan to use social media.	2	7	5	3	5	0
Lack of guidelines and monitoring in social media services.	2	7	4	4	5	0

Note: NR = No Response, NE = No effect, ME = Minor effect, N = Neutral, MOE = Moderate effect, MAE = Major effect.

(table continues)

Table 32 (continued)

Item Statement	Frequency of Responses					
	NR	NE	ME	N	MOE	MAE
Lack of knowing about policies on appropriate use of social media.	2	7	4	2	7	0
Lack of computers or equipment for Extension agents in their Extension offices.	2	18	2	0	0	0
Lack of adequate Internet access.	2	15	3	2	0	0
Fear of losing Extension program-funding.	3	17	2	0	0	0

Note: NR = No Response, NE = No effect, ME = Minor effect, N = Neutral, MOE = Moderate effect, MAE = Major effect.

Principal Component Analysis

To reduce the number of items and clarify the structure of organizational and social media barriers to identify factors affecting social media use, the principal component analysis was used. The Factor program, version 10.5.03, was used to conduct the principal component analysis (Lorenzo-Seva & Ferrando, 2006). The researcher applied the same procedures and standards in the previous principal component analysis on the statements in this scale. The scale items were collected from previous studies, and this scale contained 37 statements related to some barriers affecting the use of social media in organizations. The number of participants who responded to all statements in the scale was 135 social media users. The sample size exceeded the required sample size of 100 participants.

Data Suitability

In the beginning, the researcher checked the suitability for principal component analysis, and those included the correlation matrix, Kaiser-Meyer-Oklin test, and Bartlett's test (Pallant, 2007). The inspection of the correlation matrix revealed that there were many correlation coefficients more than .3 and above (Tabachnick & Fidell, 2007). This result indicated that the correlation matrix was not an identity matrix and all items were correlated. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .88, and all KMO values for individual items were greater than the acceptable limit of .50 (Hair et al., 2010). The result of the Bartlett's test was (Bartlett's statistic = 4165.2 (df = 666; p < .001)). According to the results, the data set was appropriated to conduct principal component analysis.

Retaining

The standards that were used to assist in the decision regarding the number of factors to retain were Kaiser's criterion or eigenvalue rule, scree test, and parallel analysis. The result showed that ten factors had eigenvalues over Kaiser's (1960) criterion of 1 and in combination explained 76.67% of the variance (Appendix H). The scree plot showed the line starts to create elbow after factor 5, and after factor 7, the line started to flatten (Figure 5). It was clear that five or six factors could be retained. Parallel analysis showed ten components with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (37 variables x 135 respondents), and the advice number of the components to retain was five (Appendix H). From that, it was decided to retain five components for further investigation.

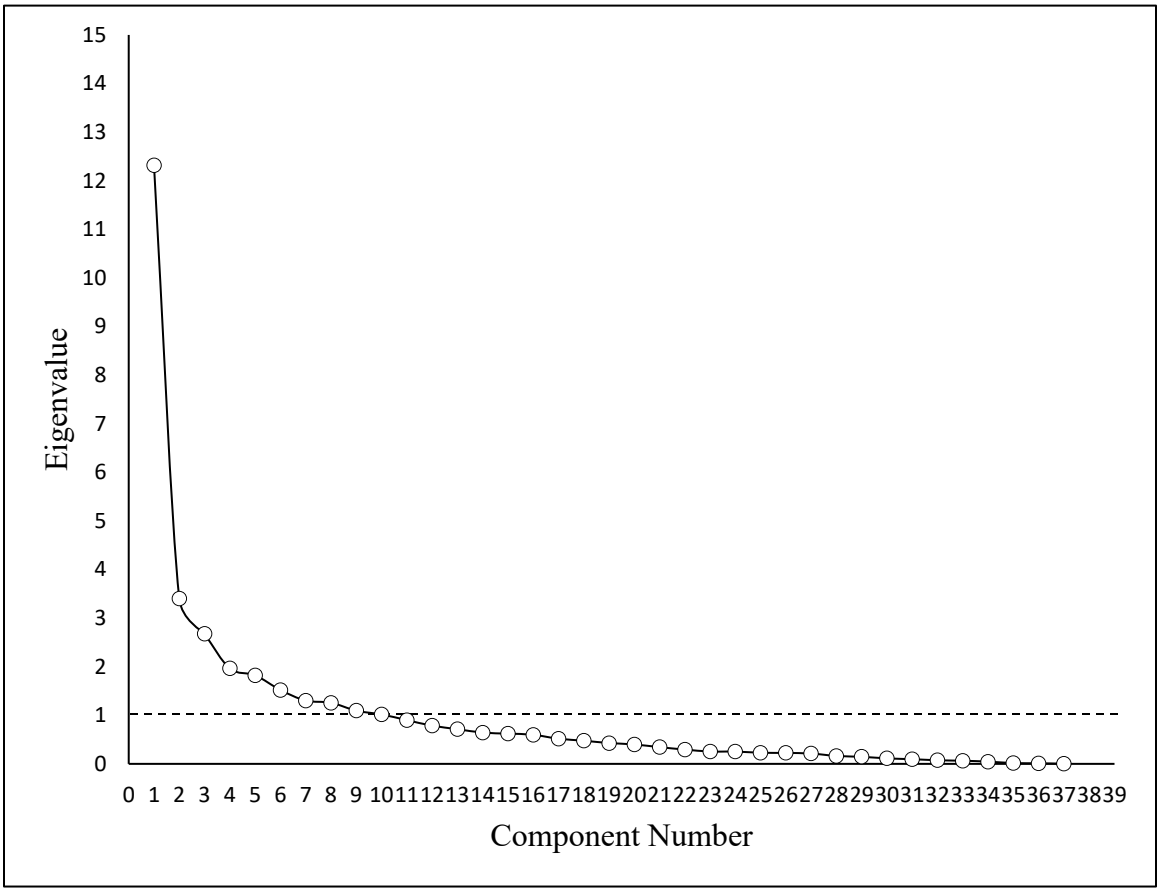

Figure 5 Scree plot for the ten factors solution

Extracting and Rotation Methods

Principal component analysis was utilized with polychoric correlation and the direct oblimin rotation. Table 33 presents the factor loadings, eigenvalues, percent of variance, and Cronbach's alpha for the five components after extracted and rotated. This 5-components simple structure explained 81.4% of the variance and used 19 (51.4%) of the original 37 items. The five components explained 50.12%, 12.80%, 7.71%, 5.98%, and 4.75% of the total variance, respectively. The five components displayed many strong loadings and all variables loaded substantially on only one component (Table 33).

The Cronbach's alpha for the five factors ranged from .814 to .914, the reliability values were above the recommended value of 0.7 (Henseler et al., 2009).

Eighteen items did not load on the five factors. Those items included “Lack of understanding on copyright issues,” “Legal and confidentiality risks to the Extension organization,” “Lack of knowing about policies on appropriate use of social media,” “Fear of losing or alienating current clients,” “Lack of interest to use social media,” “Composition and demographics of Extension Service clients,” “Fear of losing Extension program-funding,” “Unreliability of social media platforms from the client's point of view,” “Exposure to computer viruses,” “Lack of specific method(s) to archive social media posts and reports,” “Inadequate training opportunities on social media platforms,” “Changing social media platform popularity,” “Available social media platforms do not fit Extension needs,” “Fear of posting something incorrect or unprofessional,” “Lack of necessary knowledge and skills for using social media effectively,” “Lack of time to prepare and update content for social media,” “Lack of online communication skills,” and “Lack of time to learn about updated tools on social media.”

Table 33 Factor loadings after rotation of the five factors, eigenvalues, percent of variance explained, and Cronbach's alpha

Item Statement	Rotated Factor Loading				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Factor 1- SM Characteristics					
Number of characters of content that can be created.	**.896**	-0.024	0.011	-0.090	0.055
Insufficient privacy and security options.	**.798**	-0.103	0.007	0.217	0.093
Social media interface layout and its navigation system.	**.780**	0.257	0.078	-0.046	-0.126
Number and type of commercial advertisements on social media platforms.	**.758**	0.046	0.030	0.168	-0.018
Factor 2- Organizational Support					
Lack of organizational plan to use social media.	-0.101	**.954**	-0.012	0.162	-0.035
Lack of organizational administrative support.	-0.008	**.864**	0.023	-0.135	0.118
Lack of organizational standards for social media account.	0.079	**.857**	-0.080	0.121	0.083

Note: Factor loading > .40 appear in bold. Method of rotation: Direct Oblimin. SM = Social Media, Clients' I & S = Clients' Interest and Skills, Availability of E & I = Availability of Equipment and the Internet.

(table continues)

Table 33 (continued)

Item Statement	Rotated Factor Loading				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Lack of a reward structure to recognize Extension employees for using social media.	0.068	**.806**	0.061	-0.031	-0.110
Lack of organizational technical support.	0.033	**.766**	0.123	-0.123	0.125
Lack of guidelines and monitoring in social media services.	0.170	**.724**	0.027	0.044	0.045
Factor 3- Graphic Skills					
Lack of ability to create videos.	-0.022	0.025	**.944**	0.052	-0.015
Lack of ability to create quality graphics.	0.012	0.045	**.902**	0.002	-0.062
Lack of ability to take quality photos.	0.045	-0.075	**.851**	0.048	0.124
Factor 4- Clients' I & S					
Lack of interest from clients to use social media.	0.056	0.098	0.046	**.796**	0.107
Clients lack skills to use social media.	0.108	0.007	0.104	**.796**	0.064

Note: Factor loading > .40 appear in bold. Method of rotation: Direct Oblimin. SM = Social Media, Clients' I & S = Clients' Interest and Skills, Availability of E & I = Availability of Equipment and the Internet.

(table continues)

Table 33 (continued)

Item Statement	Rotated Factor Loading				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Not knowing which social media platform is preferred by clients.	0.133	0.108	0.289	**.564**	-0.113
Factor 5- Availability of E & I					
Lack of adequate Internet access.	0.017	0.016	-0.035	0.040	**.976**
Lack of high-speed Internet access.	-0.032	0.066	0.034	0.078	**.914**
Lack of computers or equipment for Extension agents in their Extension offices.	0.178	0.136	0.284	-0.297	**.560**
Eigenvalues	9.523	2.432	1.465	1.136	.903
% of variance	50.12	12.80	7.71	5.98	4.75
Cronbach's alpha	.862	.914	.878	.814	.849

Note: Factor loading > .40 appear in bold. Method of rotation: Direct Oblimin. SM = Social Media, Clients' I & S = Clients' Interest and Skills, Availability of E & I = Availability of Equipment and the Internet.

Once the components were identified, the components were named according to the content of the statements. Items with higher loadings on the component played a bigger role in naming the component. The five components were named as follows:

Factor 1: Social Media Characteristics: this component contained items related to some features of social media platforms that might affect the use of social media by Extension

faculty and agents, and those included number of characters of content, privacy and security, commercial advertisements' types, and navigation system and interface layout.

Factor 2: Organizational Support: this factor included items related to the organization administrative support, plan, standards, reward structure, technical support, guidelines and monitoring.

Factor 3: Graphic Skills: this component contained items related to Extension specialists' and agents ability to create videos, quality graphics, and take quality photos.

Factor 4: Clients' Interest and Skills: this factor included items linked to clients, such as clients lack of interest, skills, and preferred social media site.

Factor 5: Availability of Equipment and the Internet: this component contained items related to the availability of Internet access, high-speed Internet, and computers or equipment for Extension faculty and agents.

As shown in Table 34, there was a substantial positive relationship between social media characteristics and graphic skills (r = .603). In addition, there was a moderate positive relationship between organizational support and social media characteristics (r = .480). A moderate positive relationship was found between graphic skills (r = .470) and organizational support, and there was a positive relationship between availability of equipment and the Internet factor (r = .447) and organizational support. Other relationships between variables ranged from moderate to low.

Table 34 Polychoric intercorrelation matrix for the five factors that influence using social media

Factor	1	2	3	4	5
1. Social Media Characteristics	1				
2. Organizational Support	.480	1			
3. Graphic Skills	.603	.470	1		
4. Clients' Interest and Skills	.397	.206	.337	1	
5. Availability of Equipment and the Internet	.269	.447	.353	.122	1

Table 35 presents the means and standard deviations for the five factors that affecting social media use for social media users and nonusers. To understand which factor ranked by participants had the most effect on using social media, the mean for each factor was calculated by summation the factor statements scores and divided the total scores by the number of statements. Clients' interest and skills factor had the highest mean for social media users (M = 2.85, SD = 1.06) and nonusers (M = 2.78, SD = 1.35), and it was in range of neutral. For social media users, other factors mean ranged between 2.31 and 2.42, and they were in the range of minor effect on using social media by Extension faculty and agents. Social media nonusers' factors ranged from 1.28 to 2.07. Three factors were in the range of minor effect, and these are organizational support (M = 2.07, SD = .810), graphic skills (M = 2.22, SD = 1.24), and social media characteristics (M = 2.08, SD = 1.23). The availability of equipment and the Internet factor was in the range of no effect (M = 1.28, SD = .565).

Table 35 Means and standard deviations for the five factors that influence using social media

Factor	Social media users (n = 135)		Social media nonusers (n = 20)	
	M	*SD*	*M*	*SD*
Clients' Interest and Skills	2.85	1.06	2.78	1.35
Organizational Support	2.42	1.14	2.07	.810
Graphic Skills	2.41	1.10	2.22	1.24
Social Media Characteristics	2.35	1.01	2.08	1.23
Availability of Equipment and Internet	2.31	1.20	1.28	.565

Note: 1 = No effect, 2 = Minor effect, 3 = Neutral, 4 = Moderate effect, 5 = Major effect. The mean score for the five factors was interpreted using 1 to 1.5 (No effect), 1.51 to 2.5 (Minor effect), 2.51 to 3.50 (Neutral), 3.51 to 4.50 (Moderate effect), and 4.51 to 5 (Major effect).

Summary

Clients' interest and skills was only the factor that had the highest mean for social media users and nonusers, but it was in the range of neutral (undecided). For social media users, four factors were in the range of minor effect on using social media by Extension faculty and agents, and these are organizational support, graphics skills, social media characteristics, and availability of equipment and Internet. However, three factors were in range of minor effect for social media nonusers. These are organizational support, graphic skills, and social media characteristics. The availability of equipment and the Internet factor was in the range of no effect.

Relationships Between the Study Variables

In this study, objective four sought to examine the relationships between Extension employees' attitudes toward social media and the following selected variables: Extension specialists' and agents social media usage, demographic characteristics, perceived usefulness, social media self-efficacy (Facebook and Twitter), social media characteristics, organizational support, graphic skills, clients' interest and skills, and the availability of equipment and the Internet. For analysis purposes, the total scores of the eight subscales were treated as interval levels of measurement.

To assess the relationships between attitude toward social media and the study variables, point-biserial correlation, Pearson product moment correlation, Spearman's rho correlation, independent-samples *t*-test, and Eta (η) were calculated. Eta (η) values were calculated using the one-way analysis of variance (ANOVA). A multiple regression analysis was utilized to predict Extension specialists' and agents attitudes toward social media as well as to assess the effect of the variables in the study on participants' attitudes toward using social media in Extension.

In addition, a series of discriminant function analyses were applied to predict Extension faculty and agents' demographics from perceived usefulness, attitude toward using social media, Facebook self-efficacy, social media characteristics, organizational support, graphic skills, clients' interest and skills, and the availability of equipment and the Internet. The results of discriminant function analyses are presented in Appendixes I and J.

Individual Factors

For social media users, individual factors included demographics and social media self-efficacy (Facebook and Twitter). The relationships between the individual factors and Extension faculty and agents' attitudes toward social media were assessed using Point-biserial correlation, Pearson product moment correlation, Spearman's rho correlation, independent-samples *t*-test, and Eta (η). Eta (η) values were calculated using the one-way analysis of variance (ANOVA).

For social media nonusers, the relationships between attitude toward using social media and their personal and professional demographics was not calculated because of the small number of respondents who did not use social media (n = 20). In addition, social media nonusers did not participate in the social media self-efficacy scale.

Personal and Professional Demographics

Extension specialists' and agents personal and professional demographics include gender, age, levels of education, current MSU-E position, years in the profession, geographic region, and social media experience.

Gender

A point-biserial correlation coefficient (r_{pb}) was utilized to evaluate the relationship between participants' attitudes toward using social media in Extension and their gender. A nonsignificant relationship was found between participants attitudes toward using social media in Extension and gender, r_{pb} (134) = -.042, p = .627 (two-tailed). The effect size was small, r_{pb} = -.042.

Current MSU-E Position

An independent-samples *t*-test was conducted to test the hypothesis that the attitudes of Extension faculty and agents toward using social media in Extension were not different from each other (Table 36). There was no significant difference between Extension specialists' ($M = 4.06$, $SD = .71$) and agents ($M = 4.09$, $SD = .82$) attitudes toward using social media in Extension, $t(132) = -.172$, $p = .864$, *Cohen's d* = .039. However, the Cohen's *d* value was less than the Cohen's minimum standard ($d \geq .20$) to be a "small" effect size.

Table 36 Differences of specialists' and agents attitudes toward using social media in Extension in terms of their current MSU-E position (n = 134)

Current position	*n*	*M*	*SD*	*t*	*df*	*p (two-tailed)*	*Cohen's d*
Specialists	44	4.06	.71	-.172	132	.864	.039
Agents	90	4.09	.82				

Age Groups

A Spearman's rho correlation coefficient (r_s) was conducted to calculate the relationship between attitude toward social media and age. The result showed that there was a nonsignificant relationship between attitude toward using social media in Extension and participants' age, r_s (132) = -.102, $p = .246$ (two-tailed), small effect size, $r_s = -.102$.

Level of Education

To assess the relationship between Extension specialists' and agents attitude toward using social media in Extension and their education level, a Spearman's rho correlation coefficient (r_s) was conducted. The result revealed a nonsignificant relationship between level of education and attitude toward social media, r_s (133) = -.040, p = .644 (two-tailed). The effect size was small, r_s = -.040.

Years in the Profession

Spearman's rho correlation coefficient (r_s) was conducted to evaluate the relationship between participants' years in the profession and attitude toward using social media in Extension. The result showed that there was a nonsignificant relationship between experience in Extension work and attitude toward social media, r_s (124) = .040, p = .660 (two-tailed), small effect size, r_s = .040.

Geographic Location

Eta value (η) was calculated to assess the strength of the relationship between geographical location and attitude toward social media. The eta (η) or the correlation ratio measures the degree of association between two variables (Richardson, 2011). To calculate the value of eta (η), the one-way analysis of variance (ANOVA) was conducted.

A one-way analysis of variance was conducted to test the hypothesis that there is no difference in the attitudes of Extension faculty and agents toward using social media in Extension in terms of their geographic location (where they serve). The result revealed that there was no significant difference in attitude toward using social media in Extension between participants who serve the entire state (M = 4.13, SD = .83), northeast region (M

= 4.20, *SD* = .69), Delta region (*M* = 4.23, *SD* = .66), coastal region (*M* = 3.78, *SD* = .96), and the central region (*M* = 4.08, *SD* = .67), $F(4, 129) = 1.442$, $p = .224$, $\eta^2 = .043$, $\eta = .207$. However, the eta-squared (η^2), a measure of effect size, indicated a small effect (Cohen, 1988). Extension specialists' and agents attitudes toward using social media in Extension means and standard deviations by geographic location is presented in Table 37, and the result of one-way analysis of variance is displayed in Table 38.

Table 37 Extension specialists' and agents attitudes toward using social media in Extension means and standard deviations by geographic location

Geographical Location	*n*	*M*	*SD*
The entire state	30	4.13	.83
Northeast Region	29	4.20	.69
Delta Region	24	4.23	.66
Coastal Region	27	3.78	.96
Central Region	24	4.08	.67

Table 38 A one-way analysis of variance (ANOVA) result for participants' geographic location

	Sum of Squares	*df*	*Mean Square*	*F*	*p*	η^2
Between Groups	3.467	4	.867	1.442	.224	.043
Within Groups	77.55	129	.601			
	81.017	133				

Social Media Experience

A Spearman's rho correlation coefficient (r_s) was conducted to assess the relationship between Extension specialists' and agents attitudes toward using social media in Extension and their experience in social media use. There was a significant low positive relationship between participants' attitudes toward using social media in Extension and their experience in using social media, r_s (134) = .23, p = .008 (two-tailed). The effect size was small (r_s = .23).

Social Media Self-Efficacy

A series of Pearson product-moment correlations was used to measure the relationships between Extension specialists' and agents attitudes toward using social media and social media self-efficacy (Facebook and Twitter). First, correlation analysis was utilized to determine the relationship between the total scores on the attitude toward social media and Facebook self-efficacy. The second correlation analysis was used to examine the relationship between participants' attitudes toward social media and their Twitter self-efficacy. The third correlation analysis was utilized to investigate the relationship between attitude toward social media and social media self-efficacy (Facebook + Twitter).

No significant relationships were found between participants' attitudes toward using social media in Extension and their Facebook and Twitter self-efficacy. The relationship between Extension specialists' and agents attitudes toward using social media and their Facebook self-efficacy was a nonsignificant relationship, r (94) = .185, p = .075 (two-tailed). The effect size was small (r = .185). There was also a nonsignificant relationship between respondents' attitudes toward using social media and their Twitter

self-efficacy, r (36) = .030, p = .861 (two-tailed). The effect size was small, r = .030. Furthermore, there was a nonsignificant relationship between participants' attitudes toward using social media and their social media self-efficacy (Facebook + Twitter), r (130) = .141, p = .106 (two-tailed), small effect size r = .141.

Organizational Factors

Organizational factors influence Extension faculty and agents' attitudes toward using social media in Extension. For participants who use social media, organizational factors include perceived usefulness, availability of equipment and the Internet, organizational support, clients' interest and skills, and graphic skills. For social media nonusers, organizational support, graphic skills, clients' interest and skills, availability of equipment and the Internet were the organizational factors.

The relationships between organizational factors and the attitude of Extension faculty and agents were investigated using a Pearson product-moment correlation on the total scores of these subscales for social media users and nonusers. Participants attitudes toward using social media in Extension was the dependent variable, and organizational factors served as independent variables for social media users and nonusers.

Social Media Users

The result of the Pearson correlation revealed a significant moderate positive relationship between attitude toward social media and perceived usefulness, r (135) = .47, p < .001 (two-tailed). The effect size was a medium (r = .47). The relationship between attitude toward social media and clients' interest and skills was a low significant negative relationship, r (135) = -.17, p = .046 (two-tailed). The effect size was small (r = -.17).

The variables equipment and the Internet, organizational support, and graphic skills had a nonsignificant relationship with the attitude toward social media. These variables' effect sizes were small effect sizes (Cohen, 1988). Table 39 presents the results of the Pearson product-moment correlation coefficients.

Table 39 Pearson correlations between attitude toward using social media and organizational factors in the study (n = 135)

Variable	*Pearson's r*	*p (two-tailed)*
Perceived Usefulness	.47*	< .001
Equipment and Internet	.13	.136
Organizational Support	.09	.293
Graphic Skills	.01	.899
Clients' Interest and Skills	-.17*	.046

Note: The strength of relationships was assessed using Davis' (1971) coefficient conventions: r = .00 to .09 (Negligible), r = .10 to .29 (Low), r = .30 to .49 (Moderate), r = .50 to .69 (Substantial), or r = .70 to 100 (Very Strong). The effect size for the correlation coefficient r was interpreted using Cohen's (1988): r = .10 (Small), r = .30 (Medium), or r = .50 (Large) effect size. *p < .001, **p < .05.

Social Media Nonusers

For social media nonusers, the relationship of the attitudes of Extension faculty and agents toward using social media in Extension and organizational support, graphic skills, clients' interest and skills, and the availability of equipment and the Internet factors were not significant. The results of the Pearson product-moment correlations are presented in Table 40. All effect sizes for the relationships were small (Cohen, 1988).

Table 40 Pearson correlations between attitude toward using social media and organizational factors in the study (n = 20)

Variable	*Pearson's r*	*p (two-tailed)*
Equipment and the Internet	-.043	.856
Organizational Support	.041	.863
Graphic Skills	.129	.587
Clients' Interest and Skills	-.059	.805

Note: The strength of relationships was assessed using Davis' (1971) coefficient conventions: r = .00 to .09 (Negligible), r = .10 to .29 (Low), r = .30 to .49 (Moderate), r = .50 to .69 (Substantial), or r = .70 to 100 (Very Strong). The effect size for the correlation coefficient r was interpreted using Cohen's (1988): r = .10 (Small), r = .30 (Medium), or r = .50 (Large) effect size. *p < .001, **p < .05.

Social Media Factor

To evaluate the relationship between the attitudes of participants and the social media characteristics factor, the Pearson product-moment correlation was conducted for both social media users and nonusers. For social media users, the result revealed a nonsignificant relationship between attitude toward using social media and social media characteristics, r (135) = .056, p = .052 (two-tailed). According to Cohen's criteria, the effect size was small (r = .056). However, for social media nonusers, a nonsignificant relationship was found between the attitudes of Extension faculty and agents toward using social media in Extension and social media characteristics, r (20) = -.311, p = .182 (two-tailed). The result of the relationship was not significant, but the effect size was medium (r = -.311) (Cohen, 1988).

Social Media Usage

To assess the relationship between attitude toward social media and the time spent on social media updating posts, number of changes or edits performed, and the number of times checking for updating information on social media, the Spearman's rho correlation coefficient was applied on these variables. All three variables were measured using a 5 points scale. These points were 0 to 2, 3 to 6, 7 to 10, 11 to 15, and more than 15.

Participants were asked to identify the time (hours/week) that they spent updating posts by using the 5 points scale above. Two groups were eliminated from the analysis due to the small number of respondents in each one, and these were 11 to 15 and more than 15 hours per week. These two groups contained only one participant in each category. A nonsignificant relationship was found between attitude toward social media and the time spent each week updating posts on social media account(s), r_s (132) = .060, p = .498 (two-tailed). The effect size was small, r_s = .060.

The responses on the question that asked Extension faculty and agents to determine how many changes or edits they performed per week on social media account(s) was analyzed using the Spearman correlation coefficient. The number of changes or edits performed per day variable involved three groups 0 to 2, 3 to 6, and 7 to 10. There were no respondents in the 11 to 15 group, and the group of more than 15 times had only one response. These two groups were excluded from the analysis.

The result showed that there was a nonsignificant relationship between attitude toward using social media and the number of changes or edits participants performed per week on their social media accounts, r_s (134) = .039, p = .653 (two-tailed). The effect size was small, r_s = .039.

The number of times per day that participants checked for updates in work-related social media accounts by others was one of the questions that were asked to Extension faculty and agents. The variable number of times checked for updating information on social media contained three groups, 0 to 2, 3 to 6, and 7 to 10. Two groups were eliminated from the analysis due to lack of responses. The groups of 11 to 15 and more than 15 were contained only one response in each one.

To test the relationships between attitude toward using social media and the number of times per day checking for updating information on social media accounts, Spearman's rho correlation coefficient was calculated. A significant low positive relationship was found between the number of times per day checking for updates on social media accounts and participants' attitudes toward using social media in Extension, r_s (130) = .23, p = .008 (two-tailed), small effect size, r = .23.

Overall Factors

The current study examined three factors that influence participants' attitudes toward using social media in Extension based on the social cognitive theory and technology acceptance model. These factors include individual, social media, and organizational factors. Two multiple regression analyses were conducted on these factors to assess their impacts on Extension faculty and agents attitude toward using social media in Extension.

A multiple regression analysis with enter method was conducted to determine the factors that affect the attitudes of social media users toward using social media in Extension. Participants' attitude toward social media served as the dependent variable, and the independent variables were gender, age groups, levels of education, job title or

position, years in the profession, geographic region (location), social media experience, perceived usefulness, social media characteristics, organizational support, clients' interest and skills, graphic skills, and availability of equipment and the Internet. Gender, age groups, levels of education, job title or position, years in the profession, geographic region (location), and social media experience were dummy coded variables.

The result revealed that the overall model was significant, $F(22, 94) = 2.353$, $p = .002$, $R = .596$, $R^2 = .355$. This model explained 35.5% of the variance in Extension specialists' and agents attitudes toward using social media in Extension. All variables in the model were not significant except perceived usefulness ($\beta = .399$, $p = .001$) and clients' interest and skills ($\beta = -.241$, $p = .038$).

After eliminating the demographic variables (gender, age groups, levels of education, job title or position, years in the profession, and geographic location) from the model, the second multiple regression using a backward deletion method was conducted. The result revealed that the first and the final model were significant (first model, $F(6, 128) = 7.538$, $p < .001$, $R = .511$, $R^2 = .261$); final model $F(3, 131) = 14.740$, $p < .001$, $R = .502$, $R^2 = .252$. The final model explained 25.2% of the variance. In the final model perceived usefulness ($\beta = .443$, $p < .001$), clients' interest and skills ($\beta = -.196$, $p = .039$), and social media characteristics ($\beta = .197$, $p = .035$) were significant predictors for participants' attitudes toward using social media in Extension. The result of the final model is presented in Table 41.

Table 41 Backward multiple regression final model for the study variables

	B	*STE*	*β*
Constant	9.089	1.583	
Perceived usefulness	.243	.042	.443**
Clients' interest and skills	-.192	.092	-.196*
Social media characteristics	.152	.071	.197*

Note: First model: $R^2 = .261$, *Adjusted* $R^2 = .226$, $F(6, 128) = 7.538$, $p < .001$. Final model: $R^2 = .252$, *Adjusted* $R^2 = .235$, $F(3, 131) = 14.740$, $p < .001$. **$p < .001$, *$p < .05$.

Summary

For social media users, only one individual factor related to participants' attitudes toward using social media in Extension. This factor was respondents' experience in social media use. For organizational factors, perceived usefulness, and clients' interest and skills were only the factors that had significant relationships with attitude toward using social media. In addition, there was a significant relationship between the number of times per day for checking updates on social media accounts and participants' attitudes toward using social media in Extension. The results of the multiple regression revealed that perceived usefulness, clients' interest and skills, and social media characteristics were the factors that influence Extension specialists' and agents attitudes toward using social media in Extension.

CHAPTER V

SUMMARY, DISCUSSIONS AND CONCLUSIONS, AND RECOMMENDATIONS

This chapter was organized in four sections. These sections included the summary, discussions and conclusions, implications, and recommendations for future studies. The summary part divided into the study purpose and objectives, summary of procedures, and summary of findings.

Summary

Social media has become an important part of most organizations' and individuals daily routine as it provides a significant method of communicating (Lovejoy et al., 2012; Waters et al., 2009). Social media aids people to distribute a varied range of information by creating and sharing content across a variety of platforms, such as Facebook, Twitter, and Instagram. Extension workers utilized social media in Extension organizations to communicate and share information with clients (Hopkins, 2013; Lewis, 2014). In Mississippi, Extension educators utilized some technology in youth development programing such as Facebook and Twitter (McClure et al., 2014).

Several studies have identified some factors influencing users' attitudes toward using technology, and these factors included demographic characteristics (Ellins & Porter, 2005; Mazman & Usluel, 2011; Morris, & Venkatesh, 2000; Porter & Donthu, 2006), self-efficacy (Rohaan et al., 2012), technology features or characteristics (Shin & Kim, 2008), and perceived usefulness (Davis, 1993). There is a relationship between

technology use and attitude toward using the technology. Increasing attitude toward the technology leads to increasing the use of technology (Yang & Yoo, 2003). Studies have presented several factors influencing the use of technology in Extension organizations, and these include organizational structure (Seger, 2011), time, money, training, control, the fear of losing traditional clientele (Diem et al., 2009; Newbury et al., 2014), and technical support (Redmann & Kotrlik, 2004). These variables may play an important role in Extension employees' attitudes toward the use of social media in Extension. From that, this research aims to identify extension employees' demographics, self-efficacy, perceived usefulness, organizational and social media barriers to investigate the factors influencing Extension Employees' attitudes toward social media in Extension.

The Study Purpose and Objectives

The purpose of this study was to investigate what social media platform Extension employees were using as a communication tool to deliver educational programs, and to examine factors affecting Extension employees' attitudes toward using social media with Mississippi State University Extension.

The four objectives for this study included the following

1. Describe the Extension employees' personal and professional characteristics.
2. Determine the usage of social media platforms, Extension employees' attitudes toward using social media, perceived usefulness, and social media self-efficacy.
3. Identify different factors affecting the use of social media by Extension employees.

4. Examine the relationships between Extension employees' attitudes toward using social media and the following selected variables: Extension employees' social media usage, the barriers, the personal and professional characteristics, perceived usefulness, and self-efficacy.

Summary of Procedures

A survey research method was utilized to collect the data for the study. The study population was all Extension faculty and agents in Mississippi in August 1, 2017. All Extension faculty (specialists) and agents (N = 290) were studied. The questionnaire used to collect the study data from Extension specialists and agents was developed by the researcher (Appendix B). Data collection took approximately one month between August 21, 2017 and September 20, 2017. One-hundred seventy Extension faculty and agents participated in the study for a response rate of 58.6%. Descriptive statistics were used to summarize and organize the data. Frequencies and percentages were used to describe the data of the total participants (N = 170) without eliminating incomplete surveys. A total of 15 surveys were eliminated from the principal component analysis due to the lack of complete responses.

Two principal component analyses were conducted to clarify the structure, identify factors affecting the use of social media, and reduce the number of statements in the four study scales. Principal component analyses were conducted on the complete data of social media users after excluding incomplete responses. The first principal component analysis was utilized on Extension employees' attitudes toward using social media in Extension, Facebook self-efficacy, perceived usefulness (n = 94). The second principal component analysis was conducted on organization and social media scales to identify factors affecting social media use (n = 135). Frequencies, percentages, means, and

standard deviations were utilized to describe the data of the components after principal component analysis.

Measures of association were used to determine the nature and strength of the relationship between variables. Point-biserial correlation, Pearson product moment correlation, Spearman's rho correlation, and Eta (η) were calculated. Eta (η) values were calculated using the one-way analysis of variance (ANOVA). An independent-samples *t*-test was utilized to compare the differences in Extension faculty and agents' attitudes toward using social media in Extension. Davis' (1971) convention was used to describe measures of association. Two multiple regression analyses were used to find out the variables influencing Extension specialists' and agents attitudes toward using social media in Extension and identify the best variables predicting attitude toward using social media.

Summary of Findings

This section is divided into seven sections, and these are participants' demographics, social media use, social media self-efficacy, perceived usefulness, attitude toward social media, organizational and social media factors, and the relationships between the study variables.

Extension Employees' Demographics

Geographically, responses were distributed around the state of Mississippi. Over one-fourth of participants served in the entire state of Mississippi (25.9%, $f = 44$), and an equal percentage served the Northeast Region, Costal Region, or the Central Region (17.6%, $f = 30$). Only (14.8%, $f = 25$) of respondents served in the Delta Region. The

largest percentage 58.2% ($f = 99$) of the participants identified themselves as Extension agents, while 10.6% ($f = 18$) were professors, 6.5% ($f = 11$) were associate professors, 11.8% ($f = 20$) were assistant professors, and 5.9% ($f = 10$) were Extension instructors. Extension employees who respondents were white with almost an equal percentage of female 46% ($f = 78$) and male 47 % ($f = 80$) employees. The age of participants ranged from less than 25 to over 65 years old, and with 51.2% in the age range of 25 to 44 years old ($f = 87$). Approximately, 42.4% ($f = 72$) were 45 to 65 years of age or older.

Most respondents, (48.8% or $f = 83$) held a master's degree, while approximately one-third (33.5% or $f = 57$) had achieved a doctorate. More than half of the participants had worked for less than 5 to 10 years ($f = 86$) with Mississippi State University Extension. Most of participants had program responsibilities in either Agricultural and Natural Resources (54.7%, $f = 93$) and 4-H Youth Development (52.4%, $f = 89$).

Social Media Use

Extension faculty and agents utilized social media for professional purposes with Mississippi State University Extension, but there was a small group (12.9% or $f = 22$) of Extension specialists and agents who did not use social media.

Social media users utilized social media for many purposes, including sharing information with clients (95.3%, $f = 141$), distributing announcements to clients about upcoming events and programs (89.2%, $f = 132$), generating interest in Extension programs (78.4%, $f = 116$), sharing different files such as videos, photos, audios, and other formats with clients (52.7%, 78), and enhancing interaction between Extension professionals and clients (44.6%, $f = 66$). They utilized Facebook (76.5%, $f = 130$) and Twitter (42.4%, $f = 72$) platforms the most. Smartphones and public-work computers

(laptop, desktop) were the most common devices used to connect to social media by Extension faculty and agents. Half of the Extension specialists and agents had 3 to 6 years of experience using social media for professional purposes. They spent 0 to 2 hours per week updating posts on their social media accounts, performed 0 to 2 changes or edits per week on social media accounts, and checked their accounts 0 to 2 times per day for updates on their social media sites.

Participants learned how to use social media for work-related activities through "Self-study," "On-the-job experience," and "Interaction with other professionals." More than fifty percent of participants learned how to use social media by "Attending a training-workshop." Most of them got their training in Mississippi, and a small number got their training in other states. For future training, Extension faculty and agents prefer "Face-to-face training or workshop" to learn how to use social media for professional purposes.

Social Media Self-efficacy

The most comfortable social media platform used was Facebook with 70.2% (f = 104) of the participants. Twitter was the lesser-used social media platform respondents used only by (25.7%, f = 38) of participants.

Social media self-efficacy (Facebook and Twitter) was measured on a five-point Likert-type scale of 1 (Strongly Disagree) to 5 (Strongly Agree). For Facebook self-efficacy, the mean score of Extension specialists and agents was in the range of agree (M = 3.63, SD = 0.83). Twitter self-efficacy mean score of faculty and agents was in the range of neutral (M = 3.30, SD = 0.89). The results imply that the Extension faculty and agents tended to show higher self-efficacy on Facebook more than Twitter.

Perceived Usefulness

A five-point Likert-type scale was used to measure participants' perceptions of the usefulness of social media in Extension. The mean score of respondents was in the range of agree (positive) on the usefulness of social media (M = 3.84, SD = 0.71). From that, Extension faculty and agents have a positive perception of the usefulness of social media in Extension.

Attitude Toward Social Media

Participants' attitudes toward using social media in Extension was measured using a five-point Likert-type scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). For social media users, the mean score of the four statements of attitude toward using social media was in the range of agree (positive) (M = 4.08, SD = .78). Social media nonusers' attitudes toward using social media was in the range of agree (positive) (M = 3.56, SD = 0.70). Extension faculty and agents had a favorable attitude toward using social media in Extension for both groups of users and nonusers.

There was a significant difference between the users of social media (M = 4.08, SD = .78) and nonusers (M = 3.56, SD = .70) in attitude toward using social media in Extension, $t(153) = -2.80$, p = .006, Cohen's d = .69. Extension faculty and agents who use social media had more favorable attitudes toward using social media in Extension than those who did not use social media for professional purposes.

Organizational and Social Media Factors

Principal component analysis identified five factors that influence Extension specialists' and agents social media use. A five-point Likert-type scale was used to measure participants' perceptions of the factors that are influencing social media use in Extension. In the following parts, a summary is provided for each factor based on the exact statements that loaded on each factor during principal component analysis for social media users' data.

Clients' interest and skills involved items linked to clients, such as clients lack of interest, skills, and preferred social media site. The three statements used to reflect this factor included “Lack of interest from clients to use social media,” “Clients lack skills to use social media,” and “Not knowing which social media platform is preferred by clients.”

The second factor influencing social media use ranked by participants was organizational support. This factor involved six items related to the organization administrative support, plan, standards, reward structure, technical support, guidelines and monitoring. The complete statements were “Lack of organizational plan to use social media,” “Lack of organizational administrative support,” “Lack of organizational standards for social media account,” “Lack of a reward structure to recognize Extension employees for using social media,” “Lack of organizational technical support,” and “Lack of guidelines and monitoring in social media services.”

The third factor influencing social media use was graphic skills. This component contained items related to participants' ability to create videos, quality graphics, and take

quality photos. The three statements of this factor were “Lack of ability to create videos,” “Lack of ability to create quality graphics,” and “Lack of ability to take quality photos.”

The fourth factor was social media characteristics, and it contained four items related to some features of social media platforms that might affect the use of social media by participants. The complete statements of this factor were “Number of characters of content that can be created,” “Insufficient privacy and security options,” “Social media interface layout and its navigation system,” and “Number and type of commercial advertisements on social media platforms.”

The last factor was the availability of equipment and the Internet. This factor included three statements, and these were “Lack of adequate Internet access,” “Lack of high-speed Internet access,” and “Lack of computers or equipment for Extension agents in their Extension offices.”

To understand which factor ranked by participants had the most effect on using social media, the mean score for each factor was calculated. Both social media users and nonusers’ results showed that clients' interest and skills factor was the highest mean factor, but the mean scores were in the range of neutral.

For social media users, the order of the five factors was clients' interest and skills (M = 2.85, SD = 1.06), organizational support (M = 2.42, SD = 1.14), graphic skills (M = 2.41, SD = 1.10), social media characteristics (M = 2.35, SD = 1.01), and the availability of equipment and Internet (M = 2.31, SD = 1.20). Extension faculty and agents believe that organizational support, graphic skills, social media characteristics, and availability of equipment and the Internet have a minor effect on their social media use in Extension.

Social media nonusers ordered the five factors influencing social media use as clients' interest and skills ($M = 2.78$, $SD = 1.35$), graphic skills ($M = 2.22$, $SD = 1.24$), social media characteristics ($M = 2.08$, $SD = 1.23$), organizational support ($M = 2.07$, $SD = .810$), and the availability of equipment and the Internet ($M = 1.28$, $SD = .565$). Social media nonusers believe that graphic skills, social media characteristics, and organizational support have a minor effect on their social media use, but the availability of equipment and the Internet has no effect.

Relationships Between the Study Variables

To identify the factors influencing attitude toward using social media, relationships were examined between participants' attitudes toward using social media in Extension and the study variables. This research utilized two methods to evaluate the relationships between all variables. First, bivariate relationships were examined between attitude toward social media and individual factors, organizational factors, social media factor, and social media use. Davis' (1971) conventions were used to describe the strength of the relationships between these variables. The second method was used to examine the multiple relationships between attitude toward using social media and all study variables.

Individual Factors

Individual factors involved personal and professional characteristics and social media self-efficacy (Facebook and Twitter).

Personal and Professional Characteristics

Only one significant low positive relationship was found between participants' attitudes toward using social media and their social media experience (r_s (134) = .23, p = .008).

No significant relationships were found between participants' attitudes toward using social media in Extension and their gender (r_{pb} (134) = -.042, p = .627), age (r_s (132) = -.102, p = .246), education level (r_s (133) = -.040, p = .644), and years in their profession (r_s (124) = .040, p = .660). In addition, no significant difference was found between Extension faculty (M = 4.06, SD = .71) and agents (M = 4.09, SD = .82) in their attitudes toward using social media, t(132) = -.172, p = .864, *Cohen's d* = .039. Furthermore, there was no difference in participants' attitudes toward using social media in Extension between respondents who serve the entire state (M = 4.13, SD = .83), northeast region (M = 4.20, SD = .69), Delta region (M = 4.23, SD = .66), coastal region (M = 3.78, SD = .96), and the central region (M = 4.08, SD = .67), F(4, 129) = 1.442, p = .224, η^2 = .043, η = .207.

Self-efficacy

No significant relationships were found between participants' attitudes toward using social media in Extension and their Facebook (r (94) = .185, p = .075), Twitter (r (36) = .030, p = .861), and social media (Facebook + Twitter) self-efficacy (r (130) = .141, p = .106).

Organizational Factors

For social media users, only two significant relationships were found. A significant moderate positive relationship was discovered between attitude toward social media and perceived usefulness (r (135) = .47, p < .001). The relationship between participants' attitudes toward using social media and clients' interest and skills was a significant low negative relationship (r (135) = -.17, p = .046). However, the variables equipment and the Internet (r (135) = .13, p = .136), organizational support (r (135) = .09, p = .293), and graphic skills (r (135) = .01, p = .899) had a nonsignificant relationship with participants' attitudes toward using social media in Extension.

For social media nonusers, there were nonsignificant relationships between the attitudes of participants toward using social media and the variables organizational support (r (20) = .041, p = .863), graphic skills (r (20) = .129, p = .587), clients' interest and skills (r (20) = -.059, p = .805), and the availability of equipment and the Internet (r (20) = -.043, p = .856).

Social Media Characteristics

No significant relationship was found between participants' attitudes toward using social media in Extension and social media characteristics for both groups of social media users (r (135) = .056, p = .052) and nonusers (r (20) = -.311, p = .182).

Social Media Usage

There was a significant low positive relationship between the number of times per day that Extension faculty and agents checked for updates on social media account(s) and their attitudes toward using social media in Extension (r_s (130) = .23, p = .008). However,

there were nonsignificant relationships between participants' attitudes toward using social media in Extension and the time spent on social media updating posts each week (r_s (132) = .060, p = .498) and the number of changes or edits they performed per week on social media accounts (r_s (134) = .039, p = .653).

Overall Factors

The result of the multiple regression analysis with the enter method revealed that the significant predictors of participants' attitudes toward social media were perceived usefulness (β = .399, p < .001) and clients' interest and skills (β = -.241, p < .05). Gender, age groups, levels of education, current MSU-E position, years in the profession, geographic region (location), social media experience, social media characteristics, organizational support, graphic skills, and availability of equipment and the Internet were not significant predictors in the model.

A multiple regression analysis using backward deletion method results revealed that perceived usefulness (β = .443, p < .001), clients' interest and skills (β = -.196, p = .039), and social media characteristics (β = .197, p = .035) were significant predictors of participants' attitudes toward using social media in Extension. Organizational support, graphic skills, and the availability of equipment and the Internet were not significant predictors of the participants' attitudes.

Discussions and Conclusions

This study identified Extension faculty and agents personal and professional characteristics, social media use, attitudes toward social media, perceived usefulness, social media self-efficacy (Facebook and Twitter), and factors affecting Extension specialists' and agents attitudes toward using social media. The current study utilized social cognitive theory and technology acceptance model to identify the factors influencing participants' attitudes toward using social media.

Extension specialists and agents with Mississippi State University Extension were predominantly white with an almost equal percentage of male and female employees. Most of participants were in the age range from less than 25 to 44 years old. The majority of participants were Extension agents in the current study.

Most of participants had work experience from less than 5 to 10 years with Mississippi State University Extension. Extension faculty and agents had program responsibilities in Agricultural and Natural Resources and 4-H Youth Development. This finding is similar to Hopkins' (2013) study. Hopkins (2013) presented the most two program responsibilities for Extension agents in Arizona were the Agriculture and Natural Resources and 4-H Youth Development. In Mississippi, Youth, Families, Livestock Farmers, Local Government, and Agronomic Farmers were the most groups served by Extension employees.

There was a small group of participants did not use social media for professional purposes. In Mississippi, social media users prefer to use Facebook and Twitter more than other social media platforms, but their use of these platforms was two hours or less per week. Similar results were found by many researchers (Bowen et al., 2013; Hopkins,

2013). Facebook was the preferred method of social media among Arizona Extension agents (Hopkins, 2013). In Tennessee, Facebook, YouTube, and Twitter were the most social media platforms used by county 4-H program leaders (Bowen et al., 2013). Bowen et al. (2013) found that the total usage of social media for personal and professional purposes was less than 4 hours per week for county 4-H leaders in Tennessee.

Mississippi State University Extension faculty and agents used smartphones and public-work computer (laptop, desktop) to connect to social media. This result is parallel to Bowen's et al. (2013) study. Extension faculty and agents utilized social media to share information with clients, distribute announcements to clients about upcoming events and programs, generate interest in Extension programs, share different files, such as videos, photos, audios, and other formats with clients, and enhance interaction between Extension professionals and clients in Mississippi.

Social media users within the Extension had a high level of Facebook self-efficacy, a high level of perceived usefulness of social media, and a positive attitude toward using social media. The results imply that the Extension employees tended to show high self-efficacy about using social media for professional purposes, but they had higher self-efficacy about using Facebook more than Twitter. This result is parallel with the high use of Facebook in Mississippi State University Extension more than Twitter. From this result, Extension employees who respondents had some difficulties using Twitter platform. Furthermore, Extension faculty and agents perceived social media to be useful in Extension. A similar result was found by Bowen et al. (2013). In their study, they showed county 4-H program leaders perceived social media to be moderately useful.

In Mississippi, Extension faculty and agents have a positive attitude toward using social media in Extension for social media users and nonusers. This result is supported by preceding studies (Anderson & Williams, 2012; Williams, 2000). Anderson and Williams (2012) stated that agricultural science teachers in Texas have a positive attitude toward technology in classroom. A positive attitude toward using technology in classroom was found for family and consumer science teachers (Williams, 2000). The finding of current study showed a difference between social media users' and nonuser attitudes toward using social media in Extension. This result indicated that social media users had a higher level of attitude toward using social media in Extension more than who did not use social media for professional purposes.

Social media users and nonusers ranked the five factors of organizational and social media barriers differently. Both social media users and nonusers indicated that clients' interest and skills factor was in range of neutral. For social media users, organizational support, graphic skills, social media characteristics, and the availability of equipment and the Internet have minor effects on Extension specialists' and agents social media use in Extension. Nonusers believe that graphic skills, social media characteristics, organizational support have a minor effect on the use of social media in Extension, but the availability of equipment and the Internet has no effect.

The relationships between Extension specialists' and agents attitudes toward using social media and the study variables were examined by evaluating bivariate and multiple relationships. Extension specialists' and agents experience in social media has an influence on their attitude toward social media. A positive relationship was found between Extension specialists' and agents attitudes toward using social media and their

social media experience. This indicates participants' attitudes toward social media increases with increasing their experience in social media. This finding is affiliated to a study conducted by Gilbert (2015). Teachers' attitudes toward technology had a positive relationship with their previous experience in technology use.

Participants' gender, age, education level, years in the profession, current MSU-E position, and geographic location did not influence their attitudes toward using social media in Extension. No relationships were found between Extension faculty and agents' attitudes toward using social media in Extension and their gender, age, education level, and years in the profession. These results are similar to previous studies that found no differences between the attitude toward technology and gender, age, level of education, and experience (Anderson & Williams, 2012; Bain & Rice, 2006; Gilbert, 2015; Gong, 2013; Naaz, 2012; Teo, 2008). In addition, no difference was found between Extension faculty and agents in their attitudes toward using social media. This result shows that Extension faculty and agents have similar attitude toward using social media in Extension. Moreover, there was no difference in participants' attitudes toward using social media in Extension between Extension faculty and agents who serve the entire state, northeast region, Delta region, coastal region, and the central region. The result suggests that respondents who serve the entire state, northeast region, Delta region, coastal region, and the central region are sharing similar attitudes toward using social media in Extension.

Facebook and Twitter self-efficacies have no influences on Extension specialists and agents attitude toward using social media in Extension. No significant relationships were found between participants' attitudes toward using social media in Extension and

their Facebook, Twitter, and social media (Facebook + Twitter) self-efficacy. The current study result might be because self-efficacy was measured for Facebook, Twitter, Instagram, rather than for social media in general.

For social media users, perceived usefulness and clients' interest and skills have an influence on Extension specialists' and agents attitude toward using social media. However, organizational support, graphic skills, and the availability of equipment and the Internet do not have influence on Extension specialists' and agents attitudes toward using social media in Mississippi. A positive relationship was discovered between attitude toward social media and perceived usefulness. This result revealed the grater Extension employees perceived social media as a useful in Extension, the greater their attitudes toward using social media in Extension. Therefore, for social media to be viewed favorably in Extension, it must be useful. This finding is supported by existing literature (Guritno & Siringoringo, 2013; Shen & Chuang, 2010). The relationship between attitude toward social media and clients' interest and skills was a negative relationship. This result indicated that the lower mean scores of clients' interest and skills factor the high the attitude toward social media. From that, clients' interest and skills factor has a negative influence on Extension specialists' and agents' attitudes toward using social media in Extension.

For social media nonusers, there is no influence of organizational support, graphic skills, clients' interest and skills, and the availability of equipment and the Internet on social media nonusers' attitude toward using social media in Extension. Nonsignificant relationships were found between the attitudes of participants toward using social media and these four variables. The nonsignificant result might be due to the small sample size

of social media nonusers, but the effect sizes for the relationships between these variables and attitude toward social media were small effect sizes.

Social media characteristics do not have influence on social media users' attitudes toward using social media. However, there is perhaps an influence of social media characteristics on social media nonusers' attitudes. No significant relationship was found between participants' attitudes toward using social media in Extension and social media characteristics for both groups of social media users and nonusers. This result is dissimilar to Davis' (1993) finding. He found that the characteristics of the system influenced the attitude toward using the system directly. For social media users, the effect size for the relationship was a small effect size, but for social media nonusers, the effect size was a medium effect size. The nonsignificant result of the relationship may be due to the small sample size. Based on the effect size of the relationship between social media nonusers' attitudes toward using social media in Extension and social media characteristics, there was a negative influence of social media characteristics on social media nonusers' attitudes toward using social media in Extension.

Regarding the relationships between Extension specialists' and agents attitudes toward using social media in Extension and their actual use of social media, there was a relationship between the number of times per day that participants checked for updates on social media accounts and their attitudes toward using social media. This result suggests that increase participants' attitudes toward social media led to an increase the number of times per day that Extension faculty and agents checked for updates on their social media accounts. However, there were no relationships between attitude toward using social media in Extension and the time spent on social media updating posts each week and the

number of changes or edits they performed per week on social media accounts. The findings are dissimilar to Yang and Yoo's (2003) study that suggested technology use is related to attitude toward using the technology. This may due to the low amount of actual use of technology by Extension specialists and agents. In this study, participants have a positive attitude toward social media, but their actual use of social media was low. Hansen (2006) found that students had a positive attitude toward using technology, but their use of technology was low. The low use of social media by Extension employees may be due to the high responsibilities or the lack of time to use social media.

The results of the two multiple regression analyses were interesting. Social media self-efficacy (Facebook and Twitter) were eliminated from multiple regression analysis because self-efficacy was measured for Facebook and Twitter, rather than for social media in general. First, multiple regression with the enter method showed that perceived usefulness and clients' interest and skills had an influence on Extension employees' attitudes toward social media. Other variables had no influence on participants' attitudes toward using social media in the model. These variables included age, gender, years in the profession, education level, geographic location, social media experience, organizational support, graphic skills, and availability of equipment and the Internet. Social media experience had an influence on attitude toward using social media when tested alone, but when tested in the multiple regression model had no influence on attitude toward social media.

The second multiple regression analysis with backward elimination revealed that perceived usefulness, clients' interest and skills, and social media characteristics had influence on Extension specialists' and agents attitudes toward using social media in

Extension. All other variables had no influence in the model, and these were graphic skills, organization support, and the availability of equipment and the Internet. Social media characteristics had no influence on attitude toward social media when tested alone, but in the multiple regression model had an influence on participants' attitudes toward using social media. The influences of perceived usefulness and social media characteristics on attitude in this study are similar to previous studies (Davis, 1993; Guritno & Siringoringo, 2013; Shen & Chuang, 2010). The goal of using social media in Extension is to communicate with clients and meet their needs. The low acceptance or use of clients will reduce Extension faculty and agents use of social media (Gharis et al., 2014). Clients use considered one of the barriers that influencing social media use in Extension organizations (Seger, 2011). From that, if clients do not have interest or skills to use social media, Extension employees will not use social media to communicate or distribute educational programs. This may have an influence on Extension specialists' and agents attitudes toward using social media in Extension. It is critical for Extension employees to know clients' interest, skills, and their preferred social media platforms to use technology in Extension.

The findings supported some of the relationships proposed by the conceptual model in this study (Figure 3). This model was a result of combining social cognitive theory and technology acceptance model. The study conceptual model suggested that individuals, organizational, and social media factors influencing attitudes toward using social media. The results showed only organizational and social media factors had an influence on Extension specialists' and agents attitudes toward using social media.

Perceived usefulness, clients' interest and skills, and social media characteristics had an influence on Extension specialists' and agents attitudes toward using social media.

Implications

Suggestions for practice drawn from the results of this study are provided in the following points:

1. This study's results should be available to Extension administration, particularly in the staff development and training field, to facilitate upcoming social media training efforts.

2. Mississippi State University Extension needs to provide more training opportunities, workshops, seminars, and meetings about using social media for professional purposes, and to encourage Extension faculty and agents to increase the usage of social media and use different platforms, such as Twitter and Instagram.

3. Extension administration needs to design a reward structure to recognize Extension faculty and agents for using different social media platforms in Extension.

4. Based on the results that Extension employees have a positive attitude toward using social media and high Facebook self-efficacy, Mississippi State University Extension administration should implement using social media more in communication and deliver Extension Education programs to clients.

5. Organizational support should be continued to help Extension faculty and agents utilizing different social media platforms.

Implications for Future Studies

Implications for future researchers on the topic of social media use and the factors influencing Extension employees' attitudes toward using social media in Extension consist of the following:

1. Future studies should consider the role of other variables within the current study conceptual model such as privacy concerns.

2. The current research employed a quantitative method using a questionnaire to acquire the data. Future studies could consider utilizing a qualitative research through interviews and/or observations to collect more in-depth information about Extension employees' social media use, attitudes, self-efficacy, organizational, and social media barriers.

3. The continued development of the current study's questionnaire, social media use, social media self-efficacy, perceived usefulness, organizational, and social media barriers.

4. The successful implementation of social media in Extension depends on clients. Future research needs to focus on Extension clients' social media use, attitudes toward using social media, self-efficacy, and barriers.

5. Replicate this study every two to three years to determine if there are any differences in Extension employees' social media use, attitude, self-efficacy, perceived usefulness, and organizational and social media barriers.

6. Repeat the current study in total or modified form in other state Extension organizations in the country to find out if the same phenomenon occurs.

7. This study could be replicated in the researcher's home country, Saudi Arabia, to find out if under dissimilar culture and organizational structure, the same findings occur.

8. Future studies need to include Extension associates employees to understand their social media use, attitude, self-efficacy, perceived usefulness, and the organizational and social media barriers.

9. In this study, self-efficacy scale was specific to Facebook, Twitter, and Instagram. Future study needs to examine the relationship between general social media self-efficacy and attitude toward using social media in Extension.

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APPENDIX A

APPROVAL TO CONDUCT THE STUDY

MISSISSIPPI STATE UNIVERSITY

School of Human Sciences

Agricultural Information Science and Education • Human Development and Family Studies
Extension Program and Staff Development • Fashion, Design, and Merchandising

June 26, 2017

Dr. Gary B. Jackson, Director
Mississippi State University Extension
Box 9601
Campus

Dear Dr. Jackson:

I am writing to request your approval to conduct my dissertation research in the field of social media usage of Extension employees (Extension agents and State specialists) at Mississippi State University. The purpose of this study is to investigate what social media platforms Extension employees use as a communication tool to deliver programming, and to examine factors impacting Extension employee's attitudes toward using social media within Mississippi State University Extension.

Procedures of this study will include the distribution of a questionnaire via Qualitics to all Extension employees. This questionnaire will consist of six parts. These are related to demographic characteristics, social media use, social media barriers, social media self-efficacy, perceived usefulness, and attitudes towards social media. In addition, I am seeking your approval to contact the Mississippi State University Extension Program Manager, Ms. Lisa Clardy, to request a list of Extension employees who currently work for Mississippi State University Extension.

This research will examine the relationships between Extension employees' attitudes and the following selected variables: Extension employee' social media usage, barriers, personal and professional characteristics, perceived usefulness, and self-efficacy. I expect my findings to be valuable to Extension and helping to set organizational goals and objectives for Extension. If allowed to conduct this research, I will use the data under the guidance of my major professor, Dr. Kirk Swortzel.

Thank you in advance for your willingness to allow me to conduct this study and use the data in research and academia.

Sincerely,

Jamal Alotaibi

Kirk A. Swortzel, Professor

Approved, Gary B. Jackson

Dr. Swortzel -
Plese provide my office with the results.
Thanks

School of Human Sciences • Box 9745 • Mississippi State, MS 39762-9745
(662) 325-2950 • Fax (662) 325-8188 • email: humansci@humansci.msstate.edu

APPENDIX B

THE STUDY QUESTIONNAIRE

Factors influencing Extension employees' attitude toward social media

Dear Extension professional,

My name is Jamal Alotaibi, and I am a graduate student completing my Ph.D. in Agricultural and Extension Education at Mississippi State University. I am completing a research project titled, "An investigation of the barriers that influence Extension employees' attitudes toward social media use at Mississippi State University." I have received permission from Dr. Gary Jackson, Director of Mississippi State University Extension, to conduct this study.

The purpose of this study is to investigate what social media platform(s) Extension employees are currently using as communication tools to deliver and market extension programs and to examine factors affecting Extension employees' attitude toward using social media within Mississippi State University Extension. The results of this study will be shared with Dr. Jackson in hopes of improving the use of social media within Extension programs in Mississippi.

The survey will take approximately 15 minutes to complete. It includes questions about social media use, self-efficacy, organizational and social media barriers, perceived usefulness, attitudes toward social media use, and demographics. All information you provide will be anonymous. There will be no questions asking you to provide information that can directly identify you. Please know that your participation in this study is completely voluntary and if you feel uncomfortable in any way, you may skip questions or end the survey at any time.

If you have any questions about this survey, you can contact Jamal Alotaibi at (573) 529-1883 or jma648@msstate.edu or my advisor, Dr. Kirk Swortzel, at (662) 325-

7837 or kirk.swortzel@msstate.edu If you have questions about your rights or welfare as a research participant, please contact the Mississippi State University Institutional Review Board Office at (662) 325-3294. Please indicate below if you would like to proceed to the survey.

Informed Consent

- o Yes, I have read and understand the terms of the study. I will participate in the study.
- o No, I do not wish to participate in the study.

Skip To: End of Survey If = No, I do not wish to participate in the study.

Q1. For the purpose of this study, social media is defined as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and that allows the creation and exchange of user-generated content." Examples include: social networking, microblogging, photo sharing, and video sharing.

Which social media platform(s) do you currently use to reach the clientele you serve in your office? (Select all that apply).

o Blogs	o LinkedIn	o Tvinci
o eXension	o Periscope	o Twitter
o Facebook	o Pinterest	o VideoJug
o Flicker	o Plurk	o Vimeo
o Google +	o Snapchat	o Vine
o Instagram	o Tumblr	o YouTube
o I do not use social media	Other, please specify _____	

Skip To: Q13 If Q1 = I do not use social media (19)

Q4. How many years have you been using a social media platform(s) for work-related activities?

- o 0-2
- o 3-6
- o 7-10
- o 11-15
- o More than 15

Q2. Approximately how many hours each week do you spend updating your posts in your social media account(s) for work-related activities?

- o 0-2
- o 3-6
- o 7-10
- o 11-15
- o More than 15

Q3. Approximately how many changes/edits do you perform per week for the social media account(s) for work-related activities?

- o 0-2
- o 3-6
- o 7-10
- o 11-15
- o More than 15

Q5. Approximately how many times per day do you check to see if certain work-related social media accounts have been updated by other members or clients?

- o 0-2
- o 3-6
- o 7-10
- o 11-15
- o More than 15

Q6. How have you learned to use social media platforms for work-related settings? (Select all that apply)

- o Attended training-workshop
- o On-the-job experience
- o Interaction with other professionals
- o Self-study
- o Other, please specify _____

Skip To: Q7 If Q6 = Attended training-workshop (1)
Skip To: Q8 If Q6 = Interaction with other professionals (2)
Skip To: Q8 If Q6 = On-the-job experience (3)
Skip To: Q8 If Q6 = Self-study (4)
Skip To: Q8 If Q6 = Other, please specify (5)

Q7. If you attended a training-workshop, please write the latest year, the topic, and the location of the training/workshop you completed.

- o Year _____
- o Topic _____
- o Location _____

Q8. What is the primary source(s) that you use to connect social media for your job-related responsibilities? (Select all that apply.)

- o Smartphone
- o iPad
- o Personally-owned computer (laptop, desktop)
- o Public-work computer (laptop, desktop)
- o Other, plea specify_____

Q9. How do you use social media platforms for your work-related responsibilities? (Select all that apply.)

- To share information with clients
- To distribute announcements to clients about upcoming events and programs
- For two-way communication with clients
- To request information and resources from clients
- To collect information about clients
- To drive traffic to Extension websites
- To generate interest in Extension programs
- To enhance interaction between Extension professionals and clients
- To deliver Extension programs
- To assess Extension educational programs impacts
- To communicate client success stories
- To enhance collaboration between researchers and clients
- To recruit volunteers
- To share different files, such as videos, photos, audios, and other formats with clients
- None of the above
- Other, please specify _____

Q10. According to *Social Media Guidelines for the Mississippi State University Extension Service (2015), the following are social media platforms typically used by Extension professionals.* Which social media platform are you personally most comfortable using for work-related activities?

- Facebook
- Instagram
- Google+
- Twitter
- Plurk

Q11. Please indicate the extent to which do you agree or disagree with the following statements regarding your level of self-efficacy with social media platforms in your Extension efforts.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I have the necessary skills to use (Selected Choice).	○	○	○	○	○
I am able to edit a profile on (Selected Choice).	○	○	○	○	○
I am able to change my privacy settings on (Selected Choice).	○	○	○	○	○
I am capable of using available tools on (Selected Choice).	○	○	○	○	○
I am effectively able to communicate with my clients on (Selected Choice).	○	○	○	○	○
I am able to export my account content (to create a backup) on (Selected Choice).	○	○	○	○	○
I am able to figure out how to use annual new updated tools in (Selected Choice).	○	○	○	○	○
I am confident explaining to others how to use (Selected Choice).	○	○	○	○	○
I am able to invite, add, and delete friends or followers on (Selected Choice).	○	○	○	○	○

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I am able to create a photo album, as well as upload photos, videos, and other files' formats on (Selected Choice).	○	○	○	○	○
I can respond and add comments to messages or articles by clients on (Selected Choice).	○	○	○	○	○
I am able to use advanced features such as 360 photos and videos on (Selected Choice).	○	○	○	○	○
I am able to send private messages on (Selected Choice).	○	○	○	○	○
I am able to use chat feature to communicate with clients on (Selected Choice).	○	○	○	○	○
I am able to conduct discussions using (Selected Choice).	○	○	○	○	○
I am able to take quality photos and videos to use with (Selected Choice).	○	○	○	○	○
I am able to create graphics and edit videos to use with (Selected Choice).	○	○	○	○	○

Q12. Please indicate how much you agree or disagree with the following statements regarding the perceived usefulness of social media in your Extension efforts.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Using social media improves my work performance.	○	○	○	○	○
Using social media increases my work productivity.	○	○	○	○	○
Using social media saves me time and effort in communicating with stakeholders and clients.	○	○	○	○	○
Using social media makes it easier to discuss important topics with my clients.	○	○	○	○	○
Using social media makes it easier to distribute information to my clients.	○	○	○	○	○
Using social media allows for direct interactivity with stakeholders and clients.	○	○	○	○	○
Using diverse platforms of social media allows broader distribution of information to reach more clients.	○	○	○	○	○
Overall, I find social media useful within the Extension Service.	○	○	○	○	○

Q13. Please indicate the degree to which each of the following is a barrier affecting social media use in your Extension efforts.

	No effect	Minor effect	Neutral	Moderate effect	Major effect
Lack of computers or equipment for Extension agents in their Extension offices.	○	○	○	○	○
Lack of adequate Internet access.	○	○	○	○	○
Lack of high-speed Internet access.	○	○	○	○	○
Lack of understanding on copyright issues.	○	○	○	○	○
Legal and confidentiality risks to the Extension organization.	○	○	○	○	○
Lack of organizational technical support.	○	○	○	○	○
Lack of organizational administrative support.	○	○	○	○	○
Lack of a reward structure to recognize Extension employees for using social media.	○	○	○	○	○
Lack of an organizational plan to use social media.	○	○	○	○	○
Lack of organizational standards for social media content.	○	○	○	○	○
Lack of guidelines and monitoring in social media services.	○	○	○	○	○
Lack of knowing about policies on appropriate use of social media.	○	○	○	○	○

Fear of losing or alienating current clients.	○	○	○	○	○
Lack of interest to use social media.	○	○	○	○	○
Composition and demographics of Extension Service clients.	○	○	○	○	○
Fear of losing Extension program-funding.	○	○	○	○	○
Unreliability of social media platforms from the client's point of view.	○	○	○	○	○
Exposure to computer viruses.	○	○	○	○	○
Lack of specific method(s) to archive social media posts and reports.	○	○	○	○	○
Inadequate training opportunities on social media platforms.	○	○	○	○	○
Changing social media platform popularity.	○	○	○	○	○
Available social media platforms do not fit Extension needs.	○	○	○	○	○
Fear of posting something incorrect or unprofessional.	○	○	○	○	○
Lack of interest from clients to use social media.	○	○	○	○	○
Clients lack skills to use social media.	○	○	○	○	○

Not knowing which social media platform is preferred by clients.	○	○	○	○	○
Lack of necessary knowledge and skills for using social media effectively.	○	○	○	○	○
Lack of time to prepare and update content for social media.	○	○	○	○	○
Lack of online communication skills.	○	○	○	○	○
Lack of time to learn about updated tools on social media.	○	○	○	○	○
Lack of ability to create quality graphics.	○	○	○	○	○
Lack of ability to take quality photos.	○	○	○	○	○
Lack of ability to create videos.	○	○	○	○	○
Number and type of commercial advertisements on social media platforms.	○	○	○	○	○
Number of characters of content that can be created.	○	○	○	○	○
Social media interface layout and its navigation system.	○	○	○	○	○
Insufficient privacy and security options.	○	○	○	○	○

Q14. Please indicate the extent to which you agree or disagree with the following statements regarding your attitude toward social media usage in your Extension efforts.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Using social media as a communication tool is a great idea in Extension.	○	○	○	○	○
Social media platforms are good for gaining information from clients.	○	○	○	○	○
Using social media to distribute announcements about Extension programs and events is a great idea.	○	○	○	○	○
Using social media is a good strategy to offer updated information to clients.	○	○	○	○	○
Extension should use social media to attract potential clients.	○	○	○	○	○
Social media is an effective tool for building stronger relationships with clients.	○	○	○	○	○
Social media is a good tool to gain feedback about Extension programs from clients.	○	○	○	○	○

Q15. What is your preferred way of learning how to use social media platforms for work-related applications? Please rank the following source.

_____ Face-to-face training/ workshop

_____ Self-study

_____ Online training

_____ Other (please list)

Q16. What is your gender?

- Male
- Female

Q17. What is your age range?

- Under 25
- 25-34
- 35-44
- 45-54
- 55-64
- 65 or over

Q18. What is your highest level of education?

- Associate degree
- Bachelor's degree
- Master's degree
- Educational Specialist
- Doctoral degree
- Other, please specify _____

Q19. What geographic region of the state do you serve?

- The entire state
- Northeast Region
- Delta Region
- Coastal Region
- Central Region

Q20. What is your race? (Select all that apply.)

- African - American
- Asian
- Native Hawaiian or other Pacific Islander
- White
- American Indian or Alaskan native
- Other, please specify _____

Q21. What is your ethnicity?

- Hispanic - Latino
- Not Hispanic - Latino

Q22. What area(s) of Extension do you have programmatic responsibilities? (Select one or more).

- Agriculture and Natural Resources
- Family and Consumer Sciences
- Community Development
- 4-H Youth Development

Q23. How many years have you been working for Mississippi State University Extension? _____

Q24. What type of clients do you serve? (Check all that apply)

- o Agronomic Farmers
- o Families
- o Homemakers
- o Livestock Farmers
- o Forest Owners
- o Industry Personnel
- o Law Enforcement
- o Local Government
- o Master Gardeners
- o Small business owners
- o Youth
- o Wildlife and Fisheries Personnel
- o Other, please specify _____

Q25. What is your current job title? (Please select one)

- o Professor
- o Associate Professor
- o Assistant Professor
- o Extension Instructor
- o Area Extension Agent
- o Extension Agent

APPENDIX C

NOTICE OF APPROVAL FOR HUMAN RESEARCH FROM IRB

MISSISSIPPI STATE UNIVERSITY

Office of Research Compliance

Institutional Review Board for the Protection of Human Subjects in Research
P.O. Box 6223
53 Morgan Avenue
Mississippi State, MS 39762
P. 662.325.3294

www.orc.msstate.edu

NOTICE OF APPROVAL FOR HUMAN RESEARCH

DATE:	July 27, 2017
TO:	Kirk Swortzel, PhD, School of Human Sciences, Donna Peterson; Marina Denny; Susan Seal; Alotaibi, Jamal
FROM:	Jodilyn Roberts, HRPP Officer, MSU HRPP
PROTOCOL TITLE:	An Investigation of the Barriers That Influence Extension Employees# Attitudes Toward Social Media Use at Mississippi State University
PROTOCOL NUMBER:	IRB-17-396
	Approval Date: July 27, 2017 Expiration Date: July 27, 2018

This letter is your record of the Human Research Protection Program (HRPP) approval of this study as exempt.

On July 27, 2017, the Mississippi State University Human Research Protection Program approved this study as exempt from federal regulations pertaining to the protection of human research participants. The application qualified for exempt review under CFR 46.101(b)(2).

Exempt studies are subject to the ethical principles articulated in the Belmont Report, found at www.hhs.gov/ohrp/regulations-and-policy/belmont-report/#

If you propose to modify your study, you must receive approval from the HRPP prior to implementing any changes. The HRPP may review the exempt status at that time and request an amendment to your application as non-exempt research.

In order to protect the confidentiality of research participants, we encourage you to destroy private information which can be linked to the identities of individuals as soon as it is reasonable to do so.

The MSU IRB approval for this project will expire on July 27, 2018. If you expect your project to continue beyond this date, you must submit an application for renewal of this HRPP approval. HRPP approval must be maintained for the entire term of your project. Please notify the HRPP when your study is complete. Upon notification, we will close our files pertaining to your study.

If you have any questions relating to the protection of human research participants, please contact the HRPP by phone at 325.3994 or email irb@research.msstate.edu. We wish you success in carrying out your research project.

Jodilyn Roberts

Review Type:	EXEMPT
IRB Number:	IORG0000467

APPENDIX D

OTHER TYPE OF EXTENSION CLIENTS

Table 42 Other type of clients served by participants (N = 170)

Clients	*f*	%
Adult Volunteers	1	0.6
Arborists and Foresters	1	0.6
Churches and Nursing homes	1	0.6
Consultants, agriculture allied personnel with retailers	1	0.6
Extension Agents	1	0.6
Farmers/Producers (non-agronomic crops)	1	0.6
Fruit and Vegetable Producers	2	1.2
Public people	3	1.8
Loggers	1	0.6
Master Floral Designers	1	0.6
Senior citizens	2	1.2
School Officials and Teachers	2	1.2

Note: Participants were asked to identify other clients not in the list provided.

APPENDIX E

SOCIAL MEDIA

Table 43 Other preferred method to learn social media use for work-related activities (N = 170)

Preferred Method	*f*	%
Consulting /monitoring from instructor	1	0.6
Help line or resource contact dedicated to assist	1	0.6
Interactive Video	2	1.2
One-on-One Training Request	2	1.2
Provide supplemental how-to material	1	0.6
Study Tours	1	0.6
Webinar	1	0.6

Note: Participants were asked to provide other preferred method not in the list provided.

Table 44 Other sites participants utilized (N = 170)

Site	*f*	%
Dropbox	1	0.6
Eden	1	0.6
Email	1	0.6
Remind	1	0.6
Website; online forum	2	1.2
Yahoo groups	1	0.6

Note: Participants were asked to provide other social media sites not in the list provided

Table 45 Other methods used by participants to learn how to use social media for work-related activities (n = 148)

Method	*f*	%
Personal accounts	1	0.7
Other organizations social media accounts	1	0.7
Youth	1	0.7

Note: Participants were asked to provide other methods not in the list provided

Table 46 The latest year participants attended a training or workshop (n = 148)

Year	*f*	%
2006	1	0.7
2010	1	0.7
2011	1	0.7
2013	2	1.4
2014	2	1.4
2015	25	16.9
2016	19	12.8
2017	8	5.4

Note: Participants were asked to provide the latest year of training or workshop attended

Table 47 Topics of latest training or workshop attended by participants (n = 148)

Topic	*f*	%
Agricultural Communication	1	0.7
Marketing Extension Programs by Social Media	2	1.4
Marketing by Using Social Media	4	2.7
Taking Pictures and Using Facebook	1	0.7
Using Technology in Extension	3	2.0
Using Social Media in Extension	45	30.4

Note: Participants were asked to provide the topic of latest training or workshop attended.

Table 48 The location of latest training or workshop attended by participants (n = 148)

Location	*f*	%
Austin, TX	1	0.7
Choctaw County Extension Office, MS	3	2.0
The Central Mississippi Research and Extension Center (CMREC), Raymond, MS	2	1.4
Decatur, MS	1	0.7
Eagle Ridge Conference Center- Raymond, MS	1	0.7
Itawamba Extension Office, MS	1	0.7
Leflore County, MS	1	0.7
Milwaukee, WI	1	0.7
MSU Extension Alcorn County, MS	2	1.4
Ocean Springs, MS	1	0.7
Pearl River Community College-Poplarville, MS	1	0.7
Raymond, MS	2	1.4
Starkville, MSU Campus	22	14.9
Stoneville, MS	7	4.7
Tampa, FL	1	0.7
Verona, MS	2	1.4

Note: Participants were asked to provide the location of latest training or workshop attended.

APPENDIX F

DEMOGRAPHICS FOR SOCIAL MEDIA USERS AND NONUSERS

Table 49 Gender of social media users and nonusers

Gender	Non-Users		Users	
	f	%	*f*	%
Male	13	59.1	67	45.3
Female	7	31.8	71	48.0
Not reported	2	9.1	10	6.7
Total	22	100	148	100

Table 50 Age groups of social media users and nonusers

Age Group	Non-Users		Users	
	f	%	*f*	%
65 or Over	1	4.5	2	1.4
55-64	5	22.7	27	18.2
45-54	4	18.2	33	22.3
35-44	4	18.2	40	27.0
25-34	6	27.3	37	25.0
Under 25	0	0.0	1	0.7
Not reported	2	9.1	8	5.4
Total	22	100	148	100

Table 51 Race and ethnicity of social media users and nonusers

	Non-Users		Users	
	f	%	*f*	%
Race				
White	16	72.7	115	77.7
African-American	1	4.6	15	10.1
Native Hawaiian or other Pacific Islander	0	0.0	1	0.7
American Indian or Alaskan Native	0	0.0	1	0.7
Other	0	0.0	1	0.7
Asian	0	0.0	0	0.0
Not reported	5	22.7	15	10.1
Ethnicity				
Not Hispanic-Latino	18	81.8	130	87.8
Not reported	4	18.2	18	12.2
Total	22	100	148	100

Table 52 Educational level of social media users and nonusers

Educational level	Non-Users		Users	
	f	%	*f*	%
Doctoral degree	14	63.6	43	29.0
Educational specialist	0	0.0	2	1.4
Master's Degree	6	27.3	77	52.0
Bachelor's degree	0	0.0	18	12.2
Not reported	2	9.1	8	5.4
Total	22	100	148	100

Table 53 Current position title of social media users and nonusers

Current position	Non-Users		Users	
	f	%	*f*	%
Professor	3	13.6	15	10.1
Associate Professor	2	9.1	9	6.1
Assistant Professor	6	27.3	14	9.5
Extension Instructor	3	13.6	7	4.7
Extension Agent	5	22.8	94	63.5
Not Reported	3	13.6	9	6.1
Total	22	100	148	100

Table 54 Program areas of social media for users and nonusers

Program area	Non-Users		Users	
	f	%	*f*	%
Agriculture and Natural Resources	12	54.5	81	54.7
4-H Youth Development	6	27.3	83	56.1
Community Development	7	31.8	57	38.5
Family and Consumer Sciences	5	22.7	51	34.5

Table 55 Social media users' and nonusers experience with Mississippi State University

Years in the profession	Non-Users		Users	
	f	%	*f*	%
More than 30 years	1	4.6	2	1.4
26-30 years	2	9.1	3	2.0
21-25 years	3	13.6	17	11.5
16-20 years	1	4.6	15	10.0
11-15 years	1	4.6	17	11.4
6-10 years	5	22.7	34	23.0
Less than 5 years	6	27.3	42	28.4
Not reported	3	13.6	18	12.2
Total	22	100	148	100

Table 56 Geographic regions where social media users and nonusers serve in Mississippi

Geographic region	Non-Users		Users	
	f	%	*f*	%
The entire state	13	59.2	31	21.0
Northeast Region	0	0.0	30	20.3
Coastal Region	3	13.6	27	18.2
Central Region	3	13.6	27	18.2
Delta Region	1	4.5	24	16.2
Not reported	2	9.1	9	6.1
Total	22	100	148	100

APPENDIX G

PRINCIPAL COMPONENT ANALYSIS FOR FACEBOOK SELF-EFFICACY, PERCEIVED USEFULNESS, AND ATTITUDE

Table 57 Eigenvalues and percent of variance explained on the initial three factors solution for principal component analysis on attitude, perceived usefulness, and Facebook self-efficacy scales

Variable	Eigenvalue	Proportion of Variance	Cumulative Proportion of Variance
1	9.11	0.48	47.94
2	3.61	0.19	66.96
3	1.82	0.10	76.51
4	0.80	0.04	80.74
5	0.71	0.04	84.50
6	0.57	0.03	87.49
7	0.42	0.02	89.72
8	0.37	0.02	91.65
9	0.28	0.01	93.11
10	0.27	0.01	94.55
11	0.26	0.01	95.94
12	0.22	0.01	97.08
13	0.20	0.01	98.12
14	0.13	0.01	98.80
15	0.09	0.00	99.26
16	0.08	0.00	99.68

(table continues)

Table 57 (continued)

Variable	Eigenvalue	Proportion of Variance	Cumulative Proportion of Variance
17	0.03	0.00	99.85
18	0.03	0.00	100.00
19	0.00	0.00	100.00

Table 58 Parallel analysis based on principal component analysis on attitude, perceived usefulness, and Facebook self-efficacy scales

Variable	Real-data eigenvalues	Mean of random eigenvalues	95 Percentile of random eigenvalues
1	9.11*	2.02	2.22
2	3.61*	1.82	1.95
3	1.82*	1.66	1.77
4	0.80	1.52	1.62
5	0.71	1.40	1.49
6	0.57	1.29	1.37
7	0.42	1.19	1.26
8	0.37	1.10	1.18
9	0.28	1.02	1.08
10	0.27	0.93	1.00
11	0.26	0.86	0.92
12	0.22	0.78	0.84
13	0.20	0.70	0.77
14	0.13	0.63	0.69
15	0.09	0.56	0.62
16	0.08	0.49	0.56

Note: *Advised number of dimensions: 3, polychoric correlation.

(table continues)

Table 58 (continued)

Variable	Real-data eigenvalues	Mean of random eigenvalues	95 Percentile of random eigenvalues
17	0.03	0.42	0.48
18	0.03	0.35	0.41
19	0.00	0.26	0.33

Note: *Advised number of dimensions: 3, polychoric correlation.

APPENDIX H

PRINCIPAL COMPONENT ANALYSIS FOR ORGANIZATIONAL AND SOCIAL MEDIA BARRIERS SCALE

Table 59 Eigenvalues and percent of variance explained on the initial ten factors solution for principal component analysis on the organizational and social media barriers scale

Variable	Eigenvalue	Proportion of Variance	Cumulative Proportion of Variance
1	12.31674	0.33288	33.288
2	3.40021	0.09190	42.478
3	2.67415	0.07227	49.705
4	1.96371	0.05307	55.012
5	1.82329	0.04928	59.94
6	1.52046	0.04109	64.049
7	1.30269	0.03521	67.57
8	1.25757	0.03399	70.969
9	1.09477	0.02959	73.928
10	1.01669	0.02748	76.676
11	0.90052	0.02434	79.11
12	0.78647	0.02126	81.236
13	0.71408	0.01930	83.166
14	0.64407	0.01741	84.907
15	0.62147	0.01680	86.587
16	0.59921	0.01619	88.206
17	0.51727	0.01398	89.604
18	0.47707	0.01289	90.893

(table continues)

Table 59 (continued)

Variable	Eigenvalue	Proportion of Variance	Cumulative Proportion of Variance
19	0.42821	0.01157	92.05
20	0.40006	0.01081	93.131
21	0.34356	0.00929	94.06
22	0.29465	0.00796	94.856
23	0.25384	0.00686	95.542
24	0.25293	0.00684	96.226
25	0.22845	0.00617	96.843
26	0.22475	0.00607	97.45
27	0.21212	0.00573	98.023
28	0.16269	0.00440	98.463
29	0.14550	0.00393	98.856
30	0.11253	0.00304	99.16
31	0.09605	0.00260	99.42
32	0.07408	0.00200	99.62
33	0.06413	0.00173	99.793
34	0.04642	0.00125	99.918
35	0.01604	0.00043	99.961
36	0.01132	0.00031	99.992
37	0.00224	0.00006	99.998

Table 60 Parallel analysis based on principal component analysis on the organizational and social media barriers scale

Variable	Real-data eigenvalues	Mean of random eigenvalues	95 Percentile of random eigenvalues
1	12.32**	2.31	2.47
2	3.40**	2.14	2.26
3	2.67**	2.01	2.11
4	1.96*	1.89	1.98
5	1.82*	1.79	1.87
6	1.52	1.70	1.77
7	1.30	1.62	1.70
8	1.26	1.55	1.62
9	1.09	1.48	1.54
10	1.02	1.41	1.47
11	0.90	1.35	1.40
12	0.79	1.28	1.34
13	0.71	1.22	1.27
14	0.64	1.16	1.22
15	0.62	1.11	1.16
16	0.60	1.05	1.11
17	0.52	1.00	1.06
18	0.48	0.95	1.00

Note: Correlation matrices analyzed: Polychoric correlation matrices. ** Advised number of dimensions when 95 percentile is considered: 3, * Advised number of dimensions when mean is considered: 5. (table continues)

Table 60 (continued)

Variable	Real-data eigenvalues	Mean of random eigenvalues	95 Percentile of random eigenvalues
19	0.43	0.90	0.95
20	0.40	0.86	0.90
21	0.34	0.81	0.85
22	0.29	0.77	0.81
23	0.25	0.72	0.76
24	0.25	0.68	0.72
25	0.23	0.64	0.68
26	0.22	0.60	0.64
27	0.21	0.56	0.60
28	0.16	0.52	0.56
29	0.15	0.48	0.52
30	0.11	0.44	0.48
31	0.10	0.40	0.44
32	0.07	0.36	0.41
33	0.06	0.33	0.37
34	0.05	0.29	0.33
35	0.02	0.25	0.29
36	0.01	0.21	0.25
37	0.00	0.16	0.21

Note: Correlation matrices analyzed: Polychoric correlation matrices. ** Advised number of dimensions (95 percentile): 3, * Advised number of dimensions (mean): 5.

APPENDIX I

DISCRIMINANT FUNCTION ANALYSIS FOR THE FIVE FACTORS OF

ORGANIZATIONAL AND SOCIAL MEDIA BARRIERS

Table 61 Means and standard deviations of the comparison of participants' gender on the five factors

Discriminating Variable	Group				*F*
	Male		*Female*		
	M	*SD*	*M*	*SD*	
Clients	2.91	1.02	2.78	1.11	0.50
Skills	2.39	1.13	2.42	1.07	0.02
Organization	2.48	1.15	2.33	1.12	0.56
Social Media	2.34	1.00	2.33	1.02	0.00
Equipment/Internet	2.34	1.10	2.27	1.30	0.12

Note: * $p < .05$. Clients = Clients' interest and skills, Skills = Graphic skills, Organization = Organizational support, Social Media = Social media characteristics, Equipment/Internet = Availability of equipment and the Internet.

Table 62 Summary of the discriminant function analysis variables of gender

Variables	Discriminant Function		Group Centroids	
	b	*s*	Male	.11
Clients	0.86	0.56	Female	-.11
Skills	-0.60	-0.11		
Organization	0.76	-0.11		
Social Media	-0.49	0.03		
Equipment/Internet	0.08	0.28		
Eigenvalue	*Rc*		*Wilks' lambda*	*p*
.10	.11		.99	.91

Note: b = standardized discriminant function coefficient, s = within-group structure coefficients, Rc = canonical correlation coefficient, Clients = Clients' interest and skills, Skills = Graphic skills, Organization = Organizational support, Social Media = Social media characteristics, Equipment/Internet = Availability of equipment and the Internet.

Table 63 Classification of participants by gender

Actual Group	*n*	Predicted Group	
		Male	*Female*
Male	65	29 (44.6%)	36 (55.4%)
Female	69	25 (36.2%)	44 (63.8%)

Note: n = number of cases, 54.5 % of original grouped cases correctly classified.

Table 64 Means and standard deviations of the comparison of participants current MSU-E position on the five factors

Discriminating Variable	Group				*F*
	Extension Faculty		*Extension Agents*		
	M	*SD*	*M*	*SD*	
Clients	2.69	0.99	2.95	1.07	1.81
Skills	2.39	1.12	2.44	1.09	0.05
Organization	2.44	1.08	2.42	1.17	0.01
Social Media	2.11	0.83	2.48	1.06	4.14*
Equipment/Internet	2.28	1.17	2.34	1.22	.07

Note: * $p < .05$. Clients = Clients' interest and skills, Skills = Graphic skills, Organization = Organizational support, Social Media = Social media characteristics, Equipment/Internet = Availability of equipment and the Internet.

Table 65 Summary of the discriminant function analysis variables of current MSU-E position

Variables	Discriminant Function		Group Centroids	
	b	*s*	Faculty	-.33
Clients	0.28	0.51	Agents	.16
Skills	-0.54	0.09		
Organization	-0.51	-0.03		
Social Media	1.13	0.77		
Equipment/Internet	0.17	0.10		
Eigenvalue	*Rc*		*Wilks' lambda*	*p*
.05	.22		.95	.25

Note: b = standardized discriminant function coefficient, s = within-group structure coefficients, Rc = canonical correlation coefficient. Clients = Clients' interest and skills, Skills = Graphic skills, Organization = Organizational support, Social Media = Social media characteristics, Equipment/Internet = Availability of equipment and the Internet.

Table 66 Classification of participants by current MSU-E position

Actual Group	*n*	Predicted Group	
		Extension Faculty	*Extension Agent*
Faculty	44	3 (6.8%)	41 (93.2%)
Extension Agent	90	3 (3.3%)	87 (96.7%)

Note: n = number of cases, 67.2 % of original grouped cases correctly classified.

Table 67 Means and standard deviation of the comparison of participants' experience groups on the five factors

Discriminating Variable	Group						*F*
	0-10 years		*11-20 years*		*21-30 years*		
	M	*SD*	*M*	*SD*	*M*	*SD*	
Clients	2.72	1.08	3.03	1.03	2.82	0.93	.99
Skills	2.32	1.20	2.58	0.99	2.52	0.99	.66
Organization	2.24	1.16	2.70	1.11	2.61	1.03	2.21
Social Media	2.10	0.97	2.64	1.01	2.78	1.05	5.48*
Equipment/Internet	2.20	1.17	2.55	1.33	2.43	1.11	1.03

Note: * $p < .05$. Clients = Clients' interest and skills, Skills = Graphic skills, Organization = Organizational support, Social Media = Social media characteristics, Equipment/Internet = Availability of equipment and the Internet.

Table 68 Summary of the discriminant function analysis variables of experience groups

Variables	Discriminant Function				Group Centroids		
	b		*s*				
	1	2	1	2	years	1	2
Clients	-0.34	0.97	0.28	0.77	0-10	-0.28	-0.02
Skills	-0.41	-0.02	0.28	0.35	11-20	0.31	0.16
Organization	0.25	0.39	0.53	0.57	21-30	0.53	-0.18
Social Media	1.17	-0.64	0.88	0.16			
Equipment/Internet	0.14	0.28	0.34	0.50			

Eigenvalue	*Rc*		*Wilks' lambda*	*p*
.12	.32	1 through 2	.88	.32
.01	.11	2	.99	.83

Note: b = standardized discriminant function coefficient, s = within-group structure coefficients, Rc = canonical correlation coefficient. Clients = Clients' interest and skills, Skills = Graphic skills, Organization = Organizational support, Social Media = Social media characteristics, Equipment/Internet = Availability of equipment and the Internet.

Table 69 Classification of participants by experience

Actual Group	*n*	Predicted Group		
		0-10 years	*11-20 years*	*21-30 years*
0-10 years	73	68 (93.2%)	5 (6.8%)	0 (0.0%)
11-20 years	31	26 (83.9%)	3 (9.7%)	2 (6.5%)
21-30 years	20	17 (85.0%)	1 (5.0%)	2 (10.0%)

Note: n = number of cases, 58.9% of original grouped cases correctly classified.

Table 70 Means and standard deviation of the comparison of participants' educational level groups on the five factors

Discriminating Variable	Group						*F*
	Bachelor's Degree		*Master's Degree*		*Doctoral Degree*		
	M	*SD*	*M*	*SD*	*M*	*SD*	
Clients	3.06	1.01	2.85	1.07	2.78	1.05	0.43
Skills	2.59	1.05	2.40	1.14	2.37	1.04	0.25
Organization	2.14	1.04	2.44	1.20	2.51	1.08	0.64
Social Media	2.71	1.16	2.37	1.03	2.18	0.91	1.70
Equipment/Internet	1.82	0.87	2.45	1.28	2.24	1.13	1.98

Note: *$p < .05$. Clients = Clients' interest and skills, Skills = Graphic skills, Organization = Organizational support, Social Media = Social media characteristics, Equipment/Internet = Availability of equipment and the Internet.

Table 71 Summary of the discriminant analysis variables of educational level groups

Variables	Discriminant Function				Group Centroids		
	b		*s*				
	1	*2*	*1*	*2*	*Educational level*	*1*	*2*
Clients	-0.03	-0.05	-0.29	0.09	Bachelor's	-0.71	-0.09
Skills	-0.15	-0.46	-0.22	-0.03	Master's	0.06	0.14
Organization	0.63	-0.67	0.35	-0.05	Doctoral	0.19	-0.20
Social Media	-0.91	0.68	-0.54	0.36			
Equipment/Internet	0.51	1.01	0.48	0.71			

Eigenvalue	*Rc*		*WL*	*p*
0.08	0.27	1 through 2	0.91	0.24
0.02	0.15	2	0.98	0.54

Note: b = standardized discriminant function coefficient, s = within-group structure coefficients, Rc = canonical correlation coefficient, WL = Wilks' lambda. Clients = Clients' interest and skills, Skills = Graphic skills, Organization = Organizational support, Social Media = Social media characteristics, Equipment/Internet = Availability of equipment and the Internet.

Table 72 Classification of participants by educational level

Actual Group	*n*	Predicted Group		
		Bachelor's Degree	*Master's Degree*	*Doctoral Degree*
Bachelor's Degree	17	3 (17.6%)	14 (82.4%)	0 (0.0%)
Master's Degree	74	1 (1.4%)	71 (95.9%)	2 (2.7%)
Doctoral Degree	42	0 (0.0%)	40 (95.2%)	2 (4.8%)

Note: n = number of cases, 57.1 % of original grouped cases correctly classified.

Table 73 Means and standard deviation of the comparison of participants' age groups on the five factors

Discriminating Variable	Group (Years old)								*F*
	25-34		*35-44*		*45-54*		*55-64*		
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	
Clients	2.58	1.11	2.88	1.08	2.70	1.00	3.32	0.91	2.96*
Skills	2.29	1.26	2.39	1.12	2.27	0.95	2.77	1.00	1.35
Organization	2.24	1.18	2.30	1.18	2.44	1.10	2.78	1.02	1.40
Social Media	2.02	0.97	2.23	1.02	2.30	0.92	2.97	0.90	5.50*
Equipment/Internet	2.39	1.27	2.37	1.30	2.28	1.09	2.15	1.12	0.24

Note: *$p < .05$, M = Mean, SD = Standard deviation. Clients = Clients' interest and skills, Skills = Graphic skills, Organization = Organizational support, Social Media = Social media characteristics, Equipment/Internet = Availability of equipment and the Internet.

Table 74 Summary of the discriminant function analysis variables of age groups

Variables	Discriminant Function						Group Centroids			
	b			*s*						
	1	*2*	*3*	*1*	*2*	*3*	*Age*	*1*	*2*	*3*
Clients	0.20	0.89	-0.65	0.57	0.71	-0.24	25-34	-0.41	-0.01	0.06
Skills	-0.09	0.51	1.18	0.38	0.47	0.71	35-44	-0.16	0.15	-0.04
Organization	0.34	-0.61	0.13	0.41	-0.22	0.19	45-54	-0.03	-0.19	-0.04
Social Media	0.82	-0.49	-0.21	0.82	0.07	0.07	55-64	0.78	0.03	0.03
Equipment/ Internet	-0.63	0.22	-0.28	-0.17	0.14	0.01				

Eigenvalue	*Rc*		*W*	*p*
.19	.40	1 through 2	.83	.06
.02	.13	2 through 3	.98	.97
.002	.05	3	.99	.96

Note: b = standardized discriminant function coefficient, s = within-group structure coefficients, Rc = canonical correlation coefficient, W = Wilks' lambda. Clients = Clients' interest and skills, Skills = Graphic skills, Organization = Organizational support, Social Media = Social media characteristics, Equipment/Internet = Availability of equipment and the Internet.

Table 75 Classification of Extension employees by age groups

Actual Group (Years old)	*n*	Predicted Group			
		25-34	*35-44*	*45-54*	*55-64*
25-34	35	14 (40.0%)	11 (31.4%)	5 (14.3%)	5 (14.3%)
35-44	40	12 (30.0%)	18 (45.0%)	3 (7.5%)	7 (17.5%)
45-54	32	7 (21.9%)	15 (46.9%)	4 (12.5%)	6 (18.8%)
55-64	28	2 (7.1%)	9 (32.1%)	3 (10.7%)	14 (50.0%)

Note: n = number of cases, 37% of original grouped cases correctly classified.

APPENDIX J

DISCRIMINANT FUNCTION ANALYSIS FOR PERCEIVED USEFULNESS,

FACEBOOK SELF-EFFICACY, AND ATTITUDE

Table 76 Means and standard deviations of the comparison of participants' gender on the three factors

Discriminating Variable	Group				*F*
	Male		*Female*		
	M	*SD*	*M*	*SD*	
Attitude toward SM	4.16	0.79	4.04	0.81	0.50
Perceived Usefulness	3.92	0.84	3.82	0.68	0.38
Facebook self-efficacy	3.67	0.99	3.62	0.75	0.06

Note: * $p < .05$. SM = Social Media.

Table 77 Summary of the discriminant function analysis variables of gender

Variables	Discriminant Function		Group Centroids	
	b	*s*	Male	0.11
Attitude toward SM	0.69	0.91	Female	-0.06
Perceived Usefulness	0.49	0.80		
Facebook self-efficacy	-0.06	0.31		
Eigenvalue	*Rc*		*Wilks' lambda*	*p*
.007	.08		.993	.90

Note: b = standardized discriminant function coefficient, s = within-group structure coefficients, Rc = canonical correlation coefficient, SM = Social Media.

Table 78 Classification of participants by gender

Actual Group	*n*	Predicted Group	
		Male	*Female*
Male	31	0 (0.0%)	31 (100%)
Female	62	0 (0.0%)	62 (100%)

Note: n = number of cases, 66.7% of original grouped cases correctly classified.

Table 79 Means and standard deviations of the comparison of participants' current MSU-E position on the three factors

Discriminating Variable	Group				*F*
	Extension Faculty		*Extension Agents*		
	M	*SD*	*M*	*SD*	
Attitude toward SM	4.10	0.69	4.08	0.84	0.01
Perceived Usefulness	3.73	1.01	3.91	0.65	0.96
Facebook self-efficacy	3.89	0.87	3.56	0.82	2.48

Note: * $p < .05$. SM = Social Media.

Table 80 Summary of the discriminant function analysis variables of current MSU-E position

Variables	Discriminant Function		Group Centroids	
	b	*s*	Faculty	0.51
Attitude toward SM	0.33	-0.38	Agents	-0.14
Perceived Usefulness	-1.00	0.61		
Facebook self-efficacy	1.00	0.03		
Eigenvalue	*Rc*		*Wilks' lambda*	*p*
.07	.26		.93	.10

Note: b = standardized discriminant function coefficient, s = within-group structure coefficients, Rc = canonical correlation coefficient, SM = Social Media.

Table 81 Classification of participants by current MSU-E position

Actual Group	*n*	Predicted Group	
		Extension Faculty	*Extension Agents*
Faculty	20	1 (5.0%)	19 (95.0%)
Agents	74	0 (0.0%)	74 (100%)

Note: n = number of cases, 79.8% of original grouped cases correctly classified.

Table 82 Means and standard deviation of the comparison of participants' experience groups on the thee factors

Discriminating Variable	Group						*F*
	0-10 years		*11-20 years*		*21-30 years*		
	M	*SD*	*M*	*SD*	*M*	*SD*	
Attitude toward SM	4.13	0.78	4.18	0.69	3.97	1.02	0.35
Perceived Usefulness	4.04	0.77	3.77	0.73	3.70	0.60	1.84
Facebook self-efficacy	3.98	0.71	3.31	0.71	3.31	0.86	8.56*

Note: * $p < .05$, SM = Social Media.

Table 83 Summary of the discriminant function analysis variables of experience groups

Variables	Discriminant Function				Group Centroids		
	b		*s*				
	1	*2*	*1*	*2*	*years*	*1*	*2*
Attitude toward SM	-0.31	1.04	0.04	1.00	0-10	0.44	0.00
Perceived Usefulness	0.26	-0.08	0.44	0.43	11-20	-0.53	0.11
Facebook self-efficacy	0.94	-0.01	0.96	0.21	21-30	-0.48	-0.15

Eigenvalue	*Rc*		*Wilks' lambda*	*p*
.23	.433	1 through 2	.81	.01
.01	.09	2	.99	.72

Note: b = standardized discriminant function coefficient, s = within-group structure coefficients, Rc = canonical correlation coefficient, SM = Social Media.

Table 84 Classification of participants by experience

Actual Group	*n*	Predicted Group		
		0-10 years	*11-20 years*	*21-30 years*
0-10 years	45	42 (93.3%)	0 (0.0%)	3 (6.7%)
11-20 years	22	13 (59.1%)	9 (40.9%)	0 (0.0%)
21-30 years	17	12 (70.6%)	5 (29.4%)	0 (0.0%)

Note: n = number of cases, 60.7% of original grouped cases correctly classified.

Table 85 Means and standard deviation of the comparison of participants' educational level groups on the three factors

Discriminating Variable	Group						*F*
	Bachelor		*Master*		*Doctoral*		
	M	*SD*	*M*	*SD*	*M*	*SD*	
Attitude toward SM	4.29	0.71	4.06	0.84	4.05	0.78	0.43
Perceived Usefulness	4.09	0.60	3.92	0.68	3.59	0.95	2.09
Facebook self-efficacy	3.81	0.56	3.60	0.88	3.59	0.87	0.34

Note: *$p < .05$, SM = Social media.

Table 86 Summary of the discriminant analysis variables of educational level groups

Variables	Discriminant Function				Group Centroids		
	b		*s*				
	1	*2*	*1*	*2*	Educational level	*1*	*2*
Attitude toward SM	-0.40	0.78	0.14	0.80	Bachelor	0.18	0.28
Perceived Usefulness	1.24	-0.21	0.89	0.46	Master	0.10	-0.06
Facebook self-efficacy	-0.35	0.66	0.11	0.71	Doctoral	-0.45	0.02

Eigenvalue	*Rc*		*WL*	*p*
.06	.23	1 through 2	.94	.43
.01	.11	2	.99	.56

Note: b = standardized discriminant function coefficient, s = within-group structure coefficients, Rc = canonical correlation coefficient, SM = Social Media, WL = Wilks' lambda.

Table 87 Classification of participants by educational level

Actual Group	*n*	Predicted Group		
		Bachelor's Degree	*Master's Degree*	*Doctoral Degree*
Bachelor's Degree	12	0 (0.0%)	12 (100%)	0 (0.0%)
Master's Degree	62	0 (0.0%)	62 (100%)	0 (0.0%)
Doctoral Degree	19	0 (0.0%)	18 (94.7%)	1 (5.3%)

Note: n = number of cases, 67.7% of original grouped cases correctly classified.

Table 88 Means and standard deviation of the comparison of participants' age groups on the three factors

Discriminating Variable	Group (Years old)								*F*
	25-34		*35-44*		*45-54*		*55-64*		
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	
ATSM	4.38	0.68	3.87	0.86	4.12	0.92	4.00	0.66	1.96
PU	4.24	0.63	3.72	0.57	3.89	0.87	3.59	0.79	3.72*
FSE	4.22	0.63	3.41	0.84	3.68	0.73	3.14	0.75	9.07*

Note: *$p < .05$, ATSM = Attitude Toward Social Media, PU = Perceived Usefulness, FSE = Facebook Self-Efficacy.

Table 89 Summary of the discriminant function analysis variables of age groups

Variables	Discriminant Function						Group Centroids			
	b			*s*						
	1	*2*	*3*	*1*	*2*	*3*	*Age*	*1*	*2*	*3*
ATSM	0.21	1.10	-0.13	0.39	0.87	0.30	25-34	0.87	0.03	0.01
PU	0.23	-0.47	1.06	0.60	-0.02	0.80	35-44	-0.36	-0.16	0.00
FSE	0.84	-0.16	-0.63	0.93	-0.21	-0.29	45-54	0.07	0.02	-0.02
							55-64	-0.66	0.17	0.01

Eigenvalue	*Rc*		*WL*	*p*
0.35	0.51	1 through 2	0.73	0.001
0.02	0.12	2 through 3	0.99	0.85
0.00	0.01	3	1.00	0.91

Note: b = standardized discriminant function coefficient, s = within-group structure coefficients, Rc = canonical correlation coefficient, WL = Wilks' lambda, ATSM = Attitude Toward Social Media, PU = Perceived Usefulness, FSE = Facebook Self-Efficacy.

Table 90 Classification of participants by age groups

Actual Group (Years old)	*n*	Predicted Group			
		25-34	*35-44*	*45-54*	*55-64*
25-34	25	16 (64.0%)	8 (32.0%)	1 (4.0%)	0 (0.0%)
35-44	28	6 (21.4%)	19 (67.9%)	0 (0.0%)	3 (4.8%)
45-54	21	5 (23.8%)	15 (71.4%)	0 (0.0%)	1 (4.8%)
55-64	20	2 (10.0%)	13 (65.0%)	0 (0.0%)	5 (25.0%)

Note: n = number of cases, 42.6% of original grouped cases correctly classified.