Journal of Agricultural Education, 63(2), 131-149
https://doi.org/10.5032/jae.2022.02131

Finding the Right Channel: An Analysis of Communication Channel Preferences Amongst Potential Extension Clientele

Ashley A. Carroll[1], Kevan W. Lamm[2], and Abigail Borron[3]

Abstract

New communication methods and technology continue to emerge and evolve – as do societal trends – making it paramount that Extension professionals stay abreast with the preferred communication channels of potential clientele. By being aware of clients' preferred communication channels, Extension professionals can increase the number of participants who benefit from their work while also improving the quality of the message being delivered. The present study examined the preferred communication channels of potential Extension clientele specifically when gathering information regarding their community. Specifically, a non-probability opt-in sampling procedure was employed whereby respondent (N = 3,347) communication channel preferences were analyzed from an audience segmentation and uses and gratifications perspective. Overall, the results indicated the most effective channels through which to reach potential Extension clientele under 50 years of age is through the internet and social media, while word of mouth and newspaper are preferred channels for those 50 and over. However, the results of the study indicate there are a variety of potential communication channels with varying degrees of preference among different audiences. Using study results as a starting point to inform communication channel strategy may help to Extension professionals ensure the correct message is provided to the correct audience via the correct channel.

***Keywords*:** communication channel preferences; extension programming; audience analysis

Author Note: Corresponding Author: Kevan W. Lamm, KL@uga.edu, Department of Agricultural Leadership, Education and Communication, University of Georgia, 141 Four Towers Building, Athens, GA, 30602, USA. ORCID: 0000-0001-5238-8842
This work was supported by the University of Georgia with which the authors have a professional relationship. We have disclosed these interests fully to the Journal of Agricultural Education and have in place a plan for managing any potential conflicts arising from this arrangement.

Introduction

For more than 100 years, Cooperative Extension has "translated the science of everyday living" from land grant universities to citizens throughout the United States and internationally through a variety of communication channels (Cooperative Extension History, n.d.). Such channels included research bulletins, news articles, lectures, and field demonstrations – all, of which, established and capitalized on the Cooperative Extension System's priority to meet people at the local level in a timely and effective manner. Today, those channels are still in use but have evolved in capacity and reach. In addition, new communication methods and technology continue to emerge and evolve – as do societal trends – making it paramount that Extension professionals stay abreast with the preferred communication channels of potential clientele and not becoming complacent with successful past methods. By being aware of clients'

[1]Ashley A. Carroll is the Tift County Extension Agent and a graduate student in the Department of Agricultural Leadership, Education, and Communication at the University of Georgia (ashleyc@uga.edu)
[2] Kevan W. Lamm is an Assistant Professor in the Department of Agricultural Leadership, Education and Communication at the University of Georgia; 141 Four Towers, Athens, GA 30602 (KL@uga.edu)
[3]Abigail Borron is an Associate Professor in the Department of Agricultural Leadership, Education and Communication at the University of Georgia; 143 Four Towers, Athens, GA 30602 (aborron@uga.edu)

preferred communication channels, Extension professionals can increase the number of participants who benefit from their work while also improving the quality of the message being delivered.

Consumer behavior related to seeking information is constantly evolving (Liu, 2020). In decades past, organizations relied heavily on physical mail and postage to communicate with clientele. However, the emergence of the internet has forever changed how communication takes place. Whether through email, websites, social media, video conferencing or a variety of other virtual platforms and tools, most consumers have nearly 24/7 access to information online. As of February 2021, 85% of adults in the United States own smart phones, and this rate has more than doubled in the last ten years (O'Dea, 2021).

New communication platforms are regularly being developed and adopted by organizations to better reach their clients. In 2017, Forbes Technology Council highlighted the trends in communication preferences with the popularity of live chat rapidly increasing (Leshchenko, 2018). As smart phone applications demonstrated a capacity to ease workflow and audience engagement, early adopters in Extension began employing them, setting the stage for others within the system to follow suit (Dvorak et al., 2012). Beattie et al (2019) found that social media, especially Facebook at the time of the study, have become a popular and successful method for communicating with diverse 4-H stakeholders.

Although the swift adoption of the internet has increased the reliance on virtual communication channels, Extension professionals must keep in mind the limitations that come from complete reliance on online communication. In a study conducted to determine communication preferences for land owners in the Texas Little River Watershed, authors identified that lack of access to information was negatively related to respondents' ability to adopt best management practices (Dewald et al., 2018). Participants stated that they preferred to receive water-related information via a variety of channels including websites monthly and direct mailings. "In addition to accessible information, landowners choose to absorb messages based on their perception of the sources' trustworthiness" (Dewald et al., 2018, p. 344).

A similar study was conducted in 2016 to determine the communication channel preferences of agricultural opinion leaders in agricultural and natural resource leadership development programs. This study identified meetings and web pages as the most preferred methods of communication with conference calls and Twitter being identified as the least preferred channels (Lamm et al., 2016).

The current study expands upon previous research to provide insights regarding potential Extension clientele and their preferred communication channels within a particular context, specifically, how individuals gather information regarding their community. Utilizing preferred communication channels can enable Extension professionals to improve the likelihood that an intended audience receives their information, subsequently choosing to adopt recommended practices and/or participating in programs being promoted.

Conceptual Framework

The conceptual framework for this research study was based on the integration of uses and gratifications (Katz et al., 1974) and audience segmentation (Bonoma & Shapiro, 1983) within the Ecological Model for Leadership Contexts framework (Lamm et al., 2020). These frameworks were selected with the understanding that within any given audience, such as potential Extension clientele in this study, there are differences that can be examined to better understand smaller subsets of the audience.

Audience Segmentation

Audience segmentation is the process of organizing a group of people, such as survey respondents, based on similar characteristics like demographics, region or employment status (Bonoma & Shapiro, 1983). The technique is often used by mass media and advertising companies to design the most

effective campaigns for their intended audience. "Using audience segmentation can be an effective way to deliver tailored content to specific audiences, and different audiences have different communication channel preferences" (Lamm et al., 2019, p. 13). When communicating to address the needs of a specific audience, audience segmentation should be considered before developing the message and selecting the channel used to communicate the message (Slater, 1996). Tailoring a message to a specific audience using audience segmentation can improve the message's effectiveness. Extension has utilized segmentation of email systems to better provide clientele with the content they prefer by allowing clientele to select from topics about which they are most interested in receiving information (McGuire & Hoheisel, 2013). "Of special interest to extension professionals working in today's reality of limited resources, audience segmentation can inform a structured decision-making process for whom to prioritize and how when delivering programs to an essentially limitless target audience" (Gibson et al, 2020, p. 158).

Uses and Gratifications

Uses and gratifications is a positivistic theory often used to study communication in mass media. This theory considers consumers of information as active participants in the exchange of media mainly because they are purposely seeking specific information to address their needs (Matei, 2014). Opposed to other communications theories, uses and gratifications assumes that audiences choose which media to engage with to fulfill their needs and interests (Katz et al., 1974). Uses and gratifications theory can be used to address why audiences interact with the select media – such as gaining knowledge, enhancing social interaction and escaping (Beattie et al., 2019). Understanding the motivating factors for audiences' selection of specific media can assist Extension professionals in selecting the appropriate communication channel (Beattie et al., 2019).

Ecological Model of Leadership Contexts

The Ecological Model of Leadership Contexts was developed based on the McLeroy et al. (1988) ecological model for health promotion, Bronfenbrenner's (2005) ecological framework for human development, and the Glass and McAtee (2006) ecosocial model (Lamm et al., 2020). The model assumes that humans and their behavior are influenced by their environment; and that environmental factors closer to the subject have more impact on them than those environmental factors that are distal. The model has four levels of environmental influence outside of the individual. These levels range from most proximal to most distal, including: stable person, achievement person, work context, and work environment. Biological characteristics such as sex, age, race and ethnicity are all variables of the stable person level. Variables within the achievement person level include education level and the status and level of employment. The next level is work context which includes the occupational sector, organizational size and occupational category of the individual. The final and farthest level from the individual is the work environment level. Rurality, geographic region and country are the variables at this level.

Integration of Audience Segmentation, Uses and Gratifications and Ecological Model of Leadership Contexts

Uses and gratifications theory states that people engage in different media to fulfill their individual needs, and the integration of audience segmentation allows for the grouping of audience members based on similar characteristics. Utilizing audience segmentation can inform the process of identifying which communication channels individuals with specific characteristics might prefer, additionally, Bonoma and Shapiro (1983, as cited in Slater, 1996) "argued that segmentation strategies form a nested hierarchy" (p. 270). The Ecological Model of Leadership Contexts provides a nested hierarchy framework and structured approach to distinguish subsets within the audience at the different levels regarding influences from their environment. Integrating these three concepts may better illuminate

the considerations Extension professionals should undertake to make more informed decisions about communication channels and tailor messages more effectively based on their intended audience.

Summary of Literature Based on Ecological Model Characteristics:

The different levels of environmental influences within the Ecological Model of Leadership Contexts can be used to differentiate among subgroups of an audience. The first level of the model is the stable person which includes variables such as sex, age, race and ethnicity.

Previous research has sought to determine the role gender differences play in using social networking sites. For example, "While women are mainly driven by relational uses, such as maintaining close ties and getting access to social information on close and distant networks, men base their continuance intentions on their ability to gain information of a general nature" (Krasnova et al., 2017, p. 276). Another study on the communication channel preferences of opinion leaders found that "females and younger individuals are more likely to prefer informal meetings than their counterparts" (Lamm et al., 2019, p. 13). Understanding that characteristics, such as gender and age, can help predict the preferences of an intended audience may further inform the methods Extension professionals use to communicate with that audience.

Lamm et al. (2019) also found that although there are some communication channels that rank more favorably with a particular subgroup, using a dedicated webpage or blog was the most effective method for communicating agricultural and natural resource opinion leaders, regardless of audience segmentation. Using an audience segmentation approach Warner et al. (2017) also found that visiting a website was the most preferred communication channel for learning about water conservation, but when looking at the subgroups of the water considerate majority, the water savvy conservationists and the unconcerned water users, watching television and reading print materials were also highly preferred methods.

Gibson et al. (2020) found that rurality (work environment level of the Ecological Model of Leadership Contexts) is a factor when communicating with audiences. The results indicated urban audiences may benefit from in-person or virtual experiences at a farm while suburban residents may need more introductory agricultural education. Previous research may therefore indicate the utility for Extension professionals to used tailored communication channels and messages when reaching and teaching specific audiences.

Purpose & Research Objectives

The purpose of this study was to examine the preferred communication channels of potential Extension clientele specifically when gathering information regarding their community. The study was driven by the following research objectives:

1. Describe potential Extension clientele communication channel preferences regarding information related to their community based on audience segmentation and uses and gratifications within the Ecological Model of Leadership Contexts framework characteristics.
2. Determine whether Ecological Model of Leadership Contexts characteristics were statistically significantly associated with communication channel preferences.

Methods

Targeting residents from every county in the state of Georgia, a non-probability opt-in sampling approach designed by an online survey company was utilized to develop a sampling frame as recommended within the literature (see Lamm & Lamm, 2019). As recommended within the literature (Kirkman & Chen, 2011) it is important to note the data were collected as part of a larger research study.

The data collection method included an online questionnaire with attention filters, resulting in 3,347 completed surveys. There were 152 out of 159 Georgia counties represented in the study with a range of one to 308 responses per county. The attention filters included asking respondents to select a specific response within the question set (Lamm & Lamm, 2019), as well as total duration monitoring to ensure a minimum amount of time had been spent completing the survey (Lamm & Lamm, 2019).

Content validity, response process validity and internal structure validity were all examined before the survey instrument was employed. This process included an expert panel review, a review of corresponding literature and a pilot of the instrument with a representative sample of similar respondents. The expert panel included individuals with expertise regarding Extension programming, communication best practices, Extension evaluation, and survey research methods.

In addition to self-reporting demographic data, the online questionnaire asked respondents, "Where do you get your information about your community?" to which they were able to select from a list of available options. The options were based on a researcher-developed list informed by previous research (see Lamm et al., 2016) and expert panel input in the instrument development process. The specific options included: newspaper, social media, internet, magazine, farming organizations, family/friends, attending events/activities, governmental website, self-observation, television and radio. Respondents were also able to select an "Other" communication channel option and manually add information in a provided text entry box. Additionally, a "None of the above" option was also provided.

Due to the non-probability sampling method utilized, results from this study cannot be generalized; therefore, non-response bias was not a factor. The Statistical Package for Social Sciences (SPSS) version 26 was used to analyze the data collected from respondents. Descriptive statistics were calculated to identify respondents' most and least preferred channels for receiving information. Associations between Ecological Model for Leadership Contexts characteristics and communication channel preferences were tested using Chi-square analysis. Cramer's V (Φ) was calculated to determine effect sizes of associations with effect size interpretations according to Cohen (1988). The level of significance was established *a priori* at .05.

Results

A summary of the overall frequency counts are presented in Table 1. Across all respondents, the internet communication channel had the highest frequency of responses indicating it was a preferred communication channel.

Table 1

Communication Channel Preference Frequency Counts

Characteristic	*Yes*		*No*	
	f	*%*	*f*	*%*
Internet	1956	58.0	1418	42.0
Family and friends	1902	56.4	1472	43.6
Social media	1854	54.9	1520	45.1
Newspaper	1556	46.1	1818	53.9
Self-observation	1429	42.4	1945	57.6
Television	1215	36.0	2159	64.0
Attending events/activities	983	29.1	2391	70.9
Radio	822	24.4	2552	75.6
Governmental website	659	19.5	2715	80.5
Magazine	286	8.5	3088	91.5
Farming organizations	98	2.9	3276	97.1

Table 1

Communication Channel Preference Frequency Counts, continued…

Other	53	1.6	3321	98.4

Across all channels analyzed in the study, the internet communication channel (Table 2), had the highest frequency of indicated preference. When further analyzing the internet communication channel, an association between age and the highest level of education categories were observed. The calculated effect sizes were both small (Cohen, 1988). Generally, preference for the internet tended to decrease with age.

Table 2

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Internet

Characteristic	*Yes*		*No*				
	f	*%*	*f*	*%*	*n*	χ^2	Φ
Gender						.05	.00
Male	817	58.2%	587	41.8%	1404		
Female	1139	57.8%	831	42.2%	1970		
Age						42.25***	.11
Under 20	89	66.4%	45	33.6%	134		
20 to 29	414	64.6%	227	35.4%	641		
30 to 39	439	62.5%	263	37.5%	702		
40 to 49	332	57.1%	249	42.9%	581		
50 to 59	280	51.8%	261	48.2%	541		
60 to 69	262	52.5%	237	47.5%	499		
70 and Over	140	50.7%	136	49.3%	276		
Occupational Work Level						5.91	.06
Nonsupervisory employee	559	59.3%	383	40.7%	942		
Manager	309	65.2%	165	34.8%	474		
Owner, CEO, President	156	59.1%	108	40.9%	264		
Not applicable	142	57.7%	104	42.3%	246		
Highest Level of Education						18.43**	.07
Less than 12th grade	48	43.6%	62	56.4%	110		
High school diploma/GED	334	53.6%	289	46.4%	623		
Some college, no degree	489	59.0%	340	41.0%	829		
2-year college degree	253	57.9%	184	42.1%	437		
4-year college degree	544	61.1%	347	38.9%	891		
Graduate or Professional degree	288	59.5%	196	40.5%	484		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Analyzing the family and friends communication channel (Table 3), an association between gender categories was observed. The calculated effect size was small (Cohen, 1988). Overall, the data indicate females preferred the family-based communication channel more than males.

Table 3

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Family and Friends

Characteristic	*Yes*		*No*				
	f	%	*f*	%	*n*	χ^2	Φ
Gender						16.38***	.07
Male	734	52.3%	670	47.7%	1404		
Female	1168	59.3%	802	40.7%	1970		
Age						6.74	.05
Under 20	89	66.4%	45	33.6%	134		
20 to 29	356	55.5%	285	44.5%	641		
30 to 39	394	56.1%	308	43.9%	702		
40 to 49	323	55.6%	258	44.4%	581		
50 to 59	302	55.8%	239	44.2%	541		
60 to 69	276	55.3%	223	44.7%	499		
70 and Over	162	58.7%	114	41.3%	276		
Occupational Work Level						1.67	.03
Nonsupervisory employee	534	56.7%	408	43.3%	942		
Manager	254	53.6%	220	46.4%	474		
Owner, CEO, President	149	56.4%	115	43.6%	264		
Not applicable	132	53.7%	114	46.3%	246		
Highest Level of Education						2.93	.03
Less than 12th grade	56	50.9%	54	49.1%	110		
High school diploma/GED	355	57.0%	268	43.0%	623		
Some college, no degree	480	57.9%	349	42.1%	829		
2-year college degree	244	55.8%	193	44.2%	437		
4-year college degree	491	55.1%	400	44.9%	891		
Graduate or Professional degree	276	57.0%	208	43.0%	484		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Analyzing the social media communication channel (Table 4), an association between all categories were observed. The calculated effect sizes ranged from small to almost medium (Cohen, 1988). In general, females tended to prefer social media when compared to males. Younger respondents tended to prefer social media when compared to older respondents; however, the divergence did not generally occur until respondents indicated they were 50 or older.

Table 4

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Social Media

Characteristic	*Yes*		*No*				
	f	%	*f*	%	*n*	χ^2	Φ
Gender						111.60***	.18
Male	621	44.2%	783	55.8%	1404		
Female	1233	62.6%	737	37.4%	1970		
Age						241.63***	.27
Under 20	89	66.4%	45	33.6%	134		
20 to 29	422	65.8%	219	34.2%	641		
30 to 39	470	67.0%	232	33.0%	702		
40 to 49	359	61.8%	222	38.2%	581		

Table 4

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Social Media, continued…

50 to 59	246	45.5%	295	54.5%	541		
60 to 69	183	36.7%	316	63.3%	499		
70 and Over	85	30.8%	191	69.2%	276		
Occupational Work Level						8.18*	.07
Nonsupervisory employee	552	58.6%	390	41.4%	942		
Manager	295	62.2%	179	37.8%	474		
Owner, CEO, President	136	51.5%	128	48.5%	264		
Not applicable	147	59.8%	99	40.2%	246		
Highest Level of Education						17.55**	.07
Less than 12th grade	58	52.7%	52	47.3%	110		
High school diploma/GED	350	56.2%	273	43.8%	623		
Some college, no degree	489	59.0%	340	41.0%	829		
2-year college degree	242	55.4%	195	44.6%	437		
4-year college degree	486	54.5%	405	45.5%	891		
Graduate or Professional degree	229	47.3%	255	52.7%	484		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Analyzing the newspaper communication channel (Table 5), an association between the categories of age and occupational work level were observed. The calculated effect sizes were both small (Cohen, 1988). Within the age characteristic, newspaper use tended to increase as age group increased.

Table 5

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Newspaper

Characteristic	*Yes*		*No*				
	f	%	*f*	%	*n*	χ^2	Φ
Gender						2.71	.03
Male	671	47.8%	733	52.2%	1404		
Female	885	44.9%	1085	55.1%	1970		
Age						59.21***	.13
Under 20	49	36.6%	85	63.4%	134		
20 to 29	243	37.9%	398	62.1%	641		
30 to 39	307	43.7%	395	56.3%	702		
40 to 49	272	46.8%	309	53.2%	581		
50 to 59	249	46.0%	292	54.0%	541		
60 to 69	269	53.9%	230	46.1%	499		
70 and Over	167	60.5%	109	39.5%	276		
Occupational Work Level						8.01*	.06
Nonsupervisory employee	434	46.1%	508	53.9%	942		
Manager	223	47.0%	251	53.0%	474		
Owner, CEO, President	139	52.7%	125	47.3%	264		
Not applicable	99	40.2%	147	59.8%	246		
Highest Level of Education						7.23	.05
Less than 12th grade	43	39.1%	67	60.9%	110		
High school diploma/GED	292	46.9%	331	53.1%	623		
Some college, no degree	380	45.8%	449	54.2%	829		

Table 5

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Newspaper, continued…

2-year college degree	199	45.5%	238	54.5%	437
4-year college degree	397	44.6%	494	55.4%	891
Graduate or Professional degree	245	50.6%	239	49.4%	484

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Analyzing the self-observation communication channel (Table 6), an association between highest level of education was observed. The calculated effect size was small (Cohen, 1988).

Table 6

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Self-Observation

Characteristic	*Yes*		*No*				
	f	*%*	*f*	*%*	*n*	χ^2	Φ
Gender						1.18	.02
Male	610	43.4%	794	56.6%	1404		
Female	819	41.6%	1151	58.4%	1970		
Age						10.21	.06
Under 20	50	37.3%	84	62.7%	134		
20 to 29	278	43.4%	363	56.6%	641		
30 to 39	289	41.2%	413	58.8%	702		
40 to 49	235	40.4%	346	59.6%	581		
50 to 59	228	42.1%	313	57.9%	541		
60 to 69	210	42.1%	289	57.9%	499		
70 and Over	139	50.4%	137	49.6%	276		
Occupational Work Level						6.95	.06
Nonsupervisory employee	395	41.9%	547	58.1%	942		
Manager	188	39.7%	286	60.3%	474		
Owner, CEO, President	121	45.8%	143	54.2%	264		
Not applicable	86	35.0%	160	65.0%	246		
Highest Level of Education						13.20*	.06
Less than 12th grade	39	35.5%	71	64.5%	110		
High school diploma/GED	239	38.4%	384	61.6%	623		
Some college, no degree	383	46.2%	446	53.8%	829		
2-year college degree	183	41.9%	254	58.1%	437		
4-year college degree	367	41.2%	524	58.8%	891		
Graduate or Professional degree	218	45.0%	266	55.0%	484		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Analyzing the television communication channel (Table 7), an association between age was observed. The calculated effect size was small (Cohen, 1988).

Table 7

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Television

Characteristic	*Yes*		*No*				
	f	%	*f*	%	*n*	χ^2	Φ
Gender						1.99	.02
Male	525	37.4%	879	62.6%	1404		
Female	690	35.0%	1280	65.0%	1970		
Age						40.01***	.11
Under 20	61	45.5%	73	54.5%	134		
20 to 29	192	30.0%	449	70.0%	641		
30 to 39	227	32.3%	475	67.7%	702		
40 to 49	190	32.7%	391	67.3%	581		
50 to 59	216	39.9%	325	60.1%	541		
60 to 69	214	42.9%	285	57.1%	499		
70 and Over	115	41.7%	161	58.3%	276		
Occupational Work Level						3.76	.04
Nonsupervisory employee	302	32.1%	640	67.9%	942		
Manager	161	34.0%	313	66.0%	474		
Owner, CEO, President	75	28.4%	189	71.6%	264		
Not applicable	88	35.8%	158	64.2%	246		
Highest Level of Education						4.92	.04
Less than 12th grade	49	44.5%	61	55.5%	110		
High school diploma/GED	227	36.4%	396	63.6%	623		
Some college, no degree	290	35.0%	539	65.0%	829		
2-year college degree	161	36.8%	276	63.2%	437		
4-year college degree	309	34.7%	582	65.3%	891		
Graduate or Professional degree	179	37.0%	305	63.0%	484		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Analyzing the attending events/activities communication channel (Table 8), an association between gender, occupational work level, and highest level of education was observed. The calculated effect sizes were small (Cohen, 1988). Overall, preference for attending events was higher amongst females than males, and as level of education increases.

Table 8

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Attend Events/Activities

Characteristic	*Yes*		*No*				
	f	%	*f*	%	*n*	χ^2	Φ
Gender						20.60***	.08
Male	350	24.9%	1054	75.1%	1404		
Female	633	32.1%	1337	67.9%	1970		
Age						5.26	.04
Under 20	31	23.1%	103	76.9%	134		
20 to 29	173	27.0%	468	73.0%	641		
30 to 39	214	30.5%	488	69.5%	702		
40 to 49	176	30.3%	405	69.7%	581		
50 to 59	164	30.3%	377	69.7%	541		

Table 8

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Attend Events/Activities, continued…

60 to 69	147	29.5%	352	70.5%	499		
70 and Over	78	28.3%	198	71.7%	276		
Occupational Work Level						9.77*	.07
Nonsupervisory employee	285	30.3%	657	69.7%	942		
Manager	164	34.6%	310	65.4%	474		
Owner, CEO, President	95	36.0%	169	64.0%	264		
Not applicable	62	25.2%	184	74.8%	246		
Highest Level of Education						47.51***	.12
Less than 12th grade	14	12.7%	96	87.3%	110		
High school diploma/GED	132	21.2%	491	78.8%	623		
Some college, no degree	255	30.8%	574	69.2%	829		
2-year college degree	133	30.4%	304	69.6%	437		
4-year college degree	274	30.8%	617	69.2%	891		
Graduate or Professional degree	175	36.2%	309	63.8%	484		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Analyzing the radio communication channel (Table 9), no associations between categories were observed.

Table 9

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Radio

Characteristic	*Yes*		*No*				
	f	*%*	*f*	*%*	*n*	χ^2	Φ
Gender						.79	.02
Male	353	25.1%	1051	74.9%	1404		
Female	469	23.8%	1501	76.2%	1970		
Age						6.68	.05
Under 20	34	25.4%	100	74.6%	134		
20 to 29	167	26.1%	474	73.9%	641		
30 to 39	185	26.4%	517	73.6%	702		
40 to 49	136	23.4%	445	76.6%	581		
50 to 59	130	24.0%	411	76.0%	541		
60 to 69	116	23.2%	383	76.8%	499		
70 and Over	54	19.6%	222	80.4%	276		
Occupational Work Level						5.88	.06
Nonsupervisory employee	241	25.6%	701	74.4%	942		
Manager	144	30.4%	330	69.6%	474		
Owner, CEO, President	72	27.3%	192	72.7%	264		
Not applicable	56	22.8%	190	77.2%	246		
Highest Level of Education						1.47	.02
Less than 12th grade	32	29.1%	78	70.9%	110		
High school diploma/GED	149	23.9%	474	76.1%	623		
Some college, no degree	201	24.2%	628	75.8%	829		
2-year college degree	108	24.7%	329	75.3%	437		
4-year college degree	215	24.1%	676	75.9%	891		
Graduate or Professional degree	117	24.2%	367	75.8%	484		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Analyzing the government website communication channel (Table 10), an association between age, occupational work level, and highest level of education was observed. The calculated effect sizes were small (Cohen, 1988). Overall, preference for government websites increases with age as well as level of education.

Table 10

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Government Website

Characteristic	*Yes*		*No*				
	f	%	*f*	%	*n*	χ^2	Φ
Gender						.47	.01
Male	282	20.1%	1122	79.9%	1404		
Female	377	19.1%	1593	80.9%	1970		
Age						40.27***	.11
Under 20	9	6.7%	125	93.3%	134		
20 to 29	88	13.7%	553	86.3%	641		
30 to 39	134	19.1%	568	80.9%	702		
40 to 49	124	21.3%	457	78.7%	581		
50 to 59	120	22.2%	421	77.8%	541		
60 to 69	117	23.4%	382	76.6%	499		
70 and Over	67	24.3%	209	75.7%	276		
Occupational Work Level						14.68**	.09
Nonsupervisory employee	160	17.0%	782	83.0%	942		
Manager	108	22.8%	366	77.2%	474		
Owner, CEO, President	62	23.5%	202	76.5%	264		
Not applicable	34	13.8%	212	86.2%	246		
Highest Level of Education						27.13***	.09
Less than 12th grade	10	9.1%	100	90.9%	110		
High school diploma/GED	94	15.1%	529	84.9%	623		
Some college, no degree	156	18.8%	673	81.2%	829		
2-year college degree	91	20.8%	346	79.2%	437		
4-year college degree	186	20.9%	705	79.1%	891		
Graduate or Professional degree	122	25.2%	362	74.8%	484		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Analyzing the magazine communication channel (Table 11), an association between all occupational work level and highest level of education was observed. The calculated effect sizes were both small (Cohen, 1988). Overall, preference for magazines as communication channels was generally observed to be low across almost all categories.

Table 11

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Magazine

Characteristic	*Yes*		*No*				
	f	%	*f*	%	*n*	χ^2	Φ
Gender						1.28	.02
Male	110	7.8%	1294	92.2%	1404		

Table 11

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Magazine, continued…

Female	176	8.9%	1794	91.1%	1970		
Age						8.24	.05
Under 20	12	9.0%	122	91.0%	134		
20 to 29	52	8.1%	589	91.9%	641		
30 to 39	76	10.8%	626	89.2%	702		
40 to 49	42	7.2%	539	92.8%	581		
50 to 59	45	8.3%	496	91.7%	541		
60 to 69	42	8.4%	457	91.6%	499		
70 and Over	17	6.2%	259	93.8%	276		
Occupational Work Level						10.89*	.08
Nonsupervisory employee	68	7.2%	874	92.8%	942		
Manager	57	12.0%	417	88.0%	474		
Owner, CEO, President	31	11.7%	233	88.3%	264		
Not applicable	23	9.3%	223	90.7%	246		
Highest Level of Education						20.77**	.08
Less than 12th grade	3	2.7%	107	97.3%	110		
High school diploma/GED	37	5.9%	586	94.1%	623		
Some college, no degree	67	8.1%	762	91.9%	829		
2-year college degree	35	8.0%	402	92.0%	437		
4-year college degree	84	9.4%	807	90.6%	891		
Graduate or Professional degree	60	12.4%	424	87.6%	484		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Analyzing the farming organization communication channel (Table 12), an association between occupational work level and highest level of education was observed. The calculated effect sizes were both small (Cohen, 1988). Overall, preference for farming organizations as communication channels was generally observed to be low across almost all categories.

Table 12

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Farming Organization

Characteristic	*Yes*		*No*				
	f	%	*f*	%	*n*	χ^2	Φ
Gender						.00	.00
Male	41	2.9%	1363	97.1%	1404		
Female	57	2.9%	1913	97.1%	1970		
Age						9.85	.05
Under 20	3	2.2%	131	97.8%	134		
20 to 29	22	3.4%	619	96.6%	641		
30 to 39	31	4.4%	671	95.6%	702		
40 to 49	12	2.1%	569	97.9%	581		
50 to 59	13	2.4%	528	97.6%	541		
60 to 69	11	2.2%	488	97.8%	499		
70 and Over	6	2.2%	270	97.8%	276		
Occupational Work Level						13.62**	.08
Nonsupervisory employee	23	2.4%	919	97.6%	942		
Manager	23	4.9%	451	95.1%	474		

Table 12

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Farming Organization, continued…

Owner, CEO, President	16	6.1%	248	93.9%	264		
Not applicable	4	1.6%	242	98.4%	246		
Highest Level of Education						14.84*	.07
Less than 12th grade	3	2.7%	107	97.3%	110		
High school diploma/GED	14	2.2%	609	97.8%	623		
Some college, no degree	22	2.7%	807	97.3%	829		
2-year college degree	12	2.7%	425	97.3%	437		
4-year college degree	20	2.2%	871	97.8%	891		
Graduate or Professional degree	27	5.6%	457	94.4%	484		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Analyzing the other communication channel (Table 13), no associations between categories were observed. Among individuals who indicated they preferred to receive their information from other sources, there were 45 respondents who entered a response in the open-ended text box. The most frequent response was Church ($n = 8$), followed by Library ($n = 4$), and Work ($n = 3$). Additional responses included billboards, community associations, county commission meetings, signs, word of mouth, and local officials.

Table 13

Communication Channel Preference Based on Demographic, or Audience Segmentation, Characteristics – Other

Characteristic	*Yes*		*No*				
	f	%	*f*	%	*n*	χ^2	Φ
Gender						.09	.01
Male	21	1.5%	1383	98.5%	1404		
Female	32	1.6%	1938	98.4%	1970		
Age						7.31	.05
Under 20	1	0.7%	133	99.3%	134		
20 to 29	6	0.9%	635	99.1%	641		
30 to 39	11	1.6%	691	98.4%	702		
40 to 49	9	1.5%	572	98.5%	581		
50 to 59	12	2.2%	529	97.8%	541		
60 to 69	6	1.2%	493	98.8%	499		
70 and Over	8	2.9%	268	97.1%	276		
Occupational Work Level						1.48	.03
Nonsupervisory employee	11	1.2%	931	98.8%	942		
Manager	5	1.1%	469	98.9%	474		
Owner, CEO, President	5	1.9%	259	98.1%	264		
Not applicable	2	0.8%	244	99.2%	246		
Highest Level of Education						1.06	.02
Less than 12th grade	1	0.9%	109	99.1%	110		
High school diploma/GED	8	1.3%	615	98.7%	623		
Some college, no degree	14	1.7%	815	98.3%	829		
2-year college degree	7	1.6%	430	98.4%	437		
4-year college degree	16	1.8%	875	98.2%	891		
Graduate or Professional degree	7	1.4%	477	98.6%	484		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 14 shows a summary of the descriptive communication channel preference results based on demographic or audience segmentation categories. For each characteristic, the communication channel receiving the highest percentage of *Yes* selections is identified in the most preferred column of the table and the communication channel receiving the highest percentage of *No* selections is identified in the least preferred column in the table. Most analyzed groups identified internet and social media as their most preferred communication channel. Furthermore, farming organization was identified as the least preferred communication channel by all audience segments.

Table 14

Most and Least Preferred Communication Channel by Audience Segment

Characteristic	*Most Preferred*	*Least Preferred*
Gender		
Male	internet	farming organization
Female	social media	farming organization
Age		
Under 20	social media, internet, family	farming organization
20 to 29	social media	farming organization
30 to 39	social media	farming organization
40 to 49	social media	farming organization
50 to 59	family	farming organization
60 to 69	family	farming organization
70 and Over	newspaper	farming organization
Occupational Work Level		
Nonsupervisory employee	internet	farming organization
Manager	internet	farming organization
Owner, CEO, President	internet	farming organization
Not applicable	social media	farming organization
Highest Level of Education		
Less than 12th grade	social media	magazine, farming organization
High school diploma/GED	family	farming organization
Some college, no degree	social media, internet	farming organization
2-year college degree	internet	farming organization
4-year college degree	internet	farming organization
Graduate or Professional degree	internet	farming organization

Conclusions, Discussion, and Recommendations

Extension professionals are often tasked with being both proactive and adaptive (Stokes et al., 2021; Fox, 2017) while partnering with community organizations and individuals to meet the everchanging needs of the communities they serve (Wille et al., 2019). While they may have valuable resources and training available to meet the needs of their clientele, they are not always able to reach the intended audience. Regardless of how helpful the resources are, or information is, if an Extension educator cannot find the correct communication channel to reach their clientele, their work may have limited value.

The purpose of this research was to determine the most preferred communication channels amongst potential Extension clientele, specifically when gathering information regarding their community. The Ecological Model of Leadership contexts served as a theory-based lens through which to

consider the different levels of environmental influences which may be relevant to considering audiences and communication channel preferences (Lamm et al., 2020). The results showed that differences in preferred communication channels exist among different groups. A key finding was that social media was most frequent across ages, and internet most frequent across occupational work level. This is consistent with research conducted in Mississippi (Moreno-Ortiz et al., 2021), Illinois (Abrams & Sackman, 2014) and throughout the United States (Hawley et al., 2018). Another key finding, particularly from a public perspective, farming organization was the least preferred channel.

Results from this study indicated the most effective channels through which to reach potential Extension clientele under 50 years of age is through the internet and social media, while word of mouth and newspaper are preferred channels for those 50 and over. An associated recommendation is to allocate resources such as funding and training for Extension's use of internet and social media, in addition to providing support for other communication channels as well. Such investments in upskilling may facilitate more effective utilization of these communication channels. By offering trainings to help Extension professionals build skills in promoting programs and information using the internet and social media, organizations may see an increase in program participation or adoption on practice.

A recommendation for future research would be to explore the differences in communication channel preferences between the clientele within the different Extension program areas (4-H youth, Family and Consumer Sciences [FACS], Agricultural and Natural Resources [ANR], Economic and Community Development [ECD], and so forth). While many of the audience segments measured in this study selected internet or social media, it may be interesting to investigate further and determine if a difference exists among the preferences of someone who typically engages in ANR, FACS, ECD or 4-H programming. It may also be helpful to understand the intricacies that exist among the specific social media platforms related to programmatic audiences. An additional recommendation would be to conduct a study to determine the communication channel preferences amongst county level Extension professionals for receiving information from district, state and national level administrators. A further recommendation for future research would be to examine ways in which to distinguish Extension communications from other material, particularly that of "fake news" or "fabricated information that mimics news media content in form but not in organizational process or intent" (Lazer et al., 2018, p. 1094). Although well beyond the scope of the present study, there may be opportunities to examine how Extension may help to "improve individual evaluation of the quality of information sources through education" (p. 1095) as has been proposed in the literature.

The study also yielded results which indicate farming organizations may not be effective channels for reaching potential clientele, particularly within the general public. It is recommended that in future research, farming organizations be more clearly defined, or perhaps made to be more general to include trade or professional organizations. Additionally, considering the plethora of research citing Cooperative Extension's effectiveness in disseminating educational information (Bruynis et al., 2016; Jones et al., 2011; Kudryatsev et al., 2010) it may be interesting to specifically identify Cooperative Extension as a potential communication channel.

One limitation of this study is the difference in perspectives of respondents. Different respondents could have different interpretations of what is considered internet versus social media versus farming organizations. For example, is a farming organization which posts on social media one or the other or both? As noted previously, data were collected as part of a larger research study and the need to balance specificity within the instrument while also considering cognitive load of respondents may have resulted in some unintended response process ambiguity. Other limitations of this study are the use of an electronic survey instrument and the non-probability opt-in sampling method used. This method may skew data to be more likely to be collected from respondents who prefer the use of the internet rather than alternative forms of communication (Lamm & Lamm, 2019). While the findings from the current study indicate a general preference for online communication channels it is possible certain groups may prefer

print or in-person communication channels if the survey had been conducted in a different format. Replication of the study using alternative forms of data collection are recommended in future research.

As noted by Lamm et al. (2019) an additional limitation exists with findings from this study. The change in, and emergence of, new communication channels make it difficult for the findings to remain relevant over a lasting period of time. While these results may provide insight for Extension professionals now and in the immediate future, as new communication channels are created and trends shift, so should the attention toward effective methods used to reach potential clientele.

As a general recommendation, Extension professionals should also consider program or location specific details when promoting programs or sharing information. Although these findings may help serve as a starting point to guide communication, they should not be generalized to every area or potential stakeholder. Furthermore, although a specific channel may rank highest with a specific group, that medium may not be the best fit for the type of information being shared. Extension professionals should take care to match the message with the appropriate channel. Effective Extension communication requires building trust with the community and providing information through a variety of channels (Kolich, 2014). As Fox et al. (2017) note, "In expanding its services to reach all U.S. populations, Extension can continue improving the vitality of all communities" (p. 7). The current study is therefore intended to be a benchmark and starting point to provide an empirical guideline to help inform Extension communication efforts, particularly those involving community-related information.

References

Abrams, K. M., & Sackmann, A. (2014). Are alternative farmers yielding success with online marketing and communication tools for their social capital and business viability? *Journal of Applied Communications, 98*(3), 5. https://newprairiepress.org/jac/vol98/iss3/5

Beattie, P., Lamm, A., Bunch, J. C., & Lundy, L. (2019). Communicating with 4-H stakeholders: Examining social media use in rural and urban programs. *Journal of Agricultural Education, 60*(1), 202–223. https://doi.org/10.5032/jae.2019.01202

Bonoma, T. V., & Shapiro, B. P. (1983). *Segmenting the industrial market*. Lexington Books.

Bronfenbrenner, U. (2005). *Making human beings human: Bioecological perspectives on human development*. Sage.

Bruynis, C. L., Shoemaker, D. E., Ward, B., & Custer, S. G. (2016). Implementing an innovative educational program delivery strategy to teach 2014 farm bill changes to Ohio farmers and landowners. *The Journal of Extension, 54*(3), Article 17. https://tigerprints.clemson.edu/joe/vol54/iss3/17

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Erlbaum.

Dewald, S., Leggette, H., Pesl Murphrey, T., Berthold, A., & Wagner, K. (2018). Communicating to landowners in the Texas Little River watershed: A descriptive analysis of their communication preferences for receiving water-related information. *Journal of Agricultural Education, 59*(2), 343–369. https://doi.org/10.5032/jae.2018.02343

Dvorak, J. S., Franke-Dvorak, T. C., & Price, R. R. (2012). "Apps"—An innovative way to share extension knowledge. *The Journal of Extension, 50*(6), Article 11. https://tigerprints.clemson.edu/joe/vol50/iss6/11

Fox, J. M., Ruemenapp, M. A., Proden, P., & Gaolach, B. (2017). A national framework for urban extension. *The Journal of Extension, 55*(5), Article 21. https://tigerprints.clemson.edu/joe/vol55/iss5/21

Gibson, K., Lamm, A., Lamm, K., & Warner, L. (2020). Communicating with diverse audiences about sustainable farming: Does rurality matter? *Journal of Agricultural Education, 61*(4). https://doi.org/10.5032/jae.2020.04156

Glass, T. A., & McAtee, M. J. (2006). Behavioral science at the crossroads in public health: extending horizons, envisioning the future. *Social Science & Medicine*, *62*(7), 1650-1671.

Hawley, J. L., Hall, K., & Chowdhury, A. (2018). Agricultural communicators' use of mobile devices and social media in USA. *Rural Extension and Innovation Systems Journal, 14*(1), 101. https://www.researchgate.net/publication/326742474_Agricultural_communicators'_use_of_mobile_devices_and_social_media_in_USA

Jones, M. A., Kaminski, J. E., Christians, N. E., & Hoffman, M. D. (2011). Using blogs to disseminate information in the turfgrass industry. *The Journal of Extension, 49*(1), Article 23. https://tigerprints.clemson.edu/joe/vol49/iss1/23

Katz, E., Blumler, J. G., & Gurevitch, M. (1974). *The uses of mass communications: Current perspectives on gratifications research*. Sage Publications.

Kirkman, B.L. & Chen, G. (2011). Maximizing your data or data slicing: Recommendations for managing multiple submissions from the same data set. *Management and Organization Review*, *7*(3), 433-446. https://doi.org/10.1111/j.1740-8784.2011.00228.x

Kolich, H. N. (2014). Risk and emergency communications: how to be heard when the message counts most. *The Journal of Extension, 52*(6), Article 5. https://tigerprints.clemson.edu/joe/vol52/iss6/5

Krasnova, H., Veltri, N. F., Eling, N., & Buxmann, P. (2017). Why men and women continue to use social networking sites: The role of gender differences. *The Journal of Strategic Information Systems, 26*(4), 261-284. https://doi.org/10.1016/j.jsis.2017.01.004

Kudryatsev, A., Krasny, M. E., & Walther, J. B. (2010). Dissemination of outreach education programs: In-person and computer-mediated strategies. *The Journal of Extension, 48*(5), Article 4. https://tigerprints.clemson.edu/joe/vol48/iss5/4

Lamm, A. J. & Lamm, K. W. (2019). Using non-probability sampling methods in agricultural and extension education research. *Journal of International Agricultural and Extension Education, 26*(1), 52-59. https://doi.org/10.5191/jiaee.2019.26105

Lamm, K. W., Borron, A., Holt, J., & Lamm, A. J. (2019). Communication channel preferences: A descriptive audience segmentation evaluation. *Journal of Applied Communications, 103*(3). https://doi.org/10.4148/1051-0834.2238

Lamm, K. W., Fuhrman, N., Lamm, A., & Carter, H. (2020). Adult agriculture and natural resource leadership development program participant characteristics: An evaluation of 28 programs. *Journal of Agricultural Education, 61*(2), 128-141. https://doi.org/10.5032/jae.2020.02128

Lamm, K. W., Rumble, J., Carter, H., & Lamm, A. (2016). Agricultural opinion leader communication channel preferences: An empirical analysis of participants of agricultural and natural resource leadership development programs. *Journal of Agricultural Education, 57*(1), 91-105. https://doi.org/10.5032/jae.2016.01091

Lazer, D. M., Baum, M. A., Benkler, Y., Berinsky, A. J., Greenhill, K. M., Menczer, F., Metzger, M. J., Nyhan, B., Pennycook, G., Rothschild, D., Schudson, M., Sloman, S. A., Sunstein, C. R., Thorson, E. A., Watts, D. J., & Zittrain, J. L. (2018). The science of fake news. *Science*, *359*(6380), 1094-1096. https://doi.org/10.1126/science.aao2998

Leshchenko, D. (2018, October 29). *Council post: Emerging trends in customer communication preferences*. Forbes. https://www.forbes.com/sites/forbestechcouncil/2018/10/29/emerging-trends-in-customer-communication-preferences/?sh=4a810e871df8.

Liu, F. (2020, January 26). *How information-seeking behavior has changed in 22 years*. Nielsen Norman Group. https://www.nngroup.com/articles/information-seeking-behavior-changes/

Matei, S. (2014, September 16). *What can uses and gratifications theory tell us about social media?* I Think. http://matei.org/ithink/2010/07/29/what-can-uses-and-gratifications-theory-tell-us-about-social-media/.

McGuire, A., & Hoheisel, G. (2013). Segmentation of email systems benefits you and your clientele. *The Journal of Extension, 51*(4), Article 11. https://tigerprints.clemson.edu/joe/vol51/iss4/11

McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly*, *15*(4), 355-377. https://doi.org/10.1177/109019818801500401

Moreno-Ortiz, C. A., Peterson, D. J., Collart, A. J., Downey, L., Seal, S., & Gallardo, R. (2021). Small farmers' use of social media and other channels for marketing their agricultural products. *The Journal of Extension, 59*(4), Article 19. https://doi.org/10.34068/joe.59.04.19

O'Dea, S. (2021, May 12). *US smartphone ownership 2021*. Statista. https://www.statista.com/statistics/219865/percentage-of-us-adults-who-own-a-smartphone/.

Slater, M. D. (1996). Theory and method in health audience segmentation. *Journal of Health Communication, 1*(3), 267–284. https://doi.org/10.1080/108107396128059

Stokes, B., Lynn, E., & Belt, T. (2021). Adapting to provide innovative in-person extension programming during a pandemic. *Journal of Extension, 58*(5), Article 1. https://tigerprints.clemson.edu/joe/vol58/iss5/1

United States Department of Agriculture. (n.d.). *Cooperative extension history*. National Institute of Food and Agriculture. https://nifa.usda.gov/cooperative-extension-history.

Warner, L., Chaudhary, A. K., Rumble, J., Lamm, A., & Momol, E. (2017). Using audience segmentation to tailor residential irrigation water conservation programs. *Journal of Agricultural Education, 58*(1), 313-333. https://doi.org/10.5032/jae.2017.01313

Wille, C. G., Garcia, Z., & Garcia, J. L. (2019). Collaborating across state lines to leverage cultural competency expertise. *The Journal of Extension, 57*(3), Article 4. https://tigerprints.clemson.edu/joe/vol57/iss3/4