

ISSN 1051-0834 ©
Volume 94 • Nos. 1 & 2 • 2010



**Journal of
Applied Communications**

*Official Journal of the Association for Communication Excellence
in Agriculture, Natural Resources, and Life and Human Sciences*

The Journal of Applied Communications

Editorial Board

Lisa Lundy, Chair
Louisiana State University

Barb Abbott
Iowa State University

Cindy Akers
Texas Tech University

Jennifer Alexander
Kansas State University

Evie Engel
Oregon State University

Hugh Maynard, ACE Board Liaison
Qu'anglo Communications

Amanda Ruth-McSwain
College of Charleston

Jefferson Miller
University of Arkansas

Emily Rhoades
The Ohio State University

Ricky Telg
University of Florida

Executive Editors

Dwayne Cartmell, Associate Professor
Oklahoma State University
dwayne.cartmell@okstate.edu

About JAC

The *Journal of Applied Communications* is a quarterly, refereed journal published by the Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (ACE).

The *Journal of Applied Communications* is:

- Focused specifically on issues and topics relevant to agricultural and applied communication professionals.
- Peer-reviewed to ensure accuracy and quality.
- Indexed selectively in AGRICOLA; listed in Ulrich's International Periodicals Directory and ARL's Directory of Scholarly Electronic Journals and Academic Discussion Lists.

Manuscript Organization

Every article (not reviews) must contain an abstract of no more than 250 words. If applicable, briefly list the purpose, methodology, population, major results, and conclusions. Begin the manuscript text as page 1. Use appropriate subheads to break up the body of the text. List footnotes and literature citations on separate pages at the end of the text along with tables or figures, if used. Indicate in margins of the text, approximately, where tables/figures should appear. Include three to five keywords to describe the content of your article. Text for research articles, such headings as Introduction, Methods, Results and Discussion would be appropriate.

For literature citations, follow the style guidelines in the Publication Manual of the American Psychological Association (Sixth Edition). Within a paragraph, omit the year in subsequent references as long as the study cannot be confused with other studies cited in the article.

When statistical information is reported in an article, the author should contact the lead editor for special guidelines.

Board of Directors

President
Robert G. Casler
University of Arizona

Vice President
Faith Peppers
University of Georgia

Treasurer
Holly Young
University of New Hampshire

President-elect
Elaine Edwards
Kansas State University

Past President
Steve Dodrill
Oregon State University

International Director
Position Vacant

Northeast Director
Edwin Remsberg
Photographer

Southern Director
Doug Edlund
University of Tennessee

Retirees Director
Tom Knecht

SIG Director
Suzanne Steel
The Ohio State University

DC Director
Allison Eckhardt
USDA

North Central Director
Sandi Karstens
University of Nebraska

Western Director
Brad Beckman
Brad Beckman Media

ACE Mission

ACE develops professional skills of its members to extend knowledge about agriculture, natural resources, and life and human sciences to people worldwide.

ACE Headquarters

Nicole Singleton
P.O. Box 3948
Parker, CO 80134
866-941-3048
info@aceweb.org

Publication Agreement

Copyright: In order for a submitted work to be accepted and published by the Journal of Applied Communications, the author(s) agree to transfer copyright of the work to ACE- this includes full and exclusive rights to the publication in all media now known or later developed, including but not limited to electronic databases, microfilm, and anthologies.

Author Warranties: The author(s) represent(s) and warrants(s) the following conditions: that the manuscript submitted is his/her (their) own work; that the work has been submitted only to this journal and that it has not been previously published; that the article contains no libelous or unlawful statements and does not infringe upon the civil rights of others; that the author(s) is (are) not infringing upon anyone else's copyright. The authors agree that if there is a breach of any of the above representations and warranties that (s)he (they) will indemnify the Publisher and Editor and hold them blameless. If an earlier version of the paper was presented at a conference, the author must acknowledge that presentation and the conference.

How to Submit a Work

Authors are to submit their paper as a PDF to ACE Headquarters via e-mail at info@aceweb.org.

It is to include two files – the cover sheet with author and contact information and the text with figures.

Both files must include the title.

If the article is accepted, then the author will have to submit a final copy containing the revisions as electronic files (Word) that can be edited. These will go to the executive editor for final review.

The format for articles is as follows:

- Text double-spaced in Times New Roman or similar font, 12-point, 1-inch margins.
- Separate title page listing authors' names, titles, mailing and e-mail addresses. Indicate contact author, if more than one author.
- Inside pages with no author identification.
- No more than six tables or figures.
- Images, photos, and figures should be high resolution (300 dpi or higher). Tif format is best; jpg format is acceptable. A file size of 300 Kb or a pixel width of 1500 pixels is a good reference point for jpgs.
- Acknowledgement of any funding source.
- Acknowledgement if manuscript is based on prior presentation.

What Reviewers Seek in Manuscripts

As a peer-reviewed journal, the *Journal of Applied Communications* welcomes original contributions from any author, although priority may be given to ACE members, should manuscripts of comparable quality be available. First consideration will be given to theoretical and applied articles of direct value to ACE members. Articles should be submitted to one of four categories.

Categories are as follows:

- Research and Evaluation - These are the traditional, scholarly articles, using quantitative (e.g., statistical and survey methods) and/or qualitative (e.g., case studies) methods.
- Professional Development - These articles take advantage of the author's particular expertise on a subject that will benefit career performance of ACE members.
- Commentary - These are opinion pieces. They speak to trends in communication or other issues of importance to professional communicators.
- Review - These are critiques of new books, journal articles, software/hardware, technologies or anything else that would be appropriate for the audience of the JAC.

All submitted manuscripts are considered for publication. However, prospective contributors are encouraged to be aware of the focus of this journal and manuscript requirements.

A manuscript is accepted with the understanding that the Journal of Applied Communications has exclusive publication rights, which means that the manuscript has not been submitted concurrently, accepted for publication, or published elsewhere.

While every effort is made to maintain an interval of no more than nine months from submission to publication, authors should be aware that publication dates are contingent on the number and scope of reviewer comments as well as response times during the review process.

All submissions are peer-reviewed (blind).

Research

page 6 Conversations with Gatekeepers: An Exploratory Study of
Agricultural Publication Editors' Decisions to Publish Risk Coverage
Katie M. Abrams and Courtney A. Meyers

page 19. Compentencies Needed by Agricultural Communication
Undergraduates: An Industry Perspective
A. Christian Morgan

page 33. Identifying Adoption Barriers in Organizational Rhetoric:
A Response to the Strategic Plan
for the National Animal Identification System
Shari R. Veil

page 49. Examining *JAC*: An Analysis of the
Scholarly Progression of the *Journal of Applied Communications*
Traci L. Naile, J. Tanner Robertson, and D. Dwayne Cartmell

Journal of 
Applied Communications
Volume 94 • Nos. 1 & 2 • 2010

Conversations with Gatekeepers: An Exploratory Study of Agricultural Publication Editors' Decisions to Publish Risk Coverage

Katie M. Abrams and Courtney A. Meyers

Abstract

The United States' agriculture industry is impacted by numerous financial, human, legal, and production risks. These risks are frequently reported in mass media and agricultural publications. Farmers often use agricultural magazines to help them make production decisions and learn about new technology, which both involve some element of risk. Gatekeeping is the process of determining what information is included in media coverage in which editors serve as gatekeepers and make decisions regarding what topics to report. The purpose of this study was to discover how agricultural publication editors, in their role as gatekeepers, make decisions regarding coverage of risk related to agriculture and to explore the forces that influence this coverage. Researchers interviewed seven purposively selected editors of national or regional agricultural magazines. The findings indicated that the editors conceptualize risk in agriculture differently from how agricultural risks are reported in the mainstream media for the more general public; many emphasized the issues in terms of marketing or financial risk. Editors emphasized that they report on risk from an action angle, providing advice or information on how to mitigate the risk. The public's perception of agriculture, advertisers, and personal topic preferences were cited as influencers of their risk coverage. When covering risk stories, agricultural publication editors prefer journalists who can write well and have an agricultural background or knowledge of the industry. Future research should be conducted to expand on the results from this exploratory study.

Introduction

Agricultural production is a risky endeavor. Those engaged in agricultural pursuits face a number of financial, human, legal, and production risks including unpredictable markets, food safety concerns, environmental influences, animal welfare, and others (Hardaker, Huirne, Anderson, & Lien, 2004). When seeking agricultural and risk-related information, agricultural producers are likely to rely on personal experience, peers, and agricultural publications (Ford & Babb, 1989; Wadud, Kreuter, & Clarkson, 1998).

Print farm publications serve as the main source of information for agricultural producers. These publications can be specific to a particular state or may reach across the United States. The content may also be specialized for certain agricultural areas and principal commodities (Boone, Meisenbach, & Tucker, 2000). Agricultural producers frequently use agricultural magazines for news pertaining to production technology, agribusiness management, personal health, work safety, and public policy (Ford & Babb, 1989; Wadud et al., 1998). Naile (2006) found that agricultural magazines provide

readers with information about diverse topics that can influence their decision-making processes. Because of this, agricultural media should strive to make sure the reported information is relevant and usable for readers (Naile, 2006).

Editors and journalists, who serve as gatekeepers, determine the information that ultimately reaches readers of agricultural publications. According to gatekeeping theory, potential news messages are explored and narrowed into those that are eventually transmitted through the media (Shoemaker, Eichholz, Kim, & Wrigley, 2001). The gatekeeping process involves more than the selection of news topics, it also includes how the messages are framed, timed for publication, and handled (Donohue, Tichenor, & Olien, 1974). Using a qualitative research design, this study explored how agricultural publication editors, in their role as gatekeepers, make decisions regarding coverage of risk related to agriculture.

Literature Review

Several agricultural risks, such as cloning and biotechnology, possess a certain amount of scientific uncertainty. This uncertainty is a common part of life. However, when the uncertainty is about emerging and controversial aspects of science, the mass media will more likely cover these uncertain topics and maintain the perception of uncertainty (Friedman, Dunwoody, & Rogers, 1999). Science communicators specialize in interpreting and communicating science for both the public and the mass media in areas related to health, the environment, and agriculture (Treise & Weigold, 2002). By definition, agricultural journalists are science writers that deal with the diverse, applied science and business that is agriculture. An agricultural journalist is “expected to bring with him or her a level of specialized knowledge in the agricultural field that typically is not required of the mass communicator” (Boone et al., 2000, p.103).

Agriculture and science are connected through the application of scientific advances in environmental, social, and life sciences, which provide a number of benefits to agriculture such as improved production practices, new products, environmental benefits, and enhanced food safety (National Research Council, 2003). “Science has served as a vitally important foundation for our agricultural system and its ability to provide this nation and the world with its needs for food, fiber, and feed of our livestock” (Buchanan, 2007, p. 1). American agriculture can attribute future improvements and advances to the continued research endeavors in science and technology (United States Department of Agriculture Agricultural Research Service, 2005).

When reporting on scientific issues, risk information is considered as a subset because risk is often a product of advances in science and technology. The mass media’s coverage of risk and science is often criticized for being sensationalized, biased, and inaccurate (Dunwoody & Peters, 1992). “Journalists’ decisions about what risks to cover and how to structure their stories may not be as sensitive as scientists would wish” (Dunwoody & Peters, 1992, p. 208). These decisions are often made based on the competing demands of sources, journalistic organizations, and audiences.

Social Amplification of Risk

Journalists rate information about risk as the most important factor in their judgments of a high-quality news story (Salomone, Greenberg, Sandman, & Sachsman, 1990). The theory of the social amplification of risk identifies the media as a social institution that can amplify or attenuate public response to risk. The theory states that when direct experience with a risk is absent, information about risks reaches individuals predominantly through the news media and informal personal networks. The media is one source of several that contributes to risk amplification or attenuation, and

these sources may act together in the social amplification of risk. As a source of risk amplification, the media can produce effects rippling across time, space, and social institutions (Kasperson et al., 1988).

A study testing the media's influence in the social amplification of risk found evidence that people's risk perceptions do increase and decrease in line with amplification and attenuation mechanisms in the framework. Irrespective of the volume of media reporting, the context in which the audience receives the information also affects the amount of risk amplification. The effects of risk amplification tend to be greater for a "novel hazard not yet presented to the public in crisis context compared to a more established hazard where people have been exposed to high levels of public debate in the past" (Frewer, Miles, & Marsh, 2002, p. 710). Social amplification of risk theory illustrates that the combined influence of selecting what stories to report, what information to provide, and what "news angle" to utilize can have important implications on how the audience perceives the information and the resulting attitudes or behaviors (Kasperson et al., 1988).

Gatekeeping

Each day an infinite number of messages are available for communication but only a select number actually reach a given person. Gatekeeping is the process of selecting from the infinite number of potential messages and determining what will be transmitted to the receivers. This "process involves every aspect of message selection, handling, and control, whether the message is communicated through mass media or interpersonal channels" (Shoemaker, 1991, p. 1).

Shoemaker (1996) identified five levels where gatekeeping occurs: individual, communication routines, organizational, institutional, and social system. The individual makes decisions based on personal preferences (i.e. What do I like or dislike?). Communication routines determine what is newsworthy and follow a predetermined set of guidelines. The organization determines how well the gatekeepers are completing their message selection responsibilities. The institutional level is comprised of a number of influences such as sources, audiences, advertisers, public relations efforts, economic markets, government, interest groups, and other media. The social system level includes cultural influences, political environment, military ties, and economic considerations (Shoemaker, 1996).

In a study of the individual level of gatekeeping, Chang and Lee (1992) conducted a national survey of newspaper editors to investigate their attitudes of criteria to select foreign news items. Results indicated that the gatekeepers' individual characteristics were important forces in the gatekeeping process. Cartmell (2003) surveyed newspaper editors in Arkansas about their decisions to print, or not print, agricultural news. The results found that the editors had the primary responsibility to decide what was published about agricultural issues. Editors said reader interest, accuracy, timeliness, and trustworthiness influenced their decisions to cover agricultural issues. This indicated that the editors relied on the individual and communication routine levels of the gatekeeping process.

Lewin (1947) identified "forces" that could constrain or facilitate the flow of items through gates, sections, and channels. When applied to gatekeeping in the media, these forces can be identified at each of the five levels. Individual forces could be the journalist's skill and ability to report a story. Communication routines of newsworthiness and meeting deadlines may affect what stories are reported. Organizational forces include policies for how certain topics should be covered. Institutional forces could come from the government, interest groups, or advertisers. Finally, the social system determines how acceptable certain news topics are (Shoemaker et al., 2001).

An illustration of individual forces that can influence the gatekeeping process is the editors' pref-

most editors are trained in the liberal arts and are not very familiar with science unless they were once science writers themselves. Science writers' prominent complaints about editorial control are misrepresentative headlines, the placement of articles, and insisting on definitive explanations in areas of uncertainty. Editors and science writers typically have a symbiotic relationship and "the experienced reporter knows what will be acceptable to an editor and will seldom push his own preferences to the point of confrontation" (Nelkin, 1995, p. 110).

Reisner and Walter (1994) identified organizational forces that influence coverage of agricultural issues. The study found agricultural journalists feel pressure and constraints on their coverage of stories from agribusiness advertisers. Advertising pressures affect the overall environment in which agricultural journalists work, and many allowing advertiser pressures to influence editorial decisions. Agricultural magazine editors are even more susceptible to allow advertisers to influence their decisions (Reisner & Walter, 1994).

Purpose

When agricultural journalists report on agricultural topics that may possess some characteristics of risk or uncertainty, the amount and type of coverage given to these topics can influence readers' perceptions of the risk, in accordance with the social amplification of risk literature. One factor in the communication of agricultural risk is the gatekeeping effect that editors of agricultural publications have in what information is covered and published, but no research has explored this decision making process in-depth.

The purpose of this study was to discover how agricultural publication editors, in their role as gatekeepers, make decisions regarding coverage of risk related to agriculture. This exploratory study also determined what "forces" influence editors' decisions to publish coverage of risk. The following research questions were proposed to address the stated research purpose:

RQ1: How do agricultural publication editors conceptualize risk?

RQ2: How do agricultural publication editors prefer to cover risk-related topics?

RQ3: What influences agricultural publication editors' decisions about what risks are reported?

RQ4: What skills do agricultural publication editors prefer in writers who cover risk-related topics?

Methodology

This study utilized a qualitative design to answer the stated research questions. Qualitative research design is appropriate when the study aims to gather an in-depth and interpreted understanding of individuals' perceptions, attitudes, histories, experiences, and perspectives. Qualitative methodologies improve the ability to examine and understand the researched phenomenon in detail using an inductive approach, social interaction, and small samples (Hatch, 2002). Qualitative research design encourages a naturalistic data collection environment where the researcher acts as the primary instrument. This approach allows the data to emerge from the participants, respecting the individual responses and uniqueness of each situation (Snape & Spencer, 2003).

Data Collection and Sampling

This study consisted of seven in-depth telephone interviews with agricultural publication editors. Telephone interviews have been found to be as productive in qualitative research as traditional face-to-face interviews when the respondent group is comfortable using telephones for longer conversations (Sturges & Hanrahan, 2004). In-depth interviews are a popular data collection method in qualitative research because they are flexible and interactive, elicit detailed responses, expose new knowledge, and occur in the natural setting (Legard, Keegan, & Ward, 2003). In-depth interviews with gatekeepers are useful when trying to discover why they make specific selection decisions (Shoemaker, 1996).

Participants were selected from a list of active members of the American Agricultural Editors' Association. Participants were purposively selected to provide a representative sample of publication topic (i.e. livestock, crops, etc.), circulation size, geographic area of offices/coverage (Midwest, Southeast, Southwest, North Central, West), and publication frequency. Purposive sampling is appropriate when a very specialized research population is sought (Keyton, 2001). The purposive sampling method produced participants representing a wide range of agricultural publications with audiences across the United States. The majority of participants' readership resided in the Midwest and North Central regions of the country. The participants' publications focused on beef cattle; crops, land, and livestock; crops and land; or a variety of agricultural topics. Circulation size ranged from 42,000 to 600,000. The average circulation size for this group of editors was 309,000. Researchers mailed a letter to selected participants to provide information about the research and asked for their participation in the study. Researchers then called each editor to ask for acceptance to participate and to schedule an interview time.

A semi-structured interview guide was used because it provided an outline of pre-determined questions and the flexibility to probe for additional and more detailed responses. This interview method was selected to ensure the same questions were asked of each participant while allowing any additional issues raised during the interview to be discussed in detail (Morse & Richards, 2002). Interviews ranged from 40 to 66 minutes long with an average time of 50 minutes.

Data Analysis

Each interview was audio-recorded and transcribed. During the interview, the researchers took detailed field notes to record key points, direct quotes, and impressions. Data were triangulated among researchers immediately after the interview in order to increase the trustworthiness and dependability of the collected data (Merriam, 1995). Interview transcripts were content analyzed to discover themes regarding the editors' perceptions, opinions, and attitudes about their role in reporting risk. Content analysis derives coding categories directly from the data to provide a richer understanding of the information (Hsieh & Shannon, 2005). Researchers avoided using preconceived categories, instead allowing the codes to emerge from the interview transcripts. Initial analysis began with open coding of all interviews using meaning units as separation points. The researchers highlighted the codes that are reflective of thoughts from participants. Codes were then sorted into emergent themes based on relations and linkages. Synthesized themes help contextualize the data and establish clear concepts (Strauss & Corbin, 1990).

Results

How do agricultural publication editors conceptualize risk?

To explore this research question, each editor was asked what issues come to mind when they think of risk related to agriculture. Four major themes emerged in this area: financial risk, production and management decisions, weather uncertainties, and farm safety. An additional theme emerged when several editors explicitly stated what is not considered a risk or what is not covered by their publication.

Agricultural publication editors most commonly conceptualize risk related to agriculture in terms of financial risk. Six of the seven editors indicated that they think of financial and marketing risks and the issues that affect producers' ability to run a successful farming operation. Editor Two said she thinks of the management practices and decisions "that ultimately affect the bottom line." Several mentioned that the "markets are unpredictable and uncertain," which is why it is considered a risk in agriculture. Editor Three later referred to risk in terms of marketing and finance, but initially focused on how the general public's disconnectedness with farming is a risk for farmers. He said: "I would view [risk] as anything that puts our nation's food supply at risk ...it can be a farmer going out of business [or]...consumers not knowing or caring where their food comes from."

Beyond marketing and financial issues, the editors' conceptualization of risk included specific topics related to farmers' and ranchers' production decisions and practices. Biotechnology was the recurring theme here. The decision to plant biotechnology crops was discussed in terms of the ability or inability to market these agricultural products overseas and the international policies affecting the export of these products. Editor Six summed up this theme: "[What's] the risk of planting seed here if you can't sell it in Europe; what are you going to do?" Several editors also discussed the risk of weed resistance to biotechnology crops and how seed technology could make production easier or more convenient.

Production decisions related to risk included topics such as soybean rust, livestock disease, and ethanol. The editors all emphasized that their goal is to "stay on top of trends" and "know enough about the industry to be able to provide farmers and ranchers information before they need it." All of the editors referred to ethanol as one of the hottest topics in agriculture. With respect to planting corn for ethanol production, the editors differed on the angle with which they covered this topic. Some said they cover it from the potential profitability for farmers and the production decisions necessary to get the most out of this endeavor. Editor Six indicated that his readers are not giving "much serious thought about the livestock guys ...They're excited about the prospect of ethanol and what it could mean for them." Other editors, who had more livestock producers in their readership, said they cover it from the angle of: "What is that going to do to cotton? What's that going to do to poultry, hogs, and dairy when corn is going to ethanol and not feed?"

All editors considered weather a risk in agriculture. Editor Five said, "It's the most uncontrollable thing out there. No one can plan for a drought, but it can be devastating to a farm." Editor Six said, "Farmers have tried to survive (weather uncertainties) for years." In particular, most mentioned drought as an important risk issue that they cover in their publications. However, Editor Five said, "You know, weather has always been difficult for us in a monthly magazine because we can't compete with daily media. Weather happens today." This editor and one other said they cover global warming as a weather issue, because it is a "longer range" topic that a monthly publication can cover.

Several of the editors mentioned farm safety as a risk issue because it is "the risk to life and limb." Farm safety is a risk issue that most of these editors said they cover on a regular basis. Many referred to farming as "one of the more dangerous occupations [in the United States]." Editor One provided

a typical statement to illustrate this theme: “There’s always a need for lowering risk of injury or death stories.” Editor Three said, “Farm safety is one of those things that everybody thinks they’re doing, but they’re not.”

Several editors also mentioned what they or their readers do not consider risk issues. Editor Four said, “Well, we encourage stories about the [disease] signs and all that stuff, but I think for the most part, U.S. producers are not concerned about BSE showing up on their farms.” He continued to explain that his opinion is based on beef producers’ reluctance to support a government livestock identification program. Editor Three said, “Most farmers would say there is no food safety concern.” Two editors discussed their decisions in regards to coverage of organic food. Editor Two said, “We don’t write about organics ...it’s not something our readership has requested.” While Editor Three, who did cover organic and local agriculture, said, “It hasn’t been about the (organic) ideology. It’s been about the profitability for our readers.”

How do agricultural publication editors prefer to cover risk-related topics?

When editors were asked how they communicate the risk issues, they all said that they cover risk issues in columns and feature stories or series. The majority said they prefer to explain a risk and provide guidance or steps about how to mitigate the risk. This theme of providing actionable information was described by Editor Two: “Our mission is to help people take action ...When a reader gets done reading a story they know what they can do.” Editor Seven said, “Can [the story] inform and offer advice and solutions? And then, obviously, that’s something we’d want to do.”

When asked about the sources they prefer to use when covering risk issues, farmers and ranchers were cited as the most often utilized sources by the editors because their audience wants to hear from those like them who have dealt with the risk or are working to prevent it. After farmers and ranchers, company representatives or experts, university experts, and government officials are commonly used as sources in risk coverage. Editor Seven said, “They typically would be someone with letters after their name ...because they have some sort of formal and technical education to help sort out some of the issues in the risk.”

Three of the editors also discussed the importance of covering risk stories in proportion to the “level of risk it might be to our readers.” Editor Four demonstrated this theme when he said, “[We] present the information fairly and in proportion to what the situation is, and I suppose just to try to avoid sensationalism.” Many editors compared their coverage of risk to general news coverage of risk in agriculture. Risk topics of concern in the general public such as, “food safety, consumers’ concerns about what they eat ...cloned meat and genetically modified foods” are not viewed as risks, because “people in agriculture usually have more of a foundation on those topics.” Editor One discussed agricultural journalists’ ability to cover risk topics more accurately:

If you watch typical broadcast journalism it appears to me, and this is totally my humble opinion, that somebody wakes up in the morning and says, “What are we going to scare the hell out of them with tonight.” So let’s stress the pillow case on your child’s pillow is causing cancer. You know that gets the headlines and it ...may have some miniscule uh tie to a percentage, but what is the real risk in this? And that is one of the things us science writers and trade writers, that we have to deal with.

What influences agricultural publication editors' decisions about what risks are reported?

To address this research question, editors were asked about the societal, organizational, and individual factors that influence their decisions to report risk. Influential societal factors were economics, political ideology, the culture of farming, and public perceptions of farm practices. All editors said that ultimately what is most important to their readers is “what will make them or save them money.” Another editor said the publication covers “anything that helps a farmer keep their business or helps their business grow.”

Two editors explicitly stated that political ideology of the “free-market,” which is typically associated with the Republican Party perspectives, influences their coverage of risk. Most said that government policies that affect farm businesses, such as the Farm Bill, also influence their coverage of risk topics. Editor Seven said, “The Farm Bill, you know, is largely influenced by agriculture interests, but it’s also built and shaped by nonagricultural lawmakers. Society shapes agriculture.”

Public perceptions of farm practices, such as the influence of animal rights activists and urban encroachment, were also influential factors. Editor Two said, “There’s a lot of animal rights activists that are changing things. They have power. We’re going to start covering more animal agriculture and how they are affected by mainstream society.” Some editors also said that public perceptions of agriculture and the public disconnect with where their food comes from is a risk to agriculture. “A big risk is people not knowing farming and losing that connectedness with farming ... I wish people were more in-tune with rural areas.” Related to this, four editors brought up the public perceptions of environmental issues caused by farmers and the resulting policies that affect where they can farm and their production practices. Editor Five said, “The issue of manure management and odor management are huge factors throughout the Midwest. ... Where are we gonna raise livestock? What are going to be the rules that go into raising livestock? The same goes with using chemicals in agriculture.”

In terms of organizational factors that influence agriculture publication editors’ coverage of risk, the most prominent factor was pressure from advertisers. As described by Editor One, “As with any organization that depends on advertising, there is always the known or hidden presence of what the advertiser thinks.” The pressure each editor felt from advertisers varied from absolutely none to obvious advertiser influence. Two editors who mentioned feeling some pressure from advertisers talked extensively about other agricultural publications having this problem. One said, “I’ve noticed some farm magazines that have done a good job in the past resisting it, I mean, all of a sudden they’ve just caved in and it’s so obvious.”

Two editors mentioned that small staffs influence their coverage of risk topics because they cannot always cover all topic areas. Editor Six said, “When you lose those people [with expertise] and don’t replace them, I feel like that’s a real loss. It puts more pressure on the rest of the staff, especially me, to kinda stay on top of things.” All of the editors said their publishers have no influence on their decisions to cover agricultural risk topics. Editor Two’s comment was similar to the others when she said, “[The publishers] make sure we’re not going over our budgets as far as different financial aspects of the magazine go, but the day-to-day content is up to me and the other editors.”

When asked about individual factors, the majority of the editors placed emphasis on the group decision to cover certain topics. Each writer, referred to as a topic editor, has a personal interest in what he or she covers because “people gravitate towards the things they like to do.” Each writer becomes a topic specialist in one or more areas and is expected to be “the go-to person for stories in their area.” Three editors also said that an individual’s geographic location influences risk coverage because interest in particular topics can vary by location. Editor One provided an example of this:

“We don’t do a great deal of environmental reporting, but my editor in California does a tremendous amount of it.” Editor Seven discussed how living in a farming community himself affected his coverage of risk. “I generate a lot of my feeling for what’s right for the publication from those associations [with farmers].”

What skills do agricultural publication editors prefer in writers who cover risk-related topics?

Editors were asked to describe the characteristics and skills they believe strengthen or inhibit a writer’s ability to cover risk issues. Experience and curiosity were the most frequently mentioned skills that the agricultural publication editors said they want their writers who cover risk to possess. An editor explained that “taking something technical and putting it into simple language is something that you learn by doing.” Editor Three said, “There’s just a lot of nuances and there’s a lot of things that experience teaches you that are just essential for handling these topics.” The editors emphasized the importance of curiosity because it “makes you want to ask and learn everything you can about a topic.” Editor Two said, “I think it’s just someone that is eager to learn and get in the middle of it all.” Editor Four referred to understanding the farmer as important. “You kinda have to have more of a feel for what’s important to the producers, to readers, what they would want to know.” Few commented on characteristics that inhibit a writer’s ability to cover risk issues. However, one did say that “being too close to an issue can inhibit your ability to cover the risk.” Another said it is important for writers to “detach your own feelings and biases.”

Editors were also asked if they would prefer a writer with an agriculture background and little or no writing experience or a trained journalist with no agriculture background. All responded that they would prefer a writer with both the journalistic skills and the agriculture background or knowledge. Editor Five summed this theme up when he said, “That’s always kind of been the debate, which is more important, and I kinda go back and forth. Maybe the answer is they’re pretty much equal.” When discussing the point of someone with the journalistic skills, the editors said that “providing both sides,” “not advocating,” “interviewing skills,” and “conveying human emotion” were important. When discussing the flip side of having someone with the agriculture knowledge, the editors said that “a good bank of sources,” “a healthy respect of the precision of the scientific method,” “empathy for farmers,” and “the ability to see the big picture” were important. Most did say that if they had to choose, they would choose a skilled journalist with little agriculture background. One editor explained: “We’re not in the business of teaching someone to be a good writer. We want them to have that skill when they get here. ... Great writing is hard to come by and hard to beat.”

Discussion and Conclusions

The in-depth interviews with agricultural publication editors revealed their concept of agricultural risk, how their publication covers risk, what forces influence that coverage, and what skills or characteristics make writers better able to cover agricultural risk. Editors conceptualized risk in agriculture in terms of what has the most impact on their readers, which includes news about production practices, agribusiness management, and work safety. This is in alignment with previous studies regarding why producers read trade magazines (Ford & Babb, 1989; Wadud et al., 1998). Financial and marketing risks were the most frequently mentioned because the editors are trying to provide information that will help their readers’ run a successful business. The agricultural risk topics that

may influence the larger public's food purchasing behavior such as food safety and disease outbreaks (Kalaitzandonakes et al., 2004; Nisbet & Lewenstein, 2002) were not important issues mentioned by the editors, and were specifically noted not to be risks of consideration for their audience. The readership of the represented publications approaches agriculture as a business that requires constant attention and management of financial risks. As the editors discussed, the farmers and ranchers who read their publications do not see the direct connection to the consumer; therefore, they are not as concerned with food safety issues the consumer may typically connect to agricultural risks.

As the social amplification of risk theory states, the media serve an important role in amplifying or attenuating public response to risk (Kasperson et al., 1988). The editors in this study said they strive to provide information in their agricultural publications that attenuates rather than amplifies risk. Editors said risk is discussed in columns or feature articles that provide steps or directions for farmers to handle or minimize recognized risk. These publications have differentiated themselves from daily media and news sources by providing advice and actionable solutions to risk issues in agriculture. They also tend to focus on agricultural risks that are different from mainstream media intended for the general public (i.e., genetically modified foods, cloning livestock, food safety, BSE), because they said they believe their readership is already informed and not concerned with those issues.

Gatekeeping can occur at five levels including individual, communication routines, organizational, institutional, and social system (Shoemaker, 1996). The strongest societal influence of risk coverage in agricultural publications is the public's perceptions of agriculture. The editors admitted that the public is disconnected from the agrarian lifestyle and questions common production practices. The editors noted that economics and politics also influence what issues are covered because they must inform their readers of relevant events and how it will affect their business and lives.

Within the publication organization, the editors noted the strongest organizational influence is from advertisers, which is what Reisner and Walter (1994) found in their study of agricultural journalists. The agricultural publications in this study often rely on the advertisers for revenue and as sources for stories. Special attention has to be placed on balancing their responsibility to their readers and their obligation to advertisers to support the publication. This interaction is common in agricultural publications and may become more of an issue as publications face tougher economic times and evaluate options to stay in business.

The most prevalent individual influence was personal preferences (see Chang & Lee, 1992; Cartmell, 2003). The writers in agricultural publications are often assigned as topic editors so they are very familiar with a certain aspect of agriculture such as agribusiness, crops, machinery, or livestock. This personal interest can influence what they decide to cover and what sources are used. This creates potential bias as writers depend on "source banks" for the same types of information or opinions. However, these writers are also extremely knowledgeable about their topic areas and can communicate information effectively to their readers.

Writers at agricultural publications need to be curious, have strong writing skills, and be knowledgeable about agriculture. Editors were more concerned with having someone who can write well than someone who is trained in an agricultural field. This means some writers may enter a career in agricultural communications with little or no experience in agriculture.

Recommendations

The results of this study provide several opportunities for future research. Agriculture in the United States is extremely diverse. Additional editors of agricultural publications need to be interviewed to provide a more representative sample. The themes discovered in the current study may or may not shift after interviewing more editors. This additional effort would provide more in-depth description of risk related to agriculture. The results of this exploratory research should be utilized to develop a survey instrument that can gather generalizable data from a larger sample of editors and agricultural journalists.

Research should compare what editors say they cover to what is actually covered in agricultural publications. This can be achieved through a content analysis to determine the major frames used to discuss agricultural risks.

The editors frequently mentioned that they provide stories that address readers' needs and interests. A survey of agricultural publication readers would determine their perceptions of risk coverage, what information they receive from agricultural publications, and what other needs they have that are not being met.

Finally, the results of this study indicate a need to evaluate agricultural communications and journalism curriculum at institutions of higher education in the United States. The comments from the editors emphasize the need for graduates in agricultural communications and/or journalism programs to be skilled writers in addition to understanding the agricultural industry. Future research would indicate how well graduates of these programs are meeting the expectations of employers and what adjustments can or should be made to existing curriculum.

Agricultural trade magazines are uniquely positioned to help their readers prepare for and mitigate risk issues that would ultimately affect their business. While most editors in this study cited financial risk most frequently and prominently, they did recognize the threat of the public disconnect with farming. Despite this, they specifically said they do not cover or address agricultural risks typical of public concern or, if the topic itself is addressed, it is not taken from the angle of interest to the more general public. If their goal is, as the editors said, to help farmers mitigate risk, and the public disconnect with agriculture is indeed a risk, then perhaps there is a missed opportunity here. Editors of these publications should consider how their coverage could help readers better understand the disconnected public and their consumers' conceptualization of agricultural production and risk.

About the Authors

Eric K. Kaufman is an assistant professor in the Department of Agricultural and Extension Education at Virginia Tech. Glenn D. Israel is a professor in the Department of Agricultural Education and Communication at the University of Florida. ACE member Tracy A. Irani is an associate professor in the Department of Agricultural Education and Communication at the University of Florida. A portion of this research was presented at the 2007 annual meeting of the Southern Rural Sociology Association, Mobile, AL.

Keywords

risk, gatekeeping, agricultural publications, magazines, editors, in-depth interviews

References

- Boone, K., Meisenbach, T., & Tucker, M. (2000). *Agricultural communications: Changes and challenges*. Ames, Iowa: Iowa State University Press.
- Buchanan, G. (2007, May 10). Statement before the U.S. House Committee on Agriculture. Retrieved September 30, 2007, from <http://agriculture.house.gov/testimony/110/h70510a/Buchanan.doc>.
- Cartmell, D. D. (2003). Publishing agricultural news: A study of Arkansas daily newspaper editors. *Journal of Applied Communication*, 87(4), 7-22.
- Chang, T. K., & Lee, J. W. (1992). Factors affecting gatekeepers' selection of foreign news: A national survey of newspaper editors. *Journalism Quarterly*, 69, 554-561.
- Donohue, G. A., Tichenor, P. J., & Olien, C. N. (1974). Gatekeeping: Mass media systems and information control. In F.G. Kline & P. Tichenor (Eds.) *Current Perspectives in Mass Communication Research* (pp. 41-70). Beverly Hills, CA: Sage.
- Dunwoody, S., & Peters, H. P. (1992). Mass media coverage of technological and environmental risks: A survey of research in the United States and Germany. *Public Understanding of Science*, 1(2), 199-230.
- Ford, S. A., & Babb, E. M. (1989). Farmer sources and uses of information. *Agribusiness*, 5(5), 465-476.
- Frewer, L. J., Miles, S., & Marsh, R. (2002). The media and genetically modified foods: Evidence in support of social amplification of risk. *Risk Analysis*, 22(4), 701-711.
- Friedman, S., Dunwoody, S., & Rogers, C. (Eds.) (1999). *Communicating uncertainty: Media coverage of new and controversial science*. Lawrence Erlbaum Associates: Mahwah, N.J.
- Hardaker, J. B., Huirne, R. B. M., Anderson, J. R., & Lien, G. (2004). *Coping with risk in agriculture* (2nd ed.). Cambridge, MA: CABI Publishing.
- Hatch, A. (2002). *Doing qualitative research in education settings*. Albany: State University of New York Press.
- Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277-1288.
- Kalaitzandonakes, N., Marks, L. A., & Vickner, S. S. (2004). Media coverage of biotech foods and influence on consumer choice. *American Journal of Agricultural Economics*, 86(5), 1238-1246.
- Kasperson, R. E., et al. (1988). The social amplification of risk: A conceptual framework. *Risk Analysis*, 8(2), 177-187.
- Keyton, J. (2001). *Communication research: Asking questions, finding answers*. New York: McGraw-Hill.
- Legard, R., Keegan, J., & Ward, K. (2003). In-depth interviews. In J. Ritchie & J. Lewis (Eds.) *Qualitative research practice: A guide for social science students and researchers* (pp. 138-169). Thousand Oaks, CA: Sage.
- Lewin, K. (1947). Frontiers in group dynamics: Concept, method and reality in science, social equilibria and social change. *Human Relations*, 1, 143-153.
- McInerney, C., Bird, N., & Nucci, M. (2004). The flow of scientific knowledge from the lab to the lay public: The case of genetically modified food. *Science Communication*, 26(1), 44-74.
- Merriam, S. (1995). What can you tell from an N of 1?: Issues of validity and reliability in qualitative research. *Journal of Lifelong Learning*, 4, 51-60.

- Morse, J. M., & Richards, L. (2002). *Readme first for a user's guide to qualitative methods*. Thousand Oaks, CA: Sage Publications.
- Naile, T. L. (2006). *Editor preferences for the use of scientific information in livestock publications*. Unpublished thesis, Oklahoma State University, Stillwater, OK.
- Nelkin, D. (1995). *Selling science*. New York: W.H. Freeman and Company.
- National Research Council. (2003). *Frontiers in agricultural research: Food, health, environment, and communities*. Washington, D.C.: National Academies Press.
- Nisbet, M. C., & Lewenstein, B. V. (2002). Biotechnology and the American media: The policy process and the elite press, 1970-1999. *Science Communication*, 23(4), 359-391.
- Reisner, A., & Walter, G. (1994). Journalists' views of advertisers pressures on agricultural news. *Journal of Agricultural and Environmental Ethics*, 7(2), 157-172.
- Retzinger, J. P. (2001, July). *Setting the agenda—and setting the table—for genetically modified foods in the press*. Paper presented at the 6th Biennial Conference on Communication and Environment, Cincinnati, Ohio.
- Salomone, K. L., Greenberg, M. R., Sandman, P. M., & Sachsman, D. B. (1990). A question of quality: How journalists and news sources evaluate coverage of environmental risk. *Journal of Communication*, 40(4), 117-130.
- Shoemaker, P. J. (1991). *Gatekeeping*. Newbury Park, CA: Sage Publications.
- Shoemaker, P. J. (1996). Media gatekeeping. In M.B. Salwen & D.W. Stacks (Eds.) *An integrated approach to communication theory and research* (pp.79-91). Mahwah, NJ: Lawrence Erlbaum Associates.
- Shoemaker, P. J., Eichholz, M., Kim, E., & Wrigley, B. (2001). Individual and routine forces in gatekeeping. *Journalism and Mass Communication Quarterly*, 78(2), 233-246.
- Snape, D., & Spencer, L. (2003). The foundations of qualitative research. In J. Ritchie & J. Lewis (Eds.) *Qualitative research practice: A guide for social science students and researchers* (pp. 1-23). Thousand Oaks, CA: Sage.
- Strauss, A., & Corbin, J. (1990). *Basics of Qualitative Research*. Newbury Park, CA: Sage.
- Sturges, J. E., & Hanrahan, K. J. (2004). Comparing telephone and face-to-face qualitative interviewing: A research note. *Qualitative Research*, 4(1), 107-118.
- Treise, D., & Weigold, M. F. (2002). Advancing science communication: A survey of science communicators. *Science Communication*, 23(3), 310-322.
- United States Department of Agriculture Agricultural Research Service. (2005). *Science in your shopping cart*. Retrieved November 27, 2007, from <http://www.ars.usda.gov/is/np/shopcart/shopcart.pdf>
- Wadud, S. E., Kreuter, M. W., & Clarkson, S. (1998). Risk perception, beliefs about prevention, and preventative behaviors of farmers. *Journal of Agricultural Safety and Health*, 4(1), 15-24.

Competencies Needed by Agricultural Communication Undergraduates: An Industry Perspective

A. Christian Morgan

Abstract

Competencies needed by agricultural communication graduates to meet industry needs are dynamic, with new technologies being integrated into the communication industry annually. Over the past 35 years, several studies have reviewed agricultural communication curriculum by inquiring of students, graduates, faculty, and industry to determine what coursework, competencies, and objectives should be included to prepare undergraduates. Yet, the literature recommends reviewing curriculum every 2 to 5 years. This Delphi study was conducted to determine what competencies are desired by industry for bachelor of science graduates so existing curriculum at [university name] could be revised. Thirty-seven participants from industry came to consensus on 85 statements. Statements were categorized using curriculum categories from Terry et al. (1995). The ten statements receiving the highest level of agreement were "Conduct activities in an ethical manner," "Ability to meet deadlines," "Dependability," "Strong work ethic," "Reliable," "Organizational skills," "Demonstrate professional/business etiquette in workplace," "Ability to multi-task," "Time management skills," and "Ability to be a productive member of a team." This study sought to address a portion of Agricultural Communications National Research Priority Area 4: "What are the skills, competencies, and resources necessary to prepare professional agricultural communicators for success in various aspects of agricultural knowledge management."

Introduction

Courses in agricultural communication have been taught for over 100 years and during that time the discipline has expanded beyond writing for print media (Doerfert & Miller, 2006). Today's graduates can pursue a wide range of career options; from advertising to sales and policy to photography, providing agricultural communication graduates with skills valued by many sectors of agriculture (University of Georgia, 2007). The development of these skills may be due to the intersection of disciplines found in this academic major, as students have traditionally taken courses in basic science, agricultural science, and communications (Tucker, Whaley, & Cano, 2003) which encompass many competencies to be developed by graduates.

Agricultural communication programs have grown over time while gaining popularity as a discipline (Weckman, Witham, & Telg, 2000). At the same time, the communication needs and preferences of agricultural industry professional and agricultural communication stakeholders are changing at a rapid pace (Doerfert & Miller, 2006; Weaver, 2009). Over the past 35 years, several studies have reviewed agricultural communication curriculum by inquiring of students, graduates, faculty, and industry professionals to help determine what coursework, competencies, and objectives should be

included to properly prepare undergraduates for successful careers (Bailey-Evans, 1994; Kroupa & Evans, 1973; Sprecker & Rudd, 1997; Terry, Lockaby, & Bailey-Evans, 1995; Terry et al., 1994). These studies are valuable assets to the discipline, but due to the dynamic nature of the agricultural communications profession and the technologies that continue to emerge, frequent evaluation of curriculum is recommended to determine industry needs. Indeed, agricultural communication programs have a responsibility to provide students with curriculum that equips them for the work place. To accomplish this, curriculum must be periodically reexamined by seeking input from students, instructors, graduates, and professionals (Doerfert & Miller, 2006; Ettredge & Bellah, 2008).

Likewise, industry encourages the profession to review the curriculum every 2 to 5 years to “re-assess and readdress the agricultural communications curriculum” (Terry et al., 1994, p. 24). To accomplish this, a model was sought for curriculum revision. Finch and Crunkilton (1999) developed a systems curriculum model that requires feedback from graduates and industry to improve the curriculum. Incorporating input from professionals in the field will help programs mirror the needs of industry (Sprecker & Rudd, 1998).

Beyond professionals, input from stakeholders has been recommended as well (Crowder, 1997; Wolf, 2007). Alumni committees and advisory boards can provide input and recommendations about the curriculum and “desired competencies of graduates” (Tucker et al., 2003, p. 27). Including stakeholder input in this process will strengthen curriculum and graduate competencies, and “is likely to concentrate heavily on the program’s performance in providing practical skills perceived as necessary for entry-level employment in the field” (p. 27).

Similarly, the National Research Agenda for the American Association of Agricultural Education, developed by the American Association for Agricultural Education (AAAE), encourages evaluating curriculum. Within Agricultural Communications Research Priority Area 4 is the charge to determine “What are the skills, competencies, and resources necessary to prepare professional agricultural communicators for success in various aspects of agricultural knowledge management” (Osborne, 2007, p. 11).

Past studies have evaluated curriculum from a variety of perspectives. Cooper and Bowen (1989) solicited feedback from program graduates and found they perceived the five most important areas of study completed were agricultural communications, agricultural economics, food science, animal science, and natural resources. Within the communications curriculum, the five most important courses to graduates were writing, editing, public relations, advertising, and photography. When looking back on their overall program experience, graduates stated the most beneficial required course was writing or editing. If they could plan their degree program over again, 40% of the respondents stated they would add more journalism or communication courses, while 34% would enroll in management, marketing, or other business courses. Interestingly, 71% of the participants stated they felt unprepared for the management, marketing, and business responsibilities encountered in their careers.

In a study of agricultural communication faculty members from 30 institutions, Reisner (1990) found the communication courses most commonly required were writing skills, photography, and communications law. The schools studied offered specific discipline options that varied between schools: general agricultural communications, news-editorial, public relations, broadcast, and advertising that allowed students to build skills specific to each option area. Regarding agricultural course electives, industry professionals recommended agricultural economic courses. A criticism was that the curriculums accessed did not require students to take courses relating to “cross-cultural global perspectives, agricultural systems analysis, values and ethics in agriculture, public policy, or leader-

In a 1994 study, Terry et al. assembled a panel of leaders from seven agricultural communication professional organizations who determined that agricultural communication coursework should consist of courses from 28 disciplines consisting of 89 specific concepts. The following concepts received 100% agreement: grammar, government policies, history of American agriculture, communicating agriculture to the public-domestic, communicating agriculture to the public-international, agricultural policy, geography, word processing, creative strategies, campaign planning, graphic design, news writing, reporting, editing, ethics, design and layout, problem solving, speech writing, oral communications, scripting writing, and an internship that allows the student to apply learned concepts.

Sprecker and Rudd (1997) interviewed faculty, practitioners, and alumni of agricultural communication and found all three groups agreed the most valuable skill for graduates was writing, as this is the “foundation for success” in communication (p. 9). Overall, four themes emerged among the groups studied. First, a broad overview of agriculture, especially as it applies to the respective state, including policy, law, economics, and trade. Second, students’ communication skills were more important than having agricultural knowledge. This was emphasized in further statements by interviewees such as “first and foremost” agricultural communication students are communicators, rather than agriculturalists (p. 9) and a graduate’s communication skills will allow them to land a job, not their agricultural knowledge. Next, students need to possess a wide variety of communication skills and apply them proficiently. Finally, the ability to network is a foundational component in agricultural communication.

When analyzing statements among the groups studied, the following themes were found: instructors and practitioners highly valued internships, yet many practitioners that had worked with interns found students’ writing skills inadequate. Similarly, alumni felt that students should take courses in which they must take on a project “from inception to completion” (p. 9), emphasizing the application of communication skills. Beyond agriculture courses, coursework focusing on policy, agricultural issues, economics, politics, and international trade were recommended by the participants. In addition, those interviewed felt students should be able to manage issues in the areas of environmental regulation and activism, and predicted that most future graduates would be employed in public relations (Sprecker & Rudd, 1997).

Although many professionals believe the agricultural coursework should be a significant portion of the curriculum, most stated that a solid foundation of communication coursework is critical for undergraduates (Cooper & Bowen, 1989; Sprecker & Rudd, 1997). Indeed, previous research revealed that “communication skills should be the basis of an agricultural communication curriculum” (Ettredge & Bellah, 2008, p. 7).

A study by Irlbeck and Akers (2009) inquired of selected industry professionals that have employed agricultural communication graduates during the previous three years to rate habits and skills of recently hired agricultural communication graduates. Employers ranked the workplace habits of trustworthiness, easy to work with, and reliability highest, while the lowest ranked were creativity, common sense, and organization. Likewise, employers ranked the communication skills of TV production, photo editing, and page layout highest and writing, photography, news editing, and web design lowest.

A synthesis of curriculum research was conducted in 2008 by Ettredge and Bellah which emphasized “students should obtain a solid education in communication and writing” and that a “majority of professionals surveyed considered agricultural coursework to be a major component of agricultural communication curricula” (p. 7). Yet, they were quick to remind the reader that solid communica-

tion skills are “more significant” than agricultural proficiencies (p. 7). In addition, the importance of internships was stated. However, they discovered that over 60% of the articles found were over 10 years old, leading them to state “the majority of available research is dated, and may not serve as an accurate foundation for grounding course offerings” (p. 9) and “current studies are necessary to evaluate potential changes for the education of future agricultural communicators” (p. 8). This lack of current data for curriculum revision was a significant impetus for this current study.

Purpose

The purpose of this study was to determine the competencies needed by agricultural communication graduates as perceived by industry professionals. The objective of the study was to identify the agricultural communication competencies that had the greatest level of consensus. With this information, existing curriculum may be modified or new curriculum developed to provide students with the current knowledge and skills required for today’s workplace.

Methods

Because consensus of opinion was desired, the Delphi method was chosen for this study (Stitt-Gohdes & Crews, 2004) and has been used successfully in previous curriculum studies (Martin & Frick, 1998; Morgan, Rudd, & Kaufmann, 2004; Terry et al., 1994). The Delphi method is an efficient method of gathering opinions, as it requires only that participants respond to a questionnaire rather than attend a series of meetings or write a paper (Dalkey, 1969). An 80% level of agreement was established a priori as the level required for statements to move from Round 2 to Round 3 and for statements in Round 3 to achieve consensus (Moreno-Casbas, Martin-Arribas, Orts-Cortes, & Coment-Cortes, 2001; Morgan, Rudd, & Kaufmann, 2004; Simon, Haygood, Akers, Doerfert, & Davis, 2005; Stitt-Gohdes & Crews, 2004).

Participants were chosen using the snowball method of sampling (Ary, Jacobs, & Razavieh, 1996). This method of sampling is a technique whereby a selected set of participants are asked to recommend additional participants. In this study, alumni from [university name] communication program (N = 78) were contacted via email and asked to provide three names of experts in the field of communication. Fifteen alumni responded with names of experts and, using a modified Tailored Design Method (Dillman, 2000), these experts (n = 45) were then invited to participate in the study. Of the 45 contacted, 32 responded to Round 1 of the study by providing responses to the statement, “What competencies are needed for agricultural communication bachelor of science graduates?” yielding a response rate of 71.1%.

Statements from Round 1 were analyzed and condensed using the constant comparative method (Glaser & Strauss, 1967). One-hundred forty-eight statements were derived from this process and presented to the participants in Round 2 where they were asked to rank their level of agreement to them using a five-point Likert-type scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. Participant demographic information was also collected.

In Round 2, 26 participants responded providing a 57.8% response rate. Means of participant responses to the statements were determined and statements having an 80% or higher level of agreement ($M \geq 4.00$) were used in Round 3 (n = 110). These statements were sorted by level of agreement and presented to the participants using a four-point Likert-type scale to force a positive or negative response to the statement: 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree. Five additional statements that participants wrote in from Round 2 were included as well.

Thirty participants responded in Round 3, providing a 66.7% response rate. Means of participant responses to the statements were determined and statements having an 80% or higher level of agreement ($M \geq 3.20$) were determined to have consensus ($n = 85$). Throughout the course of the study, a total of 37 individuals participated, with some completing only one or two rounds. Twenty-two participants completed all three rounds. Dalkey (1969) stated that a response rate of $n = 13$ yielded a reliability of 0.80.

To categorize participants' statements an established system was sought. The divisions established by Terry, Lockaby, and Bailey-Evans (1995) of Core Area, Discipline, and Competencies were used. In some cases, no Discipline or Competency properly categorized the statement, so the researcher labeled the statement with the term Miscellaneous, especially when the statement appeared to address more than one category.

Results

Participants ranged in age from 25 to 55 years old, with a mean of 35.7 years, and consisted of 30 females and seven males. Years spent in the career field of communication ranged from 0 to 35, with a mean of 11.8. Participants had been in their current position 5.6 years on average, with a range of 0 to 18 years. Level of education ranged from bachelor degree ($n = 21$) to doctorate ($n = 1$) with 15 having a master's degree. High school career and technical education of participants included agriculture ($n = 19$), journalism ($n = 8$), business ($n = 7$), marketing ($n = 2$), information technology ($n = 1$), and none ($n = 10$, participants were allowed to indicate more than one category). Regarding academic discipline in college, most participants majored in agricultural communication/agricultural journalism ($n = 26$), while some majored in agriculture ($n = 7$), marketing ($n = 6$), journalism ($n = 5$), and various other disciplines ($n = 3$, participants were allowed to indicate more than one category). When asked, "What is the primary focus of your position?" most stated administration or management ($n = 24$) followed by public relations ($n = 22$) and print publication ($n = 15$, participants were allowed to indicate more than one primary focus).

Participant statements were categorized into three Core Areas of study: Agriculture, Communication, and General Education. Within these Core Areas are Disciplines as identified by Terry, Lockaby, and Bailey-Evans (1995). Within Disciplines are Competencies; for this study, the Competencies stated by the participants were categorized into one of the Competency categories identified by Terry, Lockaby, and Bailey-Evans. Numbers in parentheses after the statements indicate the level of agreement for the statement.

The Core Area of Agriculture contains 28 statements on which participants came to consensus (see Table 1). The statements ranked highest in the study were, "Conduct activities in an ethical manner" (94.7%), "Ability to meet deadlines" (94.7%), and "Dependability" (94.7%). The competencies of "Strong work ethic" (93.2%) and "Reliable" (90.9%) had the next highest level of agreement. Following these were "Organizational skills" (90.2%), "Demonstrate professional/business etiquette in workplace" (90.2%), "Ability to multi-task" (90.2%) and "Time management skills" (89.4%).

The Core Area of Communication contained 27 statements on which the participants came to consensus (see Table 2). "Effectively communicate verbally" (91.7%) was the competency with the highest level of consensus followed by "Communications Principles- understanding the media mix and how to use them effectively and efficiently" (87.5%), "Ability to identify barriers to communication" (87.5%), and "Communication skills beyond 'listening' - being able to understand what the person is saying" (87.1%).

Table 1
Agriculture Core Area Disciplines and Competencies

Statement	Discipline	Competency	Level of Agreement	SD
Conduct activities in an ethical manner	Agricultural Leadership	Ethics	94.7%	.60
Ability to meet deadlines	Internships	Development of Personal Skills	94.7%	.60
Dependability	Internships	Development of Interpersonal Skills	94.7%	.60
Strong work ethic	Internships	Employee Responsibilities	93.2%	.63
Reliable	Internships	Development of Interpersonal Skills	90.9%	.65
Organizational skills	Agricultural Leadership	Personal Development	90.2%	.66
Demonstrate professional/business etiquette in workplace	Internships	Employee Responsibilities	90.2%	.66
Ability to multi-task	Internships	Development of Personal Skills	90.2%	.66
Time management skills	Agricultural Leadership	Personal Development	89.4%	.66
Ability to be a productive member of a team	Internships	Development of Interpersonal Skills	89.4%	.66
Flexibility in day to day tasks	Internships	Development of Personal Skills	88.6%	.67
Detail oriented	Internships	Development of Personal Skills	88.6%	.71
Ability to listen	Internships	Development of Personal Skills	87.5%	.67
Interpersonal skills. The ability to have genuine one on one conversation/discussion with people	Internships	Development of Personal Skills	86.4%	.75
Dedicated	Internships	Development of Interpersonal Skills	85.6%	.66
Positive attitude that is most concerned with finding answers	Internships	Problem Solving	85.6%	.79
Social skills	Agricultural Leadership	Interpersonal Relations	84.8%	.75
An understanding of professional dress	Internships	Employee Responsibilities	84.8%	.70
Ability to identify current issues in the agricultural industry	Miscellaneous	Miscellaneous	84.8%	.70
Leadership skills	Agricultural Leadership	Miscellaneous	84.4%	.75

Table 1 (continued)

Agriculture Core Area Disciplines and Competencies

Statement	Discipline	Competency	Level of Agreement	SD
Graduates need the ability to think on their feet	Internships	Problem Solving	84.1%	.74
Beyond all else an ability to listen	Internships	Development of Personal Skills	83.6%	.83
The ability to think on their feet and using the technical knowledge they have gained [in their bachelors program] to apply that info solve real-world workplace dilemmas. This includes the following: Leadership skills, team building skills, and organizational skills	Internships	Application of Ag Communications Concepts	83.1%	.70
An understanding of the business aspects of the major industries of agriculture	Agricultural Economics	Gen Concepts and Principles	81.8%	.72
Real experience in problem solving	Internships	Problem Solving	81.8%	.72
Solid project management skills in diverse and complex situations	Internships	Development of Personal Skills	81.3%	.67
Exceptional interpersonal communication skills	Internships	Development of Personal Skills	81.3%	.88
Understanding of the agriculture industry and terminology	Miscellaneous	Miscellaneous	81.1%	.75

Table 2

Communication Core Area Disciplines and Competencies

Statement	Discipline	Competency	Level of Agreement	SD
Effectively communicate verbally	Public Speaking	Oral Communication	91.7%	.65
Communications Principles- understanding the media mix and how to use them effectively and efficiently	Miscellaneous	Miscellaneous	87.5%	.67
Ability to identify barriers to communication	Public Relations	Problem Solving	87.5%	.67
Ability to create and edit newsletter articles	Journalism	Design and Layout of Publications	87.1%	.71
Communication skills beyond 'listening' - being able to understand what the person is saying. Repeat back what you understand to make sure you are hearing what truly has been (at least attempted to be) communicated.	Journalism	Reporting	87.1%	.51

Table 2 (continued)*Communication Core Area Disciplines and Competencies*

Statement	Discipline	Competency	Level of Agreement	SD
My ideal employee would need to be able to write, design, strategize and come up with concepts for clients	Advertising	Miscellaneous	86.7%	.76
Creative	Advertising	Creative Strategies	85.9%	.72
Superior tactical communication skills and instincts	Miscellaneous	Miscellaneous	85.9%	.72
Identify their own strengths and learn how to develop/enhance their strengths from a communications perspective	Miscellaneous	Miscellaneous	85.2%	.71
Ability to create and edit press releases	Journalism	Miscellaneous	84.8%	.70
Translate technical information for lay people	Journalism	Dissemination Systems	84.4%	.75
Reporting skills - formulate and ask meaningful questions	Journalism	Reporting	84.4%	.79
Ability to understand individuals at various educational levels	Journalism	Miscellaneous	84.1%	.74
Ability to work with clients to understand their public relations needs and goals	Public Relations	Campaign Planning	84.1%	.74
Properly select and edit photos for publication	Photography	Composition	83.9%	.66
The ability to differentiate between different styles of writing such as news writing vs. feature writing	Journalism	Miscellaneous	83.6%	.75
How to organize and write viable communications plans. These plans need to "run parallel" with the business/marketing plans	Public Relations	Campaign Planning	83.6%	.70
Knowledge of graphic design / page layout	Advertising	Graphic Design	83.1%	.87
Superior strategic communication skills and instincts	Miscellaneous	Miscellaneous	82.8%	.69
Ability to identify sources	Journalism	Reporting	82.8%	.74

Table 2 (continued)
Communication Core Area Disciplines and Competencies

Statement	Discipline	Competency	Level of Agreement	SD
Graduates need to have a holistic view of communications	Miscellaneous	Miscellaneous	82.8%	.74
How to develop, write and execute a crisis management plan	Public Relations	Problem Solving	82.8%	.74
Ability to interview sources	Journalism	Reporting	82.8%	.78
How to develop a public relations marketing campaign	Public Relations	Campaign Planning	82.6%	.73
Telephone skills	Public Speaking	Oral Communication	82.6%	.68
The ability to manage people	Public Relations	Personnel Management	81.3%	.80

The final Core Area was General Education which encompassed a broad spectrum of 30 competencies, with the first four focusing on language arts skills: “Correct use of grammar” (90.2%), “Effectively communicating using the written word” (89.4%) and “Correct use of spelling” (89.4%, see Table 3). Competencies which may be difficult to teach set found consensus: “Motivated” (87.9%), “Hard worker” (87.9%), “Willingness to roll up their sleeves to ‘Get things done’ versus thinking that to fully accomplish a task one must assign this to others” (87.9%), and “Self-starter” (85.6%) were ranked in the top half of the statements.

Following the categories established by Terry, Lockaby, and Bailey-Evans’ (1995), the Discipline of computer applications is included in General Education Core Area. “Working knowledge of PC computers” (84.8%), “Web based skills” (83.6%), and “Basic competencies in office software” (83.3%) were all found to be important. Likewise, a working knowledge of communication-oriented software was important as well. “Enough exposure to graphics software to get them into an office and ability to learn/adapt quickly” (83.1%), “Working knowledge of Microsoft Word” (82.6%), “Graduates should have a basic knowledge of the industry standard design programs” (80.5%), and “How to integrate market research and various database tools available” (79.8%). Similarly, many business-type competencies were found in this Area such as “Managing a budget” (84.1%), “Understanding budgeting” (82.6%), and “General business—an understanding of business models” (80.5%).

Table 3
General Education Core Area Disciplines and Competencies

Statement	Disciplines	Competency	Level of Agreement	SD
Correct use of grammar	English	Grammar	90.2%	.66
Effectively communicate using the written word	English	Grammar	89.4%	.65
Correct use of spelling	English	Grammar	89.4%	.66
Excellent writing skills, which I'm convinced is still one of the most lacking areas in business today	English	Miscellaneous	88.6%	.67

Table 3 (continued)

General Education Core Area Disciplines and Competencies

Statement	Disciplines	Competency	Level of Agreement	SD
Networking skills	Sociology	None	88.3%	.62
Correct use of punctuation	English	Grammar	87.9%	.67
Motivated	Miscellaneous	Miscellaneous	87.9%	.67
Hard worker	Miscellaneous	Miscellaneous	87.9%	.67
Willingness to roll up their sleeves to "Get things done" versus thinking that to fully accomplish a task one must just assign this to others	Miscellaneous	Miscellaneous	87.9%	.76
Grammar and writing skills are not enough - must understand the environment, including business, science and law.	Miscellaneous	Miscellaneous	86.3%	.68
Self-starter	Miscellaneous	Miscellaneous	85.6%	.71
Working knowledge of PC computers	Computer Applications	Miscellaneous	84.8%	.75
Managing a budget	Business	Gen Concepts and Principles	84.1%	.74
Web based skills	Computer Applications	Electronic Communication /Networking	83.6%	.75
Love of learning	Lifelong Learning	Miscellaneous	83.6%	.65
Intuitive	Miscellaneous	Miscellaneous	83.6%	.75
Basic competencies in office software	Computer Applications	Miscellaneous	83.3%	.74
Enough exposure to graphics software to get them into an office and ability to learn/adapt quickly.	Computer Applications	Graphic Design	83.1%	.60
Ability to identify appropriate file formats for printed documents	Computer Applications	Miscellaneous	82.8%	.74
Understanding budgeting	Business	Gen Concepts and Principles	82.6%	.68
Working knowledge of Microsoft Word	Computer Applications	Word Processing	82.6%	.77
Principles of marketing- understanding and communicating the differences between a goal, an objective, a strategy and a tactic	Marketing	Marketing Principles	82.6%	.77
Optimistic	Miscellaneous	Miscellaneous	82.0%	.73
Knowledgeable with company/product/business/marketing plans	Marketing	Marketing Principles	81.8%	.72

Table 3 (continued)

General Education Core Area Disciplines and Competencies

Statement	Disciplines	Competency	Level of Agreement	SD
Understanding consumer trends	Marketing	Buyer Behavior	80.5%	.66
Utilize proper research techniques	Miscellaneous	Miscellaneous	80.5%	.71
General business - an understanding of business models.	Business	Gen Concepts and Principles	80.5%	.79
Graduates should have a basic knowledge of the industry standard design programs	Computer Applications	Graphic Design	80.5%	.79
How to integrate market research and various database tools available	Computer Applications	Database Management	79.8%	.75
Experience with current graphic design programs	Computer Applications	Graphic Design	79.7%	.82

Discussion

Participants were in early to mid career, with none near traditional retirement age. They had been in the profession a substantial number of years (11.8), and in their current position for half as long (5.6 years). All participants were well educated, having earned a bachelor degree or higher. Most were involved with agriculture in high school ($n = 19$). Similarly, a majority of participants majored in agricultural communication/journalism ($n = 27$), journalism ($n = 3$), and various other disciplines ($n = 5$). Likewise, most participants' current position focused heavily on administration or management ($n = 24$) rather than communication skills. This may emphasize the need for students to be prepared for management and leadership roles and prompt agricultural communication programs to include coursework to address these needs.

Several of the Agriculture Core Area competencies identified by the participants may be indirectly taught in a college courses. For example, the competency "Ability to meet deadlines" is not usually taught in a course, but is assumed to be a component of courses based on assignment due dates and penalties for late assignment submissions. Similarly, the trait of "Reliability" was found by Irlbeck and Akers (2009); yet, these are not traditional objectives found in courses. Likewise, the competencies of "Dependability" and "Strong work ethic" are not usually subjects addressed in courses, but Irlbeck and Akers (2009) discovered similar traits (reliability and work ethic). Many of these competencies are not specifically addressed in course work, but through the structure of the university environment it is as if there is an assumption students will develop these competencies before graduating. Due to the agreement for these types of competencies stated in this study, perhaps more effort should be devoted to incorporating these competencies into courses.

Included in the Area of Communication was a breadth of competencies for graduates to achieve. While verbal communication topped the list, effective listening was also held in high esteem by the participants along with skilled journalistic writing. Verbal communication and writing was mentioned by other authors (Bailey-Evans, 1994; Ettredge & Bellah, 2008; Irlbeck & Akers, 2009), but listening was not seen in previous research. Additional, competencies that may be more difficult to define emerged such as "Superior tactical communication skills and instincts."

Overall, it appeared a holistic approach to communications surfaced. Statements such as ability to “Understand the media mix and use them effectively,” “Create and edit a newsletter,” “Write, design, strategize, and come up with concepts for clients” and “Graduates need to have a holistic view of communications” lend themselves to the notion that students must be capable to undertake all aspects of a project. Similarly, Sprecker and Rudd (1997) found that “students need to be versatile, able to do many communication tasks thoroughly” (p. 9) and comparable skills were found in prior research (Ettredge & Bellah, 2008; Irlbeck & Akers, 2009). Based on this, it appears students do not have the luxury of narrowing their focus to one area of communications and becoming proficient, but rather need to incorporate all of the elements of communication successfully for clients.

The competencies with the highest level of consensus pertained to English, and in particular grammar. Competencies such as “Correct use of grammar,” along with spelling, writing effectively, and punctuation, which are competencies expected of any college graduate, were ranked high in this study by participants. Past research emphasized grammar, spelling, and writing as well (Bailey-Evans, 1994; Irlbeck & Akers, 2009). However, students must go beyond writing and grammar to succeed. The statement “Grammar and writing skills are not enough - must understand the environment, including business, science and law” links to the earlier “holistic” comment in the communications section, emphasizing students are expected to understand how all the disciplines interlink.

Interestingly, rankings related to technology were included with General Education. Having a “Working knowledge of PC computers” was ranked higher than knowing how to use Mac computers (which received less than 80% level of agreement). When addressing competency in software use, participants came to consensus on only one specific program: Microsoft Word®. Regarding graphics programs, consensus showed that having a familiarity with graphics programs was valued, but more important was the ability to learn any program the graduate is required to use. Previous studies did not address these specific competencies. This seems to indicate that knowing a specific operating platform is less important than having the ability to learn a given platform or software.

A general understanding of business principles emerged as well. Although few specific disciplines of business received consensus, managing and understanding a budget was found to be important, as well as a general understanding of business models. Similarly, many dimensions of marketing were valued. Principles of marketing, understanding marketing plans and consumer trends received consensus. Bailey-Evans (1994) found similar results, specifically the competencies of business, management, and marketing all earned a 90% level of agreement or higher. Based in this information, it appears that curriculum should include a solid foundation in business.

As with the Competencies found in the Agriculture Core Area, many of the competencies in the General Education Core Area may be taught indirectly in many courses. Statements such as “Motivated,” “Hard worker,” “Willingness to roll up sleeves and get things done,” “Intuitive,” “Optimistic,” and “Self-starter” may be more difficult to teach and assess, and perhaps are more associated with one’s personality rather than a concept to be taught in class. Previous studies did not address these specific competencies.

The fact that so many of these “indirect” competencies were stated in Round 1, and then gained consensus in subsequent rounds makes one question the qualities employers are finding in new employees today. With statements such as “Willingness to roll up their sleeves to ‘Get things done’ versus thinking that to fully accomplish a task one must assign this to others,” and “Self-starter” ranking in the top half of the statements, could it be that graduates are not meeting employer’s expectations? And if this is the case, is it possible to structure courses in such a way that these characteristics are

developed in students? Irlbeck and Akers (2009) seem to reinforce this finding, as their study found “recent graduates do not seem to understand ‘paying dues’” (p. 67).

Additional research should be conducted to determine if graduates possess these competencies that industry participants have identified and if these competencies are learned in the university environment or are they learned after graduation once the graduate enters their career field? A follow-up study should be conducted to determine the specific objectives to be associated with each competency found. In addition, the discipline should pursue feedback from graduates and industry so programs can be periodically reviewed, revised, and improved. Finally, the system of categorizing communication competencies developed by Terry, Lockaby, and Bailey-Evans’ (1995) should be updated to include current technologies and skills, such as the World Wide Web and revised to determine if the current categories are appropriate.

Keywords

Delphi, curriculum, undergraduate

References

- Ary, D., Jacobs, L. C., & Razavieh, A. (1996). *Introduction to Research in Education* (5th ed.). Fort Worth, TX: Harcourt Brace College Publishers.
- Bailey-Evans, F. (1994). *Enhancing the agricultural communications curriculum: A national Delphi study*. Unpublished doctoral dissertation, Texas Tech University, Lubbock, TX.
- Cooper, B. E., & Bowen, B. E. (1989). Agricultural communications curriculum: Perceptions of Ohio State graduates. *ACE Quarterly*, 73(2), 11-16.
- Crowder, L. V. (1997). A Participatory Approach to Curriculum Development [Electronic Version]. *SD dimensions*. Retrieved September 22, 2008, from <http://www.fao.org/sd/EXdirect/EXan0017.htm>
- Dalkey, N. C. (1969). *The Delphi method: An experimental study of group opinion*. Santa Monica, CA: The Rand Corporation.
- Dillman, D. (2000). *Mail and Internet Surveys: The Tailored Design Method* (2nd ed.). New York: John Wiley & Sons, Inc.
- Doerfert, D. L., & Miller, R. P. (2006). What are agricultural industry professionals trying to tell us? Implications for university-level agricultural communications curricula. *Journal of Applied Communications*, 90(3), 17-31.
- Ettredge, T. M., & Bellah, K. A. (2008). *A curriculum for university agricultural communication programs: A synthesis of research*. Paper presented at the Southern Association of Agricultural Scientists, Dallas, TX.
- Finch, C. R., & Crunkilton, J. R. (1999). *Curriculum development in vocational and technical education: Planning, content, and implementation*. Boston: Allyn and Bacon.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory*. Chicago: Aldine.
- Irlbeck, E. G. & Akers, C. (2009). Employers’ perceptions of recent agricultural communications graduates’ workplace habits and communication skills. *Journal of Agricultural Education* 50(4), 63-71.
- Kroupa, E. A., & Evans, J. (1973). New directions in agricultural communications curricula. *AAACE Quarterly*, 56(3), 23-31.

- Martin, A. G., & Frick, M. J. (1998). The Delphi technique: An informal history of its use in agricultural education research since 1984. *Journal of Agricultural Education*, 39(1), 73-79.
- Moreno-Casbas, T., Martin-Arribas, C., Orts-Cortes, I., & Coment-Cortes, P. (2001). Identification of priorities for nursing research in Spain: A Delphi study. *Journal of Advanced Nursing*, 35(6), 857-863.
- Morgan, A. C., Rudd, R. D., & Kaufmann, E. K. (2004). *Elements of an undergraduate agricultural leadership program: A Delphi study*. Paper presented at the Association of Leadership Educators, Memphis, TN.
- Osborne, E. W. (Ed.). (2007). *National research agenda: agricultural education and communication: 2007-2010*. American Association for Agricultural Education.
- Reisner, A. (1990). An overview of agricultural communications programs and curricula. *Journal of Applied Communications*, 74(1), 8-17.
- Simon, L., Haygood, J., Akers, C., Doerfert, D., & Davis, C. (2005). Master's level agricultural communications curriculum: A national Delphi study. *Journal of Agricultural Education*, 46(3), 56-69.
- Sprecker, K. J., & Rudd, R. D. (1997). Opinions of instructors, practitioners, and alumni concerning curricular requirements of agricultural communication students at the University of Florida. *Journal of Agricultural Education*, 38(1), 6-13.
- Sprecker, K. J., & Rudd, R. D. (1998). Opinions of practitioners concerning curricular requirements of agricultural communication students at the University of Florida. *Journal of Applied Communications*, 82(1), 31-42.
- Stitt-Gohdes, W. L., & Crews, T. B. (2004). The Delphi technique: A research strategy for career and technical education. *Journal of Career and Technical Education*, 20(2), 55-67.
- Terry, R., Jr., Lockaby, J., & Bailey-Evans, F. J. (1995). *A model for undergraduate academic programs in agricultural communications*. Paper presented at the Southern Agricultural Education Research Conference, Wilmington, NC.
- Terry, R., Jr., Vaughn, P. R., Vernon, J. S., Lockaby, J., Bailey-Evans, F., & Rehrman, M. (1994). *Enhancing the agricultural communications curriculum: A vision for the future*. Unpublished manuscript, Lubbock, TX.
- Tucker, M., Whaley, S. R., & Cano, J. (2003). Agricultural education and agricultural communications: Striking a proper balance in the academy. *Journal of Agricultural Education*, 44(1), 22-30.
- University of Georgia. (2007). *What can I do with a major in agricultural communication?* Retrieved September 25, 2008 from http://www.career.uga.edu/multimedia/majors_handouts/AgriculturalCommunication.pdf
- Weaver, D. H. (2009). US journalism in the 21st century – what future? *Journalism*, 10(3), 396-397.
- Weckman, R., Witham, D., & Telg, R. (2000). Southern agricultural communications undergraduate programs: A survey. *Journal of Applied Communications*, 84(4), 41-50.
- Wolf, P. (2007). A model for facilitating curriculum development in higher education: A faculty-driven, data-informed, and educational developer-supported approach. In P. Wolf & J. C. Hughes (Eds.), *Curriculum development in higher education: Faculty-driven processes and practices* (Vol. 112, pp. 15-20). San Francisco: Jossey-Bass.

Identifying Adoption Barriers in Organizational Rhetoric: A Response to the Strategic Plan for the National Animal Identification System

Shari R. Veil

Abstract

This study analyzes an organization's predisposition to accept or reject an argument for change. Specifically, an analysis of the North Dakota Stockmen's Association's (NDSA) official response to the Strategic Plan for the National Animal Identification System revealed key themes attributing to NDSA's perceived inadequacy of the plan. This study contends change agents who recognize the role of rhetoric in the diffusion process will be more effective if they are able to identify the discursive justifications needed to rationalize and legitimize the adoption of an innovation. Based on the literature reviewed and the analysis in this study, these justifications can be identified by analyzing organizational rhetoric and determining the influence of organizational leadership as an opinion leader in the diffusion process.

Introduction

According to the origins of argumentation theory, in any given case there is an *a priori* argument or ground of presumption in which the argument to maintain the status quo exists (Whately, 1855). Whately's (1855) *Elements of Rhetoric* described an *a priori* case as "a preoccupation of the ground that must stand good till some sufficient reason is adduced against it" (p. 139). Whately explained no change is good in itself, and those proposing change must provide sufficient reasons as to why the change is for the better. Presumption is described as the normal or customary standing (van Eemeron, Grootendorst, & Henkemans, 1996). The ground of presumption, then, generally exists in the currently maintained argument of the way things have always been done. The burden of proof must be argued by those who would dispute the existing understanding, or "propose alterations in existing institutions" (Sproule, 1976, p. 118).

Whately (1855) contended before one can judge an argument he/she must first determine "on which side the presumption lies, and to which belongs the (onus probandi) burden of proof" (p. 139). Rescher's (1977) description of burden of proof implied the proponent of change undergoes a process of changing commitments throughout the dialectical exchange. In other words, the arguer who must present proof as to why the process must change may need to continuously evaluate and adapt the means of persuasion. Therefore, encouraging the adoption of an innovation, especially one that replaces the status quo, requires an evolving argument to shift the ground of presumption.

In April 2005, the Animal Plant Health Inspection Service (APHIS) of the United States Department of Agriculture (USDA) released a draft of the Strategic Plan for a National Animal Identification System (NAIS). The plan argued for animal trace back within 48 hours to quickly mitigate a naturally occurring disease or an agroterrorist attack. An innovative tool suggested for this potentially mandated program included radio frequency identification (RFID) tags for cattle. The plan was posted on the USDA-APHIS website allowing organizations involved in the livestock industry to post comments. In the state of North Dakota, the status quo for animal identification is branding, and the North Dakota Stockmen's Association (NDSA) is appointed by legislature to track livestock through brand records. In July 2005, the executive vice president of NDSA posted comments overwhelmingly criticizing the strategic plan. NDSA's organizational rhetoric, as presented in those online comments, thoroughly rejected USDA-APHIS's argument for NAIS.

This study examines the role of leadership and organizational rhetoric in the adoption or rejection of an argument for change. First, diffusion of innovation theory is reviewed. Second, the role of opinion leaders and organizational rhetoric in the adoption process is explained. Third, the background of an agricultural-based diffusion campaign grounded in industry risk is provided. Fourth, cluster analysis is used to identify barriers to the adoption of the Strategic Plan for NAIS specifically found in organizational rhetoric of NDSA. Finally, implications are provided for how a rhetorical approach to diffusion can assist change agents in identifying how to rationalize and legitimize the adoption of an innovation and thereby shift the ground of presumption.

Literature Review

Diffusion Theory

Diffusion is "the process in which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2003, p. 5). Traditional diffusion studies often underscore the role of rhetoric in the adoption process (Abrahamson & Fairchild, 1999; Hirsch, 1986; King & Kugler, 2000; Strang & Meyer, 1994). Green (2004) argued innovations are not adopted because they are effective and the characteristics of potential adopters make them ripe for acceptance, but because adoption has been rhetorically shaped and promoted by organizational actors (King & Kugler, 2000; Zbaracki, 1998). Investigating rhetoric in and by organizations has been well documented in research literature (Cheney & McMillan, 1990; Crable, 1986, 1990; Sproule, 1989; Tompkins, 1987). The notion of leadership appearing as and speaking for an organization has also been explored (Crable, 1990; Heath & Nelson, 1986; Heath, 1988; Weber, 1978). Yet, even Rogers (2003) acknowledged a major weakness in organization-based innovation studies is that the influence of those in leadership roles has not been taken into account.

The original idea of diffusion was first expounded on by Tarde in his 1903 book, *The Laws of Imitation*. The first application of the diffusion model can be traced to the agricultural industry. Focusing on the adoption of hybrid seed corn in Iowa, Ryan and Gross's (1943) influential study provided the basic framework for diffusion research, using retrospective surveys to determine the rate by which individuals adopt an innovation over time. The rate of adoption traditionally forms an S-shaped curve as a few individuals adopt the innovation at first before the adoption rate accelerates and then tapers off once most individuals have adopted the innovation (Ryan & Gross, 1943). Rogers (2003), who extended and popularized diffusion of innovation into multiple disciplines, places adopters along this curve into categories of (1) innovators, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards based on at what point the adopter is able to accept the uncertainty of the innovation.

Diffusion of innovation research is used to evaluate the adoption process of innovations as diverse as cancer treatment and internet use in industries as diverse as agriculture and fashion.

The point of adoption is determined in the decision-making process of (1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation (Rogers, 2003). Knowledge or awareness is the first stage in the decision making process where the individual learns about the innovation and how it works (Rogers, 2003). The awareness may be passive in that the individual does not actively try to find information on the innovation. The predispositions of individuals may also influence how they become aware of an innovation. Rogers (2003) stated, "Individuals tend to expose themselves to ideas that are in accordance with their interests, needs, and existing attitudes" (p. 171). Consciously or unconsciously, through a tendency called selective exposure, individuals notice and respond to information consistent with their existing attitudes and beliefs (Rogers, 2003). Individuals will rarely seek out information about an innovation unless they first feel a need for it.

In the knowledge or awareness stage, individuals look for information on the innovation in order to reduce uncertainty and compare advantages and disadvantages of the innovation (Rogers, 2003). They try to learn how to use the innovation and how it actually works. As Rogers (2003) suggested, if an innovation is complex, "the amount of how-to knowledge needed for adoption is much greater," and without adequate how-to knowledge before adoption, "rejection and discontinuance are likely to result" (p. 173). Regardless of the amount of knowledge gained in this step, awareness of the innovation and how it works does not necessarily lead to adoption of an innovation.

In the persuasion or interest stage individuals form a favorable or unfavorable attitude toward the innovation (Rogers, 2003). The information discovered about the innovation at this stage is interpreted based on selective perception. Information on the innovation will have little effect if the individual does not feel the innovation is relevant to their needs or consistent with their established beliefs (Hassinger, 1959). Attributes of the innovation are very important at this stage because perception of the innovation is established.

During the decision stage individuals usually try the innovation to see if they like it or vicariously learn about the innovation by observing others using it (Rogers, 2003). Even though a decision to adopt the innovation may be made in this stage, rejection can still occur if the individual does not act on the decision. Collective behavior is also very influential during the decision stage (Rogers, 2003). If an individual feels pressure to adopt or reject an innovation, personal knowledge and perception of the innovation may be discounted in the decision stage.

During implementation individuals actually begin using the innovation (Rogers, 2003). Re-invention often occurs at this stage when the user alters the innovation to suit his or her needs (Rogers, 2003). Regardless of the purpose of the innovation, how it is used determines whether it is re-invented. The implementation stage ends when the innovation is no longer considered new.

During confirmation, the final stage in the decision making process, individuals look for support of their decision to adopt the innovation (Festinger, 1957; Rogers, 2003). If the decision is reinforced by others, the innovation will continue to be used. However, if individuals do not find support for their decision, they may discontinue using the innovation (Rogers, 2003). Discontinuance occurs when individuals either find a replacement for the innovation or they become dissatisfied with the innovation (Rogers, 2003).

Throughout the decision making process, individuals evaluate the attributes of the innovation. While studies in educational settings (Holloway, 1977), information technology (Kearns, 1992; Moore & Benbasat, 1991); healthcare (Goldman, 1992) and agriculture (Kremer et. al, 2001) have

examined and even added to the list of attributes, the five attributes defined by Rogers (2003) including (1) relative advantage, (2) compatibility, (3) complexity, (4) trialability, and (5) observability, continue to be used as the base from which attribute categories are expanded.

The first and most influential attribute is relative advantage (Rogers, 2003). “Relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes” (Rogers, 2003, p. 15). Whether an individual or organization receives an actual benefit from an innovation does not determine the rate of adoption. If an individual or organization perceives the innovation to provide advantages over the current system, the innovation will be adopted. According to Rogers (2003) “The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption will be” (p. 15). Relative advantage is often expressed with financial terms since an innovation is not likely to be adopted if the costs outweigh the benefits. Incentives, specifically financial incentives, help encourage adoption of an innovation when costs are a major concern of potential adopters (Rogers, 1973).

The second attribute is compatibility. The innovation must coincide with “existing values, experiences, and the needs of potential adopters” (Rogers, 2003, p. 15). If an innovation is compatible with established norms in an organization it will be adopted more rapidly than one not inline with existing practices of the organization. As Rogers (2003) notes, “The rate of adoption of a new idea is affected by the old idea that it supersedes” (p. 245). The rate of adoption may be impeded if the innovation is not compatible or is simply too different from the system currently in place.

“Complexity is the degree to which an innovation is perceived as difficult to understand and use” (Rogers, 2003, p. 16). If the innovation requires potential adopters to develop additional skills, the time required to attain those skills may delay the innovation adoption. The innovation must also be user friendly, not just to those who propose the innovation, but more importantly, to the end users. In this sense, complexity can act as a barrier to adoption when a technology-based innovation is introduced to a non-technical field (Rogers, 2003). In addition, potential adopters must understand what purpose the innovation will serve. As Rogers (2003) stated, “Some innovations are clear in their meaning to potential adopters while others are not” (p. 257). The innovation will be rejected if potential adopters do not understand the consequences of using the innovation.

Trialability is the degree to which an innovation may be used before committing to adoption (Rogers, 2003). If potential adopters are able to try out the innovation to determine how it functions and if it works, adoption becomes more likely as uncertainty about the innovation is reduced. However, if potential adopters have a negative experience when trying the innovation, the adoption rate will diminish. For example, if the innovation does not work as it is designed to work in the trial period, there would be no reason to adopt the innovation when it is formally disseminated.

Observability is a measure of how visible the results of the innovation are to others (Rogers, 2003). Potential adopters who are able to see the innovation working in a real-world setting, beyond the trial phase, are more likely to adopt the innovation. The more individuals see other people using an innovation, the more likely they are to adopt the innovation as well. Innovations used privately, cannot be seen, or have ambiguous results have a slower adoption rate than those highly visible with obvious results. Preventative innovations have a particularly slow rate of adoption because the desired outcome is to prevent a future event (Rogers, 2003). Because the event has not occurred and may not occur, the results may never be visible.

How potential adopters perceive the five attributes of an innovation affects the relative speed with which an innovation is adopted. How the attributes are presented as information is diffused

and sought in the decision-making process is another essential element in the diffusion model. Mass media channels are usually the most rapid and efficient means of sharing information with an audience; however, because diffusion of innovation takes place in a social system, interpersonal channels are actually more effective in persuading an individual to accept a new idea (Rogers, 2003). Specifically, the role of opinion leaders can greatly influence the adoption process of an innovation (Severin & Tankard, 1997).

Opinion Leaders and Organizational Rhetoric

Opinion leadership is described as a transparent role in informal relationships (Katz & Lazarsfeld, 1955). Opinion leaders are influential people within a peer group who serve as pacesetters or models for the innovation behavior of their followers (Turnbull & Meenaghan, 2001). Opinion leaders tend to be more educated, innovative, wealthy, and have a higher social status than those who follow their leadership (Rogers & van Es, 1964; Rogers & Svenning, 1969). Opinion leaders also tend to have a high-perceived level of leadership (Weir, 1990).

While the leadership role of an opinion leader is usually inconspicuous (Katz & Lazarsfeld, 1955), Mancuso (1969) suggested status, along with mobility and confidence, are the main characteristics of an opinion leader. Wasson, Sturdivant, and McConaughty (1970) proposed the opinion leader is the most prestigious member of the group. Thus, the dual role of an opinion leader in an organizational leadership role has the potential to influence the adoption process. Because of their influence on organizational rhetoric, leaders who become advocates for or against an innovation can actually become change agents or champions in the process (Rogers, 2003).

Research suggests leaders are able to appear as and speak for an organization (Crable, 1990; Heath & Nelson, 1986; Heath, 1988; Weber, 1978). Through the hierarchical privilege of rhetorical power, leadership is also able to exercise control over the language of an organization (Cheney & McMillan, 1990; Weber, 1978). Tompkins (2005) concurs when stating a culture in which members identify with the organization can work “as a form of control as well as of motivation and identity formation” (p. 107). The individual is constrained by incorporated power (Cheney & McMillan, 1990) as organizational values supersede individual values (Hegstrom, 1990). Cheney and Lair (2005) noted “examining the constitutive nature of rhetoric in organization helps us to understand the range of persuasive activities, both overt and subtle, that are inherent in any type of organization’s argument for its own existence, continuance, and growth” (p. 64). The potential influence of opinion leaders in organizational leadership roles further complexes the decision to adopt or reject an innovation in an organizational setting.

Green (2004) posited diffusion is a product of rhetoric. In an institutional setting, discourse is used to communicate to organizational stakeholders that the adoption of an innovation is rational and complies with the norms of progress (Abrahamson, 1996; Abrahamson & Fairchild, 1999). While the role of discourse in the diffusion process has been examined (Strang & Meyer, 1994), the ways in which culture and discourse restrict alternatives in the adoption process have not been explained (Barley & Tolbert, 1997). A rhetorical theory of diffusion, as offered by Green (2004), recognizes diffusion does not take place in a social vacuum. Adoption occurs when agents provide discursive justifications that rationalize and legitimize the innovation (King & Kugler, 2000; Strang & Meyer, 1994; Tolbert & Zucker, 1996). As noted, Rogers (2003) suggested a major weakness in organization based innovation studies is that the influence of those in leadership roles has not been taken into account.

Diffusion studies have also been criticized for being pro-innovation (Rogers, 2003). Following Ryan and Gross's (1943) research process, most diffusion studies are conducted retrospectively after an innovation has been accepted; therefore, few rejected innovations are studied to determine why the innovation was not adopted. Conducting research as an innovation is being diffused rather than after the fact would provide insight as to the motivations for adopting or rejecting an innovation (Rogers, 2003). This process would allow for specific questions concerning the attributes of diffusion (relative advantage, compatibility, complexity, trialability, and observability) (Rogers, 2003) and an examination of the barriers to adoption as articulated in the rhetorical appeals of organizational leaders.

Contributions in agriculture diffusion acknowledge the slow adoption process in the industry. Ashby et al. (1996) found many farmers were slow to adopt new practices even though they understood the practices would help improve the land. While Saltiel, Bauder, and Palakovich (1994) found negative farmer perceptions regarding any one element or combination of elements in an innovation can limit the adoption of new practices. Saltiel et al. (1994) also suggested the diverse goals and wide range of practices in the industry make the current frameworks for explaining adoption in agriculture inadequate. Examining opinion leaders and change agents in the industry, Röling, Ascroft, and Chege (1976) found even within the agriculture industry, social status impacts the diffusion process.

A recent diffusion campaign in the agricultural industry was not only rejected by the leaders of some agricultural-based associations but was attacked rhetorically before the option of adoption was available to the membership. This study examines the rhetorical response of organizational leadership vehemently opposing an argument for the adoption of an innovation as it was being diffused.

Case Description

Following 9/11, the threat of an agroterrorist attack was added to the list of potential crises for the U.S. agriculture industry. If a terrorist succeeded in contaminating the United States food supply, the resulting deaths and lasting mistrust of the supply system could be devastating (Wilcox & Cameron, 2006). To assist in the prevention and mitigation of an agroterrorist attack, the Animal Plant Health Inspection Service (APHIS) of the United States Department of Agriculture (USDA) expanded the number of inspectors posted at borders and officers reported to the Department of Homeland Security (DHS) (Gips, 2003). While there had been concern that urban terrorist threats would override the agricultural mission of APHIS, moving APHIS officers into DHS made the potential threat of agroterrorism one of the nation's top priorities (Venette, Veil, & Sellnow, 2005).

In April 2005, USDA-APHIS released a draft of the Strategic Plan for NAIS suggesting RFID tags as a potential mitigation tool. RFID tags are small antennae attached to or imbedded in live-stock ear tags that can be scanned when passed by an electronic reader (M. Riesinger, personal communication, June 2005). Prototype RFID tags were being tested, scanned, and mapped using university extension research facilities for field trials across the U.S. (NDSU, 2005). The original purpose of RFID in agriculture was to allow agents to quickly locate potentially infected livestock by maintaining a record of where cattle were last scanned by a reader. As technology progresses, RFID tags will have the potential to carry information such as the breed, age, weight, medical history, feed program, and herd information of cattle as they pass by readers in stockyards, feedlots, sales barns, and eventually slaughterhouses (M. Riesinger, personal communication, June 2005).

The Strategic Plan for NAIS was released on the USDA website allowing organizations involved in the industry to comment. In July 2005, the executive vice president of NDSA posted comments

online criticizing the plan. NDSA is the organization currently responsible for tracking cattle in North Dakota. Established in 1929 to improve the plight of the cattle industry, in 1949 NDSA was appointed by North Dakota legislature to be the official brand inspection agency under the Packers and Stockyards Act (NDSA, 2004). In the online response to the strategic plan, NDSA admonished USDA-APHIS for its “failure to address cost, confidentiality, flexibility and the integration of current ID programs that are proven” (NDSA, 2004, para. 1).

On their website, NDSA claims to be the “state’s spokesperson for the beef cattle industry” (NDSA, 2006, para. 3). Veil (2010) found 90% of NDSA members want NDSA to be involved in whatever identification process is used to track cattle in North Dakota, demonstrating membership reliance on the organization. Change agents providing the argument for NAIS and RFID technology as tools for agroterrorism intervention will have difficulty securing adoption without the support of NDSA (M. Riesinger, personal communication, June 2005). This study analyzed the organizational rhetoric evident in the official response to the strategic plan posted by NDSA leadership to identify barriers to the argument for adoption of NAIS and RFID technology.

Method

The rhetorical study of risk draws attention to texts and narratives in artifacts that influence interpretation (Sauer, 2003). A rhetorical artifact may “provide a vocabulary of thoughts, actions, emotions, and attitudes for codifying and thus interpreting a situation” (Foss, 2004, p. 70). By promoting a worldview specific to the rhetor, the terms used in an artifact constitute a screen that directs attention to particular aspects of reality over others. An individual’s interpretation of the world is filtered through terministic screens built by the symbol systems to which they have been exposed (Burke, 1954). Terministic screens reveal the accepted interpretation of the rhetor and the barriers that prevent the rhetor from accepting an alternate interpretation (Burke, 1954).

Cluster analysis allows researchers to view the terministic screens of a rhetor by identifying the association of terms used by the rhetor (Burke, 1954). Cluster analysis has been used to analyze organizational ethics (Elliot, 2004), emergency response communication (Walker, 2000), and even meat consumption in the U.S. (Heinz & Lee, 1998). In cluster analysis, the meanings key symbols have for a rhetor are discovered by charting the symbols that cluster around those key symbols in an artifact (Burke, 1954). The critic selects the target artifact’s key terms and observes those terms that cluster around them for the purpose of learning more about how the rhetor associates particular concepts (Foss, 2003).

Following Foss’s (2004) description of coding for interpretation, clustering was used to categorize terms identifying NDSA’s predisposition to accept or reject the argument for NAIS adoption. The comments posted by the executive vice president of NDSA in response to the proposed NAIS in July 2005 were downloaded from the USDA-APHIS website and used as the artifact for analysis. The artifact was systematically analyzed using the following procedure: (1) The artifact was first read initially to discern the tone of the comments. (2) Recognizing the critical nature of the comments, the artifact was analyzed to identify the negative terms used to describe elements of the plan. (3) The artifact was analyzed a third time to distinguish around what key terms the negative terms clustered. For example, the clustering of the negative terms *disappointed* and *failure* identified the word *cost* as a key term in this statement: “We are extremely disappointed in both documents for failure to address cost.” (4) The key terms were then categorized based on their relation to the adoption attributes as themes of relative advantage, compatibility, complexity, trialability, and observability of the innova-

tion (Rogers, 2003). (5) The artifact was analyzed a fourth time to assure all terms where negative terms clustered were categorized into an attribute theme and no additional terms with negative clusters existed.

Results

The themes of relative advantage, compatibility, complexity, trialability, and observability of the innovation (Rogers, 2003) were all evident in NDSA leadership's response to the proposed animal identification procedure. The clustering of negative terms overlapped throughout the diffusion themes.

Relative Advantage

Comments related to a need for a cost/benefit analysis of the innovation in comparison to brand inspection were classified as a need for USDA-APHIS to provide an argument for the relative advantage of the technology over the current system. Rarely are individuals willing to pay more for a product less adequate than their current product. In the case of the NAIS, RFID was being proposed without addressing who would bear the cost of the innovation. In discussing the current understanding of the purpose of the system, symbols that clustered around statements associated with cost and relative advantage included *disappointed*, *failure*, *responsibility*, *burden*, and *unfair*. The clustering of *disappointed* and *failure* around cost includes this example:

We are extremely disappointed in both documents for failure to address cost. . . a cost/benefit analysis of various programs have not been done, so the industry cannot make an educated decision. . . . APHIS fails to adequately pursue the resources outside of its own staff to properly run this program.

Comments regarding who was *responsible* for these costs recurred throughout the artifact:

Encouraging the development of state infrastructure falls far short of its responsibility, since it wants to mandate a costly program on the industry. . . . The federal government needs to seriously address their responsibility to fund this mandate.

Since NDSA leadership did not see the government taking responsibility for the costs, the potential mandate was seen as a *burden* to producers and not *fair*. *Burden* was commonly clustered around comments regarding cost:

If this program is as important to the entire industry as reported to be, then why should only one segment of the industry, the producer, bear the entire cost. . . . USDA wants to ignore the cost element of this program by placing the entire burden on others. . . . This burden is being placed on all segments of the industry without regard for cost of equipment or manpower to administer.

By offering a recommendation, NDSA leadership alludes USDA is not being *fair* with the industry: "We suggest USDA do a fair cost/benefit analysis prior to any threats of mandates." While cost was a major issue in determining the relative advantage of the innovation, the lack of compatibility of the new plan in allotting for the current system further upset NDSA leadership.

Compatibility

Comments related to a need to integrate the new technology with the current system of brand identification were classified as a need for USDA-APHIS to provide an argument as to the compatibility of the technology with the current system. Since NDSA leadership did not see a need to adopt the innovation to adhere to the goal of animal trace-back, symbols that clustered around statements associated with lack of flexibility in integrating the current system and compatibility included *fails*, *will/will not work*, *inadequate*, and *not factual*. The term flexibility was used in conjunction with the *failure* of integrating a system that currently *works*: “USDA talks about flexibility, but leaves no room for flexibility and fails to lay out a plan that gives states the flexibility to implement any plan that will work.”

While the plan acknowledged other tracking systems exist, the system is seen as *inadequate* because it is not set up to allow for integration: “The remarks field is inadequate because it doesn’t designate which fields would need to be entered, and that must be done for non-brand states receiving a shipment of cattle from brand states.” NDSA leadership also stated USDA did not have *factual* information and was thereby out of touch with what actually *works* in the industry: “Your statement that premises identification cannot be used to record individual animal movements is not factual. We have proven through brand inspection, along with other buyer and auction records, that this can be done.”

In addition to the new plan not acknowledging currently working systems in addressing compatibility, according to NDSA leadership, the plan also overlooked essential elements related to the complexity of the systems.

Complexity

Comments related to following timelines, compliance measures of different species, and security of information were classified as a need for USDA-APHIS to provide an argument as to its understanding of the complexity of animal identification. NDSA leadership was appalled by the lack of attention in addressing the complex issues in the system. Symbols that clustered around statements associated with timelines, compliance, and confidentiality in relation to complexity included *aggressive*, *unrealistic*, *responsibility*, *unfair*, and *unacceptable*. Timelines were seen as *aggressive* and *unrealistic* because they did not take into consideration the complex concerns inherent to the industry:

Timeline for implementation is too aggressive. Most producers are unclear as to what is going to be required and are confused. . . . Timelines, again, are unrealistic with so little effort by USDA to answer the four concerns expressed by the industry.

NDSA leadership was also concerned about the lack of *responsibility* taken by the government to ensure compliance and felt the current compliance plan was *unfair* and *unacceptable*:

If there is a mandated federal system, then the compliance should be the responsibility of the federal government (USDA). USDA needs to ensure compliance. The entity that is responsible needs to ensure compliance. . . . full compliance will be difficult. Who determines the 80% of animal movement? Does it mean 100% movement reporting at some facilities and 0% at others? Is that fair or acceptable. . . . It is unfair to burden one species over another, especially since the federal government is not willing to tell any of the species what the current proposed systems will cost.

Finally, in addressing the complexity of assuring confidentiality, NSDA again clustered the words of *unfair* and *unacceptable*:

USDA cannot assure confidentiality and is pursuing legislation. We strongly feel that USDA needs to more aggressively pursue the legislation so that the industry knows what actually will be protected. It's unfair to the industry to assume that it will be passed in a form that is acceptable.

NDSA leadership stated producers have yet to be given evidence the technology can actually be tried and work effectively in the field. At the same time, the bureaucracy surrounding the system was seen as inhibiting the functionality of the system.

Trialability

Comments related to testing the technology, demonstrating it will work, and recognizing the potential barriers associated with bureaucracy surrounding the new system were classified as a need for USDA-APHIS to provide an argument as to the trialability of the innovation. Symbols that clustered around statements associated with the functionality of the technology in relation to trialability included: *failure*, *obstacles*, *unrealistic*, *premature*, *foolish*, and *ridiculous*. The technology in the field was seen as a *failure* in functionality and recognition of *obstacles*:

[T]hese standards fail to address the other equipment that must also function at -40 degrees Celsius, in manure, humidity, heat and various other weather conditions. It also fails to recognize other obstacles that cause equipment failure that are beyond the control of the operator. Failure to recognize these obstacles will result in hundreds of millions of dollars spent on equipment and personnel that is destined to fail and interrupt commerce.

NDSA leadership did not attempt to hide its contempt for government intervention. The bureaucracy surrounding the implementation of the system was seen as *unrealistic*, *premature*, *foolish*, and *ridiculous*:

These stage designations are unrealistic and premature. It appears very bureaucratic with report after report needing to be filed when time and effort need to be put into trying to make the system functional and simple as possible. . . . Requiring premises information updated annually is foolish. It fails to recognize what states are doing, and, that most often, little will change on the premises information itself. . . . We find it ridiculous that USDA is taking 47 comments and making the determination that the system should be mandatory. With more than a million producers, many have no idea what this system will entail, it is not logical that people can honestly state it should be mandatory.

NDSA leadership was further upset because USDA could not prove the technology could be observed actually working at the speed of commerce.

Observability

Comments related to the system working at the speed of commerce were classified as a need for USDA-APHIS to provide an argument as to observability of NAIS actually working within the

fast-paced agricultural market. Symbols that clustered around statements associated with observability included: *not convinced*, *not tested*, *cannot actually occur*, *not guaranteed*, and *not proven*. NDSA leadership was skeptical or *not convinced* working technology will *actually occur* at the speed of commerce because the innovation has yet to be *tested*:

A mandatory identification program may be necessary, however, we are not convinced that it needs to be the same system nation-wide or be mandatory by 2009, especially since the current RFID plan has not been fully tested to assure that cattle can be processed at the speed of commerce. . . Again, animal tracking, which will be the most expensive both in infrastructure and labor, is the most challenging and we question if it can actual occur under this system at the speed of commerce.

NDSA leadership had not had the opportunity to observe the technology functioning at the speed of commerce and USDA have *not guaranteed* it will work by *proving* the system will work:

USDA admits this will be the most challenging, yet have not guaranteed, through proper pilot programs, that this can even be done at the speed of commerce and at a cost that doesn't put a huge burden on the producers.

Also referencing the cost analysis required in establishing relative advantage as well as the speed of commerce, NDSA leadership commented, "There is no incentive for industry reps to legislate anything until USDA puts a cost estimate together, as well as prove the electronic system will work at the speed of commerce."

Throughout NDSA leadership's response to NAIS, negative comments clustered around terms related to the attributes influencing the diffusion of innovation adoption process. In fact, the themes of relative advantage, compatibility, complexity, trialability, and observability were all identified with negative connotations. Based on the comments submitted to USDA-APHIS, NDSA leadership rejects the argument for NAIS and the use of RFID technology for tracking cattle. The organizational rhetoric of NDSA also encourages the rejection of the plan by its membership. Therefore, the ground of presumption or status quo for tracking cattle through branding is maintained.

Discussion

Since NDSA is the organization responsible for tracking cattle in North Dakota, NAIS and RFID can be seen not as innovations to the industry but as threats to the organization. The purpose of NAIS and RFID technology is to quickly mitigate a livestock disease outbreak by locating and identifying potentially infected cattle. If a cow is diagnosed with a disease like foot and mouth disease (FMD), inspectors using RFID technology could access a national computer database to determine what cattle were in contact with the cow at each location it was scanned. NDSA would follow a similar process by accessing a paper trail of brand identification records in states that brand. The accuracy of brand identification in North Dakota is not being questioned; however, the speed by which cattle can be located across the country is a major concern in the event of a contagious disease outbreak. RFID could replace branding and alter the mission of NDSA by making its state appointed purpose redundant with a federally mandated system. The NDSA executive vice president specifically stated, "Those that brand don't see a need for another system. Why are we creating a system to duplicate what we already have?" (W. Moser, personal communication, June 2005).

Studying the proposed NAIS and RFID technology in North Dakota presents a different scenario than what would be found in a state that does not maintain an animal identification system. NDSA has the ground of presumption in the prevailing opinion that animal identification is accomplished through brand inspection. The burden of proof lies with those proposing NAIS and RFID to demonstrate the new system is superior to what is currently in place. As the decision-making process is enacted, the influence of NDSA as an opinion leader can greatly affect the adoption of NAIS and RFID by member producers.

In order for adoption to occur, an individual or organization must be aware of the innovation and gain an understanding of how it works (Rogers, 2003). Since knowledge is limited by selective exposure, individuals are not likely to acknowledge information about an innovation unless they first feel a need for the innovation (Rogers, 2003). NDSA feels they are already addressing the need for trace-back in disease mitigation through brand identification; therefore, there is no reason to seek out and share information with the membership about NAIS and RFID. With little or no prior knowledge about NAIS, livestock producers who are members of NDSA may not understand and therefore not process the persuasive argument directed at them by USDA-APHIS.

The perception of the innovation is established during the persuasion or interest stage of the adoption process, therefore, the attributes of the innovation are very important at this stage in the decision making process. As noted, throughout NDSA leadership's response to NAIS, negative comments clustered around terms related to the attributes influencing the diffusion of innovation adoption process. The themes of relative advantage, compatibility, complexity, trialability, and observability were all identified with negative connotations. Therefore, the organizational rhetoric of NDSA repeatedly discounted the persuasive argument of USDA-APHIS.

The knowledge required for the implementation stage of the decision making may also act as a barrier to adoption. As Rogers (2003) suggested, if an innovation is complex, "the amount of how-to knowledge needed for adoption is much greater," and without adequate how-to knowledge before adoption, "rejection and discontinuance are likely to result" (p. 173). The researchers and government workers at USDA-APHIS who are proposing NAIS are educated and likely work with technology on a regular basis. Meanwhile, NDSA leadership, representing livestock producers who may not be accustomed to using technology, may not feel membership will be able to work with RFID. By not providing the how to knowledge to membership, NDSA leadership can further limit adoption.

As Hassinger (1959) noted, the innovation must also be consistent with the established belief system of the individual or organization. Branding has become a way of life for livestock producers in the Midwest (L. Schuler, personal communication, June 2005). A brand is the identifying symbol for a cattle operation and is one of the many practices passed down through generations on family farms. In discussing the purpose of the state brand book, the chief NDSA brand inspector commented, "besides the book's obvious use to verify the ownership of livestock, you can bet some family member in future generations will treasure it for its historical value if they have one" (NDSA, 2006c, para. 7). To introduce technology that would take the place of a symbol similar in many aspects to a family crest does not coincide with the established belief system of many livestock producers or the organizational leadership representing them.

Change agents seek the acceptance of opinion leaders in order to accelerate the adoption process, however, opinion leaders opposed to the adoption can instead act as a barrier that can stall or even halt the learning process. If members replicate the articulation of barriers presented by the organization, change will not likely occur until sufficient reason is presented. As Whately (1855) explains,

no change is good in itself, and those proposing change must provide sufficient reasons as to why the change is for the better.

As the self proclaimed “state’s spokesperson for the beef cattle industry” (NDSA, 2006b, para. 3), NDSA leadership is an opinion leader in the industry. NDSA leadership spoke for its members in the response submitted to USDA-APHIS: “We are extremely disappointed. . . . we find it ridiculous. . . . we are not convinced. . . . we question. . . .” NDSA leadership rhetorically shaped and promoted the rejection of NAIS and RFID technology (Green, 2004; King & Kugler, 2000; Zbaracki, 1998). NDSA’s official response to NAIS, as a rhetorical artifact, provided a “vocabulary of thoughts, actions, emotions, and attitudes for codifying and thus interpreting” the worldview of NDSA leadership (Foss, 2004, p. 70; Burke, 1954). The negative terms used in the artifact directed attention to the particular barriers to adoption perceived by NDSA leadership.

Analyzing NDSA’s response as the plan was being introduced rather than after the plan was adopted or rejected by the industry as a whole provided insight as to NDSA’s motive for rejecting NAIS and RFID (Rogers, 2003). As an opinion leader, NDSA’s executive vice president serves as a model for the innovation behavior of NDSA members. In exercising control over the language of the organization (Cheney & McMillan, 1990; Weber, 1978), NDSA leadership promoted the rejection of the innovation through organizational rhetoric (Severin & Tankard, 1997). By condemning the plan and technology, NDSA positioned the NAIS as irrational and incompatible with the industry (Abrahamson, 1996; Abrahamson & Fairchild, 1999).

Conclusion

The role of rhetoric in the adoption process has been significantly overlooked (Abrahamson & Fairchild, 1999; Hirsch, 1986; King & Kugler, 2000; Rogers, 2003; Strang & Meyer, 1994). This study examined the rhetorical response of organizational leadership vehemently opposing an innovation as it was attempting diffusion. Specifically, cluster analysis was used to identify barriers to adoption found in NDSA’s official response to the Strategic Plan for NAIS.

Based on the negative terms clustered around concepts related to the adoption process, USDA-APHIS was not able to provide adequate arguments to persuade NDSA leadership to encourage the adoption of NAIS and RFID technology as a tool for tracking cattle. In fact, NDSA leadership promoted the rejection of the innovation in the organizational rhetoric, potentially slowing down or even halting the diffusion process in the membership. While there is an apparent need to enact a secure, universal, animal identification system to mitigate naturally occurring and intentional livestock disease outbreaks, before adoption of NAIS by NDSA members is likely to occur, USDA-APHIS must first rhetorically address the barriers articulated by NDSA leadership.

This study used cluster analysis to categorize themes to identify an organization’s predisposition to reject an innovation. Change agents who recognize the role of rhetoric in the diffusion process will be more effective if they are able to identify the discursive justifications needed to rationalize and legitimize the adoption of an innovation. Based on the literature reviewed and the analysis in this study, these justifications can be identified by analyzing organizational rhetoric and determining the influence of organizational leadership as an opinion leader in the diffusion process.

Key Words

Diffusion of Innovation, opinion leaders, risk communication, organizational communication, National Animal Identification

References

- Abrahamson, E. (1996). Management fashion. *Academy of Management Review*, 21, 254-285.
- Abrahamson, E., & Fairchild, G. (1999). Management fashion: Lifecycles, triggers and collective learning processes. *Administrative Science Quarterly*, 44, 708-740.
- Agricultural Research Service, United States Department of Agriculture. (2002). *ARS national programs, animal health*. Retrieved May 20, 2002, from <http://nps.ars.usda.gov/programs/programs.htm?npnumver=103>.
- Ashby, J. A., Beltrán, J. A., Guerrero, M. P., & Ramos, H. F. (1996). Improving the acceptability to farmers of soil conservation practices. *Journal of Soil and Water Conservation*, 51, 309-312.
- Barley, S. R., & Tolbert, P. S. (1997). Institutionalization and structuration: Studying the links between action and institution. *Organization Studies*, 18, 93-117.
- Burke K. (1954). *Permanence and change: An anatomy of purpose*. Berkeley: University of California Press.
- Cheney, G., & Lair, D. (2005). Theorizing about rhetoric and organizations: Classical, interpretative, and critical aspects. In S. K. May and D. K. Mumby (Eds.), *Engaging organizational communication theory and research* (pp. 55-84). Thousand Oaks, CA: Sage.
- Cheney, G., & McMillan, J. J. (1990). Organizational rhetoric and the practice of criticism. *Journal of Applied Communication Research*, 18(2), 93-114.
- Crable, R. E. (1986). The organizational system of rhetoric: The influence of megatrends into the twenty-first century. In L. W. Hugenberg (Ed.), *Organizational communication: Traditional themes and new directions* (pp. 235-258). Newbury Park, CA: Sage.
- Crable, R. E. (1990). Organizational rhetoric as the fourth great system: theoretical, critical, and pragmatic implications. *Journal of Applied Communication Research*, 18(2), 115-128.
- Elliot, K. C. (2004). A cluster analysis of Enron's Code of ethics. In S. K. Foss (Ed.), *Rhetorical Criticism: Exploration & Practice* (3rd ed.). Long Grove, IL: Waveland Press.
- Festinger, L. (1957). *A Theory of Cognitive Dissonance*. Stanford, CA: Stanford University Press.
- Foss, S. K. (2004). *Rhetorical criticism: Exploration and practice*. (3rd ed.). Long Grove, IL: Waveland Press.
- Gips, M. A., (2003). The first link in the food chain. *Security Management*, 47(2), 40-48.
- Goldman, K. D. (1994). Perceptions of innovations as predictors of implementation levels: The diffusion of a nationwide health education campaign. *Health Education Quarterly*, 21, 433-444.
- Green, S. E. (2004). A rhetorical theory of diffusion. *Academy of Management Review*, 29(4), 653-669.
- Hassinger, E. (1959). Stages in the adoption process. *Rural Sociology*, 24, 52-53.
- Heath, R. L. (1988). *Federal trade commission intervention into corporate rhetoric*. Paper presented at the annual meeting of the Speech Communication Association, New Orleans.
- Heath, R. L., & Nelson, R. A. (1986). *Issues management: Corporate public policymaking in an information society*. Newbury Park, CA: Sage.
- Hegstrom, T. G. (1990). Mimetic and dissent conditions in organizational rhetoric. *Journal of Applied Communication Research*, 18, 141-152.
- Heinz, B., & Lee, R. (1998). Getting down to the meat: Associational clusters and symbolic alignments in the discourse of animal consumption. *Communication Studies*, 49, 86-99.
- Hirsch, P. (1986). From ambushes to golden parachutes: Corporate takeovers as an instance of cul-

- tural framing and institutional integration. *American Journal of Sociology*, 91, 800-837.
- Holloway, R. E. (1977). *Perceptions of an innovation: Syracuse University's Project Advance*. Syracuse, NY: Syracuse University.
- Katz, E., & Lazarsfeld, P. F. (1955). *Personal influence*. New York: The Free Press.
- Kearns, K. P. (1992). Innovations in local government: A sociocognitive network approach. *Knowledge and Policy*, 5(2), 45-67.
- King, W. R., & Kugler, J. L. (2000). The impact of rhetorical strategies on innovation decisions: An experimental study. *Omega*, 28, 485-499.
- Kremer, K. S., Crolan, M., Gaiteyer, S., Tirmizi, S. N., Korshing, P. F., Peter, G., & Tong, P. (2000). Evolution of an agricultural innovation: The N-Track Soil Nitrogen Test: Adopt, and discontinuance, or reject? *Technology in Society*, 23, 93-108.
- Mancuso, J. R. (1969). Why not create opinion leaders for new product introductions? *Journal of Marketing*, 33, 20-25.
- Moore, G. C., & Benbasat, I. (1991). An examination of the adoption of information technology by end-users: A diffusion of innovations perspective (Working paper 90-MIS-012). *Department of Commerce and Business Administration*. Vancouver, Canada: University of British Columbia.
- North Dakota State University. (2005). *Agrosecurity: Disease surveillance and public health* [Brochure]. Fargo, ND: Knight Printing.
- North Dakota Stockmen's Association. (2004). *Living the legacy: 75 years of the North Dakota Stockmen's Association*. [Brochure]. Bismarck, ND.
- North Dakota Stockmen's Association. (2005). *Comments submitted on the National Animal Identification System Strategic Plan*. Retrieved August 25, 2005, from <http://www.ndstockmen.org/images/animal%20id%20comments.htm>
- North Dakota Stockmen's Association. (2006). *Welcome*. Retrieved March 12, 2006, from <http://www.ndstockmen.org>
- Piller, C. (2004, September 12). US agriculture adds defenses against terrorism; some microbes or poisons could ruin confidence in U.S. food and devastate the farm economy. *Orlando Sentinel*. p. G1.
- Rescher, N. (1977). *Dialectics: A controversy-oriented approach to the theory of knowledge*. Albany, NY: State University of New York Press.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press.
- Rogers, E. M., & Svenning, L. (1969). *Modernization among peasants: The impact of communication*. New York: Holt Rinehart & Winston.
- Rogers, E. M., & van Es, J. C. (1964). *Opinion leadership in traditional and modern Columbian peasant communities*. East Lansing, MI: Michigan State University.
- Roling, N., Ascroft, J., & Chege, F. Y. (1976). The diffusion of innovations and the issue of equity in rural development. *Communication Research*, 3, 155-170.
- Ryan, B., & Gross, N. C. (1943). The diffusion of hybrid seed corn in two Iowa communities. *Rural Sociology*, 8, 15-24.
- Saltiel, J., Bauder, J. W., & Palakovich, S. (1994). Adoption of sustainable agricultural practices: Diffusion, farm structure, and profitability. *Rural Sociology*, 59, 333-349.
- Sauer, B. (2003). *The rhetoric of risk*. Mahwah, NJ: Lawrence Erlbaum.

- Severin, W. J., & Tankard, J. W. (1997). *Communication theories: Origins, methods, and uses in the mass media* (4th ed.). White Plains, NY: Longman Publishing Group.
- Sparshott, J. (2004, February 24). Outbreak points out vulnerability of U.S. food supply. *The Washington Times*. p. A01.
- Sproule, J. M. (1976). The psychological burden of proof: On the evolutionary development of Richard Whately's theory of presumption. *Communication Monographs*, 43, 115-129.
- Sproule, J. M. (1989). Organizational rhetoric and the public sphere. *Communication Studies*, 40, 258-265.
- Strang, D., & Meyer, J. W. (1994). Institutional conditions for diffusion. In R. W. Scott & J. W. Meyer (Eds.), *Institutional environments and organizations: Structural complexity and individualism* (pp. 100-111). Thousand Oaks, CA: Sage.
- Tolbert, P. S., & Zucker, L. (1996). The institutionalization of institutional theory. In S. R. Clegg, C. Hardy, & W. Nord (Eds.), *Handbook of organization studies* (pp. 175-190). Thousand Oaks, CA: Sage.
- Tompkins, P. K. (1987). Translating organizational theory: Symbolism over substance. In F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication: An interdisciplinary perspective* (pp. 70-96). Newbury Park, CA: Sage.
- Tompkins, P. K. (2005). *Apollo, Challenger, Columbia. The decline of the space program*. Los Angeles: Roxbury Publishing Company.
- Turnbull, P. W., & Meenaghan, A. (2001). Diffusion of innovation and opinion leadership. *European Journal of Marketing*, 14(1), 3-33.
- Van Eemeren, F. H., Grootendorst, R., & Henkemans, F. S. (1996). *Fundamentals of argumentation theory: A handbook of historical backgrounds and contemporary developments*. Mahwah, NJ: Lawrence Erlbaum.
- Veil, S. R. (2006). *Crisis communication and agrosecurity: Organizational learning in a high-risk environment*. Unpublished doctoral dissertation, North Dakota State University.
- Venette, S. J., Veil, S. R., & Sellnow, T. L. (2005). Essential communication resources for combating bioterrorism: Some practical and generalizable recommendations. *Communication Research Reports*, 22, 29-37.
- Walker, K. (2000). Lights, siren, action: A dramatistic analysis of ambulance crews. *American Communication Journal*, 2(1), 1.
- Wasson, C. R., Sturdivant, F. D., & McConaughy, D. H. (1970). The social process of innovation and product acceptance. In S. H. Britt (Ed.), *Consumer behaviour in theory and in action* (pp. 252-255). New York: John Wiley & Sons.
- Weber, M. (1978). *Economy and society, 2 vols.* (G. Roth & C. Wittich, Eds. and Trans.), Berkeley: University of California Press.
- Weir, T. (1999). Innovators or news hounds? A study of early adopters of the electronic newspaper. *Newspaper Research Journal*, 20(4), 62-81.
- Whately, R. (1855). *Elements of rhetoric*. Boston: James Munroe & Co.
- Wilcox, D. L., & Cameron, G. T. (2006). *Public relations: Strategies and tactics* (8th ed.). Boston: Pearson Education.
- Zbaracki, M. (1998). The rhetoric and reality of total quality management. *Administrative Science Quarterly*, 43, 602-636.

Examining JAC: An Analysis of the Scholarly Progression of the Journal of Applied Communications

Traci L. Naile, J. Tanner Robertson, and D. Dwayne Cartmell II

Abstract

The peer-review process influences scholarly publication, authors, readers, and the direction of scientific research. In addition, this process may have a broader influence on society if policy implications are associated with scientific discovery (Hobart, Gonnell, & Caellegh, 2003). As the Journal of Applied Communications (JAC) is an outlet for scholarly, peer-reviewed publication by agricultural communicators, it must be analyzed and questioned to meet the needs of the profession (Miller, Stewart, & West, 2006). This study examined the content of JAC from 1990 to 2006 by reporting descriptive information about the content of JAC and examining the progression of published scholarly research within the framework of the peer-review process. In Volume 74(1) (1990) through Volume 90(4) (2006) of JAC, 222 research and non-research articles were published. About three-quarters (73.4%) of the articles published in JAC were research articles, and 18 methods were used and 64 populations were examined in those research articles. More than 300 authors published in JAC during the selected time period, representing more than 70 universities, agencies, and private business. Trends in the numbers of research and non-research articles were not identified, although co-authored papers were more likely to be research-based. The combined research and non-research structure of JAC provides resources for a variety of professionals in agricultural communications. Based on the results of this study, JAC does serve as a scholarly outlet for disseminating current knowledge, archiving disciplinary knowledge, controlling the quality of information, and assigning priority and credit to authors' work (Rowland, 2002).

Introduction

"Peer review of scholarly manuscripts by qualified reviewers is the cornerstone of scientific publication" (Hojat, Gonnella, & Caellegh, 2003, p. 76), and the outcomes of peer-reviewed research influence authors, journal readers, and the direction of scientific research. In addition, peer-reviewed research may have a broad impact on society if social policy implications are part of research findings and interpretations (Hojat et al.). As scientific research progresses, disciplines must analyze and determine core areas of inquiry (Osborne, n.d.). The National Research Agenda for Agricultural Education and Communication (Osborne) identified these areas and employed a team of agricultural education, communications, and leadership scholars throughout the United States in an effort to advance the scholarly progression of these disciplinary areas.

As one part of advancing scholarly progression, authors must identify appropriate outlets for publishing research efforts. Recently, scholars within agricultural communications have focused their attention on analyzing what may be the leading peer-reviewed journal in the discipline: the *Journal*

of *Applied Communications* (Miller, Stewart, & West, 2006; Williams & Woods, 2002): “those among the discipline must constantly analyze it [*JAC*], question its purpose, and propose new directions in order for it to grow, progress, and be of use to the profession it serves” (Miller et al., p. 3).

The Journal of Applied Communications

The *Journal of Applied Communications* is published quarterly by the Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (ACE) (ACE, n.d.). Zumalt (2007) identified *JAC* as one publication among the core periodical literature in agricultural communications during a study of the Agricultural Communications Documentation Center database. *JAC* was second of 45 periodicals that represented slightly more than one-half of the ACDC periodical collection, and it was the peer-reviewed publication with the most citations (Zumalt).

The journal is divided into four areas: research and evaluation, professional development, commentary, and review (Telg, Tucker, & Dolbier, 2001). Research and evaluation includes “traditional scholarly research articles” (Telg et al., p. 8) consisting of quantitative and/or qualitative methodologies. As *JAC* is an applied journal, the professional development category focuses on the “author’s particular expertise on a subject matter that will benefit career performance of ACE members” (ACE, n.d.). Commentary articles are opinion pieces typically focusing on trends or important issues in communications, and critiques of books, journal articles, software programs, and other related resources are reserved as review articles.

Based on a 2007 *JAC* readership survey conducted by ACE, about one-half (54%) of ACE members who read *JAC* have published a research article in the journal. Additionally, 26% of readers have published a professional development article, 14% a review, and 10% a commentary. More respondents indicated they were “highly interested” in reading about applied communications research than any other category, yet less than half (35%) of respondents indicated peer-reviewed publishing is required for career advancement (A. Aubuchon, personal communication, July 19, 2007).

In contrast, respondents to a 1996 *JAC* readership survey expressed dissatisfaction with the technical content of research articles. Comments included “... sometimes a preponderance of quantitative articles can be a bit overwhelming ... too researchy at times,” and “... the research articles are laborious to go through – usually read the problem and conclusions” (Brooks, 1996, p. 47). Practitioners in other disciplines have expressed similar concerns about the relationship between research and practice. For example, nurses and midwives may “see research as removed from practice, and feel disenchanting with an activity which they view as specialized, esoteric and elitist” (Heyman & Cronin, 2005, p. 401).

In agricultural communications, practitioners may gain insights from research that aid them in accomplishing their primary task: “to get information to people, ideally through the most effective and efficient channels” (Hays, 1996, p. 3). Through *JAC*, researchers and practitioners have an opportunity to exchange information to advance the discipline. As Miller et al. (2006) commented, “the results of agricultural communications research should guide agricultural communications practitioners’ work, which should set the course for academicians further research” (p. 3).

Conceptual Framework: Role of the Peer-review Process in Scholarly Publication

Bailar and Patterson (1985) defined the peer review process as “expert assessment of materials submitted for publication in scientific and technical journals,” and journals such as *JAC* are included

in that description. As a provider of peer-reviewed information for professionals and academics, *JAC* serves as an important indicator of the state of research in agricultural communications. That research is vital to policy decisions made and facilitated by agricultural communicators (Hojat et al., 2003).

Arriving at a publication decision via typical peer-review systems involves up to six steps: 1) submission to the editorial office of a journal; 2) initial decision of acceptance or rejection by the editor; 3) accepted papers sent to an average of two reviewers who are experts in the field; 4) classification by reviewers as publishable immediately, publishable with improvements, or not publishable; 5) changes suggested by reviewers; and 6) papers sent to a third reviewer, or the editor serves as third reviewer if initial reviewers disagree (Meadows, 1998). Prior to World War II, however, the peer-review process was largely unstructured; editors typically made publication decisions with little advice from colleagues (Weller, 2001). The modern peer-review system consisting of editors and expert reviewers became common only in recent times (Rowland, 2002).

Miracle (2008) identified four reasons for conducting the peer-review process: 1) to determine if the content in the manuscript is accurate and relevant for the readers of the journal; 2) to maintain scientific rigor; 3) to reduce the potential for bias; and 4) to determine if material presented in scholarly journals is valid and reliable. Peer-reviewed publication offers one method for effectively reaching wide audiences and maximizing the impact of research findings (Duff, 2001). Heyman and Cronin (2005) pointed out that publishing for the sake of publishing should be avoided, although “research and scholarship cannot influence practice and policy unless findings are disseminated” (p. 400).

The peer-review process has been examined in multiple fields with the goal of obtaining opinions about the system’s usefulness and reliability. A series of surveys conducted by the Association of Learned and Professional Society Publishers (1999, 2001, 2002) found favorable opinions of the peer-review process, and prior to the surveys, researchers noted the peer-review process was working and worthwhile (Bailar & Patterson, 1985; McKnight & Price, 1999; Pierie, Walvoort, & Overbeke, 1996). The peer-review system, however, has not always been viewed favorably by the researchers who rely upon it for their survival in academia (Hojat et al., 2003). In contrast to the ALPSP studies, authors previously found the peer-review system to be crude, unfair, and biased (Kassirer & Campion, 1994; Sharp, 1990).

Peer review remains the standard in scholarly publication, regardless of the system used and questions raised about reliability (Heyman & Cronin, 2005; Hojat et al., 2003; Miracle, 2008; Rowland, 2002). More than 75% of journals represented in the 2001 survey conducted by ALPSP reported refereeing all papers submitted, with the modal number of submissions ranging from 100 to 500 and a modal acceptance rate ranging from 25-50% (ALPSP, 2001). Of those journals using a peer-review system, 88% kept reviewers’ identities concealed, compared to 40% that reported using a double-blind review system (ALPSP). Low rates of acceptance and concealed reviewer identities thus give reviewers and the entire peer-review system considerable power (Crandall, 1982) in guiding the direction of research that may impact society in a number of ways (Hojat et al.; Meadows, 1998).

Scholarly Publication in the Journal of Applied Communications

As *JAC* has evolved from its first publication in 1968 as *aaace* (Carnahan, 2000) to the current peer-reviewed quarterly journal, its peer-review system has paralleled the basic steps identified by Meadows (1998). All papers submitted for publication in *JAC* initially are routed through the ACE

headquarters to the executive editor, who distributes all articles for blind review. If the article is accepted during the blind review process, then a final copy with revisions is submitted to the executive editor for final review before publication (ACE, n.d.).

Zumalt (2007) concluded that periodical literature in agricultural communications is vital to multiple audiences, including practitioners and researchers, who are interested in effective communications in agriculture. The need for communications in the face of issues confronting modern American agriculture has been recognized throughout agriculture and public institutions, leading to an increased role of agricultural communicators in creating communication strategies (Williams & Woods, 2002). "Frequent examination of recent research in the discipline will aid in evaluating growth and progress and will provide direction for future research and practice" (Miller et al., 2006). One method for evaluating this progress is to examine the peer-reviewed contributions by academicians and practitioners, who use available research as a foundation for training students to become communication professionals.

This study examined the content of the *Journal of Applied Communications* from 1990 through 2006 as one measure of the progression of scholarly publication in agricultural communications. The specific objectives of the study were 1) to report descriptive information about the content of the *Journal of Applied Communications*, including the number of research and non-research articles, use of theoretical and conceptual frameworks, number of authors per article, authorship by institution, use of research methods, and populations explored; and 2) to examine trends in the progression of scholarly research published in the *Journal of Applied Communications*, including contributing universities, number of authors, methods used, and populations examined.

Methods

Journal articles published in Volumes 74(1) (1990) through 90(4) (2006), the most recent issue available, of *JAC* were analyzed via content analysis. Content analysis is "a formal system for doing something we all do informally rather frequently—draw conclusions from observations of content" (Stempel III, 2003, p. 209). Miller et al. (2006) described content analysis procedures as "a research technique for making replicable and valid inferences from textual data to their context" (p. 7).

Articles were divided into two categories: research and non-research. Research articles included any *JAC* publication that supplied traditional research-based information in the article, specifically methods, quantitative and/or qualitative findings, and discussion of findings. All other articles were placed in the non-research category. All articles, excluding reviews, were analyzed, as volumes prior to 2001 did not separate articles into the presently used sections (Telg et al., 2001) and articles defined as research publications for the purpose of this study may have been published in all sections under the current *JAC* structure. In addition, *JAC* submission guidelines state all submissions are peer-reviewed and do not provide procedures for selecting reviewers based on type of article (ACE, n.d.).

Descriptive information, including number of authors, universities, and number of articles published yearly in the *JAC*, was coded through assignment of numerical values. Research articles were further examined and coded, separating framework, methodology, and population studied. Framework was divided into two distinct categories: theoretical and conceptual. The theoretical category represented all research articles that referenced at least one specific theory in the article. Research articles that did not reference a specific theory or theories as a basis for research were categorized as conceptual. Frequencies, means, modes, percentages, and cross-tabulations were used to interpret the data and describe publication trends of *JAC*.

Results

Objective 1: Content of the Journal of Applied Communications

In Volumes 74(1) through 90(4) of *JAC*, 222 research and non-research articles were published. Three hundred five unique authors contributed to those articles, with a total of 459 authors listed on the 222 articles published. About one-quarter (26.6%) of the articles published between 1990 and 2006 were not research articles. Of the articles that were considered research (73.4%), 19% used a theoretical framework and 81% used a conceptual framework.

Single authors were responsible for 37.8% of the articles examined, while 32.4% of the articles were written by two authors and 19.8% were written by three authors. The maximum number of authors listed for any article was 6 ($n = 1$, non-research). The most common number of authors for research articles was two ($n = 60$), while single authors were most common for non-research articles ($n = 36$). The number of authors per research and non-research articles is shown in Table 1.

Table 1

Frequency of number of authors per research and non-research articles (N = 222)

No. of authors	Research ($n = 163$)		
	Theoretical ($n = 31$)	Conceptual ($n = 132$)	Non-research ($n = 59$)
1	8, 25.8%	40, 30.3%	36, 61.0%
2	14, 45.2%	46, 34.8%	12, 20.3%
3	6, 19.4%	31, 23.5%	7, 11.9%
4	2, 6.5%	11, 8.3%	2, 3.4%
5	1, 3.2%	4, 3.0%	1, 1.7%
6	0	0	1, 1.7%

JAC authors represented 70 universities, agencies, and private businesses. Table 2 lists the 10 institutions represented the most in total authorship ($N = 459$) of all articles ($N = 222$).

The University of Florida was the most represented institution, with slightly more than double the representation of the second-most represented organization, Texas A&M University.

Eighteen methods were used to obtain data in research articles published in *JAC* from 1990 to 2006. The most commonly used method was mail survey (39.3%), followed by multiple method (14.8%), content analysis (8.6%), online survey (7.4%), and focus group (5.5%). Multiple method refers to a combination of two or more research methods, either quantitative or qualitative. The combinations of methods most frequently included the most common methods used, as well as on-site survey and observations. Table 3 shows the most commonly used methods, including methods that were tied in the rankings.

Table 2

Representation of universities in total authorship (N = 459)

University (N = 70)	Representation (n)	%
University of Florida	62	13.5
Texas A&M University	29	6.3
Pennsylvania State University	28	6.1
The Ohio State University	27	5.9
Iowa State University	26	5.7
University of Illinois	22	4.8
Kansas State University	18	3.9
North Carolina State University	18	3.9
Oklahoma State University	12	2.6
Oregon State University	12	2.6

Table 3

Most common methods used in research articles

Method (N = 18)	No. of articles (n = 163)	%
Survey, mail	64	39.3
Multiple method	24	14.8
Content analysis	14	8.6
Survey, online	12	7.4
Focus group	9	5.5
Case study	7	4.3
Survey, unknown	5	3.1
Interview	4	2.5
Survey, telephone	3	1.8
Testing	2	1.2
Interview, mixed	2	1.2
Survey, in person	2	1.2

Research articles published in *JAC* from 1990 to 2006 examined 64 uniquely defined populations. The most commonly studied population was university faculty/staff (14.7%), followed by farmers (8.6%), mixed population (8.0%), college students (8.0%), and populations not clearly identified (4.3%). Mixed population refers to a combination of two or more separately described sets of people. Table 4 shows the most common populations studied, including populations that were tied in the rankings.

Table 4
Most common populations studied in research articles

Population (<i>N</i> = 64)	No. of articles (<i>n</i> = 163)	%
University faculty/staff	24	14.7
Farmers	14	8.6
Mixed	13	8.0
College students	13	8.0
Not clearly defined	7	4.3
Extension clientele	6	3.7
Extension educators	5	3.1
ACE members	4	2.5
Urban newspapers	4	2.5
Extension personnel	4	2.5
Agricultural newspaper subscribers	3	1.8
Agricultural communications professional organization members	3	1.8
Agricultural magazine subscribers	3	1.8
College graduates	3	1.8

Objective 2: Trends in Scholarly Publication in the Journal of Applied Communications

Cross-tabulation between year of publication and type of article did not demonstrate clear trends in the numbers of research and non-research articles published from 1990 through 2006. With the exception of three years—1990, 1999, and 2002—all types of articles were published in each volume of *JAC*. Figure 1 shows the proportions of theoretical, conceptual, and non-research articles published in *JAC* from 1990 through 2006.

Cross-tabulation between author number and framework was analyzed to determine trends in research collaboration efforts by *JAC* authors. Co-authored papers were more likely to be research-based. In addition, the majority (70.6%) of theory-based research publications and conceptual-based research publications were co-authored. The number of authors for theoretical, conceptual, and non-research articles is shown in Table 1.

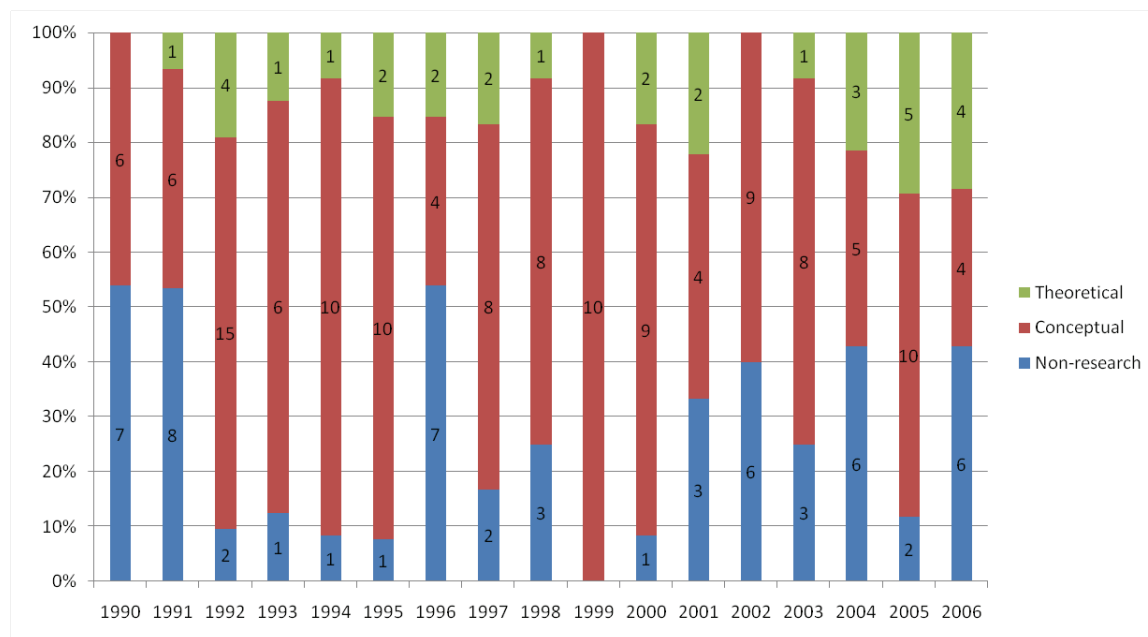


Figure 1. Frequency of type of article by year (N = 222)

Methods were cross-tabulated with the frameworks used in research articles to assess trends in the foundations of research published in *JAC*. About one-third (35.5%) of theoretical articles described use of mail surveys ($n = 11$). More than half (56.1%) of conceptual articles described a mail survey ($n = 52$) or multiple methods ($n = 22$) approach. In addition, qualitative methods, such as focus groups and interviews, tended to be cited more in conceptual articles. Table 5 shows the frameworks used with the most common methods cited in research articles.

Table 5

Frameworks used with the most common methods in research articles ($n = 163$)

Method (N = 18)	Theoretical ($n = 31$)	Conceptual ($n = 132$)
Survey, mail	11, 35.5%	52, 39.4%
Mixed method	2, 6.5%	22, 16.7%
Content analysis	7, 22.6%	7, 5.3%
Survey, online	2, 6.5%	10, 7.6%
Focus group	3, 9.7%	6, 4.6%
Case study	1, 3.2%	6, 4.6%
Survey, unknown	0	5, 3.8%
Interview	1, 3.2%	3, 2.3%
Survey, telephone	1, 3.2%	2, 1.5%
Testing	0	2, 1.5%
Interview, mixed	0	2, 1.5%
Survey, in person	1, 3.2%	1, 0.8%

Discussion and Conclusions

As *JAC* is analyzed for its usefulness in serving agricultural communications scholars and professionals, examining the trends in publication within the journal provides a measure of how *JAC* contributes to scholarly development of the discipline. The journal's stated purpose is to offer "professional development for educational communicators who emphasize agriculture, the food industry, and natural resources" (ACE, n.d.), and *JAC* achieves this purpose in current volumes through publication of research and evaluation, professional development, commentary, and review articles. Telg et al. (2001) stated: "Through commentaries and opinion pieces, the journal offers an avenue to discuss and debate important ... issues facing our profession today. Professional development articles can suggest easier, more efficient ways to do our jobs, while research articles increase our knowledge base ..." (p.15).

The content of articles such as those published in *JAC* (Telg et al., 2001) impacts the direction of agricultural communications research, as peer-reviewed publications serve as the foundation for advancing knowledge within a discipline (Hojat et al., 2003). Based on this study, some evidence exists to support the progression of *JAC* as a leading outlet for scholarly literature, while also meeting its purpose as a professional development resource for educational communicators. About one-quarter (26.6%) of all articles published from 1990 to 2006 were non-research publications, as methods, quantitative and/or qualitative findings, and discussions of findings were not reported. *JAC* does not appear to be moving toward a research-only publication, as professional development and/or commentary articles appeared consistently throughout the 16-year timeframe. As only 35% of respondents to the 2007 *JAC* readership survey indicated peer-reviewed publishing is required for career advancement (A. Aubuchon, personal communication, July 19, 2007), consistent publication of non-research articles is not surprising.

Single-authored submissions represented about half (51.5%) of all articles published. Analysis of the number of authors credited for research and non-research articles demonstrated that single authors are typical for commentary and non-research professional development articles, which were included in the non-research category of this content analysis. This trend in authorship further supports the dual purpose of *JAC*, as research typically involves multiple investigator-authors and professional development information may be based on the experiences of one communications practitioner.

In ranking universities based on the number of times they were represented by authors in *JAC* from 1990 to 2006, the University of Florida was found to be the most-represented university of the 70 institutions credited in research and non-research articles. In addition, post-hoc analysis showed the universities represented in the top 10 of authorship produced more research publications than non-research publications, although whether the authors were from academic or service units was not determined. Institutional reputation and representation may reflect on and influence the peer-review process (Hojat et al., 2003), and the most-represented universities in this study traditionally have been recognized for strong agricultural communications and journalism programs and services.

Articles classified as research publications were analyzed beyond the number of authors and institutional representation to discover basic characteristics of the peer-reviewed research included in *JAC*. Initially, the frameworks of research articles were classified as theory-based or conceptual-based to identify the foundations for research published from 1990 to 2006. In this study, a clear reference to a theory and its application to the reported research were required for articles to be classified as theoretical. As a result, articles lacking such a discussion were classified as conceptual. Examination

of the research articles revealed a relatively low proportion of theory-based publications (19%) compared to conceptually-based publications (81%), indicating that authors in *JAC* either relied more on conceptual frameworks for research or failed to develop theoretical discussions as foundations for research. As theory is key to scientific publication and applied practices in agricultural communications, it is imperative that theoretical frameworks and discussions be included in *JAC*, one of the leading journals in the field (Miller et al., 2006; Williams & Woods, 2002), to advance the profession.

Analysis of the methods reported in *JAC* research articles from 1990 to 2006 also was performed. The most common method used to conduct research was mail survey, followed by multiple method, content analyses, online surveys, and focus groups. In this study, multiple method was defined as a combination of two or more established research methods used to obtain data. The representation of quantitative and qualitative methodologies among the common research methods reported indicated a need for a variety of ways to explore agricultural communications, and the ranking of multiple-method research as the second-most common method provides further support for the importance of various research methods to scholarly work in the discipline. In addition, cross-tabulation between method and framework suggested researchers used multiple or qualitative methodologies for conceptual or exploratory frameworks and survey methodologies more for theory-based frameworks. These findings could suggest *JAC* researchers and its peer reviewers recognize foundational sociological research design and the natural progression for advancing the discipline.

With the necessity for replicating research studies in various environments to qualify generalizations and applications of results, it was expected that some populations were investigated multiple times from 1990 to 2006. Studies reporting either sampling or census of specified populations may be limited in generalizability, but it was discovered that common terms were used to report population descriptions. The most frequently studied populations were representative of common audiences and stakeholders in agricultural communications, including university faculty/staff, farmers, mixed populations, college students, and extension clientele. Mixed populations were defined in this study as the combination of two or more separately described sets of people and were typically combinations of two of the other most frequently studied populations.

Only three populations seemed to include agricultural communications industry (non-education) professionals, which suggests bridging the gap between research, education and practical applications of knowledge may require including industry professionals in research studies. Increasing the focus on agricultural communications practitioners as a research population will provide opportunities for instructors responsible for educating future professionals to examine and incorporate current practices into formal and non-formal curricula. In addition, giving practitioners a voice through research may facilitate increased interest and more positive perceptions of the role of research in applied agricultural communications (Miller et al., 2006).

The combined research and non-research structure of *JAC* provides resources for a variety of professionals in agricultural communications (ACE, n.d.), while findings of this study also indicate *JAC* may be meeting the expectations of a peer-reviewed, scholarly literature outlet needed to serve agricultural communicators in academia. Rowland (2002) outlined four primary functions of peer review, including publication of scholarly journal articles, submission of papers to conferences, publication of scholarly monographs, and award of research grants and contracts. In addition, the peer-review systems of various journals help establish the importance of papers, which guides readers' identification of the information most valuable to them (Rowland).

As a peer-reviewed publication, the current *JAC* structure serves one of the four primary functions of the peer-review process identified by Rowland (2002)—publication of scholarly journal articles—although publication of research is not the primary purpose of *JAC*. Research reported in *JAC* from 1990 to 2006 appears to be representative of the agricultural communications discipline and the peer-review process. In addition, publication of scholarly literature in *JAC* serves to disseminate current knowledge, archive disciplinary knowledge bases, control the quality of published information, and assign priority and credit to authors' work (Rowland).

Recommendations for Further Research

The findings of this study provided insight into the use of *JAC* as an outlet for scholarly, peer-reviewed research articles. The design of the study limited the content analysis to the types of articles published. Future research should include analysis of the number of pages devoted to research in comparison to non-research articles, as this may be a better indicator of the emphasis placed on scholarly publication versus professional development. In addition, this study did not examine the usefulness of *JAC* to its contributing authors. Further research should be conducted to determine if contributing authors are using *JAC* as a tool for career advancement and at what stage in their careers authors are seeking publication in *JAC*.

To elaborate on the findings of this study, further research should be conducted to determine contributing authors' satisfaction with *JAC* peer-review procedures and clarity of the *JAC* peer-review process, as well as to determine how the research published in *JAC* may be better oriented with the needs of the non-education agricultural communication industry professionals. A comparison of *JAC* with similar journals in the field of communications also should be conducted to more broadly evaluate its role as a peer-reviewed publication. Finally, the research published to date in *JAC* should be compared with the 2007-2010 National Research Agenda for Agricultural Education and Communication to evaluate the directions that should be pursued in future research.

Keywords

Journal of Applied Communications, peer review, scholarly publication

References

- Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences. (n.d.). Retrieved September 11, 2007, from <http://www.aceweb.org>
- Association of Learned and Professional Society Publishers. (1999). *What authors want: The ALPSP research study on the motivations and concerns of contributors to learned journals*. Worthing, UK: ALPSP.
- Association of Learned and Professional Society Publishers. (2001). *ALPSP/EASE peer review survey October–November 2000*. Retrieved Sept. 4, 2007, from www.alpsp.org
- Association of Learned and Professional Society Publishers. (2002). *Authors and electronic publishing: The ALPSP research study on authors' and readers' views of electronic research communication*. Worthing, UK: ALPSP.
- Bailar, J. C., & Patterson, K. (1985). Journal peer review: The need for a research agenda. *New England Journal of Medicine*, 312, 654-657.
- Brooks, J. R. (1996). Report on the Journal of Applied Communications 1996 readership survey. *Journal of Applied Communications*, 80(4), 44-49.

- Carnahan, W. E. (2000). A brief history of ACE. *Journal of Applied Communications*, 84(3), 7-19.
- Crandall, R. (1982). Editorial responsibilities in manuscript review. *The Behavioral and Brain Sciences*, 5, 207-208.
- Duff, D. (2001). Writing for publication. *Axone*, 22(4), 36-39.
- Hays, R. G. (1996). Effective communication: Practical lessons of research. In *The Communicator's Handbook: Tools, techniques and technology* (pp. 3-10). Gainesville, FL: Maupin House.
- Heyman, B., & Cronin, P. (2005). Writing for publication: Adapting academic work into articles. *British Journal of Nursing*, 14(7), 400-403.
- Hojat, M., Gonnella, J. S., & Caelleigh, A. (2003). Impartial judgment by the "gatekeepers" of science: Fallibility and accountability in the peer review process. *Advances in Health Sciences Education*, 8, 75-96.
- Kassirer, J. P., & Champion, E. W. (1994). Peer review: Crude and understudied, but indispensable. *Journal of the American Medical Association*, 272, 96-97.
- McKnight, C., & Price, S. (1999). A survey of author attitudes and skills in relation to article publishing in paper and electronic journals. *Journal of Documentation*, 55(5), 556-576.
- Meadows, A. J. (1998) *Communicating Research*. San Diego, CA: Academic Press.
- Miller, J. D., Stewart, D. M., & West, L. M. (2006). Themes, authors, and citations in the *Journal of Applied Communications*, 2000-2004. Proceedings of the 2006 SAAS Agricultural Communications Section Meeting, Orlando, FL.
- Miracle, V. A. (2008, March/April). The peer review process. *Dimensions of Critical Care Nursing*, 27(2), 67-69.
- Osborne, E. W. (Ed.) (n.d.). *National research agenda: Agricultural education and communication, 2007-2010*. Gainesville, FL: University of Florida, Department of Agricultural Education and Communication.
- Pierie, J. P., Walvoort, H. C., & Overbeke, A. J. P. (1996). Readers' evaluation of effect of peer review and editing on quality of articles in the Nederlands Tijdschrift voor Geneeskunde. *Lancet*, 348, 1480-1483.
- Rowland, F. (2002). The peer-review process. *Learned Publishing*, 15(4), 247-258.
- Sharp, D. W. (1990). What can and should be done to reduce publication bias? *Journal of the American Medical Association*, 263, 1390-1391.
- Stempel III, G. H. (2003). Content analysis. In G. H. Stempel III, D. H. Weaver, & G. C. Wilhoit (Eds.), *Mass communication research and theory* (pp. 209-230). Boston: Pearson Education, Inc.
- Telg, R., Tucker, M., & Dolbier, J. (2001). Successful writing for the Journal of Applied Communications. *Journal of Applied Communications*, 85(3), 7-16.
- Weller, A. C. (2001). *Editorial peer review: Its strengths and weaknesses*. Silver Spring, MD: American Society for Information Science and Technology.
- Williams, R.A. & Woods, M.D. (2002, August). A synthesis of agricultural communication research published in the *Journal of Applied Communications* from 1992-2001. Paper presented at the Agricultural Communicators in Education International Conference, Savannah, GA.
- Zumalt, J. (2007). Identifying core periodical literature of the Agricultural Communications Documentation Center. *Journal of Agricultural & Food Information*, 8(3), 43-63.