Themes and Tones of Blog Posts about Animal Agriculture and Protein Production

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Abstract

Research on blogs' role in public relations about animal agriculture production is limited at best. This case study set out to describe the characteristics of selected bloggers' writing about protein-related topics and issues, with a special focus on how the protein industry was represented, what themes were most common, and what the tonal characteristics of the blog posts were. Researchers used a content analysis approach to describe the content of 37 blog posts from eight purposively selected blogs that contained posts about protein-related topics. The content analysis showed at least three types of blogs about protein—organizational, which included meat industry organizations as well as activist groups that seek to effect changes in the protein industry; professional, which included blog entries by experts (such as dieticians) representing their own opinions; and personal, which included lifestyle bloggers who were not experts but who provided information to readers on a variety of topics. In terms of themes, four prominent overarching themes were identified by coders, including environment, consumption of protein, alternative protein sources, and alternative dieting. Tones associated with the environmental theme were mostly negative toward the protein industry. Tones associated with the consumption of protein were mostly positive toward the industry. Tones in the blog entries about alternative protein sources and alternative dieting were mixed—both positive and negative toward the protein industry.

Keywords: blogging; blogs; public relations; protein production; animal agriculture

Introduction

For the last two decades, agricultural communications professionals have increasingly employed websites and social media efforts as successful primary media for agricultural information (McLeod et al., 2018). Blogging, which is a form of web-based social media, has also been a popular method of reaching consumers with agricultural media relations and public relations messages (Hawley et al., 2018; Rhoades & Aue, 2010; Rhoades & Hall, 2007). In fact, across most U.S. industries, blogs have developed into an important tool for sharing public relations messages while building trust between companies and consumers (Yang & Lim, 2009). As the medium has grown in popularity, one line of blog-related research in the agricultural communications discipline has focused on characterizing blog use by crop commodity groups or by other special interest groups in the agriculture industry, but Moore et al. (2015) recommended even more specific research to investigate and describe the use of blogs in the numerous segments of the agriculture industry.

The use of blogs in the protein industry has not been thoroughly analyzed, though the industry could benefit from a stronger understanding of blogs' role in public relations about animal agriculture and protein production. Font-i-Furnols and Guerrero (2014) explained that "the meat industry currently faces the challenge of providing more and clearer information that stimulates consumption by asserting

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environmental sustainability and animal welfare and providing more convenient and healthy options while recognizing the new and changing role that meat and meat products have in our lives" (p. 363). Coombs (1998) foreshadowed the growing desire among consumers for transparency in the protein production system, and that desire continues to exist today, even as agricultural public relations professionals and marketing communicators strive to earn the trust of consumers (McKendree et al., 2014). Additionally, Helm, et al. (2016) noted that blogs help nutrition and dietetics practitioners reach broader audiences and connect directly with the public.

The trust-building characteristic of blogging has been a central theme of research related to blogging in agriculture. For example, Sweetser et al. (2008) found that journalists and the general public considered blogs more credible than traditional news sources. Partially as a result of this growing trust, the use of internet-based media and the volume of content has grown exponentially, inundating protein consumers with information. While the news media (including mainstream news reporters as well as bloggers) are often considered the point of miscommunication concerning agricultural practices, these same communicators can also be used as a more accurate and transparent source of information if they are properly informed and employed as news mediators by those in the agriculture industry (Guy et al., 2013). Bloggers, when their reputations as credible information sources have been well documented, possess the power to affect public agendas, to serve as gatekeepers for information from industry, and to frame information that blog followers read.

Moore et al.'s (2015) article on blog use in agriculture noted that limited research had been conducted on blogs or blogging trends and practices in agricultural organizations or among individuals in the industry. However, after Moore's study, Bateman et al. (2019) examined news journalists and bloggers' discourses on the meat industry in North America. Their qualitative analysis showed that blogs tended to emphasize the social problems (including risks) of meat more than newspapers do. Bateman et al. recommended that future research could focus on comparisons of discourse about meat within various types of blogs. In line with Moore et al.'s and Bateman et al.'s suggestions for further investigation, the purpose of this research—a content analysis study—was to add to the knowledge base regarding agricultural blogging by describing the characteristics—including themes and tones—of recent blogging content related to the production of protein among various categories of bloggers who write about protein-related topics and issues.

The research questions that guided this study were

RQ1:   How was the concept of the protein industry been represented in selected blog posts?

RQ2:   What themes have been most common in these blog posts concerning the protein industry?

RQ3:   What have been the tonal characteristics (positive, negative, or neutral toward the industry) of the selected blog posts concerning the protein industry?

Review of Literature

Theoretical Framework

The academic theories of agenda setting, framing, and gatekeeping theories help explain how public perceptions are affected through journalistic or other informational media, including the medium of blogging. In fact, all three related theories are frequently used to provide context for studies on blogging throughout recent academic literature. "Agenda setting concerns the impact of the media agenda on the public agenda regarding the salience of issues and objects of attention" (McCombs et al., 2014, p. 782); framing focuses on the way bloggers present news, including tone and angle selection; gatekeeping emphasizes the role bloggers play regarding what stories are chosen for publication they are reported upon.

Though closely related, each of these theories is unique and plays a key role in describing the role of information mediation through credible blogs, which function like journalistic media.

Agenda Setting

Agenda setting theory explains how the public salience of issues becomes established as a result of journalists' and bloggers' topic and framing decisions. Agenda setting has grown to become a theory with two levels that examine how news media coverage influences public opinion about an issue or object in two ways, considered an initial level and a secondary level (McCombs et al., 1997; 2014). These levels can logically be applied in the model of blogger-mediated information. The initial level of agenda setting is that bloggers have an agenda about a topic or idea, and so does the public; bloggers serve to identify these objects of attention. The second level of agenda setting explains how the blogger's agenda includes attributes about the object and those attributes affect the public's thoughts about the object and the object's attributes. McCombs et al. (1997; 2014) posited that "*agenda setting* deals with the importance of issues and problems; *focusing* deals with the definition of issues; and *problems and evaluation* deals with the creation of a climate of opinion" (p. 5). This study was initially contrived under the assumption that bloggers commonly play an agenda-setting role.

Framing

Though closely related to agenda setting, framing theory focuses more on how issues are presented and then consumed, rather than how they are selected to be written. The concept of framing is based on the assumption that how an issue is characterized by communicators (e.g., bloggers) can have an influence on how it is understood by audiences (Scheufele & Tewksbury, 2007). The concept of framing encompasses how journalists or bloggers write about public issues and current events for a specific audience (McCombs et al., 1997) in ways that resonate with readers' existing schemas (Scheufele & Tewksbury, 2007; Shoemaker & Reese, 1996). Framing, described by Entman (1993), involves highlighting salient dimensions of complex issues, therefore defining an issue's causes, consequences, and solutions. Some framing theorists link framing to the concept of tone toward a subject or the subject's impact on society. Bloggers and journalists, for example, may choose to present topics as positive, negative, or neutral in terms of potential social impact (Bateman et al., 2019). The researchers conducting this study embraced tone as an aspect of framing.

Gatekeeping

Shoemaker and Vos (2009) defined gatekeeping as "the process of culling and crafting countless bits of information into the limited number of messages that reach people each day" (p. 1). Gatekeeping is the epitome of journalists' and bloggers' roles as information mediators to the public. Gatekeeping theory emphasizes the communicator's role of determining the information to be selected, as well as the nature and content of the information, all of which is affected by the lens used to cull and craft bits of information. Underlying theories of social change and stability led to the concept of gatekeeping, which helps audiences determine their views on issues and topics, ultimately shaping their living habits (Shoemaker & Vos, 2009). This study was conducted with the concept of gatekeeping in mind and with bloggers envisioned in the role of information gatekeepers.

Recent Literature and Conceptual Framework

According to the Pew Research Center (2021), up to 72% of U.S. adults utilize some form of social media, and at least six out of 10 adults receive their news from a social media platform (Greenwood et al., 2016). This makes social media, especially blogs and microblogs (e.g., Twitter and Instagram), a relatively new and important access point for the protein industry to use in its consumer education efforts. However, Norton (2017) found a dearth of microblogging efforts (Tweets) by protein companies about their animal

welfare practices, even though research shows that consumers want more transparency. In a study looking at the use of social media in developing communication concerning livestock grazing in public areas, Barry (2014) found that using social media (Flickr) created a more open dialogue and brought forth concerns the public was feeling but would not discuss in public forums or on a survey. Morrison (2015) researched the effectiveness of social media as a marketing communications tool utilized by agriculturists and found that commodity organizations rarely used social media as a consumer relations tool. Moore et al.'s (2015) examination of agricultural commodity groups' blogging efforts found that only two of the nine organizations in their study had included blogging in their strategic communications plans, though all nine organizations were employing blogging as a public relations tool. In addition, they found that blogs offer an effective communication medium for organizations to reach audiences of both agricultural producers and consumers, and they recommended a plethora of needed research on this topic, including content analyses of agriculture-related blogs.

Most recently, Bateman et al. (2019) analyzed more than 1,000 North American mainstream news articles and over 1,000 blog posts in U.S.- and Canada-based blogs containing entries about meat. Focusing on time frame between 2015 and 2016, the researchers found the most prominent topics to be related to meat production (*production*, *big agriculture working conditions*, *environment and climate change*, and *trade and law*), consumer issues (*health risks*, *healthy diet*, *finding delicious food*, and *avoiding meat*), and two issues that transcended both consumer and producer concerns (*food safety* and *natural and quality meat*). Similarly, news articles were examined as well, and the researchers compared the topics and types of discourse. They reported that while the topics covered in each medium were somewhat similar, blogs focused on some different topics than newspapers and had a stronger focus on meat's risks.

Methodology

Researchers employed a qualitative, interpretive, case study approach to this research problem. The methodology consisted of a content analysis of blog posts pertaining to the protein industry or containing information about it.

Blogs containing information about protein, protein consumption, and the protein industry were purposively selected for this study. The goal of the blog selection process was to include in the study numerous types of blogs targeted at consumers and the general public for the purpose of providing information about food (specifically protein) and/or animal agriculture production. The selection process began with a form of snowball sampling (Patton, 1990), using a key informant—a blogger specializing in writing about the meat industry— who suggested blogs to begin with. A Google search followed, employing the search term, "animal agriculture blogs." Additionally, FeedSpot's (2019) top blogger list was used to identify influential animal agriculture bloggers. During the subject selection process, three blog types emerged as distinct categories: *professional*, *organizational*, and *personal*. A *professional* blog was one that was written by an individual for their profession or discipline, such as dietetics. An *organizational* blog was one that was written by an individual representing an organization for which the author worked, such as an activist group or a restaurant. A *personal* blog was written by an individual author who was not known to be an expert on the topics but who shared information with consumers and who was unaffiliated with an organization.

Ultimately, eight blogs representing these three categories were selected as the focus of this case study. It is also important to note that the eight blogs selected shared the characteristic of being niche blogs, or blogs with smaller audiences that focused on particular characteristics and interests, including farming, rural lifestyle, parenting, nutrition, veganism, and fitness. Though three blogs represented small companies or special interest groups and served a marketing purpose to a degree, the rest were individually owned blogs with a focus on sharing either personal or professional knowledge on their blog topics.

Blog posts were identified as a single unit of analysis as they initiated data collection, as described by Trochim (2006). Within each blog domain, two search strings—"protein" and "animal agriculture"—were used to identify posts relevant to this study. Posting dates ranged from 2014 to 2018. As the data collection process progressed and themes became recurrent and redundant, data collection ended (Lewis-Beck et al., 2003). Thirty-seven blog posts from the 8 selected blogs were analyzed for this case study. Table 1 lists the blogs examined in this study, along with their URLs and blog types.

Table 1

Selected blogs containing posts about protein and animal agriculture

Blog title	URL	Blog type
Animal Ag Engage	https://animalagengage.com/	Organization
Animal Climate Change	https://animalagclimatechange.org/category/animal-agriculture/	Organization
Bonnie Taub-Dix	https://bonnietaubdix.com/blog/	Professional
Messy Kennedy	http://www.messykennedy.com/	Personal
Modern Farmer	https://modernfarmer.com/	Personal
Beef. Runner. Travel	https://beefrunner.com/my-story/	Personal
The Farmer's Daughter	https://www.thefarmersdaughterusa.com/blog	Personal
V-Grits	https://blog.vgrits.com/tag/activism/	Organization

Note. By the conclusion of this study, two of these blogs, *Animal Ag Engage* and *Animal Climate Change*, were defunct or revised and renamed and were no longer accessible online. Additionally, the *V-Grits* blog was no longer accessible at its previous URL, though some posts were available at a different URL, vgrits.wordpress.com/tag/activism/

Data analysis involved the identification by a single knowledgeable coder of themes and tones, using guidance from an emergent codebook, which was then verified by a second researcher through a negotiated agreement process (Garrison et al., 2005). The constant-comparative method was used to ensure latent emergent themes were constant across all content, ensuring the researcher had flexibility to develop a working theory inductively (Boeije, 2002). Thematic analysis was accomplished using NVivo 11 visual qualitative analysis software and was fully inductive and emergent, as described by Creswell (2013) and Miles and Huberman (1994), beginning with no pre-conceived codes. Once initial open-coded themes were identified, specific content in each blog—such as words, quotes, and phrases—were compiled, representing supporting evidence for each theme (Ryan & Bernard, 2003). When new themes were identified, constant-comparative analysis was used to identify emergent themes across all content, and further analysis—axial coding—led to the refinement of the original themes the development of subthemes, following Corbin and Strauss's (2007) approach.

Identifying tone was a deductive process, as the researcher examined the relative balance of negative tonal words and phrases versus positive tonal words and phrases as identified by an English language test-prep study guide identifying tonal words and their positive, negative, or neutral tones (Lafayette Parish School System, 2010). The operational definition of tone for this study was how an author stylistically conveys an attitude toward a subject through word choice and balance, or equal time devoted to positive and negatives (Hyde, 2001). In addition to the balance of tonal words and phrases, according to Purdue Online Writing Lab (2018), the context of the message also plays an important role in establishing tone; therefore, context was considered carefully as researchers characterized tone in each blog post.

Qualitative Rigor and Subjectivity Statement

Guest et al. (2012) and Merriam (2009) identified numerous strategies to enhance the rigor of a qualitative study such as this. To ensure credibility, the researcher used peer debriefing, which included using professional peers to help evaluate the analysis for the presence of bias. After the data were initially coded by a single individual, a second coder reviewed the manuscripts and codebook with the first researcher and negotiated and reconciled coding discrepancies (as described in Garrison et al. (2005)). Agreement on all issues regarding both the open coding for themes and the guided coding for tone was reached. Transferability was achieved through thick, rich description of the themes noted in blog content and the context in which the themes occurred. To obtain dependability, the use of NVivo software allowed for the creation of an audit trail, which showed that the analysis methods and findings were consistent and could be repeated. As with most case study research, a limitation of this study is that the findings are not necessarily transferrable beyond the subjects involved in the case (Merriam, 2009), which is the bounded system consisting of the eight blogs and 37 blog entries that were the focus of the study. However, readers may still find similarities between this case and their own situations and are free to apply the findings of this study in practical ways.

The researchers worked to maintain objectivity throughout the data analysis. However, an understanding of their personal professional backgrounds is important to provide context for the study and to help account for potential biases in interpretation. The lead author and research director has taught and studied agricultural communications for more than 20 years. He also raises beef cattle on a hobby farm. The other primary researcher, who conducted the data analysis, lives in a rural town, where she also has a small hobby farm with livestock. All of the graduate student's undergraduate coursework is in animal science. Both the primary researchers' backgrounds include obvious connections to the animal agriculture industry that could be the source of subjective interpretations. Likewise, the rest of the research team (who provided assistance and peer review during and after the data analysis process) were experienced qualitative researchers with ties to agriculture through academia. Additionally, the use of an objective, unbiased peer for peer debriefing worked to counterbalance potential biases the researchers may have had toward the data. The peer selected or this task had no background in animal agriculture and was from a suburban area. Her connection to the protein industry was as a consumer.

Results

Among the 37 blog posts, nine salient themes were identified. The four most prominent themes were *environment, consumption of protein, alternative protein sources,* and *alternative dieting*. Each of these themes appeared in at least eight posts and was referenced at least 14 times. In further analysis, subthemes were identified under each of these themes. Table 2 includes frequency data for the themes, including subthemes and the number of posts and references within posts where the theme was present.

Table 2

Frequencies of themes

Major theme	Subthemes	Posts containing major theme	References to major theme
Environment		14	42
	Greenhouse gases		
	Climate change		
	Reduction of resources		
Consumption of Protein		11	34
	Recipes		
	Inclusion		
	Importance		
Alternative protein sources		12	28
	Ostrich		
	Insects		
	Cell-cultured meats		
Alternative Dieting		8	14
	Veganism		
	Vegetarianism		
	Flexitarianism		

Environment

The theme of environment was referenced 42 times across 14 posts. The connections between animal agriculture and greenhouse gas emissions, climate change, and the reduction of natural resources, such as water and arable land, were made by bloggers consistently throughout the posts. Nearly all posts that contained the environmental theme were categorized as having negative tones toward the industry, with only one of the 13 posts with environmental themes being positive toward the industry. In the post, *How Animal Agriculture Affects our Planet*, by Animal Climate Change, the blogger wrote,

> *As the demand for meat and dairy products increases, the rise in agricultural emissions is inevitable. Experts forecast that animal agriculture will contribute to an increase of approximately 80% in global greenhouse gas emissions from the agricultural sector.*

In the Modern Farmer blog, a post titled *Veganism 2.0: Five reasons meat-eating is becoming passé*, though it was mostly negative toward animal agriculture, also included a hint of conditional positivity for animal agriculture and the environment:

> *One of the latest studies on the environmental impacts of dietary choices claims that a mostly vegan diet with a little meat is actually better for the planet than going 100% vegan. This is because there are parts of the planet that aren't very suitable for agriculture but are suitable for grazing animals in a sustainable way.*

Within the same post, however, the blogger used statistics from Oxford University to argue against consuming animal protein:

> *According to researchers at Oxford University in the U.K., if everyone on the planet went vegan, global emissions would fall by 55%, putting the planet on track for the 2050 goal set out in the Paris climate agreement. If we were all vegetarians, emissions would fall by 44% …*

The V-Grits' blogger created the same negative tone toward grass-fed cattle, writing, "Not to mention, grass-fed cow farms are still not slacking on the environmental destruction."

In the post titled *Methane: Gas killing the world through animal agriculture*, Animal Ag Engage's author said,

> *Animals used in farming take up 1/3 of the world's land (ice free), and unsurprisingly this has a knock-on effect on everything else from fertilizer to clearing land for cattle feed. Billions of acres of land are given over to farmed livestock so they can graze, and food can be grown for them.*

The connection being made between animal agriculture and environmental concerns was repeated across multiple blogs, even including those who demonstrated positive tones toward animal agriculture overall.

Consumption of Protein

The theme of consumption of protein included posts that discussed incorporating protein into a diet, the importance of protein for health and nutrition, and protein recipes. This theme was mentioned 34 times in 11 of the 37 blog posts. Typically, blog entries about the importance of protein were positive toward consumption of protein produced by the animal agriculture industry (10 of the 11 posts were positive). It is important to note that the term "protein" was a part of the search string used to identify the post, so the prevalence of protein consumption as a theme in these blog posts was not a surprising finding; however, the subthemes surrounding the use of protein by humans were important findings in this study.

In the Beef. Runner. Travel. Blog, an entry called *Join me in the 30-Day Protein Challenge* stated,

> *I learned about several different nutrient-dense foods that are high in protein but hadn't considered before. I learned how protein can be an important source of nutrition to A) be healthier in general, and B) maintain strong muscles when training for longer distance running. So I decided to take the Protein Challenge once again…*

The author of Messy Kennedy wrote, in *Meat-In Saturday*,

> *The USDA's new food pyramid suggests 5 oz. of lean protein every day and three cups of dairy. According to the Beef Checkoff, 3 oz. of beef is a fabulous way to receive a high-quality protein, zinc, vitamin B12, selenium, and phosphorous.*

In *Supermarket Sleuth*, by Bonnie Taub-Dix, the discussion of including protein in different forms came into light. The blogger wrote,

Fish, beans, chicken and other protein sources in cans are easy to stock at home, have a long shelf life, are available in most stores, are cost-effective and can easily be incorporated into casseroles, soups, sandwiches and salads.

The Farmer's Daughter author, in the post titled *Tyson's Trendtellers Council Projects Food Trends for 2019*, wrote, "Consumers want protein, protein, and more protein." The author also said, "Milk should be marketed as a great source for lots of protein and essential nutrients. Beef isn't just for dinner, it helps fuel your workouts."

The Modern Farmer blogger took a more negative perspective toward the importance of animal-based protein in people's diets in *Rich Investors Ask Food Corporations to Use Less Meat.* The post discussed a London-based financial activist group's anti-animal agriculture activities, stating,

On September 26, FAIRR [Farm Animal Investment Risk and Return] announced that it had sent out briefings to food companies including Whole Foods, Kraft Heinz, Unilever, Nestle, Walmart, and General Mills laying out the case for animal protein as a bad investment in all senses.

The Farmer's Daughter brought to light using recipes including protein, in a post titled *Tyson Any'tizers Makes Harvest Dinners Easy*. The author wrote,

The boneless chicken wings are great for harvest meals! They are super easy and quick to make, but also pack the flavor and some protein! Pair them with cut up vegetables, like baby carrots, and you have yourself a complete meal. The convenience is hard to beat, too.

Alternative Protein Sources

Also emerging as thematic was the concept of alternative protein sources, such as beans, tofu, ostrich, insects, and meat that is grown from muscle stem cells in a lab. This theme was mentioned 28 times in 13 posts. The top three types of alternative meats mentioned throughout the blogs were: ostrich, insects, and cell-based meats. The tonal characteristics associated with this of theme were positive toward the alternative protein sources, but negative toward traditional animal agriculture production. All posts examined that were about using insects or clean meat as a source of protein maintained a positive tone toward the topic.

Bloggers referred to meat grown in a lab by many names, including *cell-cultured meat, fake meat, cell-based meat*, and *clean meat*. Overall, blog entries containing this theme focused on the positive attributes of and the science behind cell-based meats. In The Farmer's Daughter, a post was written titled *Cell-based Meat, An Introduction*. In this post, in regard to scientists developing a name for this alternative protein source, the author said, "Proponents of cell-based meat obviously want the name to reflect something positive, instead of adopting a name that scares consumers."

In the Modern Farmer blog, in the post *Swiss Supermarket to start Selling Bug Burgers*, the blogger stated, "The argument for insects as food is not a new one; they are high in protein, low in environmental impact, easy to grow in small spaces, and can be delicious." The post discussed that a large supermarket based in Switzerland had begun to sell burgers made from mealworms, as well as a bug falafel. This post noted not only the health benefits of eating insects (referred to as "bugs"), but also spoke in a positive tone about consuming mealworms while negatively referring to the space required to create traditional animal-based protein: "Mealworms are high in protein, low in fat, and require a tenth the land needed by cattle to create a kilogram of edible meat."

Alternative Dieting

Three dietary approaches were referred to throughout the blog posts: vegetarianism, veganism, and flexitarianism. Being a vegetarian is defined as, "a person who does not eat meat: someone whose diet consists wholly of vegetables, fruits, grains, nuts, and sometimes eggs or dairy products" (Merriam-Webster, n.d. c). A person following the vegan diet is, "a strict vegetarian who consumes no food (such as meat, eggs, or dairy products) that comes from animals; also: one who abstains from using animal products (such as leather)" (Merriam-Webster, n.d. b). A flexitarian is a person who whose dietary approach includes eating mostly plant-based foods while allowing meat and other animal products in moderation (Streit, 2018). Merriam-Webster (n.d. a) defines a flexitarian as "one whose normally meatless diet includes meat or fish."

The tones of these posts ranged from promoting alternative diets in support of improving environmental changes, to promoting alternative diets for health reasons. In all eight posts, the tone was negative toward the livestock industry. In Modern Farmer's post *Veganism 2.0: Five reasons meat-eating is becoming passé*, the author wrote:

> *Whether the masses fully embrace a meatless lifestyle remains to be seen, but at the very least it's fair to say that 'flexitarianism' – those who consciously choose to minimize meat consumption but aren't totally unyielding about it – is on the rise. Last year, the global market research firm Innova heralded flexitarianism as the top trend of 2016, which helped push a 24 percent bump in the sales of meat substitutes between 2011 and 2015.*

That same post's author stated that, "Adventists, who generally avoid animal products for religious reasons, found that, compared to meat-eaters, the vegetarians had a 12 % lower mortality rate and the vegans, 15 % lower."

This post favored alternative dieting for the health of the human race, as opposed to the post *Methane: Gas Killing the World through Animal Agriculture*. This post's blogger stated, "I understand not everyone reading this will turn vegetarian or even think about it, but remember if you do, you'll be saving 20lbs of Carbon Dioxide, 45lbs of grain and over 1,000 gallons of water."

Choosing an alternative diet as a health-conscious decision was mentioned a few times throughout the blog posts, but the theme of choosing a diet based on environmental impact was more common and was obviously connected to negative tones toward animal agriculture and the protein industry.

Conclusions

With websites now serving as key media for sharing agricultural information (Mcleod et al., 2018), bloggers are playing an increasingly important role in educating consumers about agricultural topics and issues (Hawley et al., 2018). Examining the content of their posts, then, should provide important insight for agricultural communicators regarding how the protein industry is represented, what key themes have been, as well as what the tone of those themes has been.

RQ1: How has the concept of the protein industry been represented in selected blog posts?

The collection of blog entries examined in this case represented diverse blog content in terms of views related to animal agriculture. Clearly, the industry-supporting organizations have created their own blogs (e.g., Animal Ag Engage) to speak in favor of the industry. Meanwhile, activist groups that seek to effect changes in the protein industry have their own blogs as well (e.g., V-Grits and Animal Climate Change). So, among these organizational blogs, the protein industry was unsurprisingly presented in a positive light by those affiliated with animal agriculture production and in a negative light by activist groups. Outside the

organizational blogs, excerpts from the personal and professional bloggers—that is, the bloggers who were representing themselves and their own opinions—appeared to contain the most balance in terms of tone toward the industry. Some personal and professional blog posts contained narrative that was both positive and negative, which fits the description of "balance" in news writing, according to Hyde (2001).

RQ2: What themes have been most common in these blog posts concerning the protein industry?

Nine themes were emergent from the data, but only four were considered major themes as a result of their frequency of appearance. These themes were

- *environment*,
- *consumption of protein*,
- *alternative protein sources*, and
- *alternative dieting*

Each of these themes had identifiable subthemes including the connection between animal agriculture and greenhouse gas emissions, climate change, and the reduction of natural resources and incorporating protein into a diet, the importance of protein, and protein recipes. Three types of alternative meats mentioned throughout the blogs were ostrich, insects, and cell-based meats, and three different dietary approaches were referred to throughout the blog posts—vegetarianism, veganism, and flexitarianism. Some of these conclusions align with Bateman et al.'s (2019) findings that identified *environment, climate change,* and *healthy dieting* as prominent topics in news stories and blog posts about the meat industry.

RQ3: What have been the tonal characteristics (positive, negative, or neutral toward the industry) of the selected blog posts concerning the protein industry?

The tones of blog posts toward the protein industry were commonly connected to the post's theme. The theme of *environment* was typically associated with negative tones. Although some balance was found even in the organizational blogs, the theme of environmental most often was associated with negatively toned blog entries. Alternatively, the theme of *consumption of protein* was addressed in several blog posts that were mostly positive toward the protein industry. Also, the themes of *alternative protein source* and *alternative dieting* were discussed in blog posts that had both positive and negative tonal characteristics toward the protein industry. The following descriptions summarize the connections between theme and tone:

- *Environment* = mostly negative
- *Consumption of protein* = mostly positive
- *Alternative protein sources* = both positive and negative
- *Alternative dieting* = both positive and negative

In terms of types of blogs and their tonality, two organizational blogs, V-Grits and the Animal Ag Climate Change, were against all forms of animal agriculture and, therefore, all their posts were unsurprisingly negative toward the industry. The other organizational blog, Animal Ag Engage, which represented the Animal Ag Alliance was mostly positive. Dietitian and nutritionist Bonnie Taub-Dix's posts on her professional blog were usually positive toward the industry, with the majority of her posts being about consumption of protein. Personal blogs Modern Farmer, Beef. Runner. Travel, and Messy Kennedy were mostly positive toward the industry with some negativity, while The Farmer's Daughter had posts that were often both positive and negative within the same post. The following descriptions characterize the perceived connections between types of blogs and tone:

- Organizational blogs = both positive and negative, aligned with organizational purposes
- Professional blog (dietitian/nutritionist) = mostly positive
- Personal blogs = mostly positive with some balancing negativity

The connection between information about the protein industry and negative tone in the organizational blogs and somewhat in the personal blogs is not surprising. Bateman's (2019) findings showed that, compared to news stories, blogs often have an even stronger focus on meat's risks.

Discussion

The theoretical framework of this study included the theories of agenda setting, framing, and gatekeeping. Each of these theories played an integral part in directing the data collection and analysis, and they also provide an organized way of examining the conclusions and resulting recommendations.

Agenda setting theory suggests that bloggers can affect public opinion about what issues are important by purposively choosing the topics about which they write (McCombs, et al., 1997). While this study, with its small scope, did not attempt to describe how bloggers may be influencing public agendas, the identification of thematic topics in the blogs raised interesting questions in this regard, especially when considered along with previous literature on the topic. Among all types and purposes of blogs, *environment*, *consumption of protein*, *alternative protein source*, and *alternative dieting* were common themes. Bateman et al.'s (2019) analysis of U.S. and Canadian blog entries and news reports that focused on meat, which was a much larger study, identified similar themes, including *environment and climate change*, *healthy diet*, *finding delicious food*, *natural and quality meat* and *avoiding meat*. While the findings of both studies provide convincing evidence that these are the most common themes in blog entries about protein and meat, the question of causality remains. Are these themes appearing in blog entries because they have been popularized in other types of news and informational media, or are bloggers playing a role in setting these topics as public agenda items? If the answer is a combination of both, then to what extent are bloggers affecting the public agenda? More research on these questions is necessary, and research efforts from both quantitative and qualitative perspectives would be useful in finding answers, which would be important to guide further academic research, but which would be equally important to guide the practices of marketing communicators and journalists.

The examination of framing among the various bloggers in this study is somewhat revealing. It is no surprise that the organizational blogs framed news and information about meat in ways that were most advantageous to their causes, resulting in non-neutral messaging on all sides of the topic of protein production. The subthemes, however, are the keys to describing how bloggers are framing information about protein. Scheufele and Tewksbury's (2007) explanation of framing indicated that journalists (and, therefore, bloggers) have the power to influence how readers view topics and issues by highlighting certain details of the issue. The subthemes that emerged in this case study were the details that can help establish readers' schemas regarding the most popular topics related to protein production. For example, greenhouse gasses and climate change were the most popular subthemes under the major theme of environment; and ostrich, meat, insects, and cell-cultured meats were the most common subthemes under alternative protein sources. These bloggers have framed information for their readers in terms of identifying the most salient angles of a topic, influencing readers' schemas and, therefore, influencing how they may interpret future information about the same topics.

Also related to framing is the finding that there was a stronger presence of balance in the blog entries. Guy et al. (2013) and Sweetser (2008) have noted the rise in credibility of blogs, even above that of traditional news media. Could it be that these personal bloggers know and understand how to apply the journalistic concepts of balance and tone to improve their credibility as an information source? Or is this presence of relative balance simply a result of bloggers' altruistic efforts to share the truth with their readers? Only more research on bloggers' intent will tell.

Ultimately, if bloggers serve as gatekeepers (Shoemaker & Vos, 2009) by contributing toward public agenda setting and by contributing toward framing how the public understands topics related to protein production, then what they write is especially important to study and understand. And while the organizational bloggers' content (content written by those paid to blog in favor of a certain viewpoint) in this case study may have been predictable, the personal and professional bloggers' content was not as predictable and was especially important to examine. These bloggers' lenses, or how they view issues or topics, ultimately affect how information is culled before being passed to consumers.

Implications for Future Research and Practice

The small focus and limited scope of this case study research adds to the knowledge base supporting wow communications researchers and practitioners understand the role of blogs and bloggers in communicating about agricultural topics, especially Bateman's (2019) study, which focused on blogging and news reporting about meat. While the discussion above has already included some suggestions regarding future research on blog content, there are multiple opportunities for further research on this topic. Learning more about consumer's schemas regarding the broad topic of protein production and the multiple sub-topics would be helpful for those who endeavor to communicate about it. Additionally, it would be beneficial to research persuasive tactics employed by successful bloggers and to examine the schemas of bloggers themselves regarding protein production and other agriculture-related issues.

Blogs are relatively unresearched social media outlets that contain large amounts of information about a wide variety of topics, including agricultural topics (Moore, 2015). They obviously provide information to consumers, who have increasingly been demanding more transparent communication about the food they eat, and they exist as an under-used, yet appropriate and effective outlet to allow open, honest, transparent communication (McKendree et al., 2014). The non-organizational blogs in this study—those written by consumers themselves or by interested professionals sharing their own insight—showed signs of tonal balance, which can help lead to credibility with consumer audiences. Therefore, organizations that desire to provide information through respected third-party bloggers such as these should focus their media relations efforts on educating these personal and professional bloggers about the topics and issues they view as most important.

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