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The Effect of Social Media on University Students' Perceptions of the Beef Industry

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Abstract

Social media is known for having the ability to rapidly disseminate information and university students now receive the majority of information about agriculture through social media platforms rather than through first-hand experience. In order to understand the impact of social media on university students related to the beef industry, a study of 300 students at the University of Tennessee were selected to participate. The purpose of this study was to describe media usage and impacts on students at the University of Tennessee. Results showed students perceived social media platforms, Facebook and Twitter, to be relatively trustworthy; agreed that the beef industry supplied safe products to consumers but they are very concerned with food safety and relatively concerned to very concerned with having access to information about the beef supply. One recommendation made was industry communicators should consider current industry representation on social media and identify ways to proactively supply information to university students.

Keywords: Social media; university students; beef industry

Introduction

Due to America's steady transition from rural to urbanized life over the past century (Jepsen, Pastor, & Elliot, 2007), less than 2% of the population currently lives on a farm (American Farm Bureau Foundation, 2014). Today's families are often twice removed from their farming ancestry (American Farm Bureau Foundation, 2014) and have a limited understanding of modern agriculture practices. In essence, the aforementioned families, especially their children, have limited direct contact with agriculture (Zimbelman, Wilson, Bennett, & Curtis, 1995). Those previously mentioned children often pursue university degrees, become consumers of agriculture products, and unfortunately gather most of their information related to agriculture from sources separated from the agriculture industry (Frick, Birkenholz, & Machtmes, 1995). These media

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sources are more likely to report on controversies involving agriculture (Zimbelman et al., 1995) instead of helping the consumer understand agricultural practices or successes. As the distance between consumers and producers continues to grow, consumers will rely more on social media outlets to retrieve information about food related issues such as food safety (Verbeke, 2005).

The agriculture industry has considerably lagged behind in terms of a social media presence (Vogt, 2013; Berg, 2013; Patsche, 2014) and is frequently attacked by anti-agriculture activists and individuals who instill uncertainty and/or fear in consumers. Consumers tend to believe information retrieved from the mass media sources, regardless of its accuracy (Ruth, Lundy, & Park, 2005). The media's coverage on the agricultural industry can be erroneous, which can play a part in consumer misunderstandings of agriculture and its sub-industries (Holt, 2010). Through their search for information, consumers are bombarded by misconceptions about the agriculture industry (Frick et al., 1995; Swinnen, McCluskey, & Francken, 2005). According to Holt and Cartmell (2013), "media coverage of the agricultural industry tends to focus on stories involving crisis situations" (p. 45). Once this information is made available on media sources, it is difficult for the agriculture industry to have its voice heard in defense (Berg, 2013; Vogt, 2013). Therefore, while the media highlights crisis situations, consumers' views of the agriculture industry can become negative (Holt & Cartmell, 2013). According to Meyers and Abrams (2010), "how the media covers agriculture is important because it can influence consumers' perceptions of how food is produced, handled, or processed" (p. 22).

The agriculture industry has seen the effects of inaccurate information being distributed across multiple media sources. For instance, the attack on the beef industry in March 2012 when Beef Product, Inc.'s 100% beef product, known as lean finely textured beef (LFTB), was scrutinized by the media and consumers nationwide (Greene, 2012). Furthermore, an ABC News report was highlighted on social media that coined the term *pink slime* to describe the pale pink, 100% beef product, and then questioned the product's safety by calling it dog food. Most notably, three of four processing plants were eliminated and over 600 jobs were lost, the United States Department of Agriculture ended the use of LFTB in school lunches, and producers removed it from commercial sale (Greene, 2012). Producers and processors of the beef industry have not been viewed as reliable sources of information in other food safety incidents up to this point, and the trend continued with pink slime (Verbeke, Pérez-Cueto, de Barcellos, Krystallis, & Grunert, 2009). Moreover, Burton and Young (1996) showed media coverage during several food safety incidents with beef products ad short-and long-term impacts on demand. For example, following the pink slime controversy, companies such as Cargill, Inc., had plant workers cut as much of the meat out of the fattier beef trimmings as possible. This simple change to the beef industry definitely influenced the producer (more time needed to do this) and the consumer (meat prices increased because of the limited supply; Greene, 2012). In addition, the 2012 McDonald's 'Twitter Fail' created an ineffective engagement in social media (Rutsaert et al., 2014). McDonald has created a campaign on Twitter to procure the public's favorite memories of McDonald's, but the public utilized the campaign's hashtag to share negative testimonies related to food safety (Rutsaert et al., 2014).

In contrast, the 2009 *Salmonella typhimurium* outbreak in peanut butter and products containing peanuts was handled effectively by the Centers for Disease Control and Prevention (CDC; Rutsaert et al., 2014). The CDC utilized various social media tools and allowed two-way communication with consumers (Rutsaert et al., 2014). Further, the CDC created a widget for websites and blogs so consumers had access to a database to check a product's barcode and if it had been recalled (Rutsaert et al., 2013). According to Rutsaert et al. 2013), the CDC's strategy during this crisis "enabled them to dispense valuable, reliable, and scientifically-based information to the public" (p. 87).

With that in mind, social media offers many advantages for communicating to the public during a food safety risk and crisis and enables individuals to share information in a timely manner with complete transparency (Rutsaert et al., 2013). Social media, unlike traditional media, provides a two-way communication chain so the public can interact and participate in the present discussion (Rutsaert et al., 2013). When consumers have an integral role in the conversation and are more active participants, the chances of the "damaging side effects of risk communications or over-reactions to perceived hazards" decrease (Rutsaert et al., 2013, p. 87). Lastly, social media also presents the opportunity to gauge consumer perceptions during a time of an agriculture crisis (Rutsaert et al., 2013).

With the social media boom over the past 10 years (Leung, 2013), university students have found social media to be a portal for information on current events and what is trending worldwide (Sun, Chang, & Yu, 2001). University students strongly rely on social media for useful, relevant, up to the second information (Kim, Sin, & Yoo-Lee, 2014). Currently, the students rely on sites like Facebook and Twitter for their news headlines rather than traditional sites like CNN.com or the New York Times that provide full news stories (Rosengard, Tucker-McLaughlin, & Brown, 2014; Smith, 2014).

University students feel that social media is a tool in their life (Rosengard et al., 2014). In addition, university students believe they accomplish more, absorb truly useful information, and learn more in less time because of their social media use (American Society for Training and Development, 2010). News sites that utilize social media to reach followers frequently post emotionally charged and enticing headlines, which are often where followers focus their attention, rather than the actual story (Ross, 2014). With university students' reliance on social media, the misinformation, or partially correct information, may have a negative impact on perceptions, opinions, and actions about the agriculture industry through their purchasing and consuming choices. This study will explore social media use and impact on university students' perceptions of the beef industry.

Theoretical Framework

Society increasingly feels the influence of the media (Ball-Rokeach & DeFleur, 1976) and individuals rely on their ability to gather, process, and disseminate information to help evaluate their position on a subject (Ball-Rokeach, 1985; DeFleur & Ball-Rokeach, 1989). Research has shown consumers "do not depend on all media equally" (Littlejohn & Foss, 2010, p. 302). Therefore, the theory of media dependency was utilized as the theoretical framework for this study.

According to Ball-Rokeach and DeFleur (1976), "dependency is defined as a relationship in which the satisfaction of needs or the attainment of goals by one party is contingent upon the resources of another party" (p. 6). Media dependency for information is a universal state in today's society (Ball-Rokeach & DeFleur, 1976). The more individuals' needs for gathering information increases, there is a significant chance the information provided could influence the individuals' cognitions, feelings, and behaviors (Ball-Rokeach & DeFleur, 1976).

Furthermore, dependency is determined by a source meeting multiple needs and desires of individuals. Success and satisfaction in the media encourages future media dependence (Gordon, 2009) and the link between society and the media has been explored with consumer media dependency during natural disasters (Gordon, 2009), disease outbreaks (Tai & Sun, 2007), and terrorist attacks (Lowrey, 2004). Moreover, Tucker, Whaley, and Sharp (2006) mentioned, "Dependency on news and information is also heighted during periods of intense conflict or change" (p. 137). Media systems interact with audiences in different ways in order to "create needs,

interests, and motives" (Littejohn & Foss, 2010, p. 302), which lead audiences to select certain media sources (Littejohn & Foss, 2010). Media dependency on newspapers, radios, and television broadcasts causes individuals to be "affected cognitively, affectively, and behaviorally" (Littlejohn & Foss, 2010, p. 302).

Cognitively, media consumers will use sources that allow them to better understand the world around them, and this may affect their attitudes, expand their beliefs, or provide clarity (Ball-Rokeach & DeFleur, 1976). Bandura (2001) stated individuals "act on their images of reality. The more people's images of reality depend upon the media's symbolic environment, the greater is its social impact" (p. 271).

Affectively, the impact that media has on society members' feelings also plays a role in media-dependency (Ball-Rokeach & DeFleur, 1976). In the scope of a society, affective effects can be seen in the form of changes in morale of a large segment of the population as well as alienation (Ball-Rokeach & DeFleur, 1976). In addition, behavioral changes are a strong indicator of the media effects on society (Ball-Rokeach & DeFleur, 1976). Ball-Rokeach and DeFleur (1976) stated changes in actions and behaviors are as important as changes in values and beliefs. Therefore, the media has the ability to drive individuals to participate in activities they normally would not or to make them not participate in activities they normally would as a response to media messages (Ball-Rokeach & DeFleur, 1976; Bandura, 2001).

Presently, there is a lack of research on the effect social media has on the consumer perception of the beef industry, especially university students, but it is expected to follow the trend of more traditional media segments in terms of positive and negative influences on consumer habits (Charanza, 2011). With agriculture frequently coming under attack, social media can be a platform for agriculture to make a defense (Anderson-Wilk, 2009; Berg, 2013; Doyle & Briggeman, 2014; Patsche, 2014). However, it is essential that agriculture communicators understand the effects different types of media has on consumers and their perceptions of agriculture in order to prepare proper marketing and educational tools to "offset any inaccurate information presented to consumers" (Holt & Cartmell, 2013, p. 46).

Purpose and Objectives

The purpose of this study was to describe media usage and impacts on students at the University of Tennessee. The specific objectives of this study were as follows:

1. Describe how students at the University of Tennessee utilize social media to interact under normal circumstances, including what platforms and with what frequency;
2. Describe the University of Tennessee students' perceptions of the beef industry;
3. Describe how students at the University of Tennessee utilized social media during a food safety incident related to the beef industry, including what platforms and with what frequency; and
4. Describe the University of Tennessee students' exposure to the pink slime incident through social media and any self-determined short- and long-term effects of this exposure.

Methods and Procedures

This study was conducted using descriptive survey research. The entire student population at the University of Tennessee was the target population for this study (N = 21,863); however, a convenience sample of students (n = 300) was used for this study.

A survey instrument was designed by the researchers based upon literature focusing on media influences of consumer beef industry perceptions (Charanza, 2011) and media dependency theory (Ball-Rokeach & DeFleur, 1976; Ball-Rokeach, 1985; DeFleur & Ball-Rokeach, 1989; Jackob, 2010; Robertson, 2009). The survey contained five sections that were designed to measure (a) perceptions of the beef industry, (b) normal social media use, (c) social media use during food safety incidents, (d) social media's role in developing opinions regarding the pink slime incident, and (e) demographics. Multiple choice, fill-in-the-blank, and Likert-type questions were utilized in the survey with all Likert-type questions utilizing 5-point response anchors. The first section assessed how often respondents utilized social media and perceptions of social media reliability. The second section measured respondents' perceptions and opinions of the beef industry under normal circumstances, when there has not been a recent food safety incident. The third section assessed respondents' usage and perception of information received on social media, and the effect that information had on their opinion about the beef industry. The fourth section focused on a specific food safety incident, pink slime, and whether social media's portrayal of the incident influenced perceptions or buying and eating habits of the respondents. The respondents were given the option to skip this portion if they did not experience or remember the incident occurring on social media. The final section consisted of demographics and included a question relating to the respondent's relationship to the agriculture industry.

Prior to disseminating the survey, face and content validity of the instrument were established through review by an expert panel (Ary et al., 2014), which consisted of six faculty members at the University of Tennessee. This panel included two faculty members from the Department of Agricultural Leadership, Education and Communications; three faculty members from the Department of Agricultural and Resource Economics; and a faculty member from the Department of Food Science and Technology. Feedback was provided individually. Panel members collectively felt the survey included several questions that did not directly relate to the subject being studied and were subsequently removed or streamlined. A pilot study was conducted with a sample of 12 students in an agricultural leadership development course at the University of Tennessee. The sample for the pilot study included six males and six females ranging from ages 20 to 28 years old. The pilot study was delivered using *Qualtrics*, and cognitive interviews were conducted (Dillman, Smyth, & Melani, 2010) to obtain reliability of the instrument. Cognitive interviewing was used as a reliability measure to determine "whether respondents comprehend questions as intended by the survey sponsor and whether questions can be answered accurately" (Dillman et al., 2010, p. 142). Respondents of the pilot study were asked to complete the survey individually and discuss any uncertainties or suggestions for clarification. The instrument was modified to reflect the pilot group members' recommendations.

Surveys were conducted over the course of a week due to time limitations and a limited number of incentives for respondents. Data for this survey were collected via an online questionnaire that was created utilizing *Qualtrics* and delivered via in-person utilizing iPads. Researchers approached and asked students to participate in the survey at two libraries, a residence hall, and a restaurant on the University of Tennessee campus. Students were approached this way because the University of Tennessee would not release student email addresses for research. This population may cause bias, as these were university students living on the University of Tennessee campus and their responses may differ from non-university students who are not living on the University of Tennessee campus; therefore, the results of this study should not be generalized beyond this sample.

The sample consisted of 47% males (f = 142) and 53% females (f = 158). The minimum and maximum ages of respondents was 18 and 28 years, respectively. Respondents identified themselves as Hispanic or Latino (f = 19, 6%), American Indian or Alaska Native (f = 12, 4%),

Asian (*f* = 24, 8%), Black or African American (*f* = 46, 15%), White or Caucasian (*f* = 182, 61%), or Mixed Race (*f* = 17, 6%). They primarily lived in suburban locales (*f* = 178, 60%) versus urban (*f* = 61, 20%) or rural (*f* = 61, 20%). Respondents represented all academic classifications including 16% freshman (*f* = 49), 28% sophomores (*f* = 83), 27% juniors (*f* = 80), 19% seniors (*f* = 58), and 10% graduate students (*f* = 30). Due to the content of the study being focused on the beef industry, respondents were asked to describe their experience in agriculture. In total, 183 study respondents indicated they had some experience in agriculture with the majority living or had lived in a rural area (*f* = 108), representing 36% of the total sample. Having taken high school agriculture courses was the second most popular response with 28% (*f* = 83) and was followed by living or having lived on a farm or ranch with 27% (*f* = 81). Having taken college agriculture courses ranked seventh with 16% (*f* = 48).

Results

Objective 1: Describe what platforms and how often students at the University of Tennessee utilize social media to interact under normal circumstances and the trustworthiness of the information in each media platform.

Students were asked to identify which major social media platforms they utilized and how many hours per week. Ten students (3%) stated they did not utilize social media regularly. In order of weekly hourly usages, students utilized YouTube (0-50 hours) followed by Facebook (0-27 hours), then Instagram (0-23 hours), blogs (0-20 hours), and lastly Twitter (0-8 hours).

In addition to the overall usage of media platforms, researchers sought to determine how university students perceived the trustworthiness of the information in each media platform (see Table 1). Perceived trustworthiness was consistent across all social media platforms with the majority of students responding social media was somewhat trustworthy to relatively trustworthy. Twitter was perceived as most trustworthy with 42% rating it relatively trustworthy (*f* = 126), 17% rating it very trustworthy (*f* = 50), and 2% rating it extremely trustworthy (*f* = 7).

Table 1

Students' perceived trustworthiness of social media platforms (n = 300)

	Not At All Trustworthy		Somewhat Trustworthy		Relatively Trustworthy		Very Trustworthy		Extremely Trustworthy	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Twitter	33	11	83	28	126	42	50	17	7	2
Facebook	43	14	100	33	119	40	37	12	1	.3
YouTube	37	12	128	43	108	36	25	8	2	.7
Blogs	52	17	106	35	102	34	33	11	6	2
Instagram	60	20	127	42	94	31	16	5	0	0

Objective 2: Describe University of Tennessee students' perceptions of the beef industry.

Students' average weekly beef consumption was measured by frequency. The vast majority of students consumed beef with regularity. Fifty-two percent of students (f = 156) consumed beef 3 – 4 times per week, followed by 29% (f = 88) consuming beef 1 – 2 times per week, 11% (f = 32) consuming beef 5 – 6 times per week, and 5% (f = 15) consuming beef 7 or more times per week. Three percent of students (f = 9) did not consume beef.

As shown in Table 2, students agreed the beef industry supplies a safe product to consumers. Responses to whether the beef industry was lacking in its response to safety concerns and in supplying information needed for consumers to make informed decisions was predominantly neutral.

Table 2

Students' beliefs about the safety of the beef industry (n = 300)

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
The beef industry supplies safe beef products to consumers	4	1	18	6	77	26	171	57	30	10
The beef industry responds efficiently to beef safety concerns	6	2	40	13	143	48	105	35	4	1
The beef industry supplies me with information I need to make informed decisions about the safety of beef	8	3	55	18	134	45	98	33	5	2

Students' concerns about the beef industry were consistent in multiple categories (see Table 3). Students were very concerned about food safety (51%, f = 152) and having access to accurate information about the beef supply (43%, f = 129). Students were relatively concerned about beef cattle production practices, the humane treatment of beef cattle, and the use of antibiotics and hormones in beef cattle.

Table 3

Students' concerns in relation to the beef industry (n = 300)

	Not At All Concerned		Somewhat Concerned		Relatively Concerned		Very Concerned		Extremely Concerned	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Food Safety	7	2	28	9	85	28	152	51	28	9
Access to accurate information about the beef supply	6	2	28	9	122	41	129	43	15	5
Use of antibiotics given to beef cattle	7	2	30	10	140	47	108	36	14	5
Use of growth hormones given to beef cattle	9	3	24	8	147	49	101	34	17	6
Beef cattle production practices	9	3	30	10	161	54	89	30	11	4
Humane treatment of beef cattle	8	3	35	12	162	54	80	27	14	5

Objective 3: Describe the University of Tennessee students' usage of social media during a food safety incident related to the beef industry, including what platforms and with what frequency.

Over half of students, 62% (*f* = 186), stated they were somewhat likely to use social media during a food safety incident, twenty-seven percent (*f* = 82) were unlikely, and 10% (*f* = 32) were very likely to use social media to collect information during a food safety incident. In order to determine the helpfulness of social media platforms in providing information about national beef safety incidents, students were asked to score each major platform (see Table 4). Facebook and Twitter were considered the most helpful of the five platforms. Additionally, the minimum and maximum values for neutral were 32.0% and 39.3%, respectively, across the social media platforms.

Table 4

Students' perceived helpfulness of social media platforms in providing information about national beef safety incidents (n = 300)

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Twitter	32	10.7	25	8.3	106	35.3	116	38.7	21	7.0
Facebook	37	12.3	36	12.0	101	33.7	104	34.7	20	6.7
Blogs	25	8.3	58	19.3	107	35.7	92	30.7	16	5.3
YouTube	28	9.3	74	24.7	118	39.3	63	21.0	16	5.3
Instagram	50	16.7	95	31.7	96	32.0	52	17.3	7	2.3

Objective 4: Describe the University of Tennessee students' exposure to the pink slime incident through social media and any self-determined short- and long-term effects of this exposure.

This study was conducted two years after the pink slime incident in 2012. As a result, students were given the option to skip this portion of the survey if they did not experience or remember the incident occurring on social media. As shown in Table 5, students stated they were negatively affected (78%, *f* = 141) by the information they received about pink slime on social media.

Table 5

Effect of information received about pink slime through social media on students' perceptions of the beef industry (n = 180)

Effect	*f*	%
Negative Way	141	78
Positive Way	12	7
Unchanged	27	15

Expanding on the initial negative affect of information about pink slime, students identified both short-term and long-term negative effects (see Table 6). Short-term (0-6 months) buying habits were negatively affected in 72% (*f* = 129) of students, and eating habits were negatively affected in 69% (*f* = 123) of students. Long-term (6+ months) buying habits were negatively affected in 56% (*f* = 100) of students, and eating habits were negatively affected in 55% (*f* = 98) of students.

Table 6

Information about pink slime on social media negatively affected students' eating habits (n = 300)

	f	*%*
Short-term (0-6 months) buying habits		
Yes	129	72
No	37	21
Unsure	14	7
Short-term (0-6 months) eating habits		
Yes	124	69
No	40	23
Unsure	16	8
Long-term (6+ months) buying habits		
Yes	100	56
No	56	31
Unsure	24	13
Long-term (6+ months) eating habits		
Yes	99	55
No	56	31
Unsure	25	14

Conclusions, Implications, and Recommendations

A convenience sample (*n = 300*) of university students from the University of Tennessee was utilized for this study, and results obtained should not be generalizable beyond this sample unless demographic data confirms the sample is representative of other populations of university students. We found students at the University of Tennessee regularly used social media platforms but mainly utilized YouTube, Facebook, Instagram, and blogs. However, students perceived social media platforms Facebook and Twitter to be relatively trustworthy; blogs to be somewhat to relatively trustworthy; and Instagram and YouTube to be somewhat trustworthy. Robertson (2009) noted communicators should be aware of the amount of time consumers spend on media and the variety of platforms they use while gathering information. Responses showed students spent several hours per week on various social media platforms, whether for personal, business, or entertainment

purposes, and individual's social media usage had increased significantly over the past five years (Charanza, 2011). Therefore, one may conclude university students are spending a significant amount of time on social media platforms to gather information whether they find them extremely trustworthy or not.

Students agreed the beef industry supplied safe products to consumers; however, they were neutral on whether the beef industry responds efficiently to beef safety concerns and provides them with information needed to make informed decisions about the safety of beef. Therefore, one may conclude students in this study are not aware of when the beef industry responds to beef safety concerns or supplies information to consumers. Communicators need to be aware that university students are obtaining information through social media. Therefore, important information related to the beef industry needs to be distributed on those social media platforms.

Students in this study are very concerned with food safety and relatively concerned to very concerned with having access to information about the beef supply. However, it is interesting to note students are only relatively concerned about beef production practices, humane treatment of cattle, antibiotics given to beef cattle, or the use of growth hormones given to cattle. In addition, university students believe they can accomplish more, absorb truly useful information, and learn more in less time because of their social media use (American Society for Training and Development, 2010). Therefore, as noted by Verbeke (2005), there is more distance between the student as the consumer and producer. This tends to provide an environment, especially with university students who rely heavily on social media for their information (Kim et al., 2014), where individuals are more concerned about having access to the information they need (so they can make the informed decision) rather than the production side of the product.

Littlejohn and Foss (2010) stated, "Media dependency can cause individuals to be affected cognitively, affectively, and behaviorally" (p. 302). Therefore, students' perceptions of the beef industry were negatively impacted by information received on social media platforms related to the pink slime incident. Furthermore, the majority of the students' short – term (0-6 months) and long – term (6+ months) buying and eating habits and/or behaviors were negatively impacted. Therefore, the information about the beef industry, and especially food safety incidents received through social media platforms, did have a negative effect on students' perceptions of the beef industry, which influenced their buying and eating habits.

After considering the results of this study and its implications, some recommendations can be made for the agriculture industry and the agriculture sub-industries, as well as for further research. Three recommendations for the agricultural industry and its sub-industries include: (a) industry communicators should consider current industry representation on social media and identify ways to proactively supply information to students because they are consumer of agriculture products; (b) industry communicators should identify social media platforms and other media outlets that can be used to reach university students and provide information proactively and reactively; and (c) agricultural communication programs should offer an elective course in the areas of effective social media platforms and information courses related to agriculture.

Recommendations can also be made for the agriculture industry to develop research that will aid in understanding the effect of social media and the best uses of social media for the industry. The findings of this study display that these university students spent several hours a week on social media while some even view it as an extremely trustworthy source for information. In addition, the short- and long-term buying and eating habits/behaviors were negatively impacted. Having an understanding about the role social media plays in university students' lives can benefit industries. Two recommendations for future research are: (a) determine the effects food safety incidents in

other agriculture sub-industries, such as poultry, swine, and biotechnology, have had on university students and industry producers and (b) describe successful and unsuccessful agricultural media campaigns that have collected messages which educate university students about agricultural practices and products.

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