

Communicating water-related information to landowners: Identifying preferred communication channels, perceived source trustworthiness, and preferred type of information

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Introduction/Need for research

Pollution is impacting water quality in the Little River watershed in Texas. More specifically, the Little River tributary is failing to meet recreational use standards (TCEQ, 2014a). Failure to meet standards is partially due to bacteria pollution. Such bacteria pollution can be traced to agricultural practices—the leading nonpoint sources of pollution in the nation’s waterways (CDC, 2010)—which can be reduced when landowners adopt best management practices (BMPs) associated with watershed-based plans (WBPs). To increase adoption of BMPs, landowners should be educated about adoption of BMPs and information should be diffused through preferred communication channels and preferred sources of information.

Rosenberg and Margerum (2008) noted newsletters were a preferred method of communication because they are a “quick, convenient, and non-invasive method of getting information” (p. 488). Yet, some agri-marketing individuals and organizations successfully used social media to communicate about current agricultural issues, such as water quality, and to educate the agricultural community (White, Meyers, Doerfert, & Irlbeck, 2014). Additionally, Midwest landowners preferred to receive information from local university extension, soil and water conservation districts, and the natural resources conservation service because of their perceived level of trustworthiness (Mase, Babin, Prokopy, & Genskow, 2015).

The information diffusion theory guided this study, focusing on shortening, sharpening, and assimilating messages for specific audiences (Stone, Singletary, & Richmond, 1999). In this context, messages should express the positive effects (e.g., economic gain, visual pleasing, property and environmental improvements) of implementing BMPs (Guo, 2014) and not express specific environmental dimensions (e.g., current water quality levels; Jackson-Smith & McEvoy, 2011) or negative impacts of agricultural practices on water quality (Baumgart-Getz, Prokopy, Floress, 2012). Noted in research priority one of the AAAE National Research Agenda, “understanding of agriculture must take into account a person’s contextual differences” (Roberts, Harder, & Brashears, 2016, p. 15), which was applied in this study to describe landowners’ preferred communication channels, perceived source trustworthiness, and preferred types of information.

Method

This quantitative study was part of a larger research project focused on the Little River watershed in Texas and was conducted using survey methodology. We identified a population of 7,592 landowners using Geographic Information System (GIS) coordinates from local county assessors along the Little River, San Gabriel River, and Big Elm Creek tributaries of the Little River watershed. Using an online sample calculator with a 95% confidence level and a 1.96 confidence interval, a simple random sample of 1,881 was obtained from the GIS database of 7,592 population (Bryman, 2015). We mailed questionnaires using Dillman’s Tailored Design method (Dillman, Smyth, & Christian, 2014), and participants had the option to return the questionnaire via mail or to complete the questionnaire online. The instrument included a total of 24 questions with dichotomous, modified four- and five-point Likert-type scales. The five-point *preference scale* included ≤ 1.50 = least preferred; 1.51 – 2.49 = slightly not preferred; 2.50 – 3.49 = no preference; 3.50 – 4.49 = slightly preferred; 4.50 \leq = most preferred. The four-point *trustworthy scale* included ≤ 1.50 = not trustworthy; 1.51 – 2.49 = somewhat trustworthy; 2.50 – 3.49 = trustworthy; 3.50 \leq = very trustworthy. A total of 1,880 questionnaires were delivered.

We achieved a 25% ($n = 462$) response rate, resulting in a total of 15% ($n = 275$) usable data. Of those 275 participants, 28.4% were 55 to 64 years of age ($n = 78$), 67.3% were males ($n = 185$), 83.6% were Caucasian ($n = 230$), and 24.0% had a bachelor's degree ($n = 66$). We analyzed the data using SPSS 23 and ran descriptive statistics and t-tests on categorical data (Field, 2013). No significant differences were found between early and late respondents (Lindner, Murphy, & Briers, 2001). We found the instrument reliable with a post-hoc Cronbach's alpha of .954 (Field, 2013), and we established instrument validity using content experts who specialize in water resources and have extensive experience in developing WBPs (Bryman, 2012).

Findings

Although there were no significant differences between direct mailings and all other preferred channels ($t(221) = .431, p = .682$), participants had a higher preference for receiving water-related information quarterly ($n = 69$) through direct mailings ($M = 3.99; SD = 1.16$). Additionally, no significant differences were found among participants' reported ages $F(3,214) = 1.172, p = .321, 1 - \beta = .313$ although participants aged 55 to 64 ($M = 4.08; SD = 1.19$) reported higher preference for direct mailings than other age groups. Although there were no significant differences between male and female participants regarding preferred communication channels ($t(91.82) = -.391, p = .697$), social media was less preferred by males ($M = 1.87; SD = 1.07$) than by females ($M = 2.04; SD = 1.28$).

Furthermore, although landowners rated all groups as somewhat trustworthy, they had a higher preference for information from Texas A&M AgriLife Extension ($M = 3.16; SD = .82$). Although no statistical differences were found among age groups related to perceived source trustworthiness ($F(3,229) = .679, p = .130, 1 - \beta = .488$), participants aged 54 and younger and participants from all other ethnicities found Texas A&M AgriLife Extension to be more trustworthy than participants from other age groups and Caucasian participants. Participants ages 65 to 74 ($M = 1.88; SD = .87$) reported the lowest level of trust for government agencies. Participants who had received information from Texas A&M AgriLife Extension reported the organization more trustworthy than those who had not received information from Texas A&M AgriLife Extension. Additionally, participants reported interest in receiving all types of water-related information (e.g., water quality levels, specific conservation practices).

Conclusions/Implications/Recommendations

Participants wanted to receive water-related information through direct mailings, which was similar to Rosenberg and Margerum (2008) and Howell and Habron (2004), and they reported Texas A&M AgriLife Extension as a somewhat trustworthy source (Rosenberg & Margerum, 2008; Mase et al., 2015). Understanding which information sources participants view as trustworthy can help communicators build communication strategies to assist landowners in assimilating content (Stone et al., 1999). Although a lack of preference for social media was reported in this study, agricultural organizations use social media in today's society to inform agricultural audiences (White et al., 2014) due to its cost effectiveness. Additional research is needed to determine if and how social media and Internet technologies could be used to deliver water-related information. It is imperative that effective outreach and educational topics be delivered to landowners in an effort to reduce pollutants entering the waterways and, ultimately, improve the quality of water in the watershed.

References

- Baumgart-Getz, A., Prokopy, L. S., & Floress, K. (2012). Why farmers adopt best management practice in the United States: A meta-analysis of the adoption literature. *Journal of Environmental Management*, 96(1), 17–25. Retrieved from <http://dx.doi.org/10.1016/j.jenvman.2011.10.006>
- Bryman, A. (2012). *Social research methods*. New York: Oxford University Press.
- Centers for Disease Control and Prevention. (2010, March 10). Water Contamination. Retrieved from <http://www.cdc.gov/healthywater/other/agricultural/contamination.html#two>
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed mode surveys: The tailored design method*. New Jersey: John Wiley & Sons.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. California: Sage.
- Guo, M. (2014). Effective watershed management: Planning, implementation, and evaluation. *Hydrological Current Research*, (5). e119.
- Howell, J. L., & Habron, G. B. (2004). Agricultural landowners' lack of preference for internet extension. *Journal of Extension*, 42(6).
- Jackson-Smith, D. B., & McEvoy, J. P. (2011). Assessing the long term impacts of water quality outreach and education efforts on agricultural landowners. *Journal of Agricultural Education and Extension*, 17(4), 341–353. doi: <http://dx.doi.org/10.1080/1389224X.2011.576823>
- Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001). Handling nonresponse in social science research. *Journal of Agricultural Education*, 42(4), 43 – 53. doi: 10.1177/1470593107076865
- Mase, A. S., Babin, N. L., Prokopy, L. S., & Genskow, K. D. (2015). Trust in sources of soil and water quality information: Implications for environmental outreach and education. *JAWRA Journal of the American Water Resources Association*, 51(6), 1656–1666.
- Roberts, T. G., Harder, A., & Brashears, M. T. (Eds). (2016). American Association for Agricultural Education national research agenda: 2016-2020. Gainesville, FL: Department of Agricultural Education and Communication.
- Rosenberg, S., & Margerum, R. D. (2008). Landowner motivations for watershed restoration: Lessons from five watersheds. *Journal of Environmental Planning and Management*, 51(4), 477–496. doi: <http://dx.doi.org/10.1080/09640560802116962>
- Stone, G., Singletary, M., & Richmond, V. P. (1999). *Clarifying communication theories*. Ames Iowa: Iowa State University Press.
- Texas Commission on Environmental Quality (2014a). 2014 Texas integrated report: Assessment results for basin 12—Brazos River. Retrieved from http://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/14txir/2014_basin12.pdf
- White, D., Meyers, C., Doerfert, D., & Irlbeck, E. (2014). Exploring agriculturalists' use of social media for agricultural marketing. *Journal of Applied Communications*, 98(4), 72–86.