Describing Consumers' Likelihood to Use Disclosure Methods for Identifying Bioengineered Food Ingredients

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Introduction/Need for Research

The United States is the world's leading producer of bioengineered crops, based on acreage, in 2015 (James, 2015), producing corn, cotton, soybeans, apples, papayas, potatoes, sugar beets, squash, and canola oil. The topic of labeling bioengineered food is relevant in today's society because President Barack Obama signed the National Bioengineered Food Disclosure Standard on July 29, 2016. The law defined bioengineered food as any food that "contains genetic material that has been modified through in vitro recombinant deoxyribonucleic acid (DNA) techniques; and for which the modification could not otherwise be obtained through conventional breeding or found in nature" (p. 1). The law changes the way the food industry uses food labels to communicate with consumers, providing options for how to display information about bioengineered ingredients. All labels must be printed on the package and provide access to further information through a website link, telephone number, or a scannable Quick Response (QR) code (National Bioengineered Food Disclosure Standard, 2016). This research can be used by agricultural communicators to develop a strategic communication about bioengineered food with the agri-food industry using a new form of smartphone technology in accordance with Priority Areas One and Two of the National Research Agenda (Roberts, Harder, & Brashears, 2016). The purpose of this research study was to discover factors influencing consumers to use the disclosure methods and their purchasing intention of bioengineered food. Specifically, the objective addressed in this manuscript was to describe the likelihood consumers will use the different disclosure methods to learn whether products contain bioengineered ingredients.

Theoretical Framework

The diffusion of innovations theory (Rogers, 2003) contributed to the theoretical framework of this study. Rogers (2003) defined the innovation-decision process as the process through which a person passes from first knowledge of the innovation, to formatting an attitude toward the innovation, to deciding to adopt or reject, to implementation and use of the idea, and to confirm the adoption decision. From survey results of 800 general election voters, conducted by The Mellman Group, Inc. (2015), fewer than 1-in-4 respondents have ever scanned a QR code or bar code for learning about a food product. Seventeen percent of respondents have never scanned a bar code to get information, with only 5% scanning bar codes regularly. Furthermore, of the respondents whose primary responsibility is shopping in their households, 17% have scanned a bar code and 16% have scanned a QR code to get information. Of 525 adults surveyed, 4.86% of respondents claimed they would not have the ability to make a call or use smartphone-wireless internet or cellular network to look up ingredients using a QR code (Berning & Roe, 2017). These respondents were very likely (21.3%) or somewhat likely (32.3%) to scan QR codes with their smartphones to determine if ingredients were genetically modified. In regards to using an in-store scanner to scan QR codes, 22.9% were very likely and 31.3% were somewhat likely (Berning & Roe, 2017).

Methods

An online survey was distributed via the company SurveyMonkey to a non-probability, opt-in sample of 523 U.S. consumers 18 and older. There were 456 usable responses that were weighted using the 2010 U.S. Census figures to further enhance representativeness. A panel of

experts evaluated the questionnaire to establish face and content validity. Before data collection began, the study was approved by the university's Institutional Review Board. Questions about their likelihood to use food disclosure methods to determine whether products contain GM ingredients were reported in this manuscript. Data were analyzed using IBMTM SPSS® Version 21 to calculate descriptive statistics and frequencies.

Results

The majority of respondents were white (*n* =369, 70.6%) and female (*n* = 239, 52.9%). The mean age was 49 years with a range from 18 years to 89 years. Twenty-six percent of the respondents indicated their highest level of education was a graduate or professional degree (*n* = 117, 26.1%), followed by a bachelor's degree (*n* = 114, 25.4%), some college education but no degree (*n* = 107, 23.8%), high school diploma or GED (*n* = 56, 12.5%), and less than high school (n = 8, 1.8%). As shown in Table 1, across the two methods to disclose via QR codes through their smartphones or a store provided scanner to access bioengineered food information, roughly a quarter of the respondents were likely or extremely likely to use them.

Table 1
Likelihood to Use Disclosure Methods to Learn Whether Products Contain Bioengineered Ingredients

	Extremely Unlikely		Unlikely		Neither		Likely		Extremely Likely	
Disclosure Method	f	%	f	%	f	%	f	%	f	%
Scan QR codes with smartphone	143	27.3	103	19.7	102	19.5	80	15.3	29	5.5
Use in-store scanner to scan QR code	115	22.0	110	21.0	103	19.7	95	18.2	34	6.5
Call number given on back of food label	200	38.2	124	23.7	84	16.1	38	7.3	11	2.1
Read food label	53	10.1	44	8.4	74	14.1	156	29.8	127	24.3

Conclusions/Recommendations/Implications

A little more than half (54.1%) of the respondents were likely or extremely likely to read the food label for bioengineered ingredient information. This finding is likely reflective of how easy and faster it might be to read the food label because the consumers do not need internet access or a QR code app on their smartphones. Agricultural communicators could work with food manufacturers on designing food labels that provide the bioengineered information and ingredients list desired by consumers to aid their decision making. QR codes have the potential for agricultural communicators to improve agri-food industry transparency and expand manufacturer-consumer communication beyond the information that can fit on a product label. The agricultural communication profession could show that QR codes add value to conversations with consumers, well beyond GM labeling. Further research should investigate access to and preferences of the disclosure methods by specific demographic groups, particularly by age and household income. Other information sources and demographics should be added to the ordinal logistic regression. Research is needed to measure consumers' reactions to the types and amounts of information sought and received on the food packages because the U.S. Secretary of Agriculture has to determine the language and symbols used in any disclosure.

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