A Proposed Framework for Understanding Perceptions of GMO Foods: Conceptualization and Application to U.S. Restaurants

Ken Bartkus, The Huntsman School of Business, Utah State University, 3500 Old Main Hill, Logan, Utah, 84322-3500

Jake Harrison, The Huntsman School of Business, Utah State University, 3500 Old Main Hill, Logan, Utah, 84322-3500

Byron Marlowe, The Carson College of Business, School of Hospitality Business, Washington State University, Richland, Washington, 99352, byron.marlowe@wsu.edu

ABSTRACT

Literature on the health implications of genetically modified organisms (GMOs) has been the subject of considerable debate. This presents somewhat of a dilemma for restaurants when deciding whether or not to adopt a non-GMO policy. The purpose of this research is to propose a conceptual framework aimed at uncovering reasons why a restaurant may (or may not) decide to adopt a non-GMO policy. Based on an adaptation of Roger's Characteristics of an Innovation, the proposed framework has five constructs: (1) Relatively Advantage, (2) Compatibility, (3) Complexity, (4) Trialability, (5) Observability.

KEYWORDS: Adoption, Genetically Modified Organisms, Restaurant

Introduction

The health implications of genetically modified organisms (GMOs) have been the subject of considerable debate in the literature. [6][9][11][12] One important aspect of the debate is the apparent disconnect between what is reported in the scientific communities and what is reported in the general public. Specifically, it has been reported that while "Nearly 9 out of 10 scientists from the *American Association for the Advancement of Science* say GMOs are 'generally safe' to eat, more than half of general public believe it is not a good idea." [10, NP]

To complicate matters, critics of GMO products contend that scientific evidence currently exists that identifies potentially harmful health effects resulting from the consumption of such products. [9] For example, it has been argued that GMOs are often resistant to herbicides and this resistance "is an invitation to farmers to spray large quantities of herbicides, and many do." [7,NP] This suggests that the use of GMO products may have some negative health implications; for example, "commercial soybeans sold today routinely contain quantities of the herbicide Roundup (glyphosate) that its maker, Monsanto, once described as 'extreme'…" [7, NP][2] Given this information, it might not be surprising to learn that a recent consumer survey found that 70 percent of respondents reported that they don't want genetically modified organisms in their food. [3]

Although resolution of the debate would certainly be beneficial, the current impasse presents somewhat of a dilemma for companies, such as restaurants, who are involved in food distribution to the general public. Specifically, should restaurants continue to use GMO food products given assurances from the many in the scientific community? Or, should they respond to consumer concerns by adopting at least some form of a non-GMO policy?

There appears to be no easy answer to this question and it would seem that any decision by restaurants to adopt or not adopt a non-GMO policy is further complicated by emerging trends in the U.S. and globally. For example, the U.S. Department of Agriculture has announced the *National Bioengineered Food Disclosure Standard*, 'which requires food manufacturers, importers and certain retailers to label foods containing genetically modified or bioengineered ingredients.' [4] Although restaurants are not required to adhere to the standard, at this time, it would not be unreasonable to suggest that this might change in the foreseeable future. Further complicating the decision process is the fact that a large number of countries around the world now require GMO labeling (e.g., Australia, China, New Zealand, New Zealand, Italy, Sweden, U.K., Spain, France, Hungary, Russia, Denmark, Brazil, among others). [1] Additionally, 28 countries in Europe now prohibit biotech companies from selling GMO seed in their countries. [5] The list includes such countries as Germany, France, Italy, Austria, Greece, Poland, Scotland, Northern Ireland and Belgium, among others. Given these trends, the potential for increased regulation within the United States appears likely. As such, restaurants may want to 'get ahead of the curve' by at least considering the adoption of a non-GMO policy.

The purpose of this research, therefore, is to conceptualize a systematic framework dedicated to developing a better understanding of why a restaurant may (or may not) decide to adopt a non-GMO policy. Based on an adaptation of Roger's Characteristics of an Innovation, the proposed framework has five constructs: (1) Relatively Advantage, (2) Compatibility, (3) Complexity, (4) Trialability, (5) Observability.

Relative advantage is characterized as the extent to which a restaurant believes that adopting a non-GMO policy will provide a meaningful return on investment (which can be defined in financial as well as non-financial terms such as brand image). Hence, the greater the perception of a relative advantage the greater the presumed likelihood of adopting a non-GMO policy. Among the five characteristics, relative advantage can be considered the bedrock of the framework and serves as the initial driving factor when considering the adoption of a non-GMO policy. It may be, for example, that some restaurants perceive a greater relative advantage than others. Specifically, since the public appears to perceive non-GMO products as being more healthful and better quality, restaurants that promote these attributes (including some fine dining and vegetarian restaurants) might be more inclined to adopt a non-GMO policy.

Compatibility is characterized as the extent to which adopting a non-GMO policy is consistent with the image and overall philosophy of the restaurant. Greater compatibility is thought to increase the likelihood of adopting a non-GMO policy. For example, it might be expected that restaurants promoting themselves on the basis of a 'healthful' image will be more likely to adopt a non-GMO policy than those who do not.

Complexity is characterized by perceptions that the adoption of a non-GMO policy is a relatively complicated process. The more complicated the perceived process, the slower the rate of adoption and vice-versa. For example, a restaurant with a relatively limited menu might perceive the adoption process to be less complicated (because they have fewer GMO products to consider) than a restaurant that has a wider and more diverse menu (i.e., which has potentially more GMO products to consider).

Trialability is characterized by the perceived risk of implementing a non-GMO policy on a trial basis prior to committing to adoption. This suggests that the perceived risk of adopting non-GMO policy might be at least partially mitigated by evaluating each GMO product on a case-by-case basis, starting with those that have the lowest perceived risk.

Observability is characterized by the extent to which restaurants can readily observe the benefits of the relative advantage. It may be that when restaurants believe they can perceive the benefits of adopting a non-GMO policy, there will be a greater likelihood of making the

adoption, and vice-versa. For example, it would seem that this likelihood would be partially contingent on how restaurants perceive the validity of the evidence regarding the safety of GMO products. In this regard, it would appear reasonable to suggest that restaurants promoting themselves on the basis of health consciousness (e.g., Organic, Vegan) would be more likely to accept scientific evidence that characterizes GMOs as unsafe to consume and, therefore, be more likely to adopt a non-GMO policy. Conversely, restaurants that have a more unhealthful image might be less inclined to perceive the same evidence as valid and, as such, be less likely to adopt a non-GMO policy.

A similar argument can be presented for consumer survey evidence. Specifically, the characteristics of the target market, with respect to their personal perceptions GMOs, would likely influence an individual restaurant's interest in adopting a non-GMO policy. In this context, the more strongly the target market for a particular restaurant perceives GMO products and ingredients to be unhealthy, the more likely that restaurant will be to consider adopting a non-GMO policy. Conversely, if the target market for a restaurant does not perceive GMO products and ingredients to be unhealthy, that restaurant might be less likely to consider a non-GMO policy.

To test the relevance of the proposed framework, an application to U.S. restaurants is conducted through a review of commentary published in the extant literature by restaurant management as it relates to their perceptions of GMO products. The results of the preliminary analysis suggest that the proposed framework can provide meaningful and systematic insights into the decision-making process.

However, it is also important to note that the ongoing debate regarding the health safety of GMOs remains uncertain. To date, while much of the evidence suggests that GMO products, as a class, are safe to consume [8], we are reminded that scientific evidence is always subject to change:

> "The current scientific consensus regarding GMOs remains unchanged: they are safe and do not pose a health risk to humans. However, a scientific consensus is subject to change if there is sufficient reproducible evidence that may impact it…" [6, NP]

Should future research strongly confirm, one way or another, the health implications of GMO products, it would facilitate more informed decision-making with regard to the adoption (or non-adoption) of a non-GMO policy. We conclude our research with recommendations for further application of the framework and propose relevant managerial implications for the decision-making process.

References

[1] Barrett, M. Breakdown of GMO Labeling Laws by Country. Retrieved from https://naturalsociety.com/breakdown-of-gmo-labeling-laws-by-country-global-map/, 2013.

[2] Bøhn, T., M. Cuhra, T. Traavik, M. Sanden, J. Fagan, and R. Primicerio. Compositional differences in soybeans on the market: Glyphosate accumulates in Roundup Ready GM soybeans. *Food Chemistry*, 2014, (153), 207-215.

[3] *Consumer Reports.* Where GMOs hide in your food. Retrieved from https://www.consumerreports.org/cro/2014/10/where-gmos-hide-in-your-food/index.htm, 2014.

[4] *Food Business News*. U.S.D.A. announces G.M.O. labeling standard. Retrieved from https://www.foodbusinessnews.net/articles/13064-usda-announces-gmo-labeling-standard, 2018.

[5] Journey, E. Where are GMO's banned? Retrieved from https://gmowatch.com/where-are-gmos-banned/, 2019.

[6] Katiraee, L. 10 times science challenged 'studies' suggesting GMOs are harmful. Retrieved from https://geneticliteracyproject.org/2019/01/25/10-times-science-challenged-studies-suggesting-gmos-are-harmful/, 2019

[7] Latham, J.R. GMO Dangers: Facts You Need to Know. Retrieved from https://nutritionstudies.org/gmo-dangers-facts-you-need-to-know/, 2015.

[8] Norris, M. Will GMOs Hurt My Body? The Public's Concerns and How Scientists Have Addressed Them. Retrieved from http://sitn.hms.harvard.edu/flash/2015/will-gmos-hurt-my-body/, 2015.

[9] Persson, S. Why GMOs Are No Friend to Cancer Patients, Retrieved from https://www.cancerwisdom.net/gmo-health-risks/, 2018.

[10] Siegel, K. & and Verity, S. What Your Need to Know about GMOs. Retrieved from, https://www.webmd.com/food-recipes/features/truth-about-gmos#1, 2016

[11] Spiroux de Vendômois, J., D. Cellier, C. Vélot, E. Clair, R. Mesnage, and G. Séralini. Debate on GMOs Health Risks after Statistical Findings in Regulatory Tests. *International Journal of Biological Science*. 2010, 6(6), 590–598. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2952409/