

# Exploration of consumers' attitudes to genetically modified (GM) foods and the effect of different labeling schemes on GMO-free products

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## ABSTRACT

Consumers' attitudes to genetically modified (GM) foods and the effect of different labeling schemes on GMO-free products is top-of-mind for food companies and certification bodies. While the notion that consumers desire to have GM foods labeled is generally accepted, little empirical information is available regarding consumers attitudes driving the need for these designations or opinions about the label itself. Based on the premise that consumers vary in their acceptance of GMOs in foods, an online quantitative survey identified distinct clusters of consumers (derived from Onyango et al, 2003) and representatives from 4 main clusters participated in 15 focus groups. While all groups consistently lacked trust in the government and food industry and value GMO labeling to some extent, the consumer clusters differed substantially in the reasons behind their desire for and use of GMO-free labeling, ultimately affecting their purchase behaviors. Groups skeptical of or opposed to biotechnology and/or government have deep concerns with long-term health effects and use GMO-free labels for assurance that potentially harmful ingredients have been avoided. Self-Protectors and Benefit Seekers, on the other hand, view GMO-free labels as useful informational tools for making purchase decisions. Results also indicated that independent 3<sup>rd</sup>-party verification is a viable option for GMO-free label certification, as well as identified characteristics necessary for GMO-free labels and comparison information between “organic” and “GMO-free” labels.

## INTRODUCTION

- Consumer acceptance or rejection of genetic modification of foods varies widely and academic research has made valiant attempts to understand the key elements that drive these perceptions.
- Attitudes towards GMOs in foods are complex and multifaceted, consisting of personal characteristics, demographics, personality traits, knowledge, and more (for examples, see: Baker and Burnham, 2001; Kaiser, 1992; Onyango et al, 2003; Pope et al, 2003).
- Despite that, elucidating drivers of consumer perceptions of GM foods is important – shown to influence purchase intentions, purchase behaviors, brand image, and corporate image (Lusk et al, 2001; Lusk et al, 2005).
- One attempt by the food industry to assuage and/or address consumer concerns is **GMO-free labeling**.
  - While a **non-GMO label is attractive to consumers who oppose genetic modification**, these customers may not represent the majority of consumers. Onyango et al (2003) determined that fewer than a third of participants in their study fell into one of two consumer clusters that opposed biotechnology of foods.
  - Fewer consumers are openly enthusiastic about food biotechnology** (see Onyango et al, 2003) – a GMO-free label will have little sway on purchase decision. An even smaller group (approximately one-quarter)
  - No data on the appeal and influence of a GMO-free label on a large segment of consumers: **those who are presumably “on the fence” to some degree about genetic modification of food.**

## PURPOSE

- This study sought to:
- Determine how various consumers perceive GMO-free labeling and how those attitudes may influence purchase behavior. Specifically, because GMO-free labeling most likely appeals to certain consumers, this research focused primarily on differences between consumers openly opposed to food bioengineering compared to consumers who are neither “into” nor opposed to genetic modification (“on the fence” consumers).
  - Explore how a GMO-free label/certification program may be effectively employed to appeal to consumers with differing views of genetic modification of foods.

## METHODS



Quantitative Online Survey

**Objectives:**

- Understand consumer attitudes/perceptions about GM of foods
- Screen consumers for focus groups

1658 consumers, 4 US geographies

31 questions



Qualitative Focus Groups

**Objective:**

Compare 4 different consumer clusters\* with respect to perceptions of GM foods and GMO-free labeling

143 consumers, 4 US states, 90-minute sessions

**\*Biotechnology Opponents, Skeptics of Government and Biotechnology Companies, Self-Protectors, and Benefit Seekers**

## Quantitative Research: Online Survey Details

A total of 1658 consumers (1151 females, 507 males) completed an online survey hosted on the Amazon MTurk platform. Consumers were recruited from the Western, Southern, Midwestern, and Southeastern United States. Respondents answered 31 questions on:

- Awareness of food issues
- Importance of food issues
- Attitudes towards GM and non-GM foods (ex: importance, etc.)
- Perceived knowledge about the global food system and genetic modification
- Actual knowledge about genetic modification of foods
- Consumer cluster identification
- Environmental concern
- Risk and risk aversion
- Social identity
- Demographics, psychographics, and geographics

For attitude, personality, and social identity measures, scales were derived from validated measures to the greatest extent possible. These include the MSU Food Literacy and Engagement survey (Kirschenbaum, 2017), the New Ecological Paradigm (Dunlap & van Liere, 1978), and Aspects of Identity Questionnaire (AIQ-IV) (Cheek & Briggs, 2013), DOSPERT (Blais & Weber, 2006). Quantitative survey data were analyzed using a combination of descriptive, frequencies, cross tabulations and chi-square tests (categorical data) and ANOVA (continuous data) to assess responses and compare differences amongst consumer clusters.

## Qualitative Research: Focus Groups

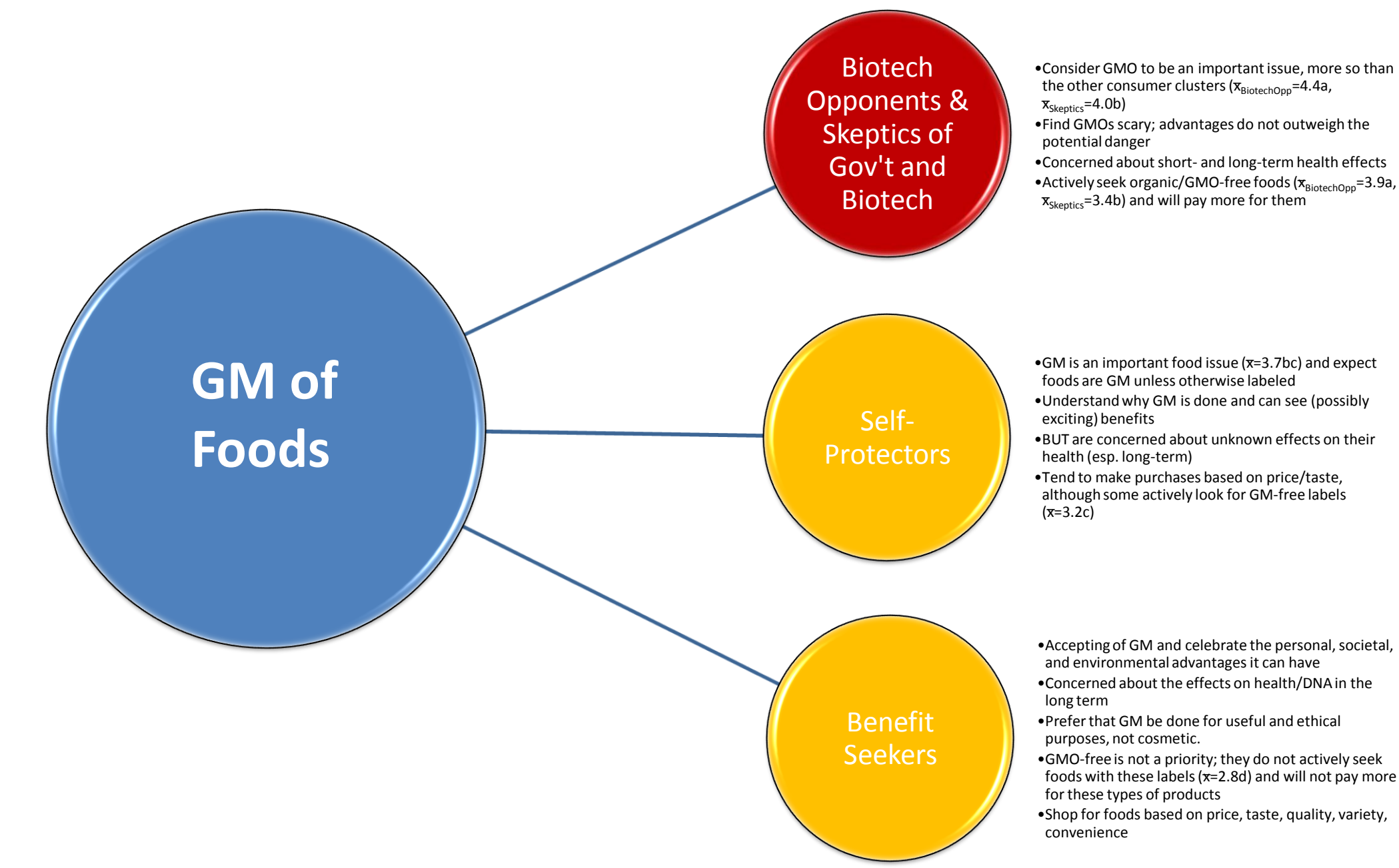
From the quantitative survey, consumers were identified by the consumer cluster (derived from Onyango et al., 2003) for which they self-reported and recruited for the focus groups. The four clusters used were: Biotechnology Opponents, Skeptics of Government and Biotechnology Companies, Self-Protectors, and Benefit Seekers. Biotechnology Opponents and Skeptics participated in the same focus group sessions, while Self-Protectors and Benefit Seekers participated in individual sessions.

Cluster (Onyango et al., 2003)	Description	OK with GM?
Biotechnology Opponents	Opposed to food biotechnology itself. Tend to disregard potential benefits of biotechnology, are skeptical of technology, biotech companies, and government regulators.	No
Skeptics of Government & Biotechnology Companies	Highly skeptical of biotech companies and government regulators – so are generally opposed to and are unlikely to buy GM foods.	No
Self-Protectors	Self-protection is the highest priority. They are interested in GM foods but prefer to verify the safety of these products.	Maybe
Benefit Seekers	Place high importance on the benefits of biotechnology. They are optimistic about biotech and are open to its use BUT they are also concerned about the safety of GM products.	Maybe
Biotechnology Optimists	Enthusiastic about genetic modification of foods	Yes

A total of 143 general consumers (82 females, 61 males) participated in a series of 15 90-minute focus group sessions in 4 states (AZ, AR, IL, and FL) using trained moderators. The discussions related to food shopping, certification labels, organic foods, genetically modified and non-genetically modified foods, non-GMO labeling, a labeling activity, impressions of an existing non-GMO label.

## RESULTS

Consumers in each cluster differ in their view of GM of foods and how it affects their purchasing behaviors.



The clusters varied slightly on personality and social identity traits (ex: risk to aversion, personal identity orientation, etc.) and demographics, as well. These results are not presented in this poster.

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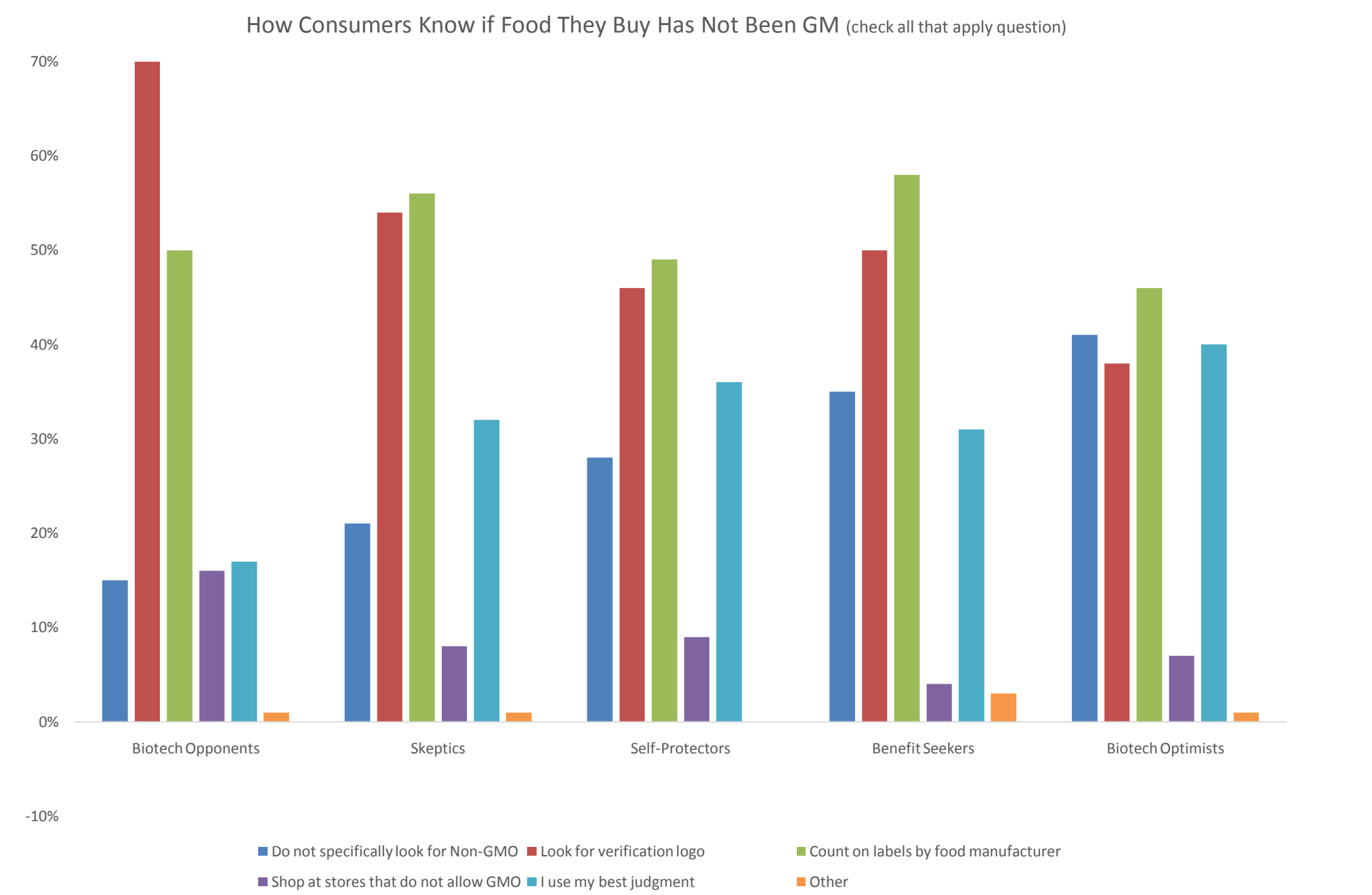
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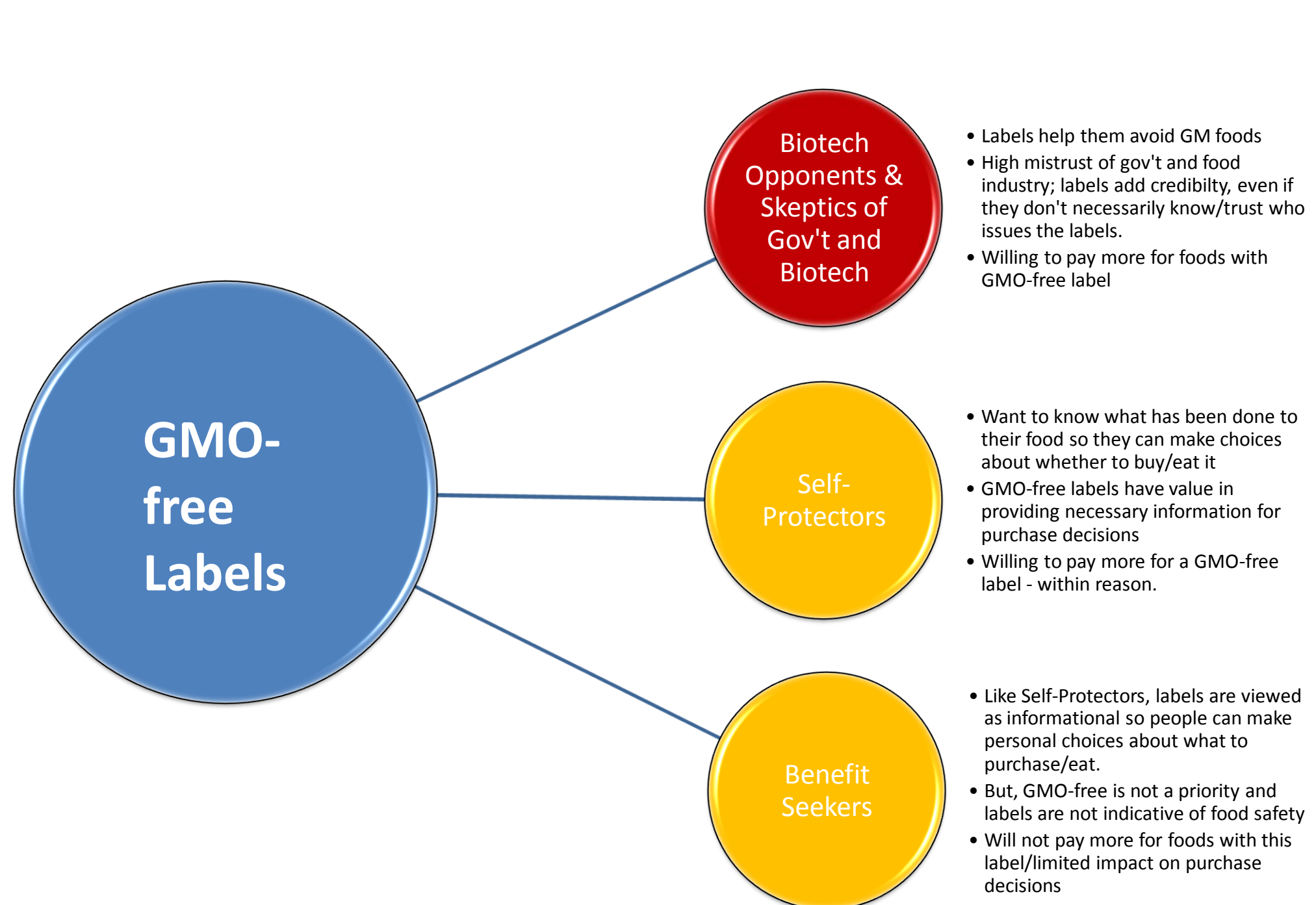
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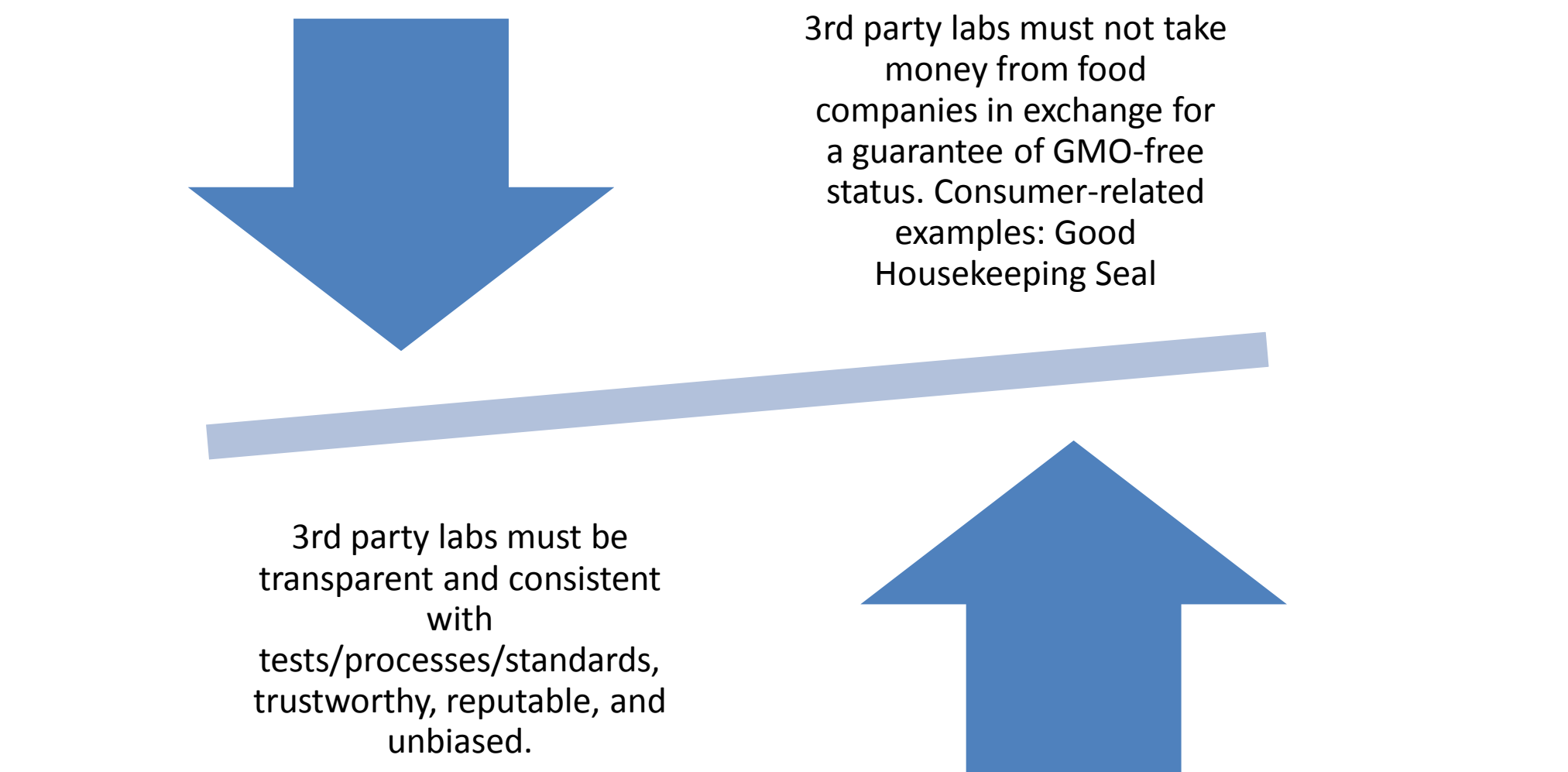
All consumer clusters value GMO-free labeling. Verification via labels are one of the only ways consumers can know if their food has been GM or not.



However, the **reasons why** GMO-free labels are considered beneficial **vary by cluster** and so are **used for different purposes**.



A pervasive lack of trust in government and the food industry was reported across all clusters and, as a result, many consumers were skeptical about whether verification labels on foods are believable. Still, consumers in all clusters generally (want to) trust labels, largely because the label is an easy heuristic and there are few other alternatives. One viable solution to this is to have an **independent, third-party laboratory** verify GMO-free status of food products. But, because of concerns of corruption, third-party verification is not, in itself, guaranteed to be trusted; certain conditions must be met for believability:



## GMO-Free Labeling:

Consumers had particular requirements of a GMO-Free label for food products. Essentially, they want to be able to readily spot the label and understand the meaning without further effort during shopping.

✓ Clear, easy-to read, bold and complementary colors
✓ Highly noticeable and positioned on the front of the package
✓ Simple design – they do not want to have to interpret the label
✓ Specific, recognizable shape
✓ “Non-GMO” or “GMO-Free”
✓ Include name of certifying company
✓ Ideally, include a website or other means for consumers to gather more information
☒ Other imagery not required. If included, nature images connote ‘natural’ state of food.

**GMO-free label may have a positive impact on the reputation of the food producers.** The label signals to consumers that the food company is interested in being transparent. However, this potential boost to reputation is **contingent upon the company having a favorable prior reputation**; a GMO-free label on products by a company that lacks trust is viewed as disingenuous and may negatively affect corporate reputation. Additional research on this topic is suggested.

## CONCLUSIONS

All consumer clusters value GMO-free labeling, as an easy heuristic. However, the reasons why GMO-free labels are considered beneficial vary by consumer. Consumers want to trust the labels, but in general are desirous of additional verification of truth in labeling.