The Effect of GMO labeling has on American and European Consumers during Food Purchasing Decisions

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Senior Thesis 190
12/15/2014
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Abstract
The introduction of Genetically Modified Organisms and consumers right to know of their presence in our food supply has given rise to various controversies in different countries. While some endorse biotechnology companies, while countries like Europe are thought to have a more cautionary perception of the technology. This project reviews studies from both Europe and the US to better understand food related concerns of consumers, their stance on GMO labeling, and their reactions to certain labeling regimes. It was found that even though there is a preference towards organics in Europe, consumers might very well purchase GMO’s if the price is set to the right amount. Meanwhile the United States was found to be more concerned with the presence of pesticides and other chemicals rather than the presence of GMO’s. Even though labels are preferred by the majority of consumers, it was also observed that these often go unnoticed.

Introduction
Genetically Modified Organisms (GMOs) have become an essential component of agriculture around the world. GMOs are developed inserting genes of one organism into another organism with the objective of improving or changing the genetic composition of the receiving organism (USDA, 2014). Whether it is for increased yield in short time spans or low maintenance and production costs, biotechnology has revolutionized modern day agriculture (Figure 1). According to the USDA, in 1997 genetically modified soy produced in the US alone comprised 17% of production in contrast to the 94% it comprises today.

![Figure 1. The Use of Bio Engineered Crops in the US (USDA, 2014)](image)
The United States has been experimenting with Genetically Modified Organisms since
the discovery of gene recombination in the late 1960’s to early 1970’s. (Kramer and
Redenbaugh, 1994). In May 1994, the world was officially introduced to one of the many
transgenic crops to come, the Flavr Savr™ tomato developed by Calgene. Calgene was a
biotechnology company and the developer behind the Flavr Savr tomato (Kramer and
Redenbaugh, 1994). This particular tomato was genetically modified to produce a longer shelf
life than that of conventional tomatoes. Two years later, Roundup ready soy beans and insect
resistant cotton were approved by the US Food and Drug Administration (FDA) and introduced
into agriculture. These crops were designed to withstand glyphosate based herbicides such as
Roundup, consequently allowing farmers to use Monsanto’s herbicides without affecting their
crops (Monsanto, 2013). The possibilities were endless for biotechnology companies, however,
with every new development came opposition highlighting possible impacts to consumers. The
 genetic modification of products lacked transparency, therefore the only way consumers would
be able to make a decision of whether to purchase a Genetically Modified Product (GMP) would
be if they were made aware that genetic modification had taken place. The idea of informing
consumers through mandatory labeling has given rise to proposed labeling regimes in various
countries. While some countries enforce labeling laws rigorously, others try their best to avoid it.
As I will later elaborate, Europe is currently known to be one of the strictest countries when it
comes to GMO labeling, whereas the United States considers labeling unnecessary due to the
“safe” categorization already established by governmental health agencies.

Product names such as Coca-Cola, Nestle, and Kellogg’s, among others, are widely
renowned across the world, while the composition of the product itself remains unknown to the
general public. In the US for example, during the fall of 2012, major food corporations such as
Coca-Cola, Nestle, and biotechnology companies such as Monsanto among others collectively spent millions of dollars to halt Proposition 37 in California. This proposition involved the labeling of products containing GMO derived ingredients. The bill was rejected on November 6th with a 47% in favor and 53% against (Almendrala, 2012). Two years later, on February 21, 2014, California Senator Noreen Evans proposed SB1381 to the senate (Watson, 2014). This bill proposed genetically modified products be considered misbranded if they were not labeled as such, and as a result imposed legal action against violators (S.1381, 2014). SB 1381 fell short 2 votes gaining only 19 of the 21 required to pass, once again delaying the labeling process of GMO derived products (Watson, 2014). California is only one in a handful of US states continually pursuing GMO labelling. States such as Washington, Oregon, Colorado, Minnesota, among a few others are also in pursuit of what they consider adequate GMO product labelling. There are currently a few states such as Connecticut, Vermont, and Maine, which have already passed GMO labelling legislation; however, due to various anticipated lawsuits from large corporations, including biotechnology companies such as Monsanto, labelling regulations will not be implemented anytime soon. These three states are waiting for at least four surrounding states to pick up on GMO labelling laws to take on possible law suits collectively rather than individually (Chokshi, 2014).

US attitude towards labelling GMO derived products can be contrasted with that of Europe. While large corporations in the US invest millions of dollars to prevent labelling laws from reaching their goal, European governments implement labelling laws to their fullest extent. Europe began implementing their labelling regime in 1996, which required any novel foods with means of production that changed “characteristic or food property compared to existing food” to be labelled (Lynch and Vogel, 2001). Four years later, Europe modified its labelling legislation
indicating that any products determined to be 1% GMO derived be labelled. Although at this
time labelling was rather low due to the absence of GM products in the European market and the
rather negative reputation GMOs were given, the stage was set for future GM products seeking
market presence in the country (Lynch and Vogel, 2001).
The objective of this project is to evaluate the effect of labelling GMOs on consumer purchase
decisions. I will focus only on studies performed in the United States and Europe given their
known stance on biotechnology. I hypothesize that labeling has no meaningful effect on
consumer purchasing decisions.

**GMO authorization in US vs Europe**

Upon the incorporation of Genetically Modified Products into the conventional goods
market, several ethical and preference questions were raised. Both Europe and the United States
have managed consumer concerns in different ways. Europe for example, opted to regulate
GMOs’ by essentially segregating them from non-GMO products in the market. This is done by
means of labelling each product upon determining that changes in its genetic composition have
taken place (European Commission, 2014. The process in which an emergent genetically
modified product, whether it be food or feed, reaches the market is quite extensive and can take
quite some time. The European Commission requires interested developers of the biotechnology
to first apply and submit their request with national authorities. Upon receiving an application,
national authorities issue a receipt confirming the submission. This information is then
forwarded to the European Food Safety Agency (EFSA) for a risk assessment which typically
takes about six months. ESFA then releases the results of the risk assessment for public review
in which the scientific community is also given the opportunity participate for a 30 day time
frame. Within three months of having received the final verdict from EFSA, the European
Commission either grants or refuses the authorization in an issued proposal. If authorized, it will be valid for the next 10 years; otherwise EFSA must explain why authorization was denied (European Commission, 2014). The United States on the other hand, requires the developers themselves to identify trait differentiation of the new product and assess whether the new composition is likely to result harmful to the environment or consumers (FDA, 2014). The FDA also establishes the developer’s responsibility to determine the nutritional values of the new product. Upon the completion of such assessment by the developer, it is then turned over to the FDA’s Biotechnology Evaluation Team, which will perform a complete evaluation in search for “safety and compliance with the law” (FDA, 2014). Once completed, if the evaluation of such assessment meets the FDA standards, the new product is free to enter the market without restraints or labels. According to the FDA, it is up to the manufacture’s discretion to label their emerging products “provided that such information is truthful and not misleading” (FDA, 2014).

It is clear that the US and Europe approach labelling regimes differently. However, it is also important to determine why this is occurs. Could it be that the consumers in the US rely heavily on FDA approval of products and therefore don’t see the need for labelling GMO’s? In contrast, do consumers in Europe have a negative perception towards allowing their government to decide what products enter the market? There have been many studies that have attempted to establish the role consumers and public opinion play when it comes to labelling policies in both countries. Although there are countless studies attempting to determine such issues, this project will focus on 4 studies which are considered to be of most relevance to the topic at hand.

**Study No 1. Evaluating Food Safety Concerns**

In the US, the trust for determination of safety consumers have towards governmental agencies assessing food products is key to the public’s opinion of why GMOs do not need
labeling. To have a better understanding of consumer confidence, The Department of Food Science and Human Nutrition in the University of Illinois aimed to determine “…overall attitudes about the safety of the food supply, to survey their attitudes towards specific current issues (GMOs), irradiation, BSE (E. Coli, etc.) to relate general concern with specific items or groups if items of concern, regulatory issues, and prioritization of food safety funding areas” (Brewer and Rojas, 2007). It was determined that while consumers retain a high level of confidence in the Federal Government product evaluations, there are still certain factors such as pesticide use that give way to skepticism (Brewer and Rojas, 2007). This study consisted of 402 people whom were selected based on their interest in food related issues and their presence in related workshops, presentations, or educational courses. Recruiting took place in events such as the Agriculture, Consumer and Environmental Science Open House at the University of Illinois, Champaign-Urbana, IL and by six Cooperative Extension Services throughout the state. The study consisted of a survey like structure divided in seven sections containing various questions. The sections instructing participants to indicate their level of concern or their opinion on certain issues in the food industry used a 5 point scale, with 1 indicating no concern /strongly disagree and 5 indicating a very strong concern/strongly agree. For the purpose of this project, sections 4 and 5, which are comprised of general food safety issues and funding prioritizations, will be the main focus.

According to the results of the demographics section, three quarters of respondents were women, 18% were between 25 and 34 years of age; 22% were between 35 and 49; 26% were between 50 and 64; and 26% were over 65. About one-third had high school educations, one-third had some college education, and one-third had some graduate education. About 38% had fulltime jobs, 10% had part time jobs, 17% were students and 28% were retired, and
approximately two-thirds of the participants were married. Generally about half of the participants thought the food they consumed was very safe and had very little concern. Furthermore, 20% had no concern whatsoever with the food they consume, and 21% indicated that although they thought food was somewhat safe, they still had minor concerns (Brewer and Rojas, 2007). In contrast to section one, section two indicated that about 50% of participants were concerned with chemical issues (pesticide residues, hormones, and preservatives), whereas the remaining participants did not consider these factors suffice for concern (Brewer and Rojas, 2007). Section 4 included a question regarding the safety of GMOs which 80% of participants found them to be perfectly safe due to governmental evaluations and approval; however, it is interesting and somewhat contradicting to observe that 32% said they would not purchase Genetically Modified Products, 39% would actually pay more for GMO free products and 28% decided to reduce their GM product intake. This indicates that labeling GMO products would have some effect on consumer decisions but not to the extent of completely deterring or influencing purchases. This difference in opinion indicates that although the public generally trusts government evaluations, there is still some sense of skepticism that doesn’t always reflect on polls towards genetically modified products.

**Study No 2. Consumer’s Real Life Purchases**

It is often determined by various studies and polls that consumers in Europe have a certain level of hostility towards GMO technology (Congress Library, 2014); however, one particular study demonstrates a change of opinion towards GMO’s when actual purchasing decisions are involved (Noussair et al., 2004a). Noussair et al., (2004) conducted a study in Grenoble France where their participants were demographically representative of French consumers. The study’s goal was to determine the actual extent to which food purchasing
decisions are affected by the presence of GMOs. The authors decided on an experimental approach due to lack of evidence showing the actual product demand for certain products. The authors believe this was the case due to negative attention GMOs receive from the media and other communication outlets that can distort actual public opinion. Meaning that the negative connotations media attaches to GMO’s is so intense that it doesn’t allow consumers to consider the benefits and as a result hindering the possible demand for GM products. The experiment was conducted with 97 subjects ranging from 18-75 years old. Participants were unaware that GMO’s were at the center of the experiment and were simply invited to “…sample food products for a government research project…” (Noussair et al., 2004a). Prior to beginning the experiment, subjects were trained to have a better understanding of the rules and incentive properties of the Becker-DeGroot-Marschak (BDM) mechanism, which happens to be the experimental method utilized in this study. The Becker-DeGroot-Marschak consists of an auction type methodology that allows bidders to strategically bid for goods close to the value for which they would purchase it in real life. The training of the subjects consisted of giving 150 francs to each subject allowing them to bid for goods. The experimenters began their training by introducing a bottle of orange juice on which the label was entirely visible, and which subjects were allowed to taste. After the biddings took place, these were posted along with the sale price randomly drawn. Winners of the juice bottle were announced instantly and the transaction was completed. The second phase of the training consisted of subjects bidding for products with missing labels, packaging, sell price, and tasting without any prior information about the products. The logic behind this training as explained by the authors is that “…to teach the subjects and verify their comprehension of the rules of the auction, to reduce the biases and noise that tend to arise in bidding behavior and to show subjects that the auction involved transactions where real money
was at stake” (Noussair et al., 2004a). Once the training phase was complete the experiment proceeded with multiple auctions for four products labeled with letters S, L, C and N. Each auction aimed to evaluate consumer preference and behavior. The first auction introduced a sample of each of the four products for taste evaluation, without its packaging or labels of any kind. Subjects were asked to rank each product using a 5 point scale where ‘I like it very much’ and ‘I don’t like it at all’ were the extremes (Noussair et al., 2004a). Following the ranking of the products, subjects were encouraged to bid on the product based on their preference for taste. The next four sections of the experiment consisted of releasing specific information about the products during each new bid (Figure 2).

<table>
<thead>
<tr>
<th>Period</th>
<th>Information Provided</th>
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<tbody>
<tr>
<td>1</td>
<td>Blind tasting of the 4 products S, L, C, N</td>
</tr>
<tr>
<td>2</td>
<td>S contains GMO’s and N is GMO free</td>
</tr>
<tr>
<td>3</td>
<td>No ingredient in L contains &gt; 1% GMO’s, No ingredient in C contains more than 1/10 of 1% GMO’s, One ingredient in S is derived from an authorised GMO product, No ingredient in N contains any detectable tract of GMO’s</td>
</tr>
<tr>
<td>4</td>
<td>Additional general information about GMO’s</td>
</tr>
<tr>
<td>5</td>
<td>Specific band names of the four products and the designation ‘organically grown’ for product N</td>
</tr>
</tbody>
</table>

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<tr>
<th>Transactions</th>
<th>Information Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random draw of the auction that counts toward final allocations and implementation of transactions for the period that counts</td>
<td></td>
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The general GMO information provided in period 4 consisted of the definition of a GMO, the criteria for classifying the content of a product as GMO, the list of GMOs authorized in France, food products sold in France that contain GMOs, and the current French law regarding GMOs. After each new piece of information was provided to the subjects, a private auction took place. Privacy was crucial to prevent one bidder’s willingness to pay from influencing another bidder’s value. The results of the experiment contrasted the negative perceptions GMO products are often attached to. While 35% of the subjects expressed their unwillingness to pay for a product
containing GMOs, 65% of the group was willing to purchase GMO derived products at the right price. According to the experiment, the percentage of GMO content plays an important role when it comes to deciding on the purchase of GMO derived products (Noussair et al., 2004a). Period 3 showed that 89% of the participants were willing to purchase GMO’s within the 1% threshold. Upon introducing an even lower threshold of .01%, an additional 7% indicated they would be willing to purchase GM products. It seems that the presence of GMOs in products is not the issue, but rather the how much of it is genetically modified (Noussair et al., 2004a).

**Study No 3. GMO Labeling Models**

Assuming that GMO products required labelling, the next issue would be to determine the content of the labels and the cost of these labelling regimes to consumers. In 2002, The University of Ohio and the University of Maine came together to examine consumers perception on whether labeling should be mandatory, what products should be labeled, what information should be included on the label, and who should be in charge of overseeing labelling regimes (Teisl et al., 2003). The study consisted of mailing out 5,462 surveys to consumers all over the United States and 710 to Maine residents with monetary compensations for completed and returned surveys. Only 2,012 of the 5,462 surveys were returned, while only 375 surveys from Maine were received. Given both samples, “… the data were weighted to adjust for oversampling; responses for each state were weighted such that the proportion of respondents from that state is reflective of the state proportion of the US adult population (as measured by the 2000 US Census) while maintaining the overall sample size”(Teisl et al., 2003). Socioeconomic characteristics of respondents were relatively similar to those presented by the 2000 census. About half of the participants were males of average age, 90% were Caucasian as opposed to the 75% presented by the census, and average education span was 14 years. The survey first
determined how knowledgeable the participants were in regards to GMOs. It was found that 76% of participants were familiar with GMOs of which the majority referred to GM corn. Experimenters attribute such correlation to media coverage in the 2000s when taco shells were determined to be contaminated with GM corn not authorized for human consumption. The following question asked participants to estimate the percentage of GM foods currently in the market. Surprisingly, about half of the participants estimated a 30% GM content in our food supply, while only 10% estimated GMOs comprised 70% or more of the food supply (Teisl et al., 2003). The study was sectioned off in 6, beginning with establishing the general perception participants had towards the food supply of the US. Generally the study was based on a 5 point rank scale, where 1 indicated not concerned, and 5 very concerned. About 70% of respondents were satisfied with the food production process, while the remaining respondents placed a moderate to low level of concern (Teisl et al., 2003). Section two aimed to establish particular concerns respondents had with the production process of foods. Similar to the study of Noussair et al., (2004), almost half of the respondents placed a greater importance on the use of pesticides and other chemicals rather than the use of GMO’s. Only 30% of respondents viewed the use of GMO’s as a reason for concern. Section three aimed to identify how knowledgeable respondents were towards GMO’s. As mentioned earlier, the presence of GMO’s in the food supply was greatly underestimated by the participants. Within the same section, participants were asked to rank the possible benefits of GMO’s using a 5 point scale. Among the 32 potential benefits, the decrease of pesticide use was considered to be number 1 with about 60% of

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<th>Section</th>
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<tr>
<td>1</td>
<td>General perceptions of Food purchases</td>
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<tr>
<td>2</td>
<td>Concerns with the way food is produced or processed</td>
</tr>
<tr>
<td>3</td>
<td>General knowledge and views of GMO products</td>
</tr>
<tr>
<td>4</td>
<td>Opinions on different labelling programs</td>
</tr>
<tr>
<td>5</td>
<td>Reaction towards different hypothetical labelling programs</td>
</tr>
<tr>
<td>6</td>
<td>Assessment of surveyors characteristics</td>
</tr>
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Figure 3. Content of Survey per Section (Teisl et al., 2003)
participants giving it a 4 or 5 rating. The remaining participants placed a 3 and 4 levels on benefits such as increased food production in lesser developed counties, lower food prices, and increased vitamins and minerals (Teisl et al., 2003). Section three also asked participants to rank the potential effects of GMO’s. It was interesting to observe that even though respondents didn’t consider GMO’s to be a reason for concern, they did determine that unknown long term health effects of GMOs was the top concern. Other concerns included: increased risk of antibiotic resistant bacteria, increased use of pesticides, and the unknown toxins produced (Teisl et al., 2003). Section four proceeded to examine respondent’s view of labeling and its implementation. Participants were first asked to indicate whether they had ever came across a product containing a “GMO-free”, or “does not contain genetically modified ingredients” label. Approximately 90% said they had never witnesses such label on a product. Participants were then asked indicated whether they would like GMO products labeled as such. About half of the participants indicated that they wanted mandatory testing with only GM products labeled. The majority of remaining respondents wanted mandatory testing with labeling for all products (Teisl et al., 2003). Participants were then provided a list of agencies and asked to identify who they considered should oversee labeling programs for GMO’s. The US Department of Agriculture, US Food and Drug Administration, and the US Environmental Agency comprised 75% of the respondent’s preference. Furthermore, participants were then asked why they had chosen a particular agency. Over 50% said they’re choice was influenced by their personal familiarity with the organization and because it was a government agency. This section proceeded to ask respondents about the content of the labels. The top three formats compromising 85% included: labels indicating which ingredients are genetically modified, any warnings associated with the modification, and who or what agency certified the product. Towards the end of section four, participants were asked to
determine whether their purchase decisions would be affected by the labels they indicated as appropriate for GMO’s. About 40% indicated that the label would have an effect in their purchase; the remaining 70% was split between “unsure” and “unaffected” (Teisl et al., 2003). Section 5 proceeded to present participants with a hypothetical labeling program to evaluate their reaction. Two loafs of bread with different labels were presented; one had a “100% of the wheat in this product is genetically modified” with a warming label indicating that the long term health effects were still unknown. The second label only read “contains no genetically modified ingredients” (Teisl et al., 2003). Respondents were then asked to determine which product they would be likely to purchase; almost half of the participants were willing to buy the GMO free product while, 30% would purchase the GMO brand regardless, and about 20% claimed they wouldn’t buy either. The study finalized with questions regarding the characteristics of the respondents.

**Study No 4. Labels go Unnoticed**

Given labeling regimes Europe had established, one can presume that there is a certain level of transparency between producers and consumers however, it would be important to establish just how much value consumers place on the labeling of products. The following study examined the effect labeling had on purchase decisions relative to the negative perception GMOs actively attract. This particular study took place in Grenoble France with 112 participants whom were only told they would be forming part of a government research project involving food samples (GMOs were not mentioned). Participants were selected based on whether they made food purchasing decisions in their household. Participants were demographically representative in that 53% were female, and their age ranged from 18 to 74 years with an average of 33 years. Similar to the previous study conducted by Noussair at al., (2004a) this study was conducted
using an auction design. In his previous study Noussair used a BDM style auction whereas in this particular study he opted for a Vickrey auction. This auction instructs participants to make bids simultaneous but private. Once the highest bidder is announced, he or she will only pay the second highest bid. The idea surrounding this auction style is that bidders are less likely to lie about their true willingness to pay given that they do not have an incentive to bid outrageously looking to beat the top bid (Noussair et al., 2001b). First-price auctions on the other hand involved trying to predict what everyone else will bid and topping the amount. Similar to Noussair’s previous study, participants were given a training phase where participants were issued 150 francs (about $21) to participate in practice auctions. Upon bidding for the fictitious items, experimenters wrote all the bids on a blackboard during which participants were free to dialogue. Each person was then asked to identify their bid, the winner of the auction, what amount was paid by the winner, and whether there were any regrets with the their own bids after having learned everyone else’s bid. Subsequently, winners completed their transactions and retrieved their goods. These fictitious auctions took place 3-5 more times until about 80% of the bids were within 5% of valuations. Upon completion of the training, participants were again issued 150 francs to proceed with the real auction. The auction consisted of 16 sections divided into 3 periods (Noussair et al., 2001b). During each period there was a revelation of the product, followed by an auction. Before the auction, participants were made aware of the wide availability of the products around Europe supermarkets and grocery stores. The products consisted of 4 chocolate bars of which 2 were identical, but labeled S and U for experiment purposes. S was labeled as containing GMO corn whereas U did not include a GMO label hence indicating GMO absence. There was an introduction of new information during each on the three periods. Period one involved giving participants 4 samples of chocolate in which only two (labeled S and U)
were of interest. During this initial introduction of the products, none of the four chocolates included their original packaging or any type of labelling. Participants were merely asked to evaluate them based on taste. During the second period all four chocolates were introduced but included a label. Participants were then given 3 minutes to examine the label before the auction took place. Finally the third period once again presented all four chocolate with labels except this time the labels were magnified on a projector (Noussair et al., 2001b). Once again participants were given 3 minutes to go over the information presented to them before the auction took place. Upon the completion of all three periods the average bid for period one was calculated by taking each individual’s bid as the base equaling 100, to track their individual bids for period two and tree relative to period one. Period one averaged 8.04 francs for GMO labeled product U while product S averaged 7.90 francs. Period two showed very little difference with product U averaging 7.80 francs and product S averaging 7.58. Finally period three showed and average of 5.67 francs for product U while S averaged 7.35 (Noussair et al., 2001b). The results indicate that willingness to pay for product U (containing GMO), decreased by about 30%. In contrast, even though product S did not include a “GMO free” or “Contains GMO” label there was only a 3% increase in bidding amount. The study then concludes that although society has a generally negative perception of GMOs, during real life purchases, GMO labels go unnoticed by consumers (Noussair et al., 2001b). It was only until the label is enlarged that participants notice the presence of GMOs and in turn decrease their willingness to pay.

Results

There’s no question Europe and the United States have distinct views towards biotechnology and consequently labeling regimes. Europe is a strong implementer when it comes
to labeling its food products, while the US welcomes biotechnology with few restrictions. One of the interesting observations made by the first study was the general public sentiment towards GMO derived products. The study indicated that 80% of the participants viewed GMOs as safe to consume (Brewer and Rojas, 2007). Oddly enough about 40% of participants would be willing to pay more for non-GMOs, and even reduced their GM products intake (Brewer and Rojas, 2007). These findings may indicate that people have a general positive perception of GMOs; however, they still hold uncertainty towards the technology. Another interesting observation from the study was the widely renowned idea of European consumers having a negative perception of GM products, yet still willing to purchase GM products if they are advertised at the right price. This behavior makes sense given that people generally favor low prices. Advertising a GM product for half the price of a non-GMO product is sure to attract consumer attention and maybe even preference.

The willingness to pay for a GM product at the right price, presumably a low one, when under all other circumstances would be rejected highlights a global behavior of consumers. For the average person with an average wage, seeking low prices for goods is not uncommon. People have a tendency to want to pay less for a product. This same logic can be applied to consumers in the US, where organic products are generally more expensive than GM derived products. There may be plenty of consumers who would like to adopt an organic diet, however paying nearly double the price of a GM product is often times a good deterrent. Another aspect that I found to be common for everyone is the little attention participants gave product labels in study number four (Noussair et al., 2001b). It would be unfair to say that no one pays attention to labels; however, generally product brands are noticed before the fine print on the back of the product. This can undoubtedly be attributed to the aggressive marketing methods used by corporations.
The familiarity of a brand along with the content of nutritional value one perceives in the product is often times what determines a purchase rather than the ingredients. Corporations make sure to include everyone’s needs in their marketing strategies. Whether it be “gluten free”, “helps lower cholesterol”, or infant formulas promoting healthy brain development in babies, there’s an implied benefit for everyone. If Coca-Cola was to begin labeling their GM derived products it is very unlikely they’ll go out of business given their level of popularity. It would be safe to say they have an established reputation that in my opinion would be generally unaffected by GMO labeling.

On the other hand, study number four supported GMO hostility by reporting that participants dropped their bidding value of a product by 30% after learning it contained GM corn (Noussair et al., 2004b). The change in value for the GM derived product changed only when the label was enlarged and projected on a big screen making the “genetically modified corn” label impossible to miss. To a certain extent I think participants viewed the label negatively rather than informative. This negative perception can tie in with what participants think the experimenters want from them, and as a result indirectly affecting the outcome. This experiment also strengthens the idea that consumers often neglect labels and focus on brands or information displayed in plain sight such as the front of the packaging. Other factors that can play a role in the neglect of labels may be language, or simply not having a full understanding of the labels or what they mean. Having a non-GMO or GMO label on a product would mean nothing to someone that doesn’t understand its meaning, or the language. For families like these, product brands and prices are the determinant factors in their purchases. This is something that I have observed with my own family when it comes to grocery shopping and I’m convinced the same occurs with other families.
The last significant conclusion I was able to draw from study number one and three was the general perceptions people have towards the use of pesticides (Brewer and Rojas, 2007), (Teisl et al., 2003). Both studies showed about 50% of their participants having a moderate to high level of concern towards the use of pesticides in food production; however, concerns for GMO’s remained significantly low. This indicates that use of pesticides and GMO’s are perceived as being mutually exclusive from one another. Even though the studies did produce significant data, an in depth review of the different types of GMO’s would’ve allowed participants to acknowledge the existence of GMO’s such as Bt corn. A toxin producing corn is sure to raise a couple questions among participants concerned with the use of pesticides and other harmful chemicals.

Conclusion

The result of these studies serve as a base to try and understand consumer behavior when dealing with biotechnology; however, I think a more effective approach of evaluating the effect of GMO labeling on consumers would be to monitor consumers during actual real life purchases. Real life decisions and concerns are better observed in places like these because there is no one keeping time, and there are alternate products that one might consider rather than the few participants are presented with. The studies are undoubtedly helpful and it is not to say they are entirely inaccurate, I just feel that peoples mindset changes when they know their responses are being evaluated.

The labeling of GMO products clearly has a long way to go. Just this November, the state of Oregon experienced one the most expensive oppositions to GMO labeling. They introduced proposition 92 which would mandate GMO derived products to be labeled but was shot down by potential lawsuits. While chemical companies claim proposers of Prop. 92, falsified nearly 4000
ballots, supporters claim chemical companies are choosing to ignore the votes. This is very common in the US, and it explains why there are only three states nationwide with GMO labeling laws. Regardless of the perceived negativity Europeans are known to have towards GMO labeling, at the end of the day people can make a conscious decision. Whether or not the US will ever get to that point is unknown; and there is no direct path towards achieving it. The removal of former biotechnology executives from federal agencies such as the FDA, or USDA might help, or simply respecting our right to know. Neither is likely to happen anytime soon, our best option is to inform ourselves and others in regards to GMO’s and make our decisions accordingly.
Works Cited


