

## Extended Abstract

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<b>Paper/Poster Title</b>	<b>Absolute Opposition and Preference for Bioengineered foods: Evidence from Sub-Saharan Africa</b>
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<b>Abstract</b>	<b>200 words max</b>
<p>Absolute opposition (AO) to bioengineered foods can be a difficult behavioural barrier to mainstreaming such foods into the food system. Moreover, as scientists push for the upscaling of genetically modified (GM) food in addressing food and nutrition insecurity in Africa, it remains unclear whether AO will constitute a significant barrier to these efforts. In this study, we employ an econometric approach based on data from a discrete choice experiment to find evidence of AO among literate consumers in Nigeria. We estimate a latent class model using a total of 1472 observations generated from 184 respondents. Latent class results show that half of those who claim to be absolutely opposed to GM were not. Further, AO was negatively related to awareness and objective knowledge of GM. On the average, our results show that AO is not likely to constitute a significant resistance to GM food products in Africa. Rather, consumers' preference for GM food is mainly dependent on whether the GM application significantly improved food traits in a cost-effective way. Since our aim here was to provide evidence for what might be expected in a larger population of consumers, we call for replication of this research among a less literate population.</p>	
<b>Keywords</b>	Absolute opposition, Genetic Modification, Choice Experiment, Latent Class Analysis, Africa
<b>JEL Code</b>	Micro-Based Behavioural Economics D9 see: <a href="http://www.aeaweb.org/jel/guide/jel.php?class=Q">www.aeaweb.org/jel/guide/jel.php?class=Q</a>
<b>Introduction</b>	<b>100 – 250 words</b>
<p>Absolute opposition (AO) to the use of bioengineering techniques to enhance food traits remains one of the most difficult behavioural barriers faced by policy makers seeking to mainstream bioengineered food into the food system. This is because consumers who uphold such injunctions are insensitive to consequentialist considerations (Baron &amp; Spranca, 1997). Consequently, these consumers are not likely to be responsive to interventions based on risk and benefits communication. Currently, scientists push for the upscale of genetically modified foods to addressing the wide spread food and nutrition insecurity in Africa (Bouis, 2003; Bouis &amp; Saltzman, 2017). However, it remains unclear whether absolute opposition to genetic modification of foods will significantly constitute a barrier to these efforts.</p> <p>In this study, we make two contributions to literature on consumer acceptance of application of genetic modification for enhancing food traits. To find evidence of absolute opposition, most of the previous studies rely on statements of consumers to classify them as absolutist opponents or otherwise. First, we make a novel application of an econometric approach to finding evidence of absolute opposition. Our approach shows that previous studies may have been exaggerating</p>	

proportion of the population who are absolute opponents by just relying on respondents' statements. Secondly, to our knowledge, our study is the first to provide an evidence of absolute opposition among consumers in Sub-Saharan Africa. In this regard, we find that AO is not likely to constitute a significant market resistance to mainstreaming genetically modified foods into the food system in Africa.

**Methodology**

**100 – 250 words**

Data for this study was obtained from a combination of survey and choice experiment carried out in Nigeria in 2021. We drew a sample of 184 respondents from a literate population of students and staff within a University in Nigeria. The survey question focused on socio-economic characteristics, knowledge of GM, risk and benefits perception of GM, trust in food chain actors and attitude towards GM. The choice experiment was designed to elicit consumer preference for a second generation genetically modified beans with enhanced yield and nutrient. We follow Baron and Spranca (1997) and Scott, et al. (2016) to classify our respondents into supporters, absolutist opponents and non-absolutist opponents. Supporters stated they did not stand against the use of GM in food. Non-absolutist opponents claimed they currently stand against the use of GM but were still open to considering the benefits and risks. Absolutist opponents claimed they were against the use of GM and would never consider the risks and benefits of GM food products. In addition, and different from previous studies, we classified consumers into real absolute opponents if in addition to their statements, they consistently chose non-GM products in their purchase decisions. To check the consistency of respondents' statements we estimated a latent class model on the choice experiment data to recover the segmentation of consumers based on their choice patterns. Finally, we assessed posterior individual conditional probabilities along with the latent class results to conclude on the true distribution of absolute opponents in our data.

**Results**

**100 – 250 words**

Based on respondents' statements, 55.4% of the entire sample supported GM, 9.2% were non-absolutist opponents while 27.2 % stated they were absolutely opposed to GM regardless of the benefits and risks. In contrast, based on the choices of consumers, we find that 86.96% supported GM product and only 13.04% of the entire sample (50.4% of those who stated they were absolutist opponents) displayed 'absolute opposition' to GM-products. In terms of knowledge, 48% of absolute opponents had no knowledge of GM and only 15.3% had complete knowledge of GM. Among supporters, 21% had no knowledge but 49% had complete knowledge. The Latent Class analysis recovered three segments of respondents. One of the classes, which clearly represents absolutist opponents, has a market share of 8.6% and two other classes 76.8% and 14.5% respectively. Class assignment of consumers based on awareness and objective knowledge shows that 'absolutist opponents' class is significantly likely to have respondents who were not aware of GM and those who had no knowledge of GM. On the other hand, awareness and complete knowledge of GM positively predict assignment into classes of



respondents supporting GM products. Further, absolutist opponents had significantly higher risk perceptions about GM compared to others.

**Discussion and Conclusion**

*100 – 250 words*

The inevitable role of novel food technologies in attaining global food security and nutrition remains indisputable (Barret, 2020). Moreover, consumers’ acceptance of the use food biotechnologies has been recognized as a crucial requirement for the success of these innovations. In this study, we investigate if absolute opposition will constitute a significant barrier to up scaling genetically modified (GM) food in Sub-Saharan Africa (SSA). Different from the approach employed by previous studies, we relied on the choice pattern of consumers to find evidence of absolute opposition to GM. Only 8.9% of the sample truly manifested absolute opposition to GM. Our results show that previous studies may have been overstating the proportion of the population who claim to be absolutist opponents. Absolute opposition, at least in the context of Africa is likely to be a question of knowledge and not an issue of protected values as suggested by previous studies.

In relation to preferred attributes, we find that majority of the consumers are positively disposed to enhancement of agronomic and consumer-related food traits, consistent with findings from previous studies. Overall, the results show that, in this population, consumers’ preference for GM food is mainly dependent on whether the GM application significantly improved food traits in a cost-effective way. Since our aim here was to provide evidence for what might be expected in a larger population of consumers, we call for further replication of this research among a less literate population of consumers.