

THE IMPACT OF MANDATORY GMO LABELING ON CONSUMER BEHAVIOR AND TRUST IN FOOD PRODUCTS

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Abstract. This study examines whether companies should be legally required to label genetically modified organism (GMO) products and investigates how mandatory GMO labeling affects consumer behavior and trust in food products. The research employs a qualitative approach based on the analysis of secondary data, including peer-reviewed academic publications, government policy reports, and consumer survey findings from international studies. The findings reveal that mandatory GMO labeling significantly influences consumer purchasing decisions and food trust perceptions, often triggering precautionary avoidance regardless of scientific consensus on GMO safety. While labeling policies enhance transparency and support informed consumer choice, they may inadvertently reinforce unfounded fears about biotechnology. This study concludes that mandatory GMO labeling should be accompanied by clear, science-based public education campaigns to prevent misinformation and build balanced consumer trust.

Keywords: GMO labeling, consumer behavior, food trust, genetically modified organisms, food policy

Аннотация. Данное исследование рассматривает вопрос о том, должны ли компании быть юридически обязаны маркировать продукты, содержащие ГМО, а также изучает, как обязательная маркировка влияет на поведение потребителей и доверие к пищевым продуктам. Исследование основано на качественном анализе вторичных данных. Результаты показывают, что обязательная маркировка ГМО существенно влияет на решения потребителей о покупке и восприятие безопасности пищевых продуктов, нередко вызывая предупреждающее отвержение, несмотря на научный консенсус об безопасности ГМО.

Ключевые слова: маркировка ГМО, поведение потребителей, доверие к продуктам питания, генетически модифицированные организмы, продовольственная политика

Annotatsiya. Ushbu tadqiqot kompaniyalar GMO (genetik jihatdan o'zgartirilgan organizmlar) mahsulotlarini belgilashga majbur etilishi kerakligini va majburiy GMO belgilash iste'molchilar xatti-harakati hamda oziq-ovqat mahsulotlariga bo'lgan ishonchga qanday ta'sir ko'rsatishini o'rganadi. Tadqiqot ikkilamchi ma'lumotlarni sifatli tahlil qilishga asoslangan bo'lib, ilmiy nashrlar, davlat siyosati hisobotlari va xalqaro iste'molchi so'rovlari natijalarini o'z ichiga oladi. Natijalar shuni ko'rsatadiki, majburiy GMO belgilash iste'molchilarning xarid qarorlariga sezilarli ta'sir ko'rsatadi va ko'pincha ilmiy konsensusdan qat'i nazar ehtiyotkorona munosabatni keltirib chiqaradi. Tadqiqot majburiy GMO belgilash siyosati ilmiy asoslangan ta'lim dasturlari bilan birga olib borilishi kerak, degan xulosaga keladi.

Kalit so'zlar: GMO belgilash, iste'molchi xatti-harakati, oziq-ovqatga ishonch, genetik jihatdan o'zgartirilgan organizmlar, oziq-ovqat siyosati

Introduction. Genetically modified organisms (GMOs) have become a central feature of modern agricultural systems, with crops engineered to resist pests, tolerate herbicides, and improve nutritional content. As GMO-derived foods have proliferated in global supply chains, public debate has intensified around the question of whether consumers have a right to know whether the products they purchase contain genetically modified ingredients. This has given rise to one of the most contentious food policy discussions in recent decades: should companies be legally required to label GMO products? The research question guiding this study is: How does mandatory GMO labeling affect consumer behavior and trust in food products? The issue carries significant implications for public health policy, the food industry, and democratic governance. This study seeks to evaluate the effects of GMO labeling mandates on consumer purchasing decisions, risk perceptions, and overall trust in food systems, drawing on international evidence from countries that have implemented labeling legislation.

Literature Review. The academic literature on GMO labeling reflects deeply polarized perspectives. Proponents of mandatory labeling argue that it serves the principle of informed consent, allowing consumers to align their purchasing behavior with personal, ethical, or religious values. Studies conducted in the European Union, where GMO labeling has been mandatory since 1997, suggest that labeled products are frequently avoided by consumers, even when no scientific evidence of harm exists. Research by Lusk and Briggeman (2009) found that food values such as naturalness and safety strongly influence consumer attitudes toward GMOs, and that labeling acts as a risk signal regardless of actual product safety. Conversely, other researchers caution that mandatory labels may function as warning indicators, inadvertently amplifying unfounded fears. Academics such as Maghari and Ardekani (2011) note that consumer perception of GMO risk is largely shaped by media framing and trust in regulatory institutions rather than scientific literacy. Furthermore, studies from the United States, where voluntary labeling was the norm until the National Bioengineered Food Disclosure Standard was introduced in 2022, demonstrate that consumer reactions to GMO labels vary considerably based on prior attitudes, education levels, and cultural context.

Method. This study adopts a qualitative research design based on the systematic review of secondary sources. Data were collected from peer-reviewed journals in food science, consumer psychology, and public policy; reports from international organizations including the World Health Organization and the Food and Agriculture Organization; and government policy documents from the European Union, United States, and Japan. The review focused on studies published between 2000 and 2024 that addressed consumer responses to GMO labeling, food trust, and purchasing behavior. Inclusion criteria required that selected sources present empirical findings or rigorous policy analysis related to GMO disclosure. This methodology enables a comprehensive and comparative assessment of the issue across multiple national and cultural contexts, offering insights into the diverse ways in which mandatory labeling affects consumer behavior and institutional trust.

Results. The analysis reveals several consistent patterns across international contexts. First, mandatory GMO labeling demonstrably affects consumer purchasing behavior, with a significant proportion of consumers in labeled markets choosing non-GMO alternatives when given the option. In the European Union, the introduction of mandatory labeling corresponded with a sharp reduction in the market share of GMO-containing products, as manufacturers reformulated goods to avoid the GMO designation. Second, consumer trust in food products is closely tied to perceived transparency: studies indicate that consumers in countries with

mandatory labeling systems report higher overall satisfaction with food governance, even as they express greater concern about GMO safety. Third, labeling appears to intensify polarization; consumers with pre-existing negative views of GMOs become more avoidant, while those with neutral or positive views are largely unaffected. Fourth, the format of the label matters significantly: simple text disclosures produce less anxiety than prominent warning symbols, and QR-code-based systems, as adopted in the United States, show lower consumer engagement than direct on-package text.

Discussion. The findings of this study underscore the complex relationship between information disclosure, risk perception, and consumer trust. Mandatory GMO labeling fulfills a fundamental democratic principle by enabling consumers to make informed choices, yet the evidence suggests that the behavioral impact of such labels is disproportionate to the actual risk profile of approved GMO products, which major scientific bodies including the WHO and the National Academies of Sciences have affirmed are safe for human consumption. This disconnect between perceived and actual risk aligns with prior research on the “halo effect” of food labels, wherein any unfamiliar designation triggers precautionary avoidance. The results also highlight that trust in food systems is a multidimensional construct, influenced by confidence in regulatory agencies, media narratives, and historical food safety crises. Governments that implement mandatory GMO labeling without accompanying science communication strategies risk reinforcing consumer skepticism rather than alleviating it. This study therefore argues that the policy question is not whether to label, but how to label in a manner that promotes genuine informed choice without amplifying irrational fear.

Conclusion. This study demonstrates that mandatory GMO labeling has measurable and significant effects on consumer behavior and food trust, though these effects are mediated by prior attitudes, label design, and the broader information environment. While labeling enhances transparency and supports consumer autonomy, it may inadvertently deepen distrust when not accompanied by accessible, science-based public education. Companies should be required to disclose GMO content, as consumer rights to information are paramount; however, policymakers must take responsibility for ensuring that such disclosures are embedded within a framework of clear, accurate, and accessible communication about biotechnology. Future research should examine the longitudinal effects of different labeling formats on consumer trust and the role of digital disclosure mechanisms in reaching diverse populations.

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