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FOOD SAFETY IN THE AGE OF TRANSPARENCY: CLEAN LABEL PRODUCTS IN THE POST-COVID-19 ERA

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Abstract

Clean-label products are defined as foods and beverages formulated with simple, natural, and familiar ingredients, instead of using artificial ingredients and additives. The clean label movement has gained popularity because of a rise in consumer demand for authentic, transparent, and healthier foods and beverages. In the post-COVID-19 era, the clean label trend has evolved considerably, indicating a shift in consumer preferences and demands. The COVID-19 pandemic has had a significant effect on consumer behavior, particularly regarding food safety and products with clear labels. According to recent studies, during the pandemics, consumers have shown an increased interest in products with clean labels as they seek healthier choices. In addition, the pandemic has impacted consumer purchasing patterns, with a shift toward ingredient examination and an increased demand for healthful products. In conclusion, the COVID-19 pandemic has highlighted the significance of the clean label trend, redirecting consumers toward safe, natural, and transparent food products, and emphasizing the importance of local purchasing and sustainable supply chains.

Key words: clean-label, COVID-19, food safety, consumer.

In recent years, there has been an increase in interest among consumers in food safety and a heightened awareness of health concerns associated with food products. The issues for ensuring safe and healthy food for the public include the growing use of improper ingredients and the related misleading strategies in packaging and labeling.

A shift in the preferences of consumers has led to a significant effort in the food sector to avoid particular ingredients by reformulation (Storm S., 2015). Ingredients commonly selected for removal include those that are artificially generated (artificial flavors or Red 40) and possess complex, "chemical sounding" terms (methyl crystalline cellulose carrageenan) (Berenstein N., 2018). While regulatory bodies consider these ingredients to be safe, the customers view them as potentially dangerous due to their unfamiliarity and their perspective of chemicals as dangerous to their health (Moskowitz H.R. et al., 2012; Wansink B. et al., 2014; Maruyama S. et al., 2021).

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Ingredion (2014) as referenced by Asioli D. et al., 2017, states that when a product is designated being clean, it means that it can be advertised as *"natural," "organic," and/or "free from additives/preservatives"* Based on the same study, food producers can use a clean label approach by utilizing ingredients that can be easily identified by customers, such as those often seen in their kitchen cupboards. The ingredients list should be clear, concise, and mostly comprise less processed foods, if possible. Avoiding using names that resemble chemicals or e-numbers is also considered for this type of product.

The ingredients list needs to be concise, uncomplicated, and mostly consist of foods that have been minimally processed if applicable. The inclusion of names resembling chemicals or e-numbers shall be avoided. According to Edwards (2013) cited by Asioli D. et al., 2017, a clean label is characterized by the absence of chemical additions, clear and comprehensible ingredients list, and production methods that adhere to traditional practices with minimal processing.

The health consciousness of customers influences their attitudes towards food consumption, as well as their intents to purchase a certain product. Research indicates that those who prioritize their health and possess a higher level of understanding of nutrition are more inclined to pay attention to the ingredients on food labels (Cavaliere A. et al., 2017; Chang M.Y. et al., 2022). Also, following the impact of the COVID-19 crisis on the food ingredient business, there is an increase in demand for products with clean labels as consumers seek out healthier and more reliable options. Thus, this review aims to discuss recent research in the food sector pertaining to clean label foods, while considering how the COVID-19 pandemic has impacted consumer preferences based on generational differences.

CONSUMERS PURCHASING PATTERNS

In a study conducted by Lee W.I. et al. (2017), it was discovered that product aspects, which includes information about the product, its quality, and pricing, have a positive influence on a consumer's decision to make a purchase. Moreover, purchase intention is seen as a preliminary factor to the actual act of buying (Fishbein M., 2011). Purchase intention is the likelihood that a buyer will choose to buy a particular product (Chang M.Y. et al., 2022).

A greater inclination to purchase indicates an increased probability of making a buying choice (Angelis M.D. et al., 2017). Moreover, when consumers have a greater amount of favorable feedback about a product or service, their inclination to make a purchase gets more intense, and the likelihood of making a purchase increase dramatically (Chang M.Y. et al., 2022). Consumer product engagement pertains to the level of interest and attention that consumers exhibit towards one particular food item (Liang Y., 2012).

Alternatively, we employ Zaichkowsky's definition, as referenced by Chang M.Y. (2022), to describe involvement in the following manner: "*The degree to which an individual views an object as significant, determined by their inherent needs, values, and interests."*

Rahman I. (2018) asserts that consumers develop engagement with a product when it possesses substantial or fundamental significance in their life. Furthermore, as stated by Beharrell and Denison, as referenced by Chang M.Y. (2022), engagement plays a crucial role in shaping one's ideas, attitudes, and behavioral consequences, such as the frequency of product consumption, through substantial cognitive effort.

In the same study, Chang M.Y. (2022) states that Strazzieri (1994) proposes that the level of involvement (high versus low) with the products under consideration is determined by the consumer's decision-making process. Hence, there exists a robust correlation between product knowledge and customer intention to purchase. The greater the level of buyer engagement, the more extensively they would utilize product facts.

"CLEAN LABEL" TERM FOR CONSUMERS

According to a 2015 consumer survey published by a publication of Wiley - Food Quality & Safety (2016), participants were asked to define the term "clean label." 34 percent of the respondents indicated that they were unfamiliar with the term "clean label." Respondents who claimed to understand the term "clean label" had differing opinions on the differentiating features of clean label foods. According to the Canadian survey mentioned before (2016), companies that are using clean labeling approaches may not be obtaining the necessary degree of consumer acceptance. According to a senior consumer insight analyst, the term "clean label" holds varying interpretations among consumers across different regions. Thus, the study revealed that a significant proportion of consumers, specifically 34 percent, lack any comprehension whatsoever of the concept. This elucidated also that the phrase is commonly employed in business to denote the increasing trend among consumers to prefer products that include "cleaner" attributes in terms of their component parts or production techniques.

For instance, eliminating high-fructose corn syrup or aspartame from products. The clean label

movement seems to be expanding as people demand the elimination of synthetic components from their food and shift towards consuming more natural food, also known as "clean eating."

According to the same survey conducted on the consumers, *"In the past few years, there has been a change in the way people approach diets. Instead of focusing solely on losing weight, there is now a greater emphasis on adopting a healthy and enjoyable lifestyle. Consequently, the term 'diet' has acquired negative connotations and is often contrasted with the clean eating movement."*

According to the Ingredion Clean Label Guide to Europe (2014), consumers in Europe are concerned about the contents of their food. This concern is reflected in their focus on the ingredient list, with 78% of customers finding it an important factor. Also, as mentioned in the same guide, in France and Italy, customers place the most priority on ingredients, with 86% and 89% respectively admitting that the selection of constituents is of great importance. Nevertheless, lesser documented levels of significance should not be dismissed. A potential reason why some consumers might give less importance could be attributed to the firmly established prevalence of the clean label movement in their country of origin.

These consumers usually have an expectation that their food will fulfill a specific clean label standard. This is especially accurate for markets such as the United Kingdom, where the clean label trend developed earlier and is nowadays more firmly developed. The clean label movement has gained momentum in countries like Turkey and Russia, with a rapid year-on-year growth. Therefore, these markets can be considered to be developing in a manner comparable to the market in the United Kingdom, where currently more than one-third of product releases are promoted as “clean label” and a “clean label” approach has become increasingly accepted as a must for achieving success on the market.

GENERATIONAL DIFFERENCES AND CLEAN LABEL PRODUCTS

In recent years, there has been a growing focus among food industry magazines and companies on the specific tastes of different generations of consumers when it comes to purchasing food products. Therefore, there is an increasing interest on consumer preferences and generational differences among Baby Boomers, Generation X, Millennials, and Generation Z.

Baby Boomers, born between 1946 and 1964, have assumed a subordinate role to their Millennial generation in several respects. Immediately after World War II, a significant number of baby boomers noticed the advent of ready-to-eat foods and the increased popularity of processed and packaged foods. For many years of their lives, the focus has been on owning many possessions and paying less attention to the transparency of their possessions. However, as individuals in this category age and experience the development of certain health problems, a significant number of them have shown an increasing awareness and concern for their well-being. Baby Boomers often choose clean-label foods primarily out of health concerns rather than a general preference for ingredient transparency. They opt for products that can help maintain their health, although they may not prioritize the complete avoidance of all artificial ingredients, unlike younger generations (FONA, 2018).

According to Mintel, as mentioned by FONA (2022), half of American customers aged 55 and above acknowledge that their motivation to eat properly stems from the desire to prevent disease or illness. The significance of preventive health measures is heightened by the fact that this generation is experiencing longer lifespans compared to previous generations. Consequently, individuals are adopting proactive strategies such as adhering to a nutritious diet and maintaining physical activity well into their senior years.

Boomers prioritize maintaining a healthy diet by focusing on their eating habits within their households. The proportion of individuals in this generation who link home-cooked meals with good health is notably more than that of their Gen Z counterparts (67% and 55%, respectively) (FONA, 2022).

Given that boomers prepare 80% of their meals at home and are over twice as inclined as Millennials to depend on leftovers, companies must prioritize the grocery store requirements of this generation (FONA, 2022).

According to the report Consumer Insight: Baby Boomers, published by FONA (2022), consumer purchasing patterns in the United States are as follows: 14% of individuals utilize online ordering for home grocery delivery, while 41% make use of digital coupons when shopping for groceries in physical locations. In terms of importance of value - Baby boomers exhibit brand loyalty when they sense distinct value and receive satisfactory customer service.

Regarding their purchases, the same report from 2022 claims that 49% of individuals express interest in functional foods such as probiotics and vitamins, while 59% are willing to pay higher prices for items that adhere to social compliance and sustainability standards. Products targeted toward the elderly may include a negative perception that

discourages individuals who do not identify themselves as being "old." Nevertheless, certain nutrients that promote brain health, eye health, and other benefits can be advantageous for individuals of all age groups (FONA, 2022).

Consequently, marketers can direct their marketing efforts toward baby boomers by emphasizing the same claims that attract younger consumers. Baby boomers, as a demographic, have strong preferences and tend to be resistant to trying new things. However, there are strategies to motivate these consumers to explore novel flavors or meals while still catering to their established preferences. An effective approach is incorporating novel ingredients into traditional recipes. According to the same report, 62% of Baby Boomers express a preference for experimenting with new foods if they are presented in a recognizable format on the menu (FONA, 2022).

Generation X, born between 1965 and 1980, have a unique point of view. They are the ones who witnessed the transition from an era of processed and ready-to-eat foods in their youth to the growth of the ecological movement and the clean label trend as they matured. They possess distinctive preferences, an appeal to nostalgia, a tendency toward skepticism, and exert a remarkable level of influence on nearly every subsequent generation. Also, having a genuine concern for their health and well-being, Gen Xers tend to be pragmatic in their choices. They value transparency and opt for products with a clean label, but occasionally they tend to choose less "clean" options, for the sake of nostalgia for the era of processed and ready-to-eat foods.

Marketers often disregard the Forgotten Generation, focusing instead on younger Millennials and elder Baby Boomers. According to Consumer Inside – Generation X Report (FONA, 2019), Gen X serves as a significant link between two extensively examined generations, and they possess an above-average household income and substantial purchasing influence.

As stated by Business Insider Report (2018), Generation X is the demographic group that is allocating the highest amount of money towards food in general. Instead, their emphasis lies on the quality of food, the capacity for customization, and attaining satisfaction. At the grocery store, convenience is the top priority for customers, and they are more receptive to novel and inventive concepts compared to past generations (FONA, 2019). According to Mintel cited in Consumer Inside – Generation X Report (2019), shoppers between the ages of 34 and 54 are significantly more inclined than shoppers aged 55 and above to express their willingness to consider meal planning and recipe suggestions as they buy. Generation X experiences a strong longing for the symbols and figures that were prominent during their early years of life. This is a method of establishing communication and fostering a connection with their Generation Z and Millennial children by demonstrating the significance of things that held importance to them throughout their own youth (FONA, 2019).

As stated by Food Business News cited by Consumer Inside – Generation X Report (FONA, 2019), Generation X depends on fruit snacks, corn chips, and granola bars, which are the same kind of food they relied on during their childhood. The desire for made-to-order or freshly prepared foods at supermarkets is mostly driven by Generation X. Mintel cited by Consumer Inside – Generation X Report (FONA, 2019), indicates that grab-and-go choices are also favorably regarded if they are promoted with an emphasis on freshness. Fried or rotisserie chicken is the most popular choice, indicating that Generation X prefers protein-rich main dishes rather than quick snacks. While it is preferable for the food to be nutritious, its nutritional composition is not yet a decisive factor (FONA, 2019). When making a purchase, the primary factor to consider is taste. Generation X has a strong affinity for comfort food, traditional cuisine, and characteristic dishes like pizza, and burgers are highly preferred. The most prevalent cuisines from other nations are Italian, Mexican, and Chinese (FONA, 2019).

Millennials, born between 1981 and 1996, have the potential for significant influence in the context of clean labeling. The current generation highly values authenticity, transparency, and sustainable products. The consumption patterns of millennials demonstrate a distinct emphasis on health and its impact on the environment. For this generation, selecting products that have a transparent and unambiguous label aligns with their principles and beliefs.

Consumers in this age group are inclined to conduct thorough investigations into food ingredients, demonstrate a willingness to pay higher prices for items that are clean products, and actively promote their health ideas and choices on social media, so exerting an influence on consumption trends.

Based on the 2022 Consumer Insight Report on Millennials published by FONA, millennials are currently in the advanced stages of their professional lives. Despite experiencing different challenges such as the COVID-19 pandemic and increasing inflation rates, millennials have encountered significant changes that have influenced their financial ability to spend.

Nevertheless, millennials desire their purchases to possess superior quality in terms of ingredients, flavor, and ethical considerations. When selecting items to purchase, 87% of individuals prioritize flavor as the most significant factor. While this age may exhibit a wide range of features, they unanimously prioritize taste as the paramount component in selecting a snack. According to Mintel cited in the same report published in 2022, 87% of millennials prioritize taste as the primary factor in their purchasing decisions (FONA, 2022).

Millennials, as a socially conscious demographic, possess a strong environmental awareness and have the expectation that their products align with this value. A significant majority of millennials, over 75%, are open to adjusting their purchasing patterns to acquire environmentally sustainable things. Furthermore, they are willing to pay additional costs to do so (FONA, 2022).

Nearly 40% of individuals belonging to the millennial generation have initiated a new relationship or reinforced an existing one with a company that has a favorable impact on the environment. According to statistics, a significant majority of millennials, over 90%, are inclined to support a company that they have confidence in when it comes to environmental matters. Furthermore, around 95% are likely to endorse and suggest that brand to their connections. In the 2022 report mentioned before, around one-third of millennials expressed their intention to allocate more of their budget towards the purchase of nutritious food and nonalcoholic beverages in the year 2023 (FONA, 2022).

When shopping for groceries, people prioritize healthier choices such as organic, fresh, low-fat, and low-sugar items. Overall organic food buying witnessed a 51% growth in 2019. A significant proportion of millennials, specifically 55%, prioritize convenience as a crucial determinant in their food purchasing decisions. The behaviors of millennials, who are constantly engaged in productive activities, are significantly influencing the perspective on dining occasions (FONA, 2022). According to a 2018 survey included in the mentioned report (FONA, 2022), 91% of millennials engage in snacking throughout the day to fulfill their energy and nutritional requirements. Additionally, 96% of them substitute a meal with a snack at least once a week, with lunch being the most common meal to be replaced. Additionally, they indulge in frequent snacking, with over half of them reporting eating 4-5 times a day. Despite enjoying frequent snacking, maintaining good health remains a primary concern. Nearly 90% of individuals have a "better-for-you" snack at least once a week. Among this group, protein is the key health feature desired in their snacks. Approximately half of the respondents consider protein to be the most crucial health aspect influencing their snack choices (FONA, 2022).

COVID-19 PANDEMIC IMPACTS ON FOOD SAFETY AND CLEAN-LABEL CONSUMER BEHAVIOR

The emergence of COVID-19 in the Wuhan region of China and its subsequent rapid spread to almost 50 countries worldwide has garnered significant global attention. This led to the World Health Organization (WHO) declaring it a pandemic on March 11, 2020 (Han S. et al., 2021). This virus exhibits a significant degree of similarity to two other coronaviruses that have appeared in the last twenty years like SARS-CoV, responsible for Severe Acute Respiratory Syndrome (SARS), and MERS-CoV, responsible for Middle East Respiratory Syndrome (MERS). Both viruses have caused significant rates of illness and death (Shereen M.A. et al., 2020). This virus is highly contagious through direct contact between individuals via respiratory droplets, which constitutes the primary mode of transmission. Additionally, contaminated objects, such as fomites, can also contribute significantly to the spread of the virus (Han S. et al., 2021).

Also, within a study published in 2012, Mullis L. et al (2012), shown that the virus can survive on food surfaces, making them potential carriers of the infection. The World Health Organization and the Center for Disease Control and Prevention (CDC) have stated that there is no evidence to suggest that SARS-CoV-2 can be transmitted or directly contaminate food and water (CDC, 2020).

However, it is important to consider the potential for the virus to spread through the consumption of food that has been in contact with contaminated surfaces, packaged in a contaminated environment, or handled and shared with an infected individual (Galanakis C.M., 2020). In this context, by Pung et al. (2020), stated there were cases of COVID-19 transmission during a conference in Singapore in January 2020. It was found that personal contact and sharing food were the means of transmission, indicating that food could potentially serve as a source of SARS-CoV-2 infection.

According to the Food and Agriculture Organization (FAO, 2020), COVID-19 impacted agriculture in two significant ways: by changing both the availability and the demand for food. These factors are closely tied to food security, which is consequently being jeopardized. The food supply

chain is a network that facilitates the movement of food from farms to consumers' tables through various stages such as manufacturing, packing, distribution, as well as storage (Chen S. et al., 2020).

Amidst the COVID-19 pandemic, the entire spectrum of the food supply chain, encompassing fresh veggies, fruits, bakery products, perishable foods, and food grains, have been severely damaged (Ivanov D et al., 2020). Thus, the COVID-19 pandemic has had a significant effect on food safety, which is one of the fundamental components of the food system (Galanakis C.M., 2020).

The COVID-19 pandemic has had a profound impact on consumer behavior, specifically concerning clean-label products since it has heightened focus on health, well-being, and food safety (Meixner O. et al., 2019).

Consumer interest in health and safety has risen, leading to substantial changes in purchasing patterns. There has been a clear movement towards more careful inspection of food ingredients and a continued demand for healthy options. Consumers generally increasingly link these choices with safety and health, particularly during the pandemic (Herrero M. et al., 2023).

Due to the restrictions implemented during the lockdown, there has been a rise in the demand for clean-label products. This is because customers are increasingly seeking healthier options during the crisis. Consequently, the understanding of what defines "clean" has progressed, encompassing more than just labels or products, but also encompassing elements of food safety and the ability of a product to remain fresh for an extended period, specifically concerning the transparency of the list of ingredients (Jiang Y. et al., 2021).

During the COVID and post-COVID period, there has been a predominant inclination towards products with positive nutritional claims and following clean label protocols. This is because there has been a significant increase in health-conscious purchases after the pandemic (Nicolosi A. et al., 2022).

In addition, despite the economic difficulties perceived during the public health crisis, consumers have exhibited a readiness to spend more money on clean-label food goods, indicating a preference for healthier, transparent, and perhaps safer choices (Van Bussel L. et al., 2022).

The pandemic has significantly impacted the global economy, thereby impacting food security, supply networks, and jobs. This has also resulted in an increase in digitalization and technology, along with its observed socio-environmental effects (Aday S. et al., 2020).

Owing to concerns regarding safety, the implementation of social distancing measures, and the adoption of lockdowns, there has been a significant transition towards online commerce. This is also related to the increasing demand for clean-label products since customers tend to seek precise and reliable food information while making online purchases (Gu S. et al., 2021). Automation of processes enhances productivity, quality control, and product traceability, all of which are crucial for upholding food safety standards. Therefore, clean-label products have earned the confidence of consumers by guaranteeing that they are manufactured in a safe manner and with total transparency (Rejeb A. et al., 2021).

Moreover, enhancing accuracy in manufacturing decreases food waste and guarantees the manufacture of safer food products for those who choose such options. Due to their distinctive characteristics, clean-label products concentrate on the use of simple, natural ingredients that are frequently regarded as recognizable and more secure by consumers (Saraiva A. et al., 2020).

Post-pandemic, customer expectations have shifted to prioritize the clarity, accuracy, and utility of food information. This reflects the increasing demand for clean-label products that offer transparent ingredient lists and origin information (Priya K. et al., 2023).

Due to the COVID-19 pandemic, there has been a noticeable surge in the demand for food safety. Consumer demand for food safety and quality has led to a rise in the popularity of clean-label products that emphasize natural ingredients. Given the ongoing increase in customer demand for natural, simpler, and safer products, the future of clean-label products appears optimistic in this context (Asioli D., 2017).

The findings of an online study including 346 participants reveal that consumers consider features such as minimal processing, removal of undesirable substances, and ethical considerations to be significant factors linked with clean labels. The consumer's perception of these traits includes the benefits of being healthy, socially responsible, appealing to the senses, having a reliable product, and being low in calories. Furthermore, canonical correlation analysis reveals two noteworthy connections between clean label features and their related advantages. The advantages of healthiness, low calories, and social responsibility are driven by the elimination of undesired components and the employment of familiar components. The qualities of being little processed and containing uncomplicated ingredients are linked to the advantage of enhanced sensory appeal (Cao Y. et al., 2023).

CONCLUSIONS AND FUTURE PERSPECTIVES

The shift of customers towards organic or clean-label products indicates a bright future for these food products, despite the challenges that producers encounter from several perspectives.

Producers in the food industry encounter challenges related to the manufacturing costs, creation, and marketing expenses of clean-label products. Furthermore, ensuring the procurement of raw materials that adhere to the quality criteria for such clean-label products is another crucial aspect. Furthermore, producers are required to overcome legal requirements to ensure the compliance of food items.

Consumers have a crucial role in ensuring the availability and longevity of clean-label items on the market. Therefore, they should actively endorse and promote transparent and clean products. Lastly, the brand associated with the label actively participates in the clean label campaign by aligning its identity and messages with the producer's.

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