

Consumer Perception and Behavior for Sustainable Market Success

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The bioeconomy is one of the most significant economic sectors in the global economy, and numerous biobased products and services have been developed in recent years. Most assessments in the field of biobased products focus on process development, technologies, and sustainability assessment. In addition to the most common focus, one of the key areas is the understanding of consumer trends, which are a critical factor in biobased products. These trends are driven by psychological, economic, social, and cultural factors, and their assessment must be developed considering factors like gender, age, income, regional culture, and labeling. Developing effective strategies to introduce biobased products into the market is essential for advancing sustainable development and must be given due emphasis.

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The bioeconomy and circular economy sectors continue to expand rapidly, driving a continuous demand for new knowledge and expertise. In particular, the bioeconomy has emerged as a significant economic force, attracting attention from countries worldwide. It represents approximately USD 4 to 5 trillion globally and is projected to reach USD 30 trillion by 2050 (Climate Policy Initiative (CPI) 2024; NatureFinance and Getulio Vargas Foundation 2024). The bioeconomy represents 5% of the European Union's Gross Domestic Product (GDP) and employs 8.3% of its workforce (Open-BIO 2015). In the United States, the bioeconomy accounts for approximately 5% of the economy (World Bio Market Insights 2025) and generates more than 640,000 domestic jobs (Federation of American Scientists (FAS) 2025). Globally, this sector is growing rapidly, with notable growth in countries such as India, China, and Brazil (NatureFinance and Getulio Vargas Foundation 2024; Zero Carbon Analytics 2024). It is essential to understand not only the technological, economic, environmental, and process-related factors, but also how biobased products are perceived and adopted by consumers.

Customer acceptance plays a critical role in the successful development of biobased, recyclable, biodegradable, and other environmentally friendly products. In this context, customer perception and behavior are key factors that must be carefully evaluated. One of the most widely used frameworks for predicting consumer behavior is the Theory of Planned Behavior (TPB) (Ajzen 2020), which highlights the role of cultural, social, personal, psychological, and economic factors in shaping consumer responses to biobased products (Brockhaus *et al.* 2016). These responses are largely influenced by sociocultural, socioeconomic, and psychological variables like age, income, lifestyle, social class, and

cultural background. Additionally, government policies have an influential impact on purchasing decisions. Figure 1 presents the key influencing factors.

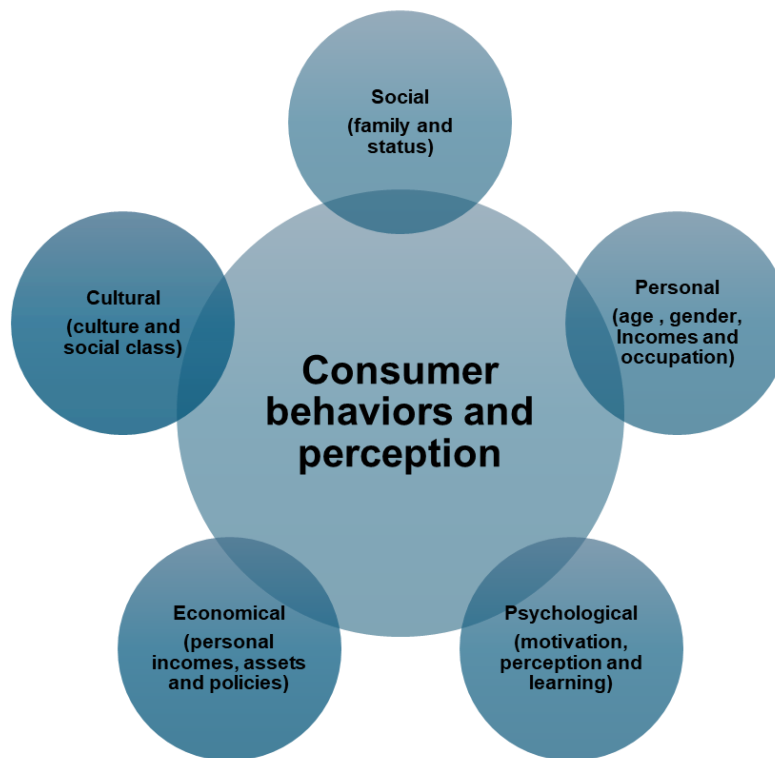


Fig. 1. Key factors influencing customer trends in biobased markets

Several studies conducted across different regions have evaluated the main factors influencing customer trends, consistently highlighting the importance of demographic variables in understanding consumer behavior. In Europe, for instance, women tend to be more proactive in purchasing sustainable products, particularly in categories such as cosmetics and textiles (Gaffey *et al.* 2021; Consumers International 2023; Laborda *et al.* 2023). In contrast, men show a stronger preference for purchasing biobased products in sectors such as construction (Gaffey *et al.* 2021). Another important aspect is that women and young consumers are most susceptible to impulses related to reminders and social media, specifically for eco-labeled products (Tavares *et al.* 2014; Ali *et al.* 2023). Global consumer insights indicate that sustainable habits are becoming a trend in lifestyle, with younger consumers and women leading the change to eco-friendly purchasing behaviors (Consumers International 2023; Deloitte 2023). Considering the age of customers, young consumers under 34, are more likely to choose recycled or biobased compared with older ones, those over the age of 44, despite being less interested in receiving related information, as previously commented (Laborda *et al.* 2023). Furthermore, consumer choices are influenced not only by environmental awareness but also by factors such as social norms, perceived product performance, and trust in labeling (Open-BIO 2015; Ajzen 2020; Gaffey *et al.* 2021).

Regarding their purchases, consumers reported buying at least one sustainable good or service at least once a month (Deloitte 2023). In this sense, as buying green becomes mainstream, consumer expectations of sustainable products are maturing across an

increasing number of product categories. Moreover, consumers are inclined to reward innovative brands that fulfill their sustainability promises by showing a willingness to pay a premium of 27% on average (Deloitte 2023) for said products. For biobased products specifically, consumers are willing to pay a green premium ranging from 10% to 50% (Gaffey *et al.* 2021). Despite limited budgets, consumers in Latin America, Asia-Pacific, the Middle East, and Africa are increasingly adopting sustainable practices, with groups, such as Zero Wasters, Meat Avoiders, and Green Spenders, focusing on improving their environmental impact. These markets have promising opportunities as a huge consumer concern is the current lack of options regarding sustainable products (Euromonitor 2023).

Similarly, the labeling of biobased products is also a decisive factor. Products labeled as biodegradable or biobased are selected more frequently than unlabeled products. In contrast, products without labels do not outperform conventional alternatives. This highlights the necessity of clear and credible eco-labels to communicate value and differentiation between available products. Notably, biobased products with logos but without labels do not score better than non-biobased products, suggesting that eco-labels must be clearly defined (Open-BIO 2015) for consumers to differentiate biobased products in competitive markets, which is critical for long-term adoption (Open-BIO 2015; Gaffey *et al.* 2021; Deloitte 2023). Figure 2 presents several key factors.

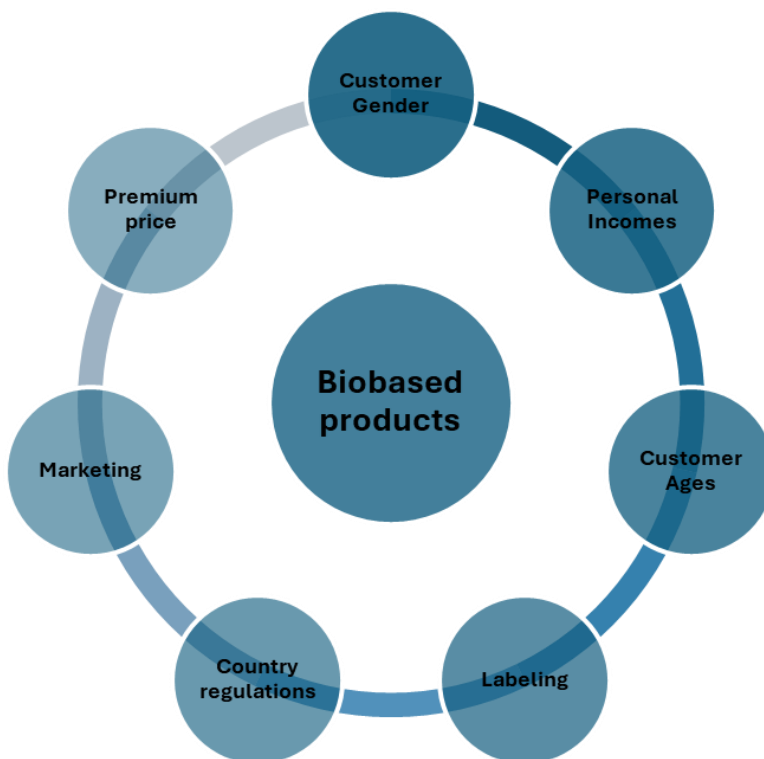


Fig. 2. Critical aspects to consider in the commercialization success of biobased products

It is also relevant that consumers often perceive the terms *biodegradable* and *biobased* as synonyms, highlighting the need for clearer communication. Moreover, when comparing different product attributes, characteristics, such as biodegradability, recyclability, and reusability, considerably increase customer acceptance of biobased products (Gaffey *et al.* 2021).

In addition to the mentioned aspects and capacities of biobased products, other concepts considered in the customer assessment are the capacity of products to be animal-friendly, home-compostable, planet-friendly, and that reduce harmful emissions. This highlights that customers are being more critical about the global impact of commercialized products (Gaffey *et al.* 2021).

Final Remarks

It is evident that the commercialization of biobased products must be carefully planned and evaluated, considering various factors such as gender, socioeconomic status, regional regulations, marketing strategies, and labeling. An increasing number of consumers have become more likely to choose environmentally friendly products over conventional ones. Moreover, many are willing to pay premium prices if the products genuinely contribute to reducing environmental impacts. As environmentally friendly products become increasingly attractive, further developments are needed to deepen the understanding of consumer trends and to ensure the success of these products and related processes.

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