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Sustainable Consumption and Branding for Gen Z: How Brand Dimensions Influence Consumer Behavior and Adoption of Newly Launched Technological Products

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Abstract: Generation Z is emerging as a powerful force in shaping global consumer behavior, particularly in the market of digital and technological products. This study examines how specific branding dimensions, such as online brand experience, engagement, image, trust, loyalty, awareness, behavioral intention, and brand knowledge, influence Gen Z's purchase intention, emphasizing sustainable consumption. Sustainable consumption, in this context, refers to the preference for tech products that minimize the environmental impact through eco-friendly design, energy efficiency, and responsible sourcing. Using a quantitative approach, this cross-sectional research explores the effects of online brand experience, engagement, image, trust, loyalty, awareness, behavioral intention, and knowledge on purchasing newly launched technological products that align with sustainability. Data were collected from a Gen Z sample using a combination of convenience and systematic sampling, and multiple regression analysis identified the most significant predictors of purchase intention. The results indicate that online brand experience, brand image, brand trust, and brand loyalty play the most crucial roles, having a greater effects on Gen Z's purchase intention, while brand awareness and knowledge also contribute. However, brand engagement and behavioral intention have weaker effects. These findings suggest that brands targeting Gen Z should prioritize building a strong, trustworthy, and engaging online presence while highlighting their sustainability efforts, and when Gen Z consumers have favorable digital interactions with a brand, perceive its image positively, trust it, and feel loyal to it, they are more likely to consider purchasing its sustainable offerings. This study enhances the understanding of Gen Z's consumer behavior and offers insights for businesses seeking to foster sustainable consumption by highlighting the importance of developing marketing strategies that strengthen online brand experience, cultivate trust and loyalty, and clearly communicate sustainability values, such as through engaging digital content, transparent messaging, and eco-conscious branding, to effectively foster sustainable consumption among this environmentally conscious and digitally driven generation.

Keywords: sustainable consumption; branding; Gen Z; newly launched technological products; consumer behavior

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1. Introduction

Sustainable consumption has become an increasingly central theme in modern consumer behavior, as environmental concerns, ethical considerations, and social responsibility not only influence purchasing decisions but also broaden consumer values and lifestyle

choices [1]. Sustainable consumption refers to the use of products and services that fulfill current needs while minimizing the environmental impact, promoting resource efficiency, and ensuring ethical production practices [2]. As sustainability awareness grows, it shapes how consumers define brand value, trust, and authenticity, prompting businesses to align their branding strategies with these evolving priorities, particularly when targeting Generation Z [3]. Consumer behavior studies aim to understand the complex motivations behind such decisions, examining how values like environmental stewardship and social impact now play integral roles in shaping preferences and loyalty [4]. Research in consumer behavior has led to the development of various behavioral theories and models that explain the evolving nature of consumer decision-making in the context of sustainability [5,6]. Branding is a key driver in this process, not only influencing purchase intention but also reinforcing consumer identity and ethical alignment with a brand, thus making it particularly relevant for newly launched technological products [7]. As industries evolve to integrate sustainability into their branding efforts, Generation Z has emerged as a critical demographic in driving sustainable consumer behavior. As digital natives, Gen Z consumers are well informed, socially conscious, and highly engaged with brand narratives that reflect transparency, innovation, and sustainability. Their decisions are not limited to individual purchases but often reflect deeper commitments to long-term environmental and ethical values. Unlike older generations, Gen Z consumers actively research brand practices before making purchasing decisions and expect companies to incorporate sustainability, authenticity, and ethical conduct into their core brand values [8]. These expectations have reshaped branding strategies, forcing companies to focus on digital engagement, corporate social responsibility, and eco-conscious innovation. For newly launched technological products, in particular, integrating sustainability messaging, such as reduced carbon footprints and ethical sourcing, has become essential in appealing to this cohort [8,9].

Newly launched technological products, especially in sectors such as informatics and digital commerce, are increasingly adopting sustainability-driven features [10]. Innovations such as AI-driven resource management, smart energy-efficient devices, and blockchain-enabled supply chain tracking contribute to sustainable consumption by optimizing resources use, minimizing waste, and promoting responsible production [11]. These innovations do more than influence purchase intention; they align with a broader value-driven approach to consumption that defines Gen Z's identity as consumers, and they strongly resonate with them due to their emphasis on efficiency, accountability, and innovation. In the context of branding and sustainability, such innovations allow companies to demonstrate real, measurable commitments to environmental responsibility [8]. Branding strategies that highlight these sustainability aspects can significantly influence purchase intention among Generation Z consumers, as they actively seek products that align with their values [12]. Digital marketing, influencer endorsements, and interactive educational content play a significant role in shaping consumer perceptions, making branding a crucial factor in the adoption of newly introduced sustainable technologies [13]. This study investigates the influence of branding on Generation Z's purchase intention for sustainable technological products by analyzing various behavioral theories, such as Social Exchange Theory, Social Impact Theory, Consumer Culture Theory, the Theory of Reasoned Action, and the Theory of Planned Behavior. These frameworks illuminate how branding influences trust, engagement, loyalty, and decision-making processes, especially when tied to sustainability values. Specifically, Social Exchange Theory supports branding strategies that build value-driven relationships, such as loyalty programs or transparent communication about sustainability efforts, where consumers feel they receive meaningful benefits in return for their engagement. Social Impact Theory underscores the effectiveness of influencer marketing, user-generated content, and peer reviews, which leverage social

credibility and proximity to shape brand perceptions. Additionally, Consumer Culture Theory emphasizes branding that reflects personal identity, lifestyle, and cultural values, encouraging brands to align with Gen Z's ethical and eco-conscious ideals. Meanwhile, the Theory of Reasoned Action highlights the importance of shaping favorable attitudes and perceived social norms through branding messages that portray sustainable consumption as both desirable and socially supported. Finally, the Theory of Planned Behavior informs branding practices that boost consumers' perceived control, such as clear sustainability labeling, accessible information, and intuitive eco-friendly product features. Together, these theories illustrate how targeted branding strategies can effectively influence Gen Z's values, intentions, and decisions in favor of sustainable consumption. By examining these theoretical perspectives, this study aims to understand how branding can drive sustainable consumption among Generation Z, encouraging the adoption of newly launched technological products that contribute to environmental sustainability and ethical consumerism. As businesses and policymakers strive to promote sustainability, understanding the intersection between branding, consumer behavior, and sustainable consumption becomes essential. This research contributes to the growing body of knowledge by exploring how branding strategies can encourage Gen Z consumers to make environmentally responsible choices, particularly in industries that rely on technological innovation. Unlike previous studies that treat sustainability or branding in isolation, this research integrates both concepts through a theoretical framework, offering a nuanced understanding of how branding strategies can shape value-driven, environmentally responsible purchasing decisions among Gen Z consumers. By identifying key branding dimensions that drive purchase intention, businesses can refine their approaches to align with sustainability trends, ensuring long-term consumer engagement and fostering a more sustainable global marketplace. Furthermore, to understand how branding influences Generation Z's decision-making regarding sustainable consumption, it is essential to draw from well-established behavioral theories that explain the psychological and social factors underlying consumer behavior. The selected theories offer complementary perspectives on how trust, social influence, cultural identity, attitudes, and perceived behavioral control shape consumer responses to branding. These frameworks are particularly relevant for analyzing Gen Z, a generation known for its value-driven and socially influenced consumption patterns. By grounding the study in these theories, we can better explore how branding strategies resonate with Gen Z's expectations and influence their intention to engage with sustainable technological products. The primary objective of this research is to examine the role of various branding dimensions in influencing Generation Z consumers' purchase intentions within the context of sustainable consumption. Specifically, this study aims to investigate whether branding factors, such as online brand experience, engagement, image, trust, loyalty, awareness, behavioral intention, and brand knowledge, are positively associated with consumers' intention to purchase sustainable technological products. In addition, the research seeks to determine which of these branding variables significantly predict purchase intention when considered collectively in a regression model. To address the objectives, this study is guided by the following research questions:

RQ1: Are branding variables positively associated with consumers' purchase intention in the context of sustainable consumption?

RQ2: Which branding variables significantly predict consumers' purchase intention when analyzed together in a regression model related to sustainable consumption?

By answering these questions, this study contributes to a deeper understanding of the mechanisms through which branding influences Gen Z's sustainable purchasing behavior and offers practical insights for developing branding strategies that resonate with this values-driven demographic.

2. Literature Review

2.1. Sustainable Consumption and Consumer Behavior

Sustainable consumption has become a defining factor in modern consumer behavior, reflecting a growing awareness of environmental responsibility, ethical production, and resource efficiency [14]. It refers to purchasing and using goods and services in a way that minimizes negative environmental and social impacts while ensuring long-term economic sustainability [15]. As global concerns over climate change, pollution, and excessive resource consumption increase, consumers are placing greater emphasis on sustainability when making purchasing decisions [16]. This shift has led businesses to rethink their branding strategies, incorporating sustainability as a core element to attract environmentally conscious consumers [9]. Consumer behavior, traditionally driven by price, convenience, and brand loyalty, is now being shaped by sustainability-driven preferences, where factors such as carbon footprint reduction, fair labor practices, recyclability, and energy efficiency play a crucial role in influencing purchasing choices [17]. Brands that fail to address sustainability concerns risk losing consumer trust, particularly among younger generations who demand greater accountability and transparency from the companies they support [7]. Consumers today, particularly those from Generation Z, have more access to information than ever before, allowing them to make highly informed purchasing decisions. They actively research brands, compare sustainability claims, and seek third-party certifications before making purchases. Unlike past generations, they are less likely to be swayed by traditional marketing tactics and instead rely on peer recommendations, digital reviews, and social media influencers to validate a brand's commitment to sustainability [18]. The increasing demand for sustainable consumption has given rise to eco-conscious consumer behavior, where individuals prioritize ethical sourcing, waste reduction, and circular economy principles [19]. Many consumers are now willing to pay premium prices for products that align with their values, demonstrating a shift from impulsive consumption toward mindful and responsible purchasing [20]. This transformation is particularly evident in industries such as fashion, food, and technology, where consumers demand eco-friendly alternatives, sustainable packaging, and reduced carbon emissions throughout the supply chain.

Sustainable consumer behavior is also closely linked to advancements in technology, as newly launched technological products are increasingly designed with sustainability in mind [21]. Innovations such as smart home systems that optimize energy consumption, AI-powered agricultural tools that minimize water and pesticide usage, and blockchain-enabled supply chains that ensure ethical sourcing are becoming central to sustainable consumerism [17]. These technological advancements not only meet the needs of environmentally conscious consumers but also drive new business models centered on sustainability, such as product-as-a-service models, rental and sharing economies, and circular production cycles [21]. The adoption of these new technologies is heavily influenced by consumer perceptions of sustainability, demonstrating that branding strategies must highlight the long-term benefits of environmentally responsible innovations [18]. Furthermore, sustainable consumption is reinforced by regulatory and social pressures, pushing businesses to integrate sustainability practices into their operations and branding efforts. Governments and international organizations are increasingly setting environmental standards and sustainability goals that companies must adhere to, influencing how businesses position themselves in the marketplace [19]. Consumers, in turn, are becoming more vigilant in holding brands accountable for greenwashing or misleading environmental claims [20]. As a result, companies must ensure that their sustainability efforts are authentic and verifiable to maintain consumer trust and brand loyalty. The role of branding in shaping sustainable consumer behavior is therefore critical, as brands must communicate their environmental commitments through clear messaging, transparent reporting, and engagement with

sustainability-focused initiatives [22]. Ultimately, sustainable consumption and evolving consumer behavior represent a shift toward a more responsible and ethical marketplace where environmental and social considerations are integral to purchasing decisions. Businesses that recognize this shift and adapt their branding and product strategies accordingly will be better positioned to engage consumers, particularly Generation Z, who are at the forefront of driving demand for sustainability [2]. As technology continues to advance, the integration of sustainability into consumer lifestyles will only become more prominent, reinforcing the need for businesses to innovate and align with sustainability values to ensure long-term market relevance and success.

2.2. Applying Social Exchange Theory to Branding

The Social Exchange Theory (SET) is a sociological and psychological framework that explains how social relationships and interactions are built on an exchange of resources, both tangible and intangible, such as support, recognition, information, or material benefits [23,24]. According to SET, individuals seek to maximize their benefits while minimizing their costs in any given relationship [23,25]. In consumer behavior, this principle suggests that consumers respond positively to brands that provide them with valuable benefits, fostering favorable attitudes, trust, and loyalty in return [26]. This exchange of value plays a crucial role in branding, as businesses must ensure that their offerings align with consumer expectations to maintain engagement and long-term commitment. SET is particularly relevant in the context of sustainable consumption, where consumers expect brands to offer not just functional benefits but also ethical and environmental value. When companies integrate sustainability into their branding, such as promoting eco-friendly packaging, ethical sourcing, and responsible production practices, consumers perceive this as a value-added exchange, reinforcing positive brand perceptions. A strong brand image enhances this relationship by shaping consumer perceptions of whether a company meets their expectations for sustainability, quality, and ethical responsibility [27,28]. Additionally, brand trust plays a vital role, as consumers need to be assured that a company's sustainability claims are genuine and not merely greenwashing [29].

Consistently delivering on sustainability commitments strengthens consumer loyalty, encouraging repeated purchases and advocacy for the brand [30]. Consumers who feel that a brand aligns with their values are more likely to remain engaged and committed over time. Brand knowledge further supports this exchange by providing consumers with information about a company's sustainability efforts, allowing them to make informed purchasing decisions [31]. The brand experience, which encompasses interactions such as using a product, visiting a website, or engaging with customer service, determines whether consumers perceive the brand's sustainability initiatives as credible and meaningful [32]. Brand awareness is the foundation of this exchange, as consumers must first recognize and understand a brand before engaging with its sustainability-driven initiatives [33]. Once awareness is established, brand engagement increases when consumers see tangible benefits from their interactions with the brand, whether through sustainable product options, ethical business practices, or contributions to environmental causes [34]. This engagement leads to deeper brand relationships, where consumers not only purchase products but actively advocate for the brand's sustainability efforts within their social circles. In conclusion, the Social Exchange Theory provides a strong foundation for understanding how branding elements influence consumer relationships based on the mutual exchange of value. When brands emphasize sustainability, they add another layer to this exchange, offering ethical and environmental benefits alongside traditional consumer benefits. This strengthens brand trust, loyalty, and engagement, as consumers increasingly seek meaningful and responsible consumption choices. By fostering transparent and impactful sustainability initiatives,

brands can enhance their long-term relationships with consumers while promoting a shift toward sustainable consumption.

2.3. Applying Social Impact Theory to Branding

The Social Impact Theory (SIT), developed by Latane in 1981, is a psychological framework that explains how individuals are influenced by others in social situations and how their behaviors, opinions, or decisions are shaped by this influence [35]. SIT is built on three fundamental principles that determine the strength of social influence: the power of the source, referring to the authority, status, or specialized knowledge of the influencing entity; the proximity, both physical and emotional, between the source and the influenced individual, with closer connections intensifying influence; and the number of influencing sources, where a greater number increases the likelihood of influence, although the effect diminishes as the number continues to grow [35,36]. This theory suggests that social influence is strongest when the sources are numerous, credible, and closely connected to the individual [37]. SIT has been widely applied in branding research, demonstrating how different sources of influence shape consumer–brand relationships [38,39]. A strong brand image amplifies influence by enhancing consumer perceptions of value, leading to a greater level of trust and loyalty [38]. The social perception of a brand significantly affects consumer attitudes, as brands with strong, positive reputations exert greater influence over purchasing decisions [40]. This dynamic is especially relevant in the context of sustainable consumption, where consumers seek brands that align with their environmental and ethical values. Businesses that position themselves as sustainability leaders can leverage social influence to encourage eco-conscious behavior, making sustainability a central element of their branding strategy.

Brand trust plays a critical role in reinforcing proximity between a brand and its consumers. When consumers trust a brand's sustainability commitments, they feel a stronger connection to it, reducing skepticism and increasing the likelihood of long-term engagement [41]. A trustworthy brand has a greater influence on consumer behavior, particularly in markets where sustainability concerns drive decision-making [42]. This relationship fosters brand loyalty, as consumers who perceive a brand's sustainability efforts as genuine are more likely to remain committed to it [39]. In cases where a brand's environmental and ethical efforts are consistently demonstrated, consumer trust transforms into brand advocacy, with loyal customers actively promoting the brand's sustainability message. Consumer knowledge also plays an essential role in social influence. The more consumers understand a brand's values, sustainability initiatives, and ethical commitments, the stronger the brand's influence becomes [41]. Consumers who are well informed about a brand's sustainability practices tend to develop a sense of shared responsibility, further strengthening their relationship with the brand and making them more likely to advocate for sustainable consumption. Similarly, brand experience shapes brand perception through real-world interactions with products and services [43]. When consumers have positive experiences with a brand that aligns with their sustainability values, they are more likely to form strong emotional connections, increasing both engagement and loyalty. This also enhances proximity, as repeated positive interactions foster a sense of closeness between the consumer and the brand.

Brand awareness further amplifies the number of influencing sources. The more recognizable and widely discussed a brand is, the more social impact it has on consumer decision-making [44]. Sustainable brands with high visibility in the market benefit from increased credibility, as their efforts are supported by a broader social network of advocates, including consumers, influencers, and industry leaders. In this context, social media, sustainability campaigns, and corporate social responsibility (CSR) initiatives help

brands increase their awareness, reinforcing their social impact on consumer behavior. Brand engagement reflects the continuous interaction between consumers and a brand, strengthening its influence over time [45]. The more actively consumers engage with a brand's sustainability initiatives—whether through social media discussions, participation in corporate sustainability programs, or advocacy for responsible consumption—the closer they feel to the brand, increasing its overall impact on their behavior [46]. Proximity is further enhanced when consumers feel personally invested in a brand's sustainability mission, as this sense of shared purpose deepens emotional and behavioral commitment. In conclusion, the Social Impact Theory provides a useful framework for understanding how branding influences consumer behavior through power, proximity, and social influence. In the context of sustainable consumption, this theory highlights how brands can drive eco-conscious behavior by leveraging social influence dynamics. When a brand builds trust, fosters strong consumer relationships, and actively promotes sustainability, it strengthens its impact on consumer decisions, reinforcing both individual and collective commitment to responsible consumption. Through effective branding strategies, businesses can position themselves as leaders in sustainability, creating a lasting social impact that extends beyond individual consumer choices to influence broader cultural and market trends.

2.4. Applying Consumer Culture Theory to Branding

The Consumer Culture Theory (CCT) is a theoretical framework that examines consumption as a cultural and social process rather than focusing solely on its economic or psychological dimensions [47]. It explores how social interactions, cultural influences, and personal identities shape consumer behavior, highlighting the ways individuals construct their identities and relationships with brands through their cultural environments [48]. CCT provides a foundation for understanding how branding is deeply embedded in social and cultural contexts, emphasizing how consumers interpret brands as symbols that align with their values, lifestyles, and societal affiliations [49]. CCT also plays a critical role in the discourse on sustainable consumption, as it highlights how cultural identity and social influence drive consumer choices toward environmentally responsible brands. Consumers are increasingly drawn to brands that promote sustainability, ethical sourcing, and environmental responsibility, seeing them as representations of their personal values and cultural beliefs [47]. A brand's image is not only a reflection of its reputation but also a means through which consumers express their environmental and ethical commitments. Consumers prefer brands that align with their personal values, social identity, and broader cultural narratives related to sustainability and responsibility [50].

Brand trust within CCT is strengthened when a brand's sustainability efforts are perceived as genuine and consistent with ethical and cultural standards [51]. Consumers seek brands that authentically engage with sustainable practices rather than those that simply capitalize on sustainability trends for marketing purposes. When brands integrate environmental responsibility into their core values and operations, they foster trust and long-term consumer commitment. Additionally, brand loyalty develops when consumers deeply associate a brand with their cultural and ethical beliefs, reinforcing the importance of sustainability in their purchasing decisions [52]. Unlike traditional views of loyalty, which emphasize repeated purchases due to habit or satisfaction, CCT suggests that loyalty is built on a brand's ability to represent the cultural and ideological perspectives of its consumers. Brand knowledge extends beyond product specifications and functionality, encompassing an understanding of a brand's environmental and ethical impact. Consumers actively seek information about sustainability efforts, such as carbon footprint reduction, fair trade practices, and circular economy initiatives [53]. The more a brand communicates its sustainability efforts effectively, the stronger its influence on consumer behavior, reinforcing

the link between knowledge and sustainable consumption [54]. Similarly, brand experience becomes an avenue for cultural expression, as consumers' interactions with brands are shaped by their cultural and environmental consciousness. Positive brand experiences, such as participating in sustainability-focused initiatives, eco-friendly packaging, or engaging in corporate social responsibility programs, enhance consumer loyalty and deepen their commitment to sustainable brands [55]. Brand awareness within the CCT framework arises from a brand's ability to engage with cultural and social movements, positioning itself as a key player in sustainability narratives [56]. The more a brand integrates itself into discussions around climate action, responsible consumption, and social change, the more recognized and influential it becomes [57]. Successful brands actively participate in these conversations through educational campaigns, community engagement, and digital storytelling, reinforcing their presence in the collective cultural consciousness.

Finally, brand engagement in CCT represents consumers' active participation in a brand's sustainability initiatives, demonstrating their commitment to ethical and eco-conscious lifestyles. Consumers who identify with a brand's sustainability values are more likely to engage with it through advocacy, social media interactions, and participation in brand-led sustainability programs [58]. Engagement in this context extends beyond transactional interactions to include emotional investment and cultural alignment, where consumers view themselves as part of a larger movement that promotes responsible consumption [59]. In conclusion, the Consumer Culture Theory highlights how branding influences consumer identity and values within cultural and social contexts. As sustainable consumption becomes a defining factor in modern consumer behavior, CCT provides valuable insights into how consumers connect with brands that promote environmental responsibility, ethical business practices, and social consciousness. Brands that successfully integrate sustainability into their cultural narrative not only foster stronger consumer relationships but also contribute to broader efforts in creating a more responsible and environmentally conscious marketplace.

2.5. Applying Theory of Reasoned Action to Purchase Intention

The Theory of Reasoned Action (TRA) is a psychological framework that explains the connection between an individual's attitudes and their behavior, particularly in decision-making processes [60]. According to this theory, a person's behavior can be predicted by their intention to engage in that behavior, which is shaped by two primary factors: attitude toward the behavior and subjective norms [61]. Attitude refers to an individual's personal assessment of whether a behavior is positive or negative, while subjective norms relate to the social pressures individuals experience, based on their perception of how others expect them to behave [62]. TRA suggests that online consumer behavior, including purchase decisions, is influenced by both internal attitudes and external social expectations, particularly through social media interactions and brand perception [63]. Consequently, digital marketing and influencer-driven campaigns play a significant role in shaping consumer preferences, brand engagement, and purchase behavior [64]. TRA is also highly relevant in the context of sustainable consumption, as it helps explain how attitudes toward sustainability and social norms influence environmentally responsible purchasing behavior. Consumers with a strong positive attitude toward sustainable products, such as eco-friendly packaging, ethically sourced materials, and carbon-neutral production processes, are more likely to develop a purchase intention for these products. Similarly, if consumers perceive strong social pressure to engage in sustainable consumption—whether from peers, influencers, or regulatory expectations—they are more likely to prioritize sustainability in their purchasing decisions [65]. Social media platforms and sustainability-

focused campaigns contribute significantly to these social norms, reinforcing the perception that responsible consumption is expected and valued in society [66].

Within the TRA framework, purchase intention serves as a critical predictor of actual consumer behavior [67]. A consumer's intention to purchase sustainable products is influenced by their personal beliefs about environmental responsibility and the level of encouragement they receive from their social environment. The stronger the consumer's belief in sustainability and the greater the societal pressure to adopt sustainable consumption habits, the higher the likelihood that they will follow through with their intentions by making eco-friendly purchases [68]. Additionally, post-purchase experiences, such as satisfaction with a product's quality, environmental impact, and brand transparency, play a crucial role in shaping long-term consumer loyalty toward sustainability-driven brands. Sustainable consumption behaviors, such as choosing reusable products, supporting ethical supply chains, and reducing waste, are often reinforced by TRA's concept of subjective norms. As sustainability movements gain momentum, consumers feel an increasing expectation to align their consumption choices with environmentally friendly and ethical practices. Businesses can leverage this by promoting sustainability through branding, digital engagement, and corporate social responsibility initiatives, ensuring that their products align with evolving consumer expectations. For example, brands that openly communicate their sustainability commitments and use certifications such as Fair Trade, Carbon Neutral, or B Corporation status can strengthen consumers' positive attitudes and perceived social norms around sustainability, increasing purchase intention and long-term loyalty. In conclusion, the Theory of Reasoned Action provides a valuable framework for understanding how consumer attitudes and social influences shape purchasing behavior. In the context of sustainable consumption, TRA highlights the importance of personal beliefs and societal expectations in driving responsible purchasing decisions. As businesses and policymakers increasingly focus on sustainability, understanding these behavioral influences can help shape effective marketing strategies, educational initiatives, and policy interventions to encourage long-term sustainable consumption patterns. Brands that successfully integrate sustainability messaging into their branding strategies, engage consumers through transparent and ethical practices, and leverage social norms to reinforce sustainable behaviors are more likely to build lasting consumer relationships and contribute to a more environmentally conscious marketplace.

2.6. Consumer Behavior Patterns Among Generation Z

Studying the consumer behavior of Generation Z is crucial for businesses and researchers, given this generation's increasing influence on global markets and its distinct characteristics. According to Bandara and Liyanage [69], Generation Z includes individuals born between 1995 and 2010, making them the first generation to grow up entirely in the digital era, with no experience of a pre-digital world. Unlike previous generations, Gen Z's exposure to rapid technological advancements and continuous access to digital media has shaped their behaviors, preferences, and expectations [70]. Their consumption habits are constantly evolving as they mature, influenced by digital interactions, emerging trends, and shifting social values [71]. Understanding the factors that drive Gen Z's purchasing decisions is critical for businesses seeking to develop effective marketing strategies and tailor product and service offerings to meet their expectations [72]. One of the defining traits of Generation Z is their strong emphasis on sustainability, social responsibility, and ethical consumption, making sustainable consumption a key factor in their decision-making process. Unlike older generations, who may have prioritized price or brand legacy, Gen Z consumers actively seek brands that align with their values of environmental protection, ethical sourcing, and transparency [73]. Businesses must respond to these preferences by

integrating sustainability into their branding, marketing strategies, and product development. Failure to do so may result in disengagement, as Gen Z consumers are quick to reject brands that do not align with their ethical and environmental concerns. Gen Z primarily interacts with brands through digital platforms, significantly reshaping how companies approach marketing, consumer engagement, and service delivery [74]. Their preference for sustainability-driven products has pushed businesses to incorporate eco-friendly innovations such as biodegradable packaging, carbon-neutral supply chains, and sustainable production practices. These expectations extend beyond individual products to a brand's overall operations, corporate social responsibility efforts, and long-term sustainability goals. For businesses, maintaining a competitive edge requires ongoing innovation and adaptation to Gen Z's sustainability-driven demands [75]. The economic power of Generation Z further reinforces their importance in shaping consumer trends. As of 2024, Gen Z accounts for approximately 25–30% of consumers, making it the largest generational consumer group [76]. Their estimated purchasing power has reached USD 360 billion, and as they continue entering the workforce and advancing in their careers, their disposable income is expected to grow substantially [77]. By 2030, Generation Z is projected to be the dominant demographic in terms of purchasing influence, solidifying its role as a key driver of market evolution [78]. Businesses that fail to prioritize this generation's expectations—particularly their preference for sustainable consumption—risk losing relevance and long-term profitability [73].

Additionally, Gen Z's influence extends beyond individual purchasing decisions, as they play a major role in shaping family and household consumption choices [75]. Their ability to sway parental purchasing decisions, advocate for sustainable alternatives, and drive household brand preferences highlights the importance of appealing to this demographic at both an individual and collective level. Businesses that successfully align their branding strategies with Gen Z's values not only gain direct consumers but also establish broader generational loyalty within households. To remain relevant in a rapidly evolving consumer environment, businesses must leverage Gen Z's digital behaviors, sustainability values, and preference for ethical brands. This includes adopting emerging trends such as social commerce, influencer marketing, and transparency-driven storytelling to effectively communicate sustainability initiatives [74]. The growing demand for sustainable consumption presents an opportunity for businesses to create long-term value by integrating environmental responsibility into their brand identity. By proactively addressing Gen Z's expectations, companies can position themselves as leaders in sustainable innovation while fostering lasting consumer relationships.

2.7. Newly Launched Technological Products

Newly launched technological products refer to recently introduced goods, devices, or software applications that incorporate innovative technologies aimed at improving functionality, efficiency, or user experience. The introduction of new products is essential for business growth and long-term sustainability, particularly in industries where technological advancements continually reshape consumer expectations [79]. However, predicting the success of these innovations remains a major challenge, as failed product launches often result in substantial financial losses [70]. Understanding consumer behavior, especially among Generation Z, is crucial for determining market trends and optimizing the adoption of new technological solutions [80]. As a generation raised in the digital era, Gen Z is highly informed and tech-savvy, with a strong preference for innovation and sustainability [70]. Their purchasing decisions are shaped not only by functionality and convenience but also by a brand's ability to demonstrate social responsibility and environmental consciousness. Sustainable consumption is a significant factor in Generation Z's approach to newly

launched products. Unlike previous generations, which often prioritized affordability and brand legacy, Gen Z actively seeks products that reflect ethical production, eco-friendly materials, and a commitment to sustainability [81]. This preference extends beyond everyday consumer goods to include technological innovations such as energy-efficient devices, biodegradable smart packaging, and AI-driven solutions that optimize resource use. These technologies may span across various sectors, including consumer electronics, environmental innovations, and agricultural applications, highlighting Gen Z's broad interest in sustainable innovation. Whether it be mobile devices, wearables, smart home technologies, or precision tools, Gen Z evaluates new products based on their sustainability impact and alignment with their values [82]. Social media, peer recommendations, and influencer endorsements play a significant role in shaping Generation Z's perception and adoption of new technological products [2]. Digital channels are essential tools for raising awareness, generating excitement, and fostering trust in new product launches [83]. Social media platforms serve as hubs for product discovery, exposing Gen Z consumers to engaging marketing campaigns, real-time product demonstrations, and detailed reviews [84]. These digital experiences are crucial in shaping first impressions and reinforcing the perceived value of a new product, particularly when sustainability is an integral part of the brand message [85].

Additionally, Generation Z places great emphasis on authenticity and personalization in their interactions with brands [86]. They prefer products that align with their unique preferences and ethical concerns, making personalization an essential aspect of product marketing [87]. Newly launched technological products that incorporate user-centered design, innovative features, and sustainable production methods are more likely to resonate with this demographic [82]. Furthermore, brands that highlight their commitment to sustainable consumption, such as renewable energy use, carbon footprint reduction, or ethical sourcing, gain a competitive edge among Gen Z consumers, who actively seek out companies that align with their values [83]. The demand for convenience and instant gratification also influences how Generation Z engages with new products [85]. These consumers expect seamless online shopping experiences, fast delivery, and accessible customer support, with little tolerance for inefficiency [86]. Companies that fail to offer an effortless digital experience risk disengagement, as Gen Z values consistency and transparency in brand interactions [82]. Sustainable business models, such as subscription services for eco-friendly products, digital repair guides for electronic devices, and second-life programs for technology recycling, further align with this generation's desire for convenience and environmental responsibility. Word-of-mouth marketing, particularly electronic word-of-mouth (eWOM), plays a crucial role in the success or failure of new product launches [81]. Positive consumer experiences shared through online forums, social media discussions, and digital product reviews significantly accelerate product adoption, while negative reviews can hinder sales [70]. This dynamic is especially relevant for sustainability-focused products, as consumers actively seek out peer testimonials and third-party certifications to verify a brand's eco-friendly claims. The increasing trend of transparency in product development, such as publishing lifecycle assessments or environmental impact reports, further strengthens consumer trust and engagement.

Generation Z's enthusiasm for innovation and exclusivity also plays a crucial role in their response to product launches [80]. Limited releases, beta testing opportunities, and early-access programs create a sense of exclusivity, tapping into their desire to be among the first to experience cutting-edge technologies [87]. This extends to sustainable innovations, where companies launching products with breakthrough eco-friendly features can generate significant interest by offering unique experiences, such as virtual reality product previews or interactive sustainability challenges [2]. In conclusion, Generation

Z's consumer behavior is shaped by their technological fluency, sustainability-driven purchasing habits, and demand for personalized experiences. Newly launched products must align with their expectations for innovation, ethical responsibility, and seamless digital interaction to succeed in this competitive market. Brands that successfully integrate sustainability into their new product strategies—through transparent communication, social media engagement, and immersive digital experiences—will not only capture Gen Z's attention but also build long-term brand loyalty within this influential consumer segment. In the context of this study, this includes not only hardware such as smart devices or energy-efficient electronics but also software applications that support sustainable practices, such as apps for carbon tracking, digital platforms promoting conscious consumption, tools that enable resource optimization and waste reduction, and technologies used in agricultural and food innovation. The current section outlines the general category of newly launched technological products as the central focus of this study, which includes but is not limited to agricultural innovations. Table 1 presents the sub-categories of technological products considered in this study, offering a structured overview of the types of innovations most relevant to Generation Z in the context of branding and sustainable consumption. The table categorizes these technologies into four key groups: consumer electronics, green technologies, agricultural and food tech, and mobile apps and digital services. Each category is described in terms of the types of products it includes, as well as its specific relevance to the study. This classification was used to guide the respondents' reflections, as they were asked to identify a recently launched technological product they would like to purchase and answer the questionnaire based on that product. The inclusion of diverse yet targeted technological sectors allows this study to capture the nuances of Gen Z's brand perceptions across different innovation contexts while maintaining a clear focus on sustainability, digital engagement, and ethical consumption.

Table 1. Sub-categories of technological products used in the study.

Technology Category	Description	Relevance to the Study
Consumer Electronics	Includes smart devices, wearable technology, and innovative electronic gadgets frequently used by Gen Z consumers.	Used to assess how branding influences the adoption of cutting-edge personal technology by Gen Z.
Green Technologies	Covers environmentally friendly products such as solar-powered devices, biodegradable tech, and reusable smart items.	Provides insight into how sustainability-driven branding appeals to Gen Z values and influences purchasing decisions.
Agricultural and Food Tech	Refers to digital platforms and tools that support sustainable agriculture, food traceability, and smart farming practices.	Explores branding effectiveness in emerging technologies tied to ethical food systems and sustainability.
Mobile Apps and Digital Services	Encompasses apps and digital platforms that promote sustainable behavior, ethical consumption, and eco-friendly lifestyles.	Represents Gen Z's interaction with digital branding in platforms aligned with environmental and social awareness.

The existing literature consistently highlights the importance of branding variables, such as online brand experience, brand engagement, image, trust, loyalty, awareness,

behavioral intention, and brand knowledge, in influencing consumer purchase decisions. Numerous studies emphasize that strong branding fosters positive consumer perceptions and behavioral responses, particularly when brands align with broader societal values. In parallel, sustainable consumption has emerged as a central theme that shapes modern consumer expectations, suggesting that brand strategies grounded in sustainability may amplify their impact on purchase intention. However, while individual branding elements have been examined in various contexts, there remains a need for a comprehensive model that investigates their collective influence on purchase intention, specifically within the context of sustainable consumption. As illustrated in Figure 1, this study integrated key branding constructs, such as online brand experience, brand engagement, and brand trust, under the overarching theme of sustainability, thereby highlighting how these factors jointly shape the consumer purchase intention of Gen Z. To address this gap, the following hypotheses are proposed.

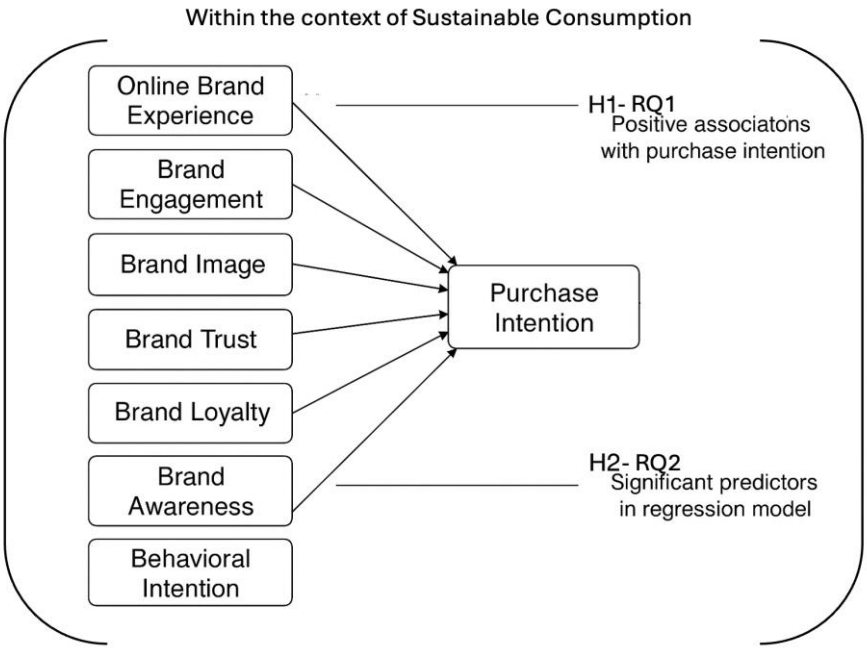


Figure 1. Research framework.

H1: *Branding variables—online brand experience, brand engagement, brand image, brand trust, brand loyalty, brand awareness, behavioral intention, and brand knowledge—are positively associated with consumers' purchase intention in the context of sustainable consumption.*

H2: *Online brand experience, engagement, image, trust, loyalty, awareness, behavioral intention, and brand knowledge significantly predict consumers' purchase intention in a regression model situated within the context of sustainable consumption.*

3. Materials and Methods

3.1. Research Method

Consumer behavior research has been explored through multiple approaches. This study employs a quantitative method to produce data that are both measurable and comparable. More specifically, it utilizes a cross-sectional research design, which is widely used to examine associations between variables or to capture a snapshot of population characteristics at a single point in time [88]. A cross-sectional research design is the most appropriate fit for this study as it aims to examine the relationships between various branding

dimensions and Generation Z's purchase intentions toward newly launched sustainable technological products at a specific point in time. The primary objective is to identify associations, such as how brand trust, loyalty, or online experience influence sustainable consumption behavior, rather than to track changes or causality over time. Cross-sectional designs are well suited for capturing a snapshot of consumer attitudes, perceptions, and intentions within a defined population, allowing for efficient data collection and analysis [88,89]. Given that Gen Z is a fast-evolving demographic with distinct digital and sustainability-driven preferences, this approach enables timely insights into their behavior. Moreover, this design supports the use of quantitative methods, such as regression analysis, to identify significant predictors, which aligns directly with this study's goal of informing branding strategies for businesses aiming to engage this segment effectively.

3.2. Sampling and Participants

This study focused on Generation Z as the target population, specifically individuals born between 1997 and 2012, who are recognized for their digital proficiency, technological familiarity, and significant influence as consumers. However, due to challenges in obtaining consent from legal guardians, individuals under 18 were excluded from the research, posing a limitation in fully capturing the behaviors of this generational group. Therefore, participants were aged between 18 and 26 years old, representing the adult segment of Generation Z. The final research sample consisted of 302 participants, exceeding the minimum sample size requirement established through G-Power analysis, which indicated that 160–180 participants would be sufficient to achieve a power of 0.80 with a significance level of $\alpha = 0.05$ and medium-to-large effect sizes. A convenience sampling method was primarily utilized, complemented by systematic sampling techniques in certain phases to enhance representativeness. Participants were selected based on accessibility, ensuring efficient data collection, and they were recruited through a list of university students used a sampling frame. To minimize potential biases, individuals were drawn from a sampling frame where available units were recorded without a predefined order, with selection occurring at alternating odd-numbered positions (1, 3, 5, 7, etc.). Although there were no financial incentives for the participants, they were informed that their input would contribute to academic research aimed at better understanding Gen Z consumer behavior, which helped encourage participation. Convenience sampling was chosen for its practicality, particularly given Generation Z's strong online presence and willingness to participate in digital surveys. This approach ensured rapid and cost-effective data collection while aligning with the digital behaviors of the target demographic. The incorporation of systematic sampling elements helped strengthen the study's reliability by reducing selection bias and increasing the accuracy of findings. This hybrid method ensured that the sample effectively captured the diverse behaviors and attitudes of Generation Z, making it a suitable choice for exploring consumer trends in a highly digitalized and dynamic environment. Although convenience sampling may introduce selection bias, it was particularly suited for this study due to the online nature of the target population, which is highly active and reachable through digital channels. To address potential limitations in representativeness and selection, systematic sampling was integrated to introduce a level of structure in participant selection, reducing random bias and improving the consistency of the data. This hybrid approach offered both practicality and methodological rigor, balancing accessibility with efforts to enhance the reliability of the sample.

Regarding demographic characteristics (Table 2), 52.3% of the respondents identified as females, offering a near-balanced gender representation consistent with broader Generation Z population trends [90]. A significant majority (85.4%) were current university students, reflecting the educational engagement typical of this generation [91], particularly among

individuals aged between 18 and 26 years who are pursuing higher education. In terms of the socioeconomic background, percentages over EUR 10.000 represent middle- and high-income segments, which are often targeted by consumer technological brands [92]. Finally, the average age of participants was 20.52 years (SD = 2.35), providing a well-balanced dataset for analyzing consumer behavior within this influential generational cohort.

Table 2. Demographics.

Variable		Percentage
Gender	Male	47.7
	Female	52.3
Educational level	High school	0.7
	University Student	85.4
	Bachelor's degree	11.2
	Masters' degree	2.7
Family income	<EUR 10,000	19.2
	EUR 10–20,000	41.7
	>EUR 20,000	39.1
Age	Mean	SD
	20.5298	2.35068

3.3. Research Tool and Data Collection

The primary research instrument for this quantitative study was a structured questionnaire designed to examine various aspects of consumer behavior, specifically regarding Generation Z's purchasing decisions related to newly introduced technological products. The questionnaire was divided into three sections, each addressing distinct areas: demographic characteristics, purchase intention, and brand-related variables. Its structured format aimed to present information clearly and concisely, ensuring ease of comprehension for respondents. Regarding the type of newly launched technological product and in order to ensure consistency in responses, participants were explicitly asked at the beginning of the questionnaire to state the most recent newly launched technological product they would like to purchase along with the brand name. This open-ended prompt appeared before the main set of survey items and was designed to anchor their responses in a specific context. Participants were then clearly instructed to keep that product in mind while completing all subsequent questions related to brand dimensions, perceptions, and purchase intention. This approach allowed us to maintain flexibility in the types of technologies considered—reflecting the diverse preferences of Generation Z—while also ensuring that each participant was referring to a particular product throughout the research. The responses included a range of technologies across categories such as consumer electronics, green devices, mobile applications, and sustainable agricultural tools. The second part of the questionnaire included items measuring brand-related constructs (e.g., brand image, brand trust, knowledge, and engagement), which were adapted from the existing literature and intentionally worded in a product-neutral manner to be applicable across different technology types. The third section of the questionnaire collected responses on purchase intention. This structure enabled the study to explore branding influences within a real-world, participant-defined context while also allowing for post hoc categorization of product types, as reflected in the sub-categories presented in Table 1.

To enhance the questionnaire's clarity and relevance, a pilot version was tested before the main data collection. This pre-testing phase involved discussions with participants to assess the clarity, appropriateness, and relevance of the questions, allowing for refinements that ensured the quality and accuracy of the collected data. The questionnaire included

demographic indicators such as age, gender, education level, and household income, providing a comprehensive overview of respondent characteristics. To measure participants' perceptions, attitudes, and behavioral intentions, the questionnaire utilized 5- or 7-point Likert scales, featuring response anchors such as "Strongly Disagree–Strongly Agree" or "Not at all–Very much". In cases where a binary response was appropriate, dichotomous scales were also incorporated. The collected data were used for in-depth statistical analyses, offering valuable insights into consumer behavior and preferences regarding new technology products. A significant strength of the questionnaire was its reliance on well-established scales that have been extensively applied in previous studies, ensuring both the validity and reliability of the measurements (Table 3). These standardized measures contributed to the robustness of the research findings, reinforcing the credibility of this study's results.

Table 3. Scales used in the primary research.

Variable	Source	Item Example
Brand behavioral intention	Rather and Hollebeek [93]; Coudounaris and Sthapit [94]	I plan to purchase this brand again in the near future.
Online brand engagement	Adapted from Rather and Hollebeek [93]	I plan to purchase this brand again in the near future.
Online brand experience	Rather and Hollebeek [93]; Tsaur et al. [95]	This brand gives me a sense of identity.
Brand awareness	Adapted from Yoo, Donthu, and Lee [96]	I am familiar with one or more products from this brand.
Brand trust	Kumar Ranganathan et al. [97]; Johnson and Grayson [98]	I trust this brand and feel confident in my choice.
Brand knowledge	Adapted from Hanaysha [99]; Jin, Lee, and Huffman [100]	- *
Brand image	Adapted from Hanaysha [99]; Jin, Lee, and Huffman [100]	This brand aligns with my values and beliefs and makes me feel better.
Brand loyalty	Adapted from Hanaysha [99]; Jin, Lee, and Huffman [100]	I intend to continue purchasing the same brand.
Purchase intention	Juniwati [101]; Hutter et al. [102]	I intend to purchase this brand in the near future.

* The brand knowledge scale is created as the sum of brand image, trust, loyalty, and brand awareness.

To ensure the reliability of responses, the questionnaire incorporated well-established scales. Following data collection, rigorous validation procedures were applied to assess both the validity and reliability of the measurement tool. These procedures included confirmatory factor analysis (CFA), outlier detection, reliability testing, and normality checks, which are discussed in detail in the following chapter. CFA was conducted to confirm the structural integrity of the scales, ensuring that they accurately measured the intended constructs. Reliability analysis assessed the internal consistency of the scales, while outlier detection and normality tests were performed to maintain the statistical soundness of the dataset. Once the data were verified as reliable and valid, both descriptive and inferential statistical analyses were conducted to test the research hypotheses and

derive meaningful insights. Inferential statistical techniques, including correlation analysis and multiple regression, were employed to examine relationships between variables and validate research hypotheses. This study adhered to the ethical guidelines outlined in the Declaration of Helsinki, ensuring that participants engaged voluntarily, provided informed consent, and had their privacy and confidentiality protected [103]. Additionally, participant confidentiality was ensured by collecting responses anonymously and storing data securely with restricted access. This study received ethical clearance from the Institutional Review Board (IRB) of the International Hellenic University, ensuring adherence to ethical research standards involving human participants. Reliability testing demonstrated strong internal consistency across most variables, as indicated by Cronbach's Alpha values, confirming the accuracy and stability of the measurements. The results affirm that the questionnaire was a reliable instrument for achieving this study's research objectives, offering a robust foundation for subsequent analyses and conclusions (Table 4).

Table 4. Reliability analysis.

Scale	Cronbach's Alpha	Items
Brand Image	0.836	5
Brand Trust	0.866	5
Brand Loyalty	0.858	5
Brand Awareness	0.739	4
Brand Behavioral Intention	0.754	2
Purchase Intention	0.801	5
Online Brand Experience	0.892	12
Online Brand Engagement	0.905	9
Brand Knowledge	0.912	19

The results of the confirmatory factor analysis (CFA) indicate that the measurement scales used in the study exhibit strong construct validity and are appropriate for further analysis (Table 5). For each construct, the Kaiser–Meyer–Olkin (KMO) values exceeded the minimum acceptable threshold of 0.50, indicating sampling adequacy, with most scales showing values well above 0.7, suggesting meritorious to excellent suitability for factor analysis. Bartlett's test of sphericity was significant ($p < 0.001$) across all constructs, confirming the presence of sufficient correlations among items to justify factor extraction. These results also imply that multicollinearity among items is not present at problematic levels, as high KMO values generally reflect balanced inter-item correlations that are strong enough to indicate shared variance without excessive redundancy. The significance of Bartlett's test further supports the absence of extreme multicollinearity by rejecting the null hypothesis that the correlation matrices are identity matrices. Online brand engagement was best represented by three factors, explaining a high total variance of 84.964% and with a strong KMO of 0.847. Similarly, brand image (1 factor; 60.448% variance explained; KMO = 0.812), brand trust (1 factor; 65.921%; KMO = 0.865), brand loyalty (1 factor; 64.646%; KMO = 0.797), and online brand experience (5 factors; 82.277%; KMO = 0.888) demonstrated good structural consistency. Brand awareness yielded one factor explaining 57.082% of the variance, though with a slightly lower KMO value of 0.691, which is still within an acceptable range. The brand knowledge scale, which included a larger number of items (19), extracted four factors and accounted for 65.264% of the variance, with a high KMO of 0.874, indicating a well-structured and multidimensional construct. Lastly, brand behavioral intention, while comprising only two items, formed a single factor explaining 81.090% of the variance. However, it displayed the lowest KMO value (0.500), indicating marginal adequacy, likely due to the limited number of items in the scale and the restricted capacity to assess inter-item correlation. Overall, these findings support the internal validity of

the measurement model, confirm that the items are grouped meaningfully under their respective constructs, and suggest that multicollinearity does not pose a threat to the integrity of the factor structure. Additional diagnostics, such as variance inflation factors (VIFs), will further validate this in the context of regression analyses.

Table 5. Confirmatory factor analysis and multicollinearity assessment for constructs.

Scale	Items	Factors Extracted	Total Variance Explained	KMO	Bartlett's Test of Sphericity
Online brand engagement	9	3	84.964	0.847	$p < 0.001$
Online brand experience	12	5	82.277	0.888	$p < 0.001$
Brand image	5	1	60.448	0.812	$p < 0.001$
Brand trust	5	1	65.921	0.865	$p < 0.001$
Brand loyalty	5	1	64.646	0.797	$p < 0.001$
Brand awareness	4	1	57.082	0.691	$p < 0.001$
Brand knowledge	19	4	65.264	0.874	$p < 0.001$
Brand behavioral intention	2	1	81.090	0.500	$p < 0.001$
Purchase intention	5	1	55.951	0.712	$p < 0.001$

The data collection process was conducted in a controlled environment with the presence of the researchers to ensure clarity and support. Before beginning the survey, participants were provided with a detailed participant information sheet outlining the purpose of the study, their rights, and the confidentiality of their responses. After reviewing this information, participants signed a consent form to confirm their voluntary participation. The questionnaire was completed on-site, allowing participants to ask questions and seek clarification from the researchers as needed. This interactive approach helped ensure that all items were fully understood, thereby enhancing the quality and reliability of the data. The entire process took approximately 10 to 15 min per participant.

4. Results

4.1. Correlations of the Brand Dimensions and Online Purchase Intention

Table 6 presents Spearman's rho correlation coefficients, illustrating the relationships between purchase intention and various branding-related factors. The correlation values indicate both the strength and direction of these relationships, with all variables showing statistically significant positive correlations ($p < 0.01$) with purchase intention. This suggests that stronger branding dimensions are generally associated with a higher likelihood of purchasing newly introduced technological products. Among the branding dimensions, online brand experience (r = 0.452—moderate correlation) demonstrates one of the strongest correlations with purchase intention, emphasizing the crucial role of digital brand interactions in influencing consumer behavior. This finding suggests that Generation Z responds positively to engaging and well-designed digital touchpoints. In the context of sustainable consumption, companies can practically leverage this by creating interactive, informative, and visually compelling digital content that highlights their sustainability efforts, such as showcasing product lifecycle transparency, eco-friendly production methods, and environmental certifications. Features like virtual farm tours, educational videos, sustainability dashboards, and gamified learning experiences can enhance the perceived authenticity and impact of a brand's environmental initiatives. By embedding sustainability narratives into every stage of the digital experience, from website navigation to post-purchase communication, brands can effectively influence Gen Z's values-driven purchasing decisions while building trust and long-term engagement.

Table 6. Correlations of the brand dimensions and online purchase intention.

		1	2	3	4	5	6	7	8	9
Spearman's rho	1. Purchase intention	-	0.452 **	0.419 **	0.382 **	0.240 **	0.364 **	0.234 **	0.256 **	0.395 **
	2. Online brand experience		-	0.692 **	0.593 **	0.371 **	0.468 **	0.360 **	0.405 **	0.598 **
	3. Brand engagement			-	0.611 **	0.425 **	0.583 **	0.465 **	0.544 **	0.674 **
	4. Brand image				-	0.438 **	0.532 **	0.571 **	0.505 **	0.825 **
	5. Brand trust					-	0.509 **	0.495 **	0.415 **	0.738 **
	6. Brand loyalty						-	0.555 **	0.670 **	0.840 **
	7. Brand awareness							-	0.501 **	0.740 **
	8. Brand behavioral intention								-	0.669 **
	9. Brand knowledge									-

** Correlation is significant at the 0.01 level (2-tailed).

Similarly, brand engagement (r = 0.419) shows a moderate positive correlation, indicating that consumers who actively interact with and feel emotionally connected to a brand are more likely to make a purchase. This finding is particularly relevant when interpreted through the lens of the Theory of Planned Behavior, which emphasizes the role of attitudes and perceived behavioral control in shaping intention. In this case, brand engagement contributes to more favorable attitudes toward sustainable technological products, reinforcing Gen Z's intention to adopt such products. From the perspective of Consumer Culture Theory, engagement reflects a deeper identification with the brand's values and lifestyle narratives. Brands that align their messaging with Gen Z's cultural priorities, such as environmental responsibility and innovation, are more likely to foster emotional investment and loyalty. Therefore, to promote sustainable technological products effectively, brands should create immersive, value-driven experiences through interactive content, influencer collaborations, and digital storytelling that resonate with Gen Z's personal identity and social environment. This approach not only strengthens brand–consumer relationships but also positions sustainability as a socially and culturally relevant norm.

Brand image (r = 0.382—moderate correlation) also plays a significant role, highlighting that consumer perceptions of a brand's reputation and positioning influence their purchasing decisions. This finding aligns with the Theory of Reasoned Action, which suggests that attitudes formed through positive brand perceptions contribute directly to behavioral intentions. When Gen Z consumers view a brand as environmentally responsible and ethically sound, they are more likely to form favorable attitudes toward its products, increasing their intent to purchase. From the perspective of Consumer Culture Theory, brand image is more than a reflection of functional quality—it becomes a symbolic representation of values, identity, and lifestyle. Gen Z consumers, in particular, seek brands that reflect their commitment to sustainability and social justice; thus, a brand that projects a strong, ethical, and eco-conscious image can tap into these deeper cultural and personal values. Additionally, Social Exchange Theory reinforces this dynamic by framing brand image as a perceived value exchange; when consumers view a brand positively, especially one committed to sustainability, they feel that the emotional and ethical "return" justifies their loyalty and purchasing behavior. In this context, a brand's environmental positioning becomes a form of social and moral currency. Therefore, to influence Gen Z's purchase intention of sustainable technological products, brands must consistently communicate and reinforce their environmental commitments through authentic storytelling, transparency in sourcing and production, and visible sustainability initiatives.

On the other hand, brand trust (r = 0.240—weak correlation), while still significant, exhibits a weaker correlation compared to other factors, implying that trust alone may not be the dominant predictor of purchase intention. However, trust remains critical in the context of sustainable consumption. From the perspective of Social Exchange Theory,

trust is a key component in the perceived value exchange between consumers and brands. Gen Z consumers, who are highly attuned to issues of greenwashing and brand integrity, are more likely to engage with brands they believe will deliver on their sustainability promises. When a brand demonstrates transparency, ethical sourcing, and environmental accountability, it reduces perceived risk, which enhances the consumer's willingness to engage in repeated exchanges. Moreover, the Theory of Planned Behavior emphasizes the importance of perceived behavioral control and attitudes in shaping intentions. Trust can enhance both by reducing uncertainty around product claims and by reinforcing the belief that choosing a particular brand aligns with personal values and expected outcomes. In this way, trust becomes a foundational element that enables positive attitudes and facilitates purchase behavior. From a Consumer Culture Theory lens, trust reflects the authenticity and moral alignment that Gen Z seeks in the brands they associate with. For this generation, brand trust is not only about product reliability but also about whether the brand's values resonate with their own social and environmental ideals. Thus, while brand trust may not be the strongest statistical predictor, it functions as an essential enabler that validates other branding dimensions, such as image and engagement, and supports Gen Z's broader decision-making process in adopting sustainable products.

Brand loyalty (r = 0.364—moderate correlation) suggests that retaining customers and fostering long-term commitment positively impact purchase decisions. This finding is particularly relevant for sustainable consumption, as consumers who are loyal to a brand that prioritizes eco-friendly initiatives are more likely to continue supporting it over time. The Theory of Planned Behavior reinforces the role of loyalty by highlighting how repeated positive experiences shape attitudes and perceived behavioral control. Loyalty reflects the internalization of positive beliefs about a brand, which simplifies future decision-making and strengthens the intention to repurchase. In the context of sustainable consumption, loyalty serves as a behavioral anchor, where consumers continue choosing environmentally responsible brands not only out of habit but because it aligns with their long-term values. Meanwhile, brand awareness (r = 0.234—weak correlation) shows the weakest correlation with purchase intention, suggesting that mere recognition of a brand is insufficient in driving actual purchases. This reinforces the idea that brands must go beyond simple visibility and instead focus on meaningful engagement, sustainability messaging, and educational campaigns that inform consumers about the impact of their purchasing choices. According to the Theory of Reasoned Action, awareness must translate into favorable attitudes and normative beliefs to influence intention. For Gen Z, recognizing a brand does not necessarily result in a purchase unless it is accompanied by positive associations related to sustainability, authenticity, and social impact.

Brand behavioral intention (r = 0.256) demonstrates a weak relationship with purchase intention, suggesting that while consumers may express intent to engage with a brand, additional factors such as sustainability commitments and product benefits influence their final decision. This relationship is best understood through the Theory of Planned Behavior, which highlights that intention alone does not guarantee behavior unless accompanied by strong attitudes and perceived behavioral control. For Gen Z, this means that even if they express intent to support a brand, they are unlikely to follow through unless they perceive that their purchase supports meaningful causes, such as environmental protection or ethical sourcing, and that the process is accessible and impactful. Lastly, brand knowledge (r = 0.395) has a moderate positive correlation with purchase intention, demonstrating that well-informed consumers are more inclined to make a purchase. This finding underlines the importance of providing transparent and accessible information about how new agricultural technologies contribute to environmental sustainability and efficiency, further motivating consumers to adopt these innovations. Moreover, this finding aligns

with the Theory of Planned Behavior, which posits that greater knowledge strengthens both attitudes and perceived behavioral control, thereby increasing the likelihood of intention translating into action. For Generation Z, a cohort known for researching brands before making purchasing decisions, brand knowledge empowers consumers to assess whether a brand aligns with their ethical and environmental expectations. Additionally, Social Exchange Theory helps explain how knowledge enhances perceived value. When consumers feel that a brand openly shares information and demonstrates accountability, they are more likely to view the relationship as trustworthy and reciprocal. In the context of sustainable agricultural technologies, clear communication about environmental benefits, innovations, and real-world impact increases the perceived return on the consumer's investment, motivating them to adopt products that align with both their values and expectations.

Overall, the results highlight the complex role of branding in shaping consumer behavior toward newly launched technological products. While all branding dimensions exhibit a positive relationship with purchase intention, online brand experience, engagement, and knowledge appear to have the most substantial influence. In contrast, brand awareness and trust, while still relevant, show comparatively weaker correlations, suggesting that passive brand recognition is not enough to drive purchasing decisions. This underscores the need for brands in the agricultural technology sector to invest in digital engagement strategies, enhance consumer education about sustainability, and foster interactive experiences that demonstrate the tangible benefits of eco-friendly innovations.

4.2. Regression Analysis for the Prediction of Online Purchase Intention

Table 7 presents a summary of the prediction model for online purchase intention, providing key statistical measures to evaluate its effectiveness. The model's correlation coefficient (R) is 0.562, indicating a strong relationship between the predictor variables and the dependent variable, online purchase intention. The R-squared value of 0.316 suggests that the independent variables account for approximately 31.6% of the variance in online purchase intention, demonstrating a moderate explanatory power. The adjusted R-squared value of 0.297 refines this estimate by considering the number of predictors in the model, ensuring a more precise representation of its explanatory strength. The standard error of the estimate is 0.74485, reflecting the average deviation between actual observed values and the predicted values, which provides an indication of the model's accuracy. Lastly, the Durbin–Watson statistic is 1.562, which is close to the ideal value of 2, suggesting that there is no significant autocorrelation in the residuals. This indicates that the model is statistically sound and appropriately fits the dataset, reinforcing its reliability in predicting online purchase intention.

Table 7. Regression model summary.

Model	R	R-Squared	Adjusted R-Squared	Std. Error of the Estimate	Durbin–Watson
1	0.562	0.316	0.297	0.74485	1.562

Table 8 presents the findings of a multiple regression analysis that evaluates the impact of different branding dimensions on purchase intention. The unstandardized coefficients (B) indicate the direct effect of each independent variable on purchase intention, while the standardized coefficients (Beta) allow for comparisons of their relative influence. The t-values and *p*-values determine the statistical significance of these relationships, with a significance threshold of $p < 0.05$. The constant (B = 1.315, $p < 0.001$) suggests that even when all independent variables are held at zero, purchase intention maintains a positive baseline value, indicating that additional factors outside the model contribute to consumer

decision-making. Online brand experience (B = 0.191, $p < 0.001$) has a significant positive effect on purchase intention, with a moderate Beta value of 0.270, reinforcing the importance of interactive digital engagement in influencing purchasing behavior. As sustainable consumption becomes a key driver in consumer choices, brands promoting eco-friendly technological innovations should enhance their digital presence by highlighting sustainability features in a compelling and interactive manner. Brand engagement (B = 0.072, $p = 0.158$) does not demonstrate a statistically significant effect on purchase intention, suggesting that mere engagement with a brand is not sufficient to drive actual purchases. This indicates that engagement strategies must be integrated with clear messaging on sustainability, transparency, and real-world impact to strengthen consumer commitment. Similarly, brand behavioral intention (B = 0.022, $p = 0.593$) does not show a significant impact on purchase intention, implying that consumers' general interest in a brand does not necessarily translate into an actual purchase unless reinforced by tangible factors such as sustainability efforts and product benefits. Those findings suggest a more complex behavioral pattern, where Gen Z may be highly interactive online, but engagement without substance (i.e., without transparency or sustainability messaging) is not sufficient to convert interest into a purchase. This highlights a potential gap between digital interaction and actual consumer commitment, indicating that performative branding strategies may fall short unless backed by authentic value.

Table 8. Coefficients of the prediction model for online purchase intention.

Model		Unstandardized Coefficients		Standardized Coefficients	t	*p*
		B	SE	Beta		
1	(Constant)	1.315	0.249		5.279	<0.001
	Online brand experience	0.191	0.050	0.270	3.828	<0.001
	Brand engagement	0.072	0.051	0.110	1.415	0.158
	Brand image	0.910	0.292	0.996	3.115	0.002
	Brand trust	0.801	0.285	0.721	2.814	0.005
	Brand loyalty	0.922	0.279	1.044	3.304	0.001
	Brand awareness	0.351	0.173	0.306	2.027	0.044
	Brand behavioral intention	0.022	0.041	0.038	0.535	0.593
	Brand knowledge	2.736	0.985	2.240	2.779	0.006

Dependent variable: online purchase intention.

Meanwhile, brand image (B = 0.910, $p = 0.002$) emerges as one of the strongest predictors of purchase intention, with a high Beta value (0.996), underlining the critical role of positive brand perception. In the context of sustainable consumption, brands that successfully position themselves as environmentally responsible and socially ethical are likely to strengthen their appeal and influence purchase decisions. Brand trust (B = 0.801, $p = 0.005$), though statistically significant, had a smaller effect size compared to brand loyalty or knowledge, indicating that trust is necessary but not sufficient, as its influence may be amplified only when coupled with ongoing brand transparency and value delivery. This is particularly relevant for sustainable consumption, as consumers demand transparency in green claims and ethical business practices. Brands that provide clear, verifiable information about their sustainability initiatives and corporate responsibility efforts can enhance trust and credibility among environmentally conscious consumers. Brand loyalty (B = 0.922, $p = 0.001$) stands out as a strong predictor, with the highest Beta value (1.044), reinforcing the idea that repeat customers with an emotional attachment to a brand are more likely to continue purchasing its products. This finding suggests that companies offering sustainable technological solutions should prioritize long-term consumer relationships by maintaining consistent quality, demonstrating continuous innovation in sustainability, and fostering community-driven initiatives that align with consumer values. Brand awareness (B = 0.351,

p = 0.044) has a significant but comparatively smaller effect on purchase intention, indicating that recognition alone is not a primary driver of purchasing behavior. Instead, awareness must be paired with deeper engagement and concrete value-based propositions, such as sustainability commitments, ethical sourcing, and eco-friendly innovations, to influence consumer choices effectively.

Notably, brand knowledge (B = 2.736, p = 0.006) has a significant positive effect on purchase intention, with a relatively high Beta value (2.240). This suggests that well-informed consumers with a solid understanding of a brand's sustainability efforts and technological advances are more likely to make confident purchasing decisions, particularly regarding sustainable technological products, where understanding product sustainability, efficiency, and environmental impact is essential. Contrary to previous research suggesting that extensive brand knowledge and too much information may lead to skepticism, this study indicates that greater awareness of a brand's sustainability efforts and technological capabilities can foster consumer confidence and drive purchase behavior. These findings emphasize the complex role branding plays in shaping purchase intention, particularly in the context of sustainable consumption. While factors like online brand experience, brand image, trust, and loyalty significantly influence consumer decisions, awareness and engagement alone are insufficient. Technological products and brands should prioritize transparency, consumer education, and digital sustainability narratives to enhance trust and long-term loyalty. By integrating sustainability into their branding strategies and effectively communicating their environmental impact, businesses can increase consumer confidence and encourage the adoption of innovative, eco-friendly technologies. These differentiated outcomes point to a hierarchical structure of branding influences among Gen Z, where foundational visibility and trust provide entry points, but it is brand knowledge, loyalty, and perceived authenticity that ultimately drive sustainable consumption. This highlights the need for integrated branding strategies that move beyond superficial engagement to deliver lasting values that align with Gen Z's ethical and environmental expectations.

Based on the final model, in which all factors are included as independent variables, the following regression equation was developed for online purchase intention. Specifically, for each unit increase in an independent variable, the dependent variable (online consumer behavior) increases by the amount of b, assuming all other variables remain constant.

$$\text{Purchase Intention} = 1.315 + 0.191 \times (\text{Online Brand Experience}) + 0.0728 \times (\text{Brand Engagement}) + 0.910 \times (\text{Brand Image}) + 0.801 \times (\text{Brand Trust}) + 0.922 \times (\text{Brand Loyalty}) + 0.351 \times (\text{Brand Awareness}) + 0.022 \times (\text{Brand Behavioral Intention}) + 2.736 \times (\text{Brand Knowledge})$$

Overall, these findings emphasize the significant influence of brand image, trust, loyalty, and online brand experience in shaping purchase intention, whereas engagement and behavioral intention exhibit minimal direct impact. The results indicate that businesses should prioritize building a strong brand image, cultivating consumer trust, and optimizing digital brand experiences to encourage purchasing behavior. In the context of sustainable consumption, brands should integrate environmental responsibility and ethical business practices into their image to enhance consumer perceptions. Trust is particularly crucial for sustainability-focused brands, as consumers seek authenticity and transparency in eco-friendly claims. Businesses that openly communicate their sustainability initiatives, such as carbon footprint reduction, ethical sourcing, and circular economy practices, are more likely to establish long-term consumer trust. Moreover, enhancing consumer knowledge about a brand's commitment to sustainability can positively influence purchase decisions. Well-informed consumers who understand a brand's environmental impact, product sustainability, and ethical business practices are more likely to feel confident in their purchasing choices. Therefore, companies should invest in educational campaigns,

interactive digital content, and transparent sustainability reporting to empower consumers and strengthen their commitment to eco-conscious purchasing. By aligning branding strategies with sustainable consumption values, businesses can foster loyalty, increase purchase intention, and drive the adoption of responsible and environmentally friendly products.

5. Discussion

This study examines how different branding dimensions influence Generation Z's purchase intention of newly introduced technological products, particularly in the context of sustainable consumption. The findings emphasize that branding plays a crucial role in shaping consumer attitudes and behaviors, especially among a digitally native and socially conscious demographic. This discussion contextualizes the key results within the existing literature, exploring their implications for businesses and potential directions for future research. One of the most significant findings is that online brand experience strongly predicts purchase intention among Generation Z consumers. This aligns with previous studies showing that digital interactions significantly influence consumer attitudes and behaviors [28,34]. For example, research by Wang, Tai, and Hu [34] highlights the pivotal role of experiential engagement in shaping brand-related outcomes, particularly among digitally native cohorts such as Gen Z. Similarly, Harjadi, Fatmasari, and Hidayat [43] emphasize that immersive digital brand experiences contribute directly to emotional bonding and loyalty, which, in turn, increase the likelihood of purchase. These findings collectively suggest that brands must design not just functional but emotionally resonant online experiences to capture the attention and loyalty of younger consumers. Given Gen Z's increasing preference for sustainability, brands should use digital platforms to highlight their environmental impact, ethical sourcing, and eco-friendly innovations. This is supported by a recent study indicating that Gen Z consumers actively seek value alignment with brands, especially in terms of environmental and social responsibility [104]. Moreover, studies by Agrawal [105] and Guerra-Tamez et al. [106] show that transparency and authenticity in sustainability communication significantly affect trust and purchase behaviors in this demographic. Digital touchpoints serve not only as tools for engagement but also as crucial mechanisms for fostering trust and educating consumers about sustainable consumption. Interactive storytelling, influencer collaborations, and user-generated content are among the strategies shown to enhance credibility and deepen consumer–brand relationships in the context of sustainability [107]. Thus, leveraging digital platforms effectively requires a holistic strategy that combines informative content with emotional and ethical appeals tailored to Gen Z values.

Brand knowledge also emerged as a key driver of purchase intention, reinforcing the idea that well-informed consumers are more confident in their buying decisions. This finding extends Araújo, Pereira, and Santos's [38] concept of brand knowledge, which suggests that awareness and associations influence consumer choices. The recent literature supports this notion by emphasizing that brand knowledge not only enhances consumer trust but also plays a mediating role between brand credibility and purchase behavior [108]. When consumers perceive a brand as knowledgeable and trustworthy, they are more likely to interpret its messaging favorably, especially in high-involvement decision contexts. However, in the context of agricultural technology and sustainability, brand knowledge becomes even more critical. Many of these products involve complex, data-driven innovations, making it essential for businesses to provide clear, transparent, and accessible information about their benefits, particularly regarding their contributions to environmental conservation and resource efficiency. This aligns with findings by Al-Emran and Griffy-Brown [109], who argue that consumers are more likely to adopt sustainable technologies when they understand the environmental implications and functional advantages.

In agricultural contexts, where technological innovations may be met with skepticism or confusion, brand knowledge helps demystify the value proposition, facilitating informed adoption. Furthermore, research by Kumar [110] highlights that transparency and educational marketing are especially important in sustainability-oriented markets, where perceived greenwashing can erode trust. By proactively communicating scientific data, environmental certifications, and long-term impacts, brands can position themselves not only as innovators but as responsible stewards of sustainability. Therefore, enhancing brand knowledge through strategic communication is not merely informative; it becomes an essential driver of both trust and purchase intention in this emerging sector. Brand trust, while statistically significant, exhibited a weaker correlation with purchase intention compared to brand experience and knowledge. This finding contrasts with earlier research that emphasizes trust as a dominant factor in consumer decision-making [29]. For instance, Huo et al. [111] and Han [112] found that brand trust strongly influences both purchase and loyalty intentions across various sectors. However, the comparatively lower influence of trust observed in this study suggests a shift in generational priorities. The weaker influence of trust in this study suggests that Generation Z consumers prioritize tangible experiences and factual information over traditional trust-building mechanisms. This may reflect a broader generational trend, as Gen Z has grown up in an era of widespread digital marketing, greenwashing awareness, and corporate skepticism, which has led them to demand proof over promises. This trend is echoed in recent studies by Agrawal [105] and Dharma et al. [113], who describe Gen Z as a 'validation generation', one that evaluates brand credibility based on transparency, data, and social proof rather than legacy reputation. As a result, trust for Gen Z may be less about emotional assurance and more about demonstrated accountability and openness. Alternatively, it could be partly context-specific, as sustainable technology products are often complex and relatively new, making consumers more reliant on transparent data and peer-validated experiences than on brand legacy or reputation alone. This is consistent with findings by Gavankar, Anderson, and Keller [114], who highlight that in emerging tech categories—particularly those linked to sustainability—consumer uncertainty is mitigated more by clarity of communication and user testimonials than by generalized brand sentiment. To compensate for this weaker effect of trust, brands must adopt a more evidence-based approach to credibility-building. This includes providing clear sustainability metrics, third-party certifications, detailed explanations of eco-friendly product features, and accessible case studies showing real-world environmental impacts. Additionally, brands should focus on co-creating trust through interactive digital content, consumer reviews, behind-the-scenes transparency, and partnerships with trusted influencers or sustainability organizations. As suggested by Hasan, Qayyum, and Zia [115], co-creation strategies not only enhance consumer involvement but also foster a sense of authenticity and brand accountability. Influencer collaborations, in particular, have been found to boost perceived credibility when the influencer's values visibly align with the brand's mission [116]. By shifting the focus from passive trust to active credibility, brands can more effectively engage Gen Z consumers and reinforce their value in the sustainable technology space. This paradigm shift in trust-building reflects a broader redefinition of brand–consumer relationships, where transparency, interactivity, and verifiability are central to shaping brand loyalty and purchase behavior among younger, socially conscious audiences.

Brand loyalty demonstrated a significant impact on purchase intention, reinforcing previous research that links consumer commitment to repeat purchasing behavior [42]. Studies by Park and Jiang [42] and Han [112] have long established that loyalty stems from a blend of satisfaction, trust, and consistent positive experiences, which collectively drive repeat purchases. However, this study reveals that loyalty is not the strongest predictor

of purchase intention among Generation Z. Unlike older consumer groups, where brand loyalty is a key driver of long-term success [43], Gen Z's purchasing behavior appears to be more fluid, shaped by engagement, experience, and perceived alignment with personal values. This finding aligns with recent research suggesting that Gen Z consumers are less brand loyal and more inclined to explore alternatives that align with their ethical, environmental, and social priorities [117]. According to Hanifawati, Dewanti, and Saputri [118], Gen Z is willing to switch brands frequently if they find better alignment with their values or improved digital engagement elsewhere. Sustainable brands must continuously innovate and maintain high levels of interaction to keep this demographic engaged and committed. This includes leveraging personalized content, real-time engagement via social platforms, and co-creation opportunities that invite Gen Z into the brand narrative. As shown by Matsa Prasanna [119], emotional connection and perceived authenticity are more important than traditional loyalty programs in retaining Gen Z consumers. Moreover, loyalty in this context is earned transaction by transaction, experience by experience, rather than assumed based on historical preference. In this evolving landscape, brand loyalty must be redefined not as a static outcome but as a dynamic process fueled by shared values, transparency, and consistent delivery on sustainability promises. Brands that succeed with Gen Z are those that engage in ongoing dialog, foster a community, and demonstrate their commitment through both action and innovation. Although brand engagement was significantly correlated with purchase intention, it did not emerge as a strong predictor in the regression analysis. This contrasts with research suggesting that consumer engagement is a primary driver of purchasing behavior [45]. For instance, studies by Onder and Çakıroglu [120] and Gupta et al. [121] highlight that brand engagement, particularly in online contexts, is closely linked to customer loyalty, satisfaction, and purchase intention. Engagement has been defined as a multidimensional construct involving cognitive, emotional, and behavioral dimensions that can deepen consumer–brand relationships. One possible explanation for this is that engagement alone is not sufficient to drive purchases unless it is combined with strong experiential branding and clear value propositions. This aligns with findings by Dessart, Veloutsou, and Morgan-Thomas [122], who argue that engagement without perceived relevance or value may result in passive involvement rather than action-oriented outcomes like purchasing. Especially among Generation Z, engagement must be meaningful, personalized, and aligned with broader lifestyle values to be impactful. For brands promoting sustainable consumption, this suggests that interactive content, such as educational webinars, gamified sustainability challenges, and digital sustainability reports, should be designed to provide both engagement and substantive information to drive purchasing decisions. Recent research by Ott et al. [123] indicates that content combining interactivity with educational or ethical messaging leads to stronger purchase intentions, particularly among socially conscious consumers. Moreover, Gen Z's preference for authenticity and transparency means that engagement efforts should be grounded in real impact rather than superficial interaction [119]. Therefore, to convert engagement into tangible outcomes, brands must ensure that interactive efforts are not only entertaining or attention-grabbing, but also substantively reinforce the brand's sustainability claims, ethical practices, and product benefits. Engagement becomes most effective when it serves as a conduit for value-based storytelling and participatory education that resonates with Gen Z's desire to make informed and responsible purchasing decisions.

Brand awareness was found to have the weakest correlation with purchase intention, indicating that simply recognizing a brand does not necessarily lead to a purchase. This supports findings from prior studies showing that awareness must be accompanied by positive brand perceptions and meaningful engagement to be effective [44]. While Aaker [124] emphasizes brand awareness as a foundational element in the consumer decision-making

process, a more recent study suggests that awareness alone is insufficient in influencing purchasing behavior, particularly among Gen Z consumers who demand more than surface-level familiarity [125]. Given that technological products and sustainable innovations may have lower visibility compared to mainstream consumer goods, this result underscores the importance of targeted branding efforts. Sustainable technology brands often operate in niche or emerging markets, where product attributes are complex and not always intuitively understood. As such, mere recognition may not translate into trust or intention to buy without a deeper understanding of the brand's value proposition. In the context of sustainable consumption, brand salience must be paired with clarity and credibility [126]. Sustainability-focused brands should not only increase visibility but also reinforce their messaging with evidence-based narratives on environmental impact, efficiency, and ethical responsibility. This finding echoes the work by Hameed and Waris [127], who argue that eco-conscious consumers seek transparency, data, and substantiated claims. Visual branding must be supported by educational storytelling and transparent disclosures, such as lifecycle analyses, carbon footprint metrics, and third-party certifications, to effectively shape perceptions and drive behavior. Moreover, interactive and immersive content, including explainer videos and AR-based product demos, can help bridge the gap between brand recognition and meaningful consumer connection [128]. Therefore, in the competitive landscape of sustainable innovation, brands must go beyond visibility campaigns and invest in strategic brand communication that emphasizes credibility, depth, and alignment with the values of informed and environmentally conscious consumers. Interestingly, behavioral intention was a weaker predictor of purchase intention than expected, contradicting prior research that suggests stated intent strongly correlates with actual consumer behavior [60]. Traditionally, models such as the Theory of Planned Behavior [60] have positioned behavioral intention as a strong and direct precursor to actual behavior, especially in the context of technology and innovation adoption. Several empirical studies [129] have consistently demonstrated a robust relationship between intention and action. This suggests that for Generation Z, merely expressing a positive intention toward sustainable brands does not necessarily translate into follow-through behavior. Recent research complicates this view, indicating that intention–behavior gaps are particularly prominent among Gen Z consumers in ethically complex or high-involvement contexts like sustainability [9]. These consumers often experience internal conflicts between values and convenience, affordability, or skepticism. One possible explanation is that Gen Z operates in a highly digital and information-saturated environment, where exposure to multiple brands and sustainability claims may lead to decision fatigue or skepticism about brand authenticity. As digital natives, Gen Z consumers are inundated with conflicting sustainability messages, making it harder to differentiate between genuine impact and performative branding [70]. In this environment, even well-articulated intentions can be derailed by cognitive overload, competing priorities, or confusion regarding what truly constitutes sustainable practices. In such contexts, trust becomes a critical filter; without a strong sense of credibility and transparency, even well-intentioned consumers may hesitate to make a purchase. Furthermore, digital engagement alone is not sufficient; if the brand experience lacks clarity, interactivity, or alignment with Gen Z's values, the consumer journey is likely to stall at the intention stage. This reflects findings by Guerra-Tamez et al. [106], who argue that trust and experiential coherence are key to closing the gap between digital engagement and transactional commitment. Behavioral intention may therefore be moderated by intervening variables such as perceived authenticity, user control, and environmental self-efficacy. Therefore, sustainable brands must focus on strategies that bridge this gap by offering seamless, immersive digital experiences; verifiable sustainability metrics; and personalized value propositions that build both trust and motivation. Interactive tools that

demonstrate real-world environmental impact, peer validation through social proof, and clear calls to action can help turn behavioral intention into concrete purchasing behavior. Tools such as augmented reality product trials, AI-driven sustainability calculators, and interactive dashboards showing personalized eco-impact have been found to increase consumer agency and motivation [130,131]. Moreover, integrating user-generated content and community-driven storytelling can enhance perceived authenticity, reinforcing the alignment between the brand's purpose and the consumer's identity.

The Social Exchange Theory (SET) provides a relevant framework for understanding how consumers perceive value in their interactions with brands. This study suggests that when brands offer tangible benefits such as product reliability, quality, and sustainability, consumers reciprocate with loyalty and purchase intent. This is consistent with the original conception of SET, which posits that social behavior is the result of an exchange process aimed at maximizing benefits and minimizing costs. In the branding context, value-driven exchanges, where consumers perceive authenticity and value, are more likely to result in long-term loyalty [23–25]. However, trust alone was not a dominant factor, reinforcing the idea that sustainability efforts must be supported by strong brand engagement and transparency to influence purchase decisions effectively. This finding is in line with more recent studies emphasizing that trust, while foundational, must be actively maintained through credible, transparent, and interactive brand communication [132]. Among Generation Z consumers, who are generally more skeptical of corporate claims, trust must be earned through ongoing, verifiable engagement. Social Impact Theory (SIT) further explains the role of peer influence in shaping consumer behavior. The findings highlight that brand engagement and online brand experience contribute significantly to the strength of consumer–brand relationships. Latane's [35] SIT posits that the likelihood of behavior change increases with the strength, immediacy, and number of social sources. Applied to marketing, this suggests that peers, influencers, and digital communities can serve as powerful social agents who amplify or dampen brand credibility. This suggests that peer recommendations, influencer endorsements, and social proof can enhance brand credibility and influence Generation Z's purchasing choices. These elements often function as amplifiers of other branding factors, such as brand image, trust, and knowledge, by reinforcing perceptions of authenticity and relevance through relatable, real-world narratives. Research by Lou and Yuan [133] demonstrates that influencer credibility significantly affects brand attitudes and purchase intention, especially when the influencer's values align with those of the target audience. Moreover, the authenticity of peer-generated content, such as reviews, testimonials, and social media discussions, has been found to increase perceived brand transparency and consumer empowerment [45,134]. For example, when influencers communicate a brand's sustainability efforts in a transparent and engaging way, it not only boosts brand engagement but also strengthens brand trust and knowledge by translating corporate claims into accessible consumer experiences. To optimize digital strategies for a greater impact, brands should collaborate with credible influencers who align with their values, encourage user-generated content that reflects sustainable product use, and leverage interactive platforms where consumers can share experiences and reviews. This co-creation model of branding has been shown to enhance not only engagement but also consumer identification with the brand's sustainability mission [135]. Integrating social proof mechanisms, such as testimonials, real-time purchase notifications, or community stories, into online brand experiences can further validate sustainability claims and drive action. By aligning digital engagement strategies with Gen Z's preference for authenticity, interactivity, and peer influence, brands can create a more cohesive and persuasive digital presence that effectively supports sustainable consumption. This is supported by empirical evidence showing that digital word-of-mouth (eWOM) significantly

increases perceived credibility and purchase intention in the context of green and ethical brands [136]. Those results align with prior studies showing that digital word-of-mouth and social media discussions are key drivers of sustainable consumption [37]. Brands promoting sustainability should leverage these social influence mechanisms to reinforce their commitment to ethical and environmental responsibility. Brand loyalty was another significant predictor of purchase intention, reinforcing the importance of consistent positive experiences in developing long-term consumer relationships. This supports the existing literature emphasizing that emotional attachment and repeated interactions strengthen brand commitment [66]. Oliver's [137] model of loyalty underscores the emotional and cognitive processes that underpin sustained consumer relationships, which are further reinforced through consistent and value-aligned brand experiences [138]. However, the relatively weak effect of behavioral intention suggests that while consumers may express interest in engaging with a sustainable brand, this does not always lead to a purchase. This discrepancy highlights the need for brands to develop compelling sustainability narratives that effectively translate consumer interest into real purchasing decisions. As noted by White, Habib, and Hardisty [139], closing the intention–behavior gap in sustainable consumption requires brands to reduce perceived effort, increase visibility of personal and societal benefits, and frame sustainability in aspirational, identity-relevant ways.

In summary, this study underscores the multifaceted role of branding in influencing Generation Z's purchase decisions, particularly in the context of sustainable consumption. Online brand experience, brand knowledge, and brand image emerged as the most influential factors, while engagement and behavioral intention had limited direct impact. For brands in the sustainability and agricultural technology sectors, these findings suggest that simply increasing awareness is not enough; companies must actively educate consumers, offer engaging digital experiences, and provide transparent, data-backed sustainability claims. By aligning branding strategies with the sustainability values of Generation Z, businesses can foster stronger consumer trust, increase purchase intention, and contribute to a more eco-conscious market landscape. Overall, this study advances current branding and sustainability research by focusing on Generation Z's purchase intentions toward newly launched technological products within an area that has received limited attention in the literature. By integrating multiple well-established consumer behavior theories, the research offers a multidimensional perspective on how various branding dimensions influence sustainable consumption choices. Unlike prior studies that often examine branding or sustainability in isolation or in more mainstream consumer contexts, this study highlights the unique expectations and behaviors of Gen Z consumers in relation to sustainability-focused innovations in a traditionally low-tech industry. Thus, it bridges a critical gap between branding strategy and sustainable technology adoption, providing both theoretical contributions and practical implications for brands aiming to engage a digitally driven and environmentally conscious generation.

6. Conclusions

This study provides an in-depth analysis of how branding influences Generation Z's purchase intention of newly introduced technological products in the agricultural sector, with a particular focus on sustainable consumption. The findings emphasize that online brand experience, brand knowledge, and brand image are the most significant factors driving purchase intention among Gen Z consumers. These results align with the growing trend of digital engagement shaping consumer decision-making, reinforcing the importance of a strong online presence and informative branding strategies. Among these three predictors, brand knowledge showed the strongest effect size, indicating that well-informed consumers are more confident in making sustainable purchase decisions. This highlights the

need for brands to prioritize transparent, detailed, and accessible information about their products, sustainability practices, and environmental impact. Online brand experience also emerged as a powerful predictor, reflecting Gen Z's expectation for engaging with seamless and interactive digital environments. This suggests that companies should invest in user-friendly platforms, virtual experiences, and digital storytelling that immerse consumers in the brand's sustainability journey. Additionally, this outcome supports the Theory of Planned Behavior, which highlights the importance of perceived behavioral control and information availability in shaping intention and action. It also aligns with Social Exchange Theory, as greater brand knowledge reduces uncertainty and increases perceived value in the consumer–brand relationship. This outcome reinforces the Theory of Reasoned Action, which argues that positive attitudes toward digital interaction—when aligned with social norms—can significantly influence behavioral intention. Meanwhile, brand image, while slightly less influential than knowledge and experience, still plays a critical role by shaping consumers' perceptions of the brand's credibility, values, and alignment with social causes. This is in line with Consumer Culture Theory, which suggests that branding reflects broader cultural meanings and allows consumers to express identity and lifestyle values, particularly when it comes to sustainability. It also draws from Social Impact Theory, as peer influence, influencer endorsements, and shared perceptions can enhance the power of brand image in digital spaces where Gen Z actively seeks social validation and authenticity. Together, these findings suggest a layered strategy: first educate (brand knowledge), then engage (online experience), and finally reinforce perception (brand image). By focusing on this triangle, brands can better appeal to Gen Z's expectations for authenticity, innovation, and environmental responsibility, thereby increasing the likelihood of sustainable purchasing behavior.

While brand trust and loyalty continue to be relevant, this study suggests that they do not function as standalone drivers of consumer behavior. Instead, their impact is enhanced when combined with engaging digital experiences and educational branding efforts. This insight highlights a shift in Generation Z's consumer behavior, where interactive and knowledge-based brand interactions take precedence over traditional trust-building methods. From a Social Exchange Theory perspective, trust and loyalty are earned when consumers perceive meaningful, reciprocal value, particularly in the form of transparent sustainability practices and open communication.

In the context of sustainable consumption, this shift implies that businesses must actively educate consumers on their sustainability initiatives, ethical sourcing, and environmental impact rather than relying solely on corporate reputation. By prioritizing experiential and knowledge-driven branding, companies in the agricultural technology sector can foster stronger consumer confidence in their sustainable innovations. Transparency and digital storytelling play crucial roles in this process, as Gen Z consumers expect brands to provide verifiable information about their sustainability commitments, product lifecycle, and long-term environmental impact. This finding expands the existing literature by illustrating how branding strategies must evolve to meet the expectations of a highly informed, environmentally conscious, and digitally engaged generation. For practitioners, these findings underscore the need to shift from traditional branding approaches toward strategies that emphasize digital interactivity, transparency, and education. Companies targeting Gen Z should invest in content-driven platforms that showcase their sustainability efforts in an engaging, authentic manner, such as through influencer partnerships, behind-the-scenes storytelling, or interactive product demonstrations. Moreover, integrating sustainability into the core brand narrative, rather than presenting it as an add-on, will strengthen consumer alignment and loyalty. By understanding that Gen Z's purchasing decisions are

deeply tied to perceived authenticity and social impact, businesses can design branding campaigns that not only capture attention but also inspire long-term brand advocacy.

6.1. Practical Implications

The findings of this study offer valuable insights for businesses and policymakers aiming to engage Generation Z consumers in the agricultural technology sector, particularly in promoting sustainable consumption. One of the key takeaways is the strong correlation between online brand experience and purchase intention, emphasizing the need for businesses to enhance digital interactions. Companies should prioritize the development of user-friendly platforms, immersive virtual experiences, and AI-driven recommendation systems that not only improve consumer engagement but also communicate sustainability efforts effectively. For example, virtual farm tours showcasing the environmental benefits of precision agriculture, blockchain-enabled transparency tools for tracking supply chains, and interactive sustainability dashboards can reinforce trust and influence purchasing decisions. The significant role of brand knowledge in shaping purchase intention underscores the importance of consumer education. Businesses should create comprehensive educational campaigns that highlight the benefits, functionality, and sustainability of agricultural technologies. This can be achieved through social media awareness initiatives, explainer videos, and interactive webinars that detail how innovations such as AI-powered soil analysis, water-efficient irrigation systems, and organic pest management contribute to sustainability. Additionally, partnerships with agricultural influencers, universities, and sustainability advocates can help disseminate knowledge and build credibility among Gen Z consumers, who rely heavily on peer recommendations and digital content for decision-making.

Brand trust and loyalty also emerged as key predictors of purchase intention, indicating that businesses must focus on fostering long-term relationships with Gen Z consumers. This can be achieved through transparent communication about sustainable practices, ethical sourcing, and eco-friendly product innovations. Companies should implement blockchain-based verification for organic and sustainably sourced materials, use carbon footprint labeling on packaging, and actively respond to consumer concerns regarding the environmental impact. Since Gen Z is highly values-driven, businesses that integrate corporate social responsibility (CSR) initiatives, such as carbon offset programs or sustainable packaging solutions, into their branding efforts are more likely to retain loyal customers. Interestingly, brand engagement did not show a statistically significant effect on purchase intention, suggesting that businesses need to rethink how they interact with consumers. Instead of focusing solely on promotional content, engagement efforts should be designed to provide meaningful, value-driven interactions that align with sustainability goals. For instance, brands could develop community-driven sustainability challenges, interactive mobile applications for monitoring eco-friendly farming practices, or gamified experiences that educate consumers about responsible consumption. Crowdsourced innovation challenges, where young consumers contribute ideas for sustainable solutions, could also foster a sense of involvement and long-term engagement. In addition to digital engagement, businesses should consider how their branding strategies manifest across all consumer touchpoints. This includes product design and packaging that use sustainable materials, minimalistic design, and eco-labeling to visibly reinforce environmental values. In-store experiences, where applicable, should also reflect sustainability commitments through educational displays, QR codes linking to supply chain transparency, or eco-friendly retail environments. Furthermore, brands can strengthen authenticity by participating in or sponsoring community-based sustainability initiatives, such as local clean-up events, green tech workshops, or collaborations with schools and NGOs. These offline actions

serve as tangible demonstrations of corporate responsibility and help build emotional connections with Gen Z consumers. Aligning internal operations with external branding, such as reducing emissions, offering take-back programs, or investing in circular economy models, can also enhance perceived integrity and trust. By extending branding efforts beyond the digital space, companies can create a holistic brand experience that reinforces their values consistently and credibly, encouraging long-term loyalty and deeper consumer commitment to sustainable choices.

From a policy perspective, government agencies and agricultural organizations should support initiatives that integrate sustainability with technological advancements. Digital literacy programs focused on sustainable farming technologies can encourage Gen Z consumers to make informed, environmentally conscious purchasing decisions. Additionally, policies that incentivize businesses to adopt eco-friendly production methods, such as tax benefits for companies using renewable energy in their agricultural operations, can further promote sustainable consumption. Collaboration between the public and private sectors, such as funding research into AI-driven sustainability tools and offering grants for young farmers adopting precision agriculture, could accelerate the adoption of green innovations. Ultimately, businesses and policymakers must recognize that Generation Z's adoption of agricultural technology is strongly linked to digital engagement, sustainability values, and demand for transparency. By integrating interactive educational strategies, transparency-driven marketing, and value-driven sustainability initiatives, companies can align their branding efforts with the evolving expectations of eco-conscious consumers. This approach not only enhances purchase intention but also contributes to a broader shift toward sustainable consumption in the agricultural sector. Moreover, to effectively drive actual purchases, brands must integrate sustainability messaging into interactive digital experiences that go beyond surface-level engagement. This can include features such as virtual product demos that showcase sustainable attributes, interactive infographics detailing the environmental impact, and real-time supply chain transparency tools. Additionally, brands should support their sustainability claims with third-party certifications, clear metrics, and accessible explanations of their environmental efforts. By combining engaging digital touchpoints with verifiable, transparent information, companies can strengthen consumer confidence and increase the likelihood of a purchase among Gen Z consumers who demand both authenticity and accountability.

6.2. Research Limitations

While this study offers valuable insights into Generation Z's purchase intention for technological products, certain limitations must be acknowledged. Firstly, the research employed a cross-sectional design, which captures consumer attitudes at a specific point in time. This approach restricts the ability to analyze how consumer behavior evolves over time. Future longitudinal studies could provide a more comprehensive understanding of how branding dimensions influence purchase intention in the long term, particularly in relation to changing sustainability trends and technological advancements. Secondly, this study relied on a convenience sampling method, which may impact the generalizability of the findings. Although systematic sampling elements were incorporated to mitigate potential biases, the sample may not fully reflect the broader Generation Z demographic. Future research should consider employing more randomized and stratified sampling techniques to enhance representativeness and ensure the findings apply to a more diverse consumer base. Moreover, the current study was geographically limited to a specific national context and primarily involved university-aged participants, which may not fully reflect the broader diversity within Generation Z. Cultural values, economic conditions, and access to technology can vary significantly across regions, potentially influencing

how branding strategies are perceived and how sustainability is prioritized. For example, Gen Z consumers in countries with strong environmental regulations or greater exposure to sustainable technologies may respond differently to branding messages than those in regions where such issues are less emphasized. Future research should integrate these geographic and demographic factors to gain a more holistic view of how branding strategies align with shifts in market conditions, technological innovation, and evolving consumer expectations regarding sustainability.

Additionally, external factors such as economic fluctuations, emerging technologies, and regulatory policies were not explicitly accounted for in the study. These factors can significantly influence consumer attitudes, sustainability preferences, and purchasing behaviors. Future research should integrate these variables to gain a more holistic view of how branding strategies align with shifts in market conditions, technological innovation, and evolving consumer expectations regarding sustainability. Incorporating these considerations in future studies will provide a more robust framework for understanding the complex relationship between branding, consumer decision-making, and sustainable consumption. By exploring these aspects further, researchers can offer deeper insights into how businesses can adapt their branding strategies to meet the demands of an increasingly environmentally conscious and digitally engaged Generation Z.

6.3. Future Research Directions

While this study offers valuable insights into the role of branding in shaping Generation Z's purchase intention for newly launched technology products, several areas require further investigation, particularly concerning sustainable consumption. Future research could explore the impact of various digital engagement strategies on brand perception and purchase behavior among Gen Z consumers. This includes assessing the effectiveness of social media influencers, gamification techniques, and interactive marketing campaigns in promoting sustainable brands and encouraging responsible consumption. Understanding how digital interactions can foster brand trust and loyalty in the context of environmentally conscious decision-making could provide valuable insights for companies seeking to align their branding strategies with sustainability goals. Moreover, as this study focuses primarily on Generation Z, future research could examine how branding influences other generational cohorts, such as Millennials or Generation Alpha, to determine generational differences in brand perception, sustainable consumption habits, and purchase behavior. A comparative analysis of multiple generations could offer a broader perspective on how branding strategies evolve alongside shifting consumer expectations, particularly regarding environmental responsibility and ethical sourcing.

Further research is also needed to analyze the long-term impact of brand trust and loyalty on customer retention within the agricultural technology sector. Since sustainability-driven technological advancements are continuously emerging, it is crucial to assess whether initial trust and loyalty translate into ongoing consumer engagement and advocacy for sustainable products. Investigating the factors that contribute to sustained commitment, such as corporate transparency, green certifications, and eco-friendly innovations, could help businesses develop branding strategies that foster lasting consumer relationships. Additionally, future research should examine how external factors, including economic fluctuations, environmental policies, and global supply chain disruptions, affect consumer purchase decisions and brand loyalty in the context of sustainable consumption. As climate change and sustainability concerns continue to influence market trends, understanding how these macro-level factors shape branding effectiveness could offer businesses practical insights into adapting their marketing efforts to align with evolving consumer priorities.

Given that this study employed a quantitative approach, future research could integrate qualitative methodologies such as in-depth interviews and focus groups to gain deeper insights into the psychological and emotional factors that influence brand preferences. Exploring the personal narratives and experiences of Generation Z consumers could provide a richer understanding of how branding affects their sustainable consumption choices, particularly in the context of newly launched technological products, which often require greater consumer trust and understanding. In addition, adopting a mixed-method approach would offer a more holistic view by combining statistical analysis with qualitative depth. For instance, researchers could begin with a large-scale survey to identify key branding predictors and then follow up with interviews to explore how Gen Z interprets digital engagement, innovation, and sustainability in relation to new tech products. Moreover, industry-specific case studies focused on technological innovation, such as smart farming tools, sustainable gadgets, or green tech solutions, could help contextualize branding strategies within real market environments. These case studies could examine how early-stage tech brands build credibility, convey value, and foster loyalty through branding. Cross-cultural studies could assess whether these findings are applicable across different geographic regions and socio-economic backgrounds, further enhancing the generalizability of the results. By addressing these research directions, scholars and industry professionals can develop a more comprehensive understanding of how branding influences consumer behavior, particularly within the growing movement toward sustainable consumption. Investigating these aspects will enable businesses to refine their branding strategies and contribute to a more environmentally responsible marketplace.

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Abbreviations

The following abbreviations are used in this manuscript:

Gen Z	Generation Z
SET	Social Exchange Theory
SIT	Social Impact Theory
CCT	Consumer Culture Theory
TRA	Theory of Reasoned Action

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