

ORIGINAL ARTICLE

Framing consumer empowerment in the digital economy: From networks and engagement toward sustainable purchase

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Abstract

The current study investigates the influence of variety among online providers and customers' access to knowledge on consumer networks, consumer engagement, and sustainable purchasing. Emphasis is on the underlying relationships among these constructs in the digital economy, which has evolved into a complex structure of multifarious nodes and linkages unfolding in the online environment. The underlying theoretical approaches are knowledge-attitude-behavior (KAB) and customer sovereignty. Against this backdrop, a questionnaire-based survey was given to 200 Millennials (i.e., generation Y) and gen Z Italians—approached as empowered stakeholders requiring accurate information and sustainable solutions from online providers—in January 2023. The data was processed via the structural equation modeling technique PLS-SEM, based on SmartPLS 4. The findings indicated that sustainable purchasing is influenced to some extent by access to knowledge, consumer engagement, and consumer networks. The study endeavors to fill a research gap, as the relationships between variety among online providers and sustainable purchasing, as well as consumer engagement from the empowerment perspective are underexplored. The study provides new evidence of the relationships between consumer networks, consumers' access to knowledge, sustainable purchasing, and consumer engagement in the framework of online retail by inquiring respondents.

KEYWORDS

consumer empowerment, consumer engagement, consumer networks, digital economy, knowledge, sustainable purchasing

1 | INTRODUCTION

Digitalization has found a fertile field in the retail industry, a sector that is benefitting from the advancement of digital technologies, both in-store and online. Retail's technological readiness and embeddedness have led to new forms of commerce, business opportunities, process transformation, mobility, service development, enhanced interactive customer relationships, internationalization,

development of consumer networks, and unprecedented consumer engagement. Retail digitalization has reconfigured all exchanges, actors, settings, and offerings (Hagberg et al., 2016). In this vein, Lee and Lee (2020) stressed the ever-growing tendency toward “untact” (i.e., absence of face-to-face contact), technology-reliant, customer-centric services in retail. The development of social media and the Internet post Web 2.0 ensured access ubiquity, mobility, connectedness, and real-time interactivity while Industry 4.0 technologies,

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such as Big Data and AI algorithms, not only ensured the expansion of online commerce models but also expedited consumer empowerment (Gallardo Vázquez, 2023; Grewal et al., 2018).

From a fresh contextual perspective, the COVID-19 pandemic has tremendously impacted the retail industry. If, in the first stages of the crisis, the retail sector was put on hold due to restrictions, leading to store closures and disruptions in the supply chain, the later stages of the pandemic boosted online and, particularly, mobile shopping and accelerated digitalization (Jiang, 2020). Furthermore, customer involvement in mobile commerce (m-commerce) became the norm, and millennial customers' expectations challenged retailers to "bring the store to them" (Akram et al., 2021).

The sustainability issue is the main concern for generation Z members, while for millennials, it ranks after healthcare and unemployment. The responsible consumer has become one of the primary drivers of innovation and sustainability in the retail sector, where new initiatives such as "fashion re-commerce" (donate, rent, or resell) are trending. As an effect of the COVID-19 pandemic, consumers desire high-quality, long-lasting products and favor more environmentally friendly products, encouraging companies to pursue the precepts of the circular economy (reduce, reuse, refurbish, repair, and recycle) to achieve change (McKinsey, 2021). Deloitte's Global Powers of Retailing report (2022) reveals that one-third of consumers in 2021 paid more for sustainable food and beverages, followed by everyday household goods.

Unlike other studies, Casalegno et al. (2022) found that members of generation X, particularly women, are actually the primary buyers of green and sustainable products from socially responsible companies, which may be due to the higher price of those goods not being affordable to younger generations. However, environmental concerns affect individuals' green purchasing behavior. Moreover, generation Z is more prone to social media influence when buying green products, as proven by a study on Instagram's influence on generation Z's fashion purchases (Djafarova & Bowes, 2021). A study conducted in Brazil and Portugal on the COVID-19 pandemic's effects on the behaviors of various generations showed that while baby boomers displayed more environmental awareness and social responsibility, generation X proved to be more involved in sustainable consumption (Severo et al., 2023).

At the level of regional and international institutions, numerous initiatives are directed toward consumer empowerment. The European Commission's perspectives on consumer empowerment in the digital economy (European Commission, 2017) integrate consumer skills, consumer rights awareness, and consumer involvement in decision-making. The EU Consumer Empowerment Index (CEI) (EC, 2012b), relying on data acquired through the Eurobarometer (no. 342) survey, was meant as a probing exercise—and thus not an exhaustive instrument—to assess EU consumer empowerment. In line with CEI, the power of consumers relies on basic numerical skills and the ability to read labels and logos and manifests through awareness of consumer rights and consumer engagement. The latter is viewed as a comprehensive understanding of providers' offerings by comparing products, choosing the best options, requesting

more information about goods, acquiring consumer information and knowledge, including by assessing peers' online reviews, a tendency to talk with others about consumer experiences and accessing knowledge about detriment and redress, which results in making informed decisions. Consumer involvement in redress is one of the most important aspects of customer behavior, leading from attitudes to actions (Nardo et al., 2011).

Reflecting on the effects on retail during the COVID-19 pandemic, which represented a market shock with a robust effect on the economy, Verhoef et al. (2023) noted that research focusing on this topic expects the global crisis to have a long-lasting effect on consumer behavior, business strategies, retail strategies, human resource management, and supply chain management. The authors highlighted several areas of possible focus and development, including sustainability and sustainable products, and expansion of multichannel retail strategies favoring online and, particularly, mobile retail. These were echoed by further studies that urged that the pandemic has substantially repositioned online shopping among the buying preferences (Jiang, 2020; Shopify, 2022; Statista, 2022), calling for additional exploration.

Prior developments in online shopping have often addressed the intertwining of consumer behavior (especially in terms of consumer engagement) in the online environments and sustainable attitudes and purchases (Islam & Rahman, 2017; Islam et al., 2020; Zafar et al., 2021; Zhao et al., 2019). In their aggregate analysis of consumers' empowerment and engagement against the backdrop of social media, Septianto et al. (2023) described empowerment as an intricate process by which individuals take action to generate a sense of motivational power, with self-determination coming forward as a pivotal driver. They also pointed to the increasing relevance of examining these phenomena within the dynamics of online environments, as such approaches can enrich the state of the art in the field.

Conflating the above arguments, this study builds on previous research conducted by Gazzola et al. (2017), which established significant relationships between online retail competition and consumer awareness about product information, consumer rights and redress remedies, and consumer networks on the one hand, and between online consumer skills and online consumer awareness and sustainable purchase decision on the other hand. In this vein, the added value of the current investigation relies on simultaneously capitalizing on two explanatory frameworks that account for consumer behavior. The first framework is the knowledge-attitude-behavior (KAB) view advanced by Kallgren and Wood (1986). This approach stresses the importance of access to relevant information (i.e., knowledge access) as a significant factor that impacts the attitude-behavior relation. By leveraging knowledge derived from past experiences, individuals' situational awareness is increased, and their attitudes are reinforced, which further significantly affects their behaviors (i.e., consumer engagement, sustainable purchasing). The second theory—consumer sovereignty—acts as a complement for the former, supporting the conceptualization and operationalization of a more specific research model. In line with Denegri-Knott et al.'s (2006) mapping of the consumer empowerment body of knowledge, consumer sovereignty

emerges as the predominant paradigm out of three Influential explanatory models in socioeconomic disciplines (i.e., consumer sovereignty, cultural power, and discursive power). It reveals how “consumers combine resources and skills to make producers do what they would not do otherwise” (Denegri-Knott et al., 2006, p. 963). Consumer sovereignty filters the wide array of manifestations of consumer empowerment, focusing on strategic behaviors where consumers engage in activities aiming to countervail and influence the other side of the market. Against this backdrop, emphasis is laid on empowerment in terms of defending consumers' rights and power is assessed via behavioral consequences, thus determining who between consumers and businesses (i.e., producers, marketers) influences whom the most (Denegri-Knott et al., 2006).

Corroborating the two explanatory models, the study will look into consumer engagement through the lens of the subpillar focused on strategic behaviors as categorized by Nardo et al. (2011), that is, detriment and redress. Sovereign customer choices are manifested, for example, by demanding money back for unsatisfactory purchases or services (Denegri-Knott et al., 2006). This ensures a clearer understanding of the active role of consumers in online markets, all the more so as the KAB model has specifically tested and confirmed the importance of access to knowledge in developing beliefs concerning sustainability and behaviors supporting environmental preservation (see also Dhir et al., 2021).

By acknowledging the above foci of interest, the present endeavor broadens the scope of the literature by addressing the influences of customers' knowledge access on consumer networks, consumer engagement (i.e., Detriment and redress subpillar), and sustainable purchasing. Three different dimensions are hereby brought forward: the input, output, and internal dynamics of consumer networks. Emphasis is placed on empowered consumers engaged in sustainable consumer practices (i.e., detriment and redress) and incentivized not only by public regulations, market-based instruments, or the adoption of technological solutions but also by default green choices. These consumers can make a significant impact on effective, long-term solutions for sustainable development through actions and behaviors that lead to an ecological civilization (as previously described by Simões (2016)). Consistent with EU framework documents (Nardo et al., 2011), consumer engagement policies are developed through the lens of consumer empowerment, thus revolving around consumers who take action to replace poor-quality products, demand refunds, resort to consumer protection authorities, etc. However, the European CEI was not concerned with sustainable purchasing behavior, and this study attempts to bring new insights in this respect by inquiring how consumer empowerment impacts buyers' green attitudes and behaviors. To this end, this research develops the CEI appraisal instrument by applying it to sustainable purchasing.

The study focuses on generations Y and Z, giving credit to ongoing research strands mainstreaming the noteworthiness of young consumers in online markets and the imperative to consistently investigate their online purchasing behaviors. Generation Y consumers are considered the most empowered and feel entitled to make a difference (Euromonitor International, 2017) as impactful customers

(Pomarici & Vecchio, 2014) looking for transparency and sustainability in the business environment (Gazzola & Mella, 2016; Gazzola et al., 2016; Gurău, 2012; Horobeț et al., 2023; Ordun, 2015; Zhou et al., 2016). They take an interest in checking a company's reputation and environmental concerns and look for green labeling (Smith & Brower, 2012). A questionnaire-based survey was given to 200 Italian respondents from generations Y and Z, who are treated as key informants for the antecedents of sustainable purchasing and sustainability imperatives in the context of the digital economy (Deloitte, 2022; Gazzola et al., 2019; Vătămănescu et al., 2021).

The paper is structured into several main sections, starting with the literature review and hypotheses, which is followed by the research design, methodology, and assessment of the measurement and structural models. Finally, the discussion of findings and conclusions also includes theoretical and societal implications along with the research limitations and future avenues of investigation.

2 | LITERATURE REVIEW AND HYPOTHESES

2.1 | Relationship between the variety of online providers and knowledge access

The digital economy has resulted in new business models that ensure dominant positions for high-tech companies, especially multisided platform businesses with scaled-up market positions due to the network effect, creating unbreachable barriers to entry for smaller businesses (Fleacă et al., 2023; Nicolescu & Nicolescu, 2014). Often, such dominant positions have been achieved by intensive exploitation of consumer data, as data has become a production factor (Cavanillas et al., 2015). Subsequently, in the relationship between providers and buyers in an online environment, there is an information asymmetry regarding detailed product characteristics and quality. Online retail competition favors better outcomes for the customer and increased awareness about products and consumer rights (Gazzola et al., 2017; Vătămănescu et al., 2017, 2018). Arising from KAB and consumer sovereignty theoretical foundations, it is possible to conclude that a large number of providers promote competition, requiring businesses to disclose more transparent and full information about their products and services. Furthermore, this transparency closes the information gap, allowing consumers to make better judgments and increasing their overall knowledge access.

Information and service quality significantly influence customers' perceived value of social commerce sites, which, in turn, predicts customers' repurchasing intentions and engagement. Moreover, consumer engagement stands as an important mediator in the relationship between perceived value dimensions and brand equity (Bapat & Hollebeek, 2023; Busalim et al., 2023). Other authors found that information quality affects men's value perception more while women favor service quality when making their decisions (Molinillo et al., 2021). Competition between online providers leads to higher-quality information that empowers consumers by allowing them to

better understand their rights, make informed purchasing decisions, and navigate complex marketplaces. This empowerment adds to a better-informed customer base, which eventually improves knowledge access.

Overall, a customer's online experience is shaped by several main factors, namely website informativeness and social presence, entertainment, and sensory appeal, while enjoyable online interactions with products and brand trustworthiness moderate consumer uncertainty in online commerce (Bleier et al., 2019). Moreover, achieving a state of flow in online commerce is paramount for the customer experience and purchasing intentions. To this end, online navigation must be seamless and enjoyable, reaching a balance between the customers' skills and the challenges of interacting with technology (Novak et al., 2000). A varied set of online providers offering relevant information and services encourages consumer interaction, which leads to increased loyalty and repeat purchases. This ongoing interaction with diverse suppliers serves as a learning experience for customers, extending their knowledge base over time.

Customer experience online is based on cognitive and affective experiential states, enhanced by consumers' perceived control (interactivity, esthetics, ease of use, connectedness, and customization), which determine trust and satisfaction with online shopping and lead to the intention to repurchase (Islam et al., 2020; Rose et al., 2012). Compelling online shopping experiences, amplified by the effect of the COVID-19 pandemic, resulted in a surge in e-tail sales, which reached 5.7 billion USD in 2022 and are forecast to top 8 billion USD in 2026, with fashion and consumer electronics leading the growth (Statista, 2022). Over 20% of global sales are now made online, and 46.75% of buyers stress customer service as a crucial factor for their e-commerce experience (Shopify, 2022). On the other hand, editorial content (e.g., issued by authorities) is considered the most informative and ranks higher than marketing information since service providers' input is seen as ensuring neither integrity nor benevolence (Dickinger, 2011).

When it comes to how people acquire and assess product information online, empirical research points to age differences and sociohistorical context as critical factors, proving Mannheim's theory of generations shaping beliefs, expectations, and behaviors (Pauliene & Sedneva, 2019). Accordingly, different generations employ social media distinctively to access and share knowledge, as well as to communicate and enhance their experiences. While generation X members show interest in being informed online, they are also more discriminating compared to millennials, who rely on information accessed on social media but exercise less critical thinking in evaluating its veracity (Dabija et al., 2018). Some current trends may fade when it comes to generation Z members. Millennials (generation Y) and generation Z (iGeneration) are both avid social media users and recalcitrant about traditional advertising, their customer beliefs, attitudes, and behaviors being often displayed in online realms. A diverse array of online providers caters to the preferences and behaviors of different generations, ensuring that a wide range of consumers can access information in ways that resonate with them. This inclusivity enhances overall knowledge access across various demographic groups.

Derived from the above findings, the following hypothesis is proposed:

- H1.** The variety of online providers exerts a positive influence on knowledge access.

2.2 | Relationship between the variety of online providers and consumer networks

Competition among vendors to draw in new consumers and prevent them from switching to rival businesses leads to increased performance, which is reflected in product price, quality, and innovation (Delp & Mayo, 2016). In online commerce, consumers are faced with enormous choice options and an abundance of information, which can make purchasing decisions cumbersome (Baum & Spann, 2014). In Molinillo et al.'s (2021) view, while e-commerce, led by businesses, strives to personalize the online shopping experience, social commerce aims to facilitate a collaborative experience and social interactions. In the first case, customers are usually limited to providing feedback through reviews and ratings, while extensive recommendation systems, private messages, communities, and dedicated content are created in the latter.

Social networking availability determines customers' purchasing intentions by ensuring social presence, support, and benefits (Li & Ku, 2018). Busalim et al. (2023) highlight how social commerce fosters community-based platforms that stimulate peers' interactions and strengthen customers' social shopping-based experience. They also stress that while preceding studies have tackled the influence of consumer engagement on increasing performance, the impact of social commerce characteristics on consumer engagement remains in an embryonic stage. Access to a wide range of Internet providers enables customers to make educated decisions and actively participate in consumer networks, reflecting the consumer sovereignty principle. In keeping with KAB, consumers' ability to compare products, comprehend terms and conditions, and share experiences generates a sense of empowerment, leading to increased active participation in consumer networks. Social commerce platforms provide collaborative experiences and interactions among customers, resulting in the establishment of powerful consumer networks. These networks use social media tools to share information and influence purchasing decisions, enhancing the link between a variety of online businesses and consumer communities.

Buyers seek reviews and recommendations from peers to reduce uncertainty and inform their purchasing decisions (Mudambi & Schuff, 2010) or to assess product fit (Kwark et al., 2014). Online reviews serve as signals for others to assess satisfaction or dissatisfaction with products and services (Zhao et al., 2019). What and how customers write are indicators of their satisfaction and can influence others' future purchase intentions, depending on the reviews' subjectivity, readability, diversity, sentiment polarity, and involvement (Zhao et al., 2019). Moreover, quality information can affect not only a consumer's choice but also upstream competition

between product providers (Kwark et al., 2014). Furthermore, as Dickinger (2011) infers from empirical research on the trustworthiness of online channels providing information on the travel experience, user-generated content is perceived as altruistic and having the most integrity. Consumers rely on reviews from peers to reduce uncertainty and inform their purchasing decisions. User-generated content has a prominent role in building trust and credibility within consumer networks, thereby enhancing the influence of the variety of online providers on consumer networks.

Empowered consumers can make informed decisions about the choices available in the market and can fully exercise their rights, including joining specialized social aggregations (i.e., consumer networks) revolving around discussions on products, services, and providers (Gazzola et al., 2017, 2019; Vătămănescu et al., 2017, 2018). The European Commission (2012a) identifies consumer empowerment as a crucial milestone in achieving the objective of sustainable, smart, and inclusive growth. In the EU framework, consumer empowerment is reflected in consumer confidence, essential knowledge about the market, and awareness of consumer norms. Consumer empowerment is built on consumer skills (numerical, financial, and EU label and logo understanding) and consumer engagement behavior. The latter is reflected in time spent shopping, comparing product prices prepurchase, using consumer information sources, reading product/service terms and conditions, shopping online, becoming familiar with consumer organizations and public agencies, cultivating interest in consumer programs and knowledge of consumer rights, and sharing experiences about purchases and detrimental behavior. These encompass individual actions taken in case of consumer-related incidents and also the involvement of consumer organizations or authorities (Nardo et al., 2011).

From the consumers' perspective, online consumer networks that employ social media resources to share quality information and knowledge on the price, quality, labeling, and sustainability claims of products and services have the potential for collaborative action based on leveraging their buying power and influencing social and environmental policies. Researchers note that consumers need to grasp the choices available on the market and the normative framework in order to make the best-informed decisions for themselves but also to know and exercise their rights and obtain redress when necessary (Mwakatumbula et al., 2016). This not only leads to favorable outcomes for the consumers but also enhances competition and business growth.

Online networks offer opportunities for knowledge acquisition (Vătămănescu et al., 2023). In consumers' online social networks, knowledge sharing is facilitated by the perceived ease of use of the websites, their social utility, and belief in the integrity of those systems (Bilgihan et al., 2016). Social networks provide participants with a wealth of information from various data sources (reviews, pictures, check-in info, etc.), allowing customers to share their feedback with potential clients and, therefore, influence their purchase decisions. As established by Qiu et al. (2021), observational learning from strangers is more robust in social networks when the products are differentiated by price or quality. Nevertheless, for horizontally differentiated products, the strength of social ties plays a

more important role. The perceived ease of use and social utility of online platforms facilitate knowledge sharing among consumers. Consumers leverage social networks to share feedback and influence the purchase decisions of others, ultimately strengthening consumer networks and their connection to the variety of online providers.

Based on these considerations, the following hypothesis was developed:

H2. The variety of online providers exerts a positive influence on consumer networks.

2.3 | Relationship between knowledge access and consumer networks

Online networks offer access to a variety of experiences and abilities based on individual members' resources and are supported by the motivation to share knowledge and create meaningful interactions (Vătămănescu et al., 2015, 2018). They allow individuals to engage in exchanges of information and to compare and assess goods and services, opening the way for business model innovation (OECD, 2016a). Such networks are expected to contribute to solving issues related to sustainable food production and consumption (European Commission, 2017).

According to Brodie et al. (2019), individuals and other socio-economic entities have agency in networks via their actions and connections, designing and changing the ecosystem in which they participate, thus reinforcing both KAB and consumer sovereignty frameworks. Through resource integration aimed at maximizing benefits, actors cocreate value through dynamic and iterative relationships. Coordination is achieved on engagement platforms through shared practices.

Consumers can gain knowledge more easily when Internet suppliers display information about their rights. This information enables consumers to make educated decisions and influences their interactions in online networks, as people are more willing to participate in debates and share their experiences when they understand their rights and duties. Specialized networks, on the other hand, are valuable sources of information about consumer rights and serve as a forum for consumers to share their expertise and experiences. Individuals can gain access to a multitude of information and insights by leveraging these networks, which improves their grasp of consumer rights and fosters better ties among consumers. Additionally, individuals use social networking sites to exchange information, opinions, and recommendations about products and services. Individuals who access and contribute to these networks expand their knowledge base and increase their ties with other consumers, reinforcing the positive impact of knowledge access on consumer networks. Individuals with access to user testimonies and reviews can better evaluate items and services, resulting in more informed purchasing decisions. These experiences also help to build trust and credibility within consumer networks since people rely on the opinions and suggestions of others.

Lin and Huang (2013) found that virtual community members' desire to share knowledge relies on self-efficacy beliefs, the sense of community manifested mainly through feelings of altruism and self-fulfillment. Chai and Kim (2012) confirmed the significant relationship between the sense of belonging, ethical culture, social ties, and knowledge sharing on social networking sites. To drive engagement and brand loyalty, companies should attempt to comprehend customers' motivations and provide rich information and interactivity to community members (Islam & Rahman, 2017). Encouraging virtual community identification and providing rewards are indispensable factors for consumer engagement (Kaur et al., 2020).

A meta-analysis of the research on online product reviews (Floyd et al., 2014) found that various characteristics of the reviews impact sales elasticity. Review volume affects customer awareness and persuasion, while review valence (preference) sways expectations, and negative assessments have a stronger influence. Similarly, customer decisions are determined by reviews demonstrating expertise, trustworthiness, product involvement (higher for pricier goods), product benefits (necessity vs. luxury goods, hedonic vs. utilitarian products), and frequency of purchase (durable vs. nondurable items).

The importance of strong social relationships has been given particular attention in the Chinese market context, where this concept is termed *guanxi*, reflecting mutual understanding, reciprocal favor, and relationship harmony (Lin et al., 2019). As social commerce strengthens communication and interactions, *guanxi* is reinforced through the real-time sharing of information, ideas, and recommendations among community members, affecting online purchase intentions (Bilal et al., 2022). On the other hand, Shao and Chen (2019) found that consumer network heterogeneity (amassing a larger information pool) and influence (encompassing more social links and hub nodes) impact opinion leadership and diffusion. The exchange of information and recommendations within online communities reinforces social ties and influences purchasing intentions, underscoring the importance of knowledge access in shaping consumer networks.

Thus, the following hypothesis is proposed:

H3. Knowledge access exerts a positive influence on consumer networks.

2.4 | Relationship between knowledge access and sustainable purchasing

To date, there is no mutually developed and shared definition of what constitutes environmentally sustainable consumer behavior (Han, 2021); thus, there are no readily acceptable measurement models. Environmental knowledge impacts sustainable attitudes, which, in turn, influence sustainable purchasing intentions, as demonstrated by research concerning Indian and Indonesian consumers (Lavuri et al., 2023). Furthermore, factors such as environmental attitude and sense of responsibility, perceived behavioral efficiency, social context, and promotion of sustainable consumption were recognized as having a direct effect on consumer engagement in

sustainable consumption and, consequently, green product purchasing (Pilgrimienė et al., 2020).

A recent study by McKinsey and NielsenIQ on consumer goods in the US market for the period 2017–2022 found that customers' spending on products claiming observance of ESG principles (environmental sustainability, ethical compliance, animal welfare, organic and vegan food, sustainable packaging, etc.) has increased (+28%) compared to non-ESG products (McKinsey & NielsenIQ, 2023). Though this survey does not establish a direct causality with customers' intentional purchasing or the veracity of ESG claims, the trend is expected to continue and stimulate businesses' ESG strategies and innovativeness in addressing sustainability concerns.

Consumers' perception of retailers' ethics, which encompasses product fairness, price fairness, nondeception, fair trade, and green products, is a predictor of their purchasing behavior and WoM communication (Cheung & To, 2021), as is their perception of retailers' competence (Andrei et al., 2017). Online retailers' CSR is directly related to consumer purchasing intentions (Dang et al., 2020). Customers who prioritize environmentally friendly products respect openness and ethical company operations. Online providers can increase confidence and credibility by giving information on consumers' rights alongside eco-friendly product offerings, affecting long-term purchasing decisions. Consumers' purchasing behavior is influenced by their perception of merchants' ethical practices. When it comes to purchasing decisions, customers favor ethical concerns like fair trade procedures and green product offers. Consumers can match their shopping behavior with their values by learning about retailers' CSR initiatives and ethical standards, contributing to sustainable consumption practices.

Ecolabeling serves as a reliable indicator of a product's environmental credentials and influences consumer choices in sustainable purchasing decisions. By accessing information on ecolabeling and sustainable production processes, consumers can make more informed decisions that align with their values and contribute to sustainable consumption practices. However, green purchasing practices (buying eco-friendly products and materials and establishing robust relationships with suppliers) are significantly linked with green capabilities (green investment, manufacturing, innovation, and digitalization), and they determine economic and environmental performance (Khan et al., 2021; Ogutu et al., 2023). Based on the expectation confirmation paradigm, consumers envisage enjoying certain benefits when acquiring a product, leading to customer satisfaction and endorsement (Kim, 2019). When the expectations are not met, dissatisfaction and discontinuity ensue. Likewise, buyers expect access to factual information, transparency, and consistency in vendors' CSR communication, which, in turn, can enhance CSR knowledge, corporate reputation, and consumers' identification with the company.

Empirical research has shown that both transaction-oriented motivations (convenience and efficiency) and sustainability motivations (reduction of resource consumption, pollution, and traffic) play a role in consumers' usage of food delivery, taxi aggregator, and digital wallet mobile apps (Nair & Bhattacharyya, 2019). Buyers' behavior has long been approached from an impulse-gratification perspective.

Nevertheless, it has been shown that normative assessments can control hasty, emotional buying when consumers' judgments involve rational evaluations of the propriety of certain impulsive purchases (Rook & Fisher, 1995). Consumers' rational evaluations of the environmental impact of their purchases can control impulsive buying behavior. By accessing information on the environmental impact of products and services, consumers can make more thoughtful and sustainable purchasing decisions that minimize resource consumption and pollution. For example, Huyghe et al.'s (2017) research sheds light on the unexpected potential of online grocery shopping to reduce vice purchases, as consumers' desire for instant gratification is mitigated by the lack of physical access to unhealthy products. Furthermore, as posited by Puteri et al. (2022), attitudes toward food waste could be reshaped by environmental concerns since one-third of European fresh produce cannot reach the market due to consumer ambivalence toward suboptimal-looking fruits and vegetables. Despite repair being a crucial element in the circular economy as mass product availability expands, when consumers employ a cost–time analysis, repair intentions and behaviors diminish, as have the availability of repair services or repair self-reliance, regardless of environmental awareness (Fachbach et al., 2022).

The retail sector is under normative and customer constraints to accelerate sustainability integration in business strategies and enhance sustainability performance through key indicators concerning water and energy consumption, product and packaging recycling, sustainability partnerships, consumer health and safety, business innovation, and more (Ruiz-Real et al., 2019). Regulatory frameworks can impact sustainable purchasing behavior and stimulate participation in sustainability-related actions by providing consumers with knowledge and information to help them make environmentally responsible decisions.

Empowered consumers have the capacity to make sound decisions by collecting and assessing information, sharing knowledge, and engaging in actions that support sustainable purchasing and consumption (European Commission, 2017; Peña et al., 2023). Resulting from the regulatory frame developed by the EU and OECD member states, green labeling and warning labels can help consumers make choices that benefit their health and the environment, thus providing consumers with opportunities to engage in sustainable consumption, recycling, and waste management (OECD, 2009; Zamfir et al., 2023). As proven by recent research, customers' perceptions of online retail ethics positively influence their repurchasing intentions, while perceived risks have the contrary effect (Yuniarti et al., 2022). Based on these considerations, we hypothesize that:

H4. Knowledge access exerts a positive influence on sustainable purchasing.

2.5 | Relationship between knowledge access and consumer engagement

As online retail becomes more competitive by harnessing technological advancements, customers' expectations and the retail

environment are enhanced. Digital technologies have profoundly affected markets on both the retailer and customer sides, providing advanced tools for communication, interaction, and empowerment (OECD, 2009). Conversely, customers' rights are challenged by information asymmetry with retailers, the lack of transparency, and the complexity of the data environment, for example, processing and trading (Larsson, 2018). However, product involvement and skillful interactive communication with consumers in the digital environment can reduce marketing intrusiveness, increase WoM knowledge sharing, and empower customers (Belanche et al., 2020). The importance consumers play in changing the retailing environment, provided they develop the abilities to make informed decisions and acquire the digital competencies necessary to reap the e-commerce benefits (OECD, 2009), has been underlined in the literature (Beranek & Kamerschen, 2013), which also aligns with consumer sovereignty concept. Competition in the market leads to fair options for customers based on quality, choice, and innovation, and also enhances consumer empowerment (Laitenberger, 2017). It is easier than ever to access information about product features, compare and follow dynamic pricing, share deeper knowledge about experiences, get engaged in consumer communities, and even co-create innovative business models (OECD, 2016b). As Islam and Rahman (2017) have found, information quality is one of the strongest factors affecting consumer engagement.

Consumer engagement is a multidimensional concept that is enhanced in virtual communities. It includes facets like satisfaction and loyalty to communities and brands; empowerment in jointly facing undesirable commercial practices; trust, connection, and emotional bonding with peers; and commitment toward common outcomes. The mesh of cognitive, emotional, and behavioral elements determines the level of engagement intensity, reflected in members' activity in online communities, the roles they assume, the social support they exhibit, and the extent of knowledge sharing (Brodie et al., 2013).

Going further, as envisaged in the EU framework documents, consumer engagement policies are developed from the perspective of consumer empowerment. Special Eurobarometer 342 (2011) on consumer empowerment revealed substantial knowledge and skills gaps related to consumer rights and limited knowledge of the consumer protection framework and contractual terms, especially in low-income, low-education populations. Consumer empowerment encompasses several dimensions: consumer knowledge and skills leading to consumer confidence, consumer awareness of the protective normative safety net, and consumer engagement in the prevention of and resolution of consumer rights breaches. Thus, online consumer empowerment integrates abilities, awareness, and engagement leading to sustainable purchasing decisions (Gazzola et al., 2017).

Attaining consumer empowerment required strengthening consumer policies and the protection framework against unfair commercial practices, contract terms, and misleading advertising while securing consumers' right to withdraw from contracts and seek adequate redress (Directive 2011/83/EU on consumer rights). EU examples of the legal protection of consumer rights range from consumer access rights and knowledge about products and services to food

quality guarantees, protection of personal data, passenger rights, product and service safety requirements, quality packaging, removal of roaming fees and providers' switching rights, etc. Furthermore, consumers have been given access to swift and simple redress procedures and low-cost litigation with alternative and online dispute resolution procedures (European Commission, 2012a).

Studies on customer behavior in the case of service provider failures have shown the importance of equity in the relationship between retailers and customers. For instance, Magnini et al. (2007) have suggested a so-called service recovery paradox, where an effective remedy to customer complaints after a failure could actually lead to higher customer satisfaction and loyalty. However, Lin et al.'s (2011) research has rejected the applicability of the paradox to the online commerce environment. Nevertheless, the authors confirmed that employing the approaches of distributive justice (i.e., service fairness reflected in discounts, compensation, reimbursement), procedural justice (i.e., clear procedure implementation for complaint and support for redress), and interactional justice (i.e., fair interactions and communications by the retailer) to online retail incidents (e.g., failures, errors, delays) significantly influences customer satisfaction, although only interplays with distributive justice impact repurchasing intentions. Retailers' just and effective actions in handling incidents and restoring customer satisfaction and trust are certainly conducive to better long-term outcomes for the commercial activity than perceived short-term gains.

Access to information on consumer rights provided by online providers empowers consumers. Knowledge of consumer organizations and programs supporting consumer rights enables customers to make informed decisions and take action when necessary, leading to increased engagement with retailers and consumer protection institutions. Access to information on product features, pricing, detriment and redress, etc. enables consumers to make grounded decisions, leading to greater confidence and engagement in the online marketplace. Furthermore, the retailers' actions in handling incidents and restoring customer satisfaction are impactful. Effective remedy and service recovery measures can positively influence consumer engagement and loyalty.

Based on these arguments, we propose the following hypothesis:

- H5.** Knowledge access exerts a positive influence on consumer engagement.

2.6 | Relationship between consumer networks and consumer engagement

Knowledgeable consumers who engage in the market (Madill & Mexis, 2009) and generate exchanges about products and services with peers contribute to uncertainty reduction (Bratianu & Bolisani, 2015; Vătămănescu et al., 2018). Furthermore, engaged customers who develop consumer protection awareness make informed purchasing decisions and contribute to consumer-based online networks, developing relational capital (Vătămănescu

et al., 2017, 2018). Leveraging network capabilities, consumer networks gather individuals with related consumer preferences, habits, and interests (Brodie et al., 2013; Cheung et al., 2008) to share resources, interests, experiences, and practices online, engaging in learning, development, and collaboration (Soto-Acosta et al., 2014). All these contribute directly or indirectly to sustainable purchasing decisions (Maher et al., 2016; Wright et al., 2006), thereby rounding off the entire process.

Online consumer networks serve as valuable platforms for information exchange, enhancing peer-to-peer communication and empowering consumers to make informed decisions. Individuals who actively participate in online networks are more likely to perform thorough research, consider testimonials, and review contractual terms before making a purchase. Consistent participation and information-sharing build trust among network members, leading to stronger relationships and social support. This trust factor encourages more active participation and engagement within the network, further reinforcing its positive influence on consumer behavior and transposing KAB into practice.

The main aim of participants on social networking sites is to pursue their interests, interact, share experiences, and exchange information. Inside these virtual communities, members contribute advice; offer ratings, reviews, recommendations, and referrals; and set up groups that encourage discussions according to common preoccupations where discussions are encouraged. Persistent participation in consumer networks can enhance relationship quality and social support among peers based on trust, which is conducive to social commerce intentions and also to consumer empowerment (Sheikh et al., 2019).

Based on empirical research results, Rossmann et al. (2016) posited that consumer communities' knowledge-sharing practices and involvement may differ depending on their purpose. Communities for products share experiences with products that may involve emotional aspects and exchanges of digital media files (e.g., pictures with the product) while communities interested in services engage in information-building (such as forums and troubleshooting advice) that could benefit other users. Different types of consumer networks serve varying purposes and cater to diverse consumer interests. This diversity in consumer networks ensures that consumers have access to relevant information and support tailored to their specific needs and preferences.

Consequently, the following hypothesis is advanced:

- H6.** Consumer networks exert a positive influence on consumer engagement.

2.7 | Relationship between consumer networks and sustainable purchasing

The online environment facilitates customer access to information about products and services, as well as insights and experiences shared by peers. Consumers have opportunities to search

for and reach communities of interest and ask for supplementary information, advice, or support (Gazzola et al., 2017; Vătămănescu et al., 2018). The development of social media technologies has provided opportunities for real-time access to such groups and networks and the exchange of rich media files concerning product and service characteristics and experiential usage evidence (Vătămănescu et al., 2022; Zhao et al., 2019). Moreover, researchers posited that social media use promotes sustainable attitudes and purchases (Zafar et al., 2021).

Mudambi and Schuff (2010) determined that the impact of customer reviews differs between search goods (e.g., cameras, pills) and experience goods (e.g., wine, music). For search goods, product descriptions tend to suffice while experience goods require sampling. How customers assess the usefulness of their peers' reviews is affected by the product type, review extremity, and depth, with moderate reviews being perceived as more helpful for experience goods.

Customers consider online reviews when making purchases of experiential goods (e.g., books), relying on other consumers' feedback about products (Zhao et al., 2013). Such trust and influence from community members or social media influencers play an important role in the purchase decisions of millennials (Johnstone & Lindh, 2022), who are endorsers of social networks (Hobart & Sendek, 2014) and generation Z (Dabija et al., 2017; Pauliene & Sedneva, 2019). Consumer testimonials and reviews play a significant role in shaping purchasing decisions. Consumers rely on the experiences shared by others to gauge the sustainability and environmental impact of products. Positive reviews for eco-friendly products have influenced consumers to make sustainable choices. The empowering potential of consumer networks translates into the ability to prioritize sustainable products and practices when making purchasing decisions. Consumers in online networks share information and resources related to eco-friendly products, ethical practices, and consumer rights. This collective knowledge-sharing fosters a culture of sustainability and responsible consumption, influencing purchasing decisions in favor of environmentally and socially responsible products and practices.

Based on this, the following hypothesis is proposed:

- H7.** Consumer networks exert a positive influence on sustainable purchasing.

2.8 | Relationship between consumer engagement and sustainable purchasing

Sustainable development is one of the European Union's main objectives. The Flash Eurobarometer 256 (2009) assessed European citizens' knowledge about sustainable consumption and production, awareness of environmental consumption, understanding of eco-labels, trust in products' environmental performance and companies' environmental and social performance reporting, support for a voluntary environmental "code of conduct" for retailers, awareness of methods for promoting environmentally friendly products,

and retailers' role and taxation systems. Overall, half of the respondents expressed awareness of environmental issues when purchasing products and comprehension of ecolabelling, and 8 in 10 respondents stated that environmental impact plays a role in their product choice. However, half of the participants did not have trust in producers' environmental performance. Finally, similar numbers declared support for better visibility of eco-friendly products in stores and tax reductions for such products.

As highlighted by Bonchek and Cornfield (2016), customers are swifter and more flexible than companies in adapting to the digital transformation. They expect high-quality service, the best standards, and holistic experiences. Customers are more empowered than ever before. The proliferation of online platforms has empowered consumers with access to information, enabling them to make more informed choices regarding sustainability. Knowledgeable consumers actively seek out products with eco-friendly labels and sustainable production processes, thereby influencing market dynamics and encouraging companies to adopt more environmentally responsible practices.

Consumer empowerment is crucial for making sustainable purchasing decisions, as reflected in acquiring products that comply with sustainable development standards in terms of quality and performance. This way, customers influence market competition and green innovation. The online environment provides consumers with the means to search and compare products that meet certain sustainability parameters and certifications, check the product sourcing and labelling, make inquiries for more information, exchange opinions, report breaches of green standards or unethical practices swifter and more conveniently, and get support from peers for redress actions.

Consumer engagement has a positive impact on social, economic, and environmental sustainability (Maher et al., 2016). Empowering consumers to make sustainable decisions (Păduraru et al., 2016) involves making them aware of the individual and social benefits, acquiring know-how concerning sustainable consumption, and developing the relevant skills and attitudes to implement new behaviors (Maher et al., 2016). In this respect, consumers are the final decision-makers when it comes to sustainable consumption (Wright et al., 2006) and often the first actors in waste management (Islam et al., 2021). Initiatives like eco-labeling and the development of sustainability standards contribute to building trust and confidence among consumers, leading to increased engagement in sustainable purchasing. Long-term consumer engagement on sustainability outcomes has the potential to drive systemic change across industries and promote a more sustainable economy.

Therefore, another hypothesis is put forward:

- H8.** Consumer engagement exerts a positive influence on sustainable purchasing.

All the aforementioned hypotheses and the main supporting literature are combined in the table below (Table 1), as a foundation for advancing the following conceptual model (Figure 1).

Hypothesis	Supporting literature
H ₁ : Variety of online providers exerts a positive influence on knowledge access.	Bleier et al. (2019); Dabija et al. (2018); Gazzola et al. (2017); Islam et al. (2020); Pauliene & Sedneva (2019); Rose et al. (2012); Vătămănescu et al. (2017, 2018)
H ₂ : Variety of online providers exerts a positive influence on consumer network.	Baum & Spann (2014); Delp & Mayo (2016); Gazzola et al. (2017, 2019); Kwarik et al. (2014); Molinillo et al. (2021); Nardo et al. (2011); Qiu et al. (2021); Vătămănescu et al. (2017, 2018, 2022); Zhao et al. (2019)
H ₃ : Knowledge access exerts a positive influence on consumer network.	Floyd et al. (2014); Islam & Rahman (2017); Kaur et al. (2020); Lin & Huang (2013); Lin et al. (2019); Shao & Chen (2019)
H ₄ : Knowledge access exerts a positive influence on sustainable purchase.	European Commission (2017); Huyghe et al. (2017); Khan et al. (2021); Kim (2019); McKinsey & NielsenIQ (2023); Puteri et al. (2022); Rook & Fisher (1995); Ruiz-Real et al. (2019); Yuniarti et al. (2022)
H ₅ : Knowledge access exerts a positive influence on consumer engagement.	Beranek & Kamerschen (2013); Brodie et al. (2013); Fatas & Lyons (2013); Islam et al. (2019); Laitenberger (2017); Larsson (2018); Lin et al. (2011); OECD (2016b)
H ₆ : Consumer network exerts a positive influence on consumer engagement.	Brodie et al. (2013); Gazzola et al. (2017); Rossmann et al. (2016); Sheikh et al. (2019)
H ₇ : Consumer network exerts a positive influence on sustainable purchasing.	Dabija et al. (2017); Gazzola et al. (2017); Hobart & Sendek (2014); Pauliene & Sedneva (2019); Vătămănescu et al. (2018); Zafar et al. (2021)
H ₈ : Consumer engagement exerts a positive influence on sustainable purchasing.	Bonchek & Cornfield (2016); Islam et al. (2021); Maher et al. (2016); Wright et al. (2006)

TABLE 1 Hypotheses and supporting literature.

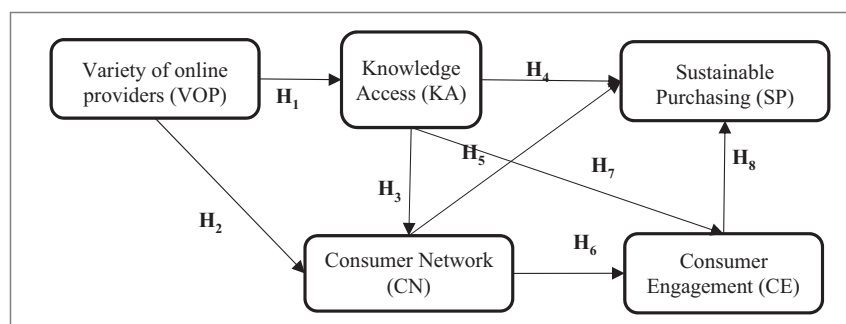


FIGURE 1 Conceptual model: Generating sustainable purchases.

3 | MATERIALS AND METHODS

3.1 | Data collection and research sample

The aim of this research was to determine the sustainable purchasing of customers according to the networks they are involved in, their engagement with online providers, and their access to knowledge when buying online (see Figure 1).

To assess the clarity of the questionnaire items, an online pretest with seven subjects from generations Y and Z was conducted at the beginning of January 2023. Following this procedure, small adjustments were made, mostly at the level of item wording. Furthermore, the authors relied on convenience sampling, with the aim of attracting as many respondents as possible. The researchers invited subjects via email using formal university channels based on the already established infrastructure for conducting online surveys. Respondents were

informed in detail about the main issues covered by the questionnaire and the importance of answering each item responsibly. Two rounds of invitations to fill in the questionnaire were sent during January 2023, and 200 complete responses were retrieved by the end of the month.

To ensure the sample's suitability, a common way of determining the minimum sample size is to follow the guidelines identified in the literature (Cohen, 2013; Green, 1991). Therefore, an estimation of the required minimum sample size can be obtained by relying on the G*Power Analysis (Cunningham & McCrum-Gardner, 2007). The results of this analysis indicated that for three predictors (i.e., knowledge access, consumer network, and consumer engagement), a multiple regression analysis and an f^2 size effect of 0.35 (large effect) for a sample size of 76 was required for the present research. Therefore, the sample size for this research (i.e., 200 subjects) was appropriate (Cohen, 1998, 2013; Green, 1991).

With a view to check if the collected data indicates any significant differences from the generation and gender standpoints, we made comparisons between pairs of the different consumer generations (Generation Y and Generation Z) and gender (males versus females) based on the dependent construct (i.e., Sustainable purchasing). In this regard, independent sample t-tests were performed. The tests did not pinpoint significant differences between the groups (Generation Y versus Generation Z, $F=0.021$ and $p=.865$; males versus females, $F=0.020$ and $p=.888$), so it was concluded that the sample is bias-free (Armstrong & Overton, 1977).

Out of a total of 200 respondents from Italy, 107 individuals (53.5%) belonged to generation Z while 93 (46.5%) were millennials. Sixty-four respondents (32%) were male, while 136 (68%) were female. One hundred and ten respondents (55%) were undergraduate students, 45 (22.5%) were graduate students, 31 (15.5%) hold a master's degree, and 14 (7%) hold a PhD. Fourteen respondents (7%) had less than a year of online shopping experience, 24 (12%) had between 1 and 3 years of online shopping experience, 63 (31.5%) had between 3 and 5 years of online shopping experience, 43 (21.5%) had between 5 and 7 years of online shopping experience, and 56 (28%) had shopped online for more than 7 years. One hundred and four respondents (52%) relied on less than 3 online providers, 61 (30.5%) relied on 3 to 5 online providers, and 19 (9.5%) relied on more than 5 online providers.

3.2 | Method and technique

The study is based on empirical quantitative-based research implemented through questionnaires distributed via the established university infrastructure for conducting online surveys. By employing SmartPLS 4.0., a structural equation modeling (SEM) analysis of the conceptual model was performed (see Figure 2). In line with the literature (Hair et al., 2010), different analyses regarding the indicators, as well as the considered constructs/dimensions, were performed.

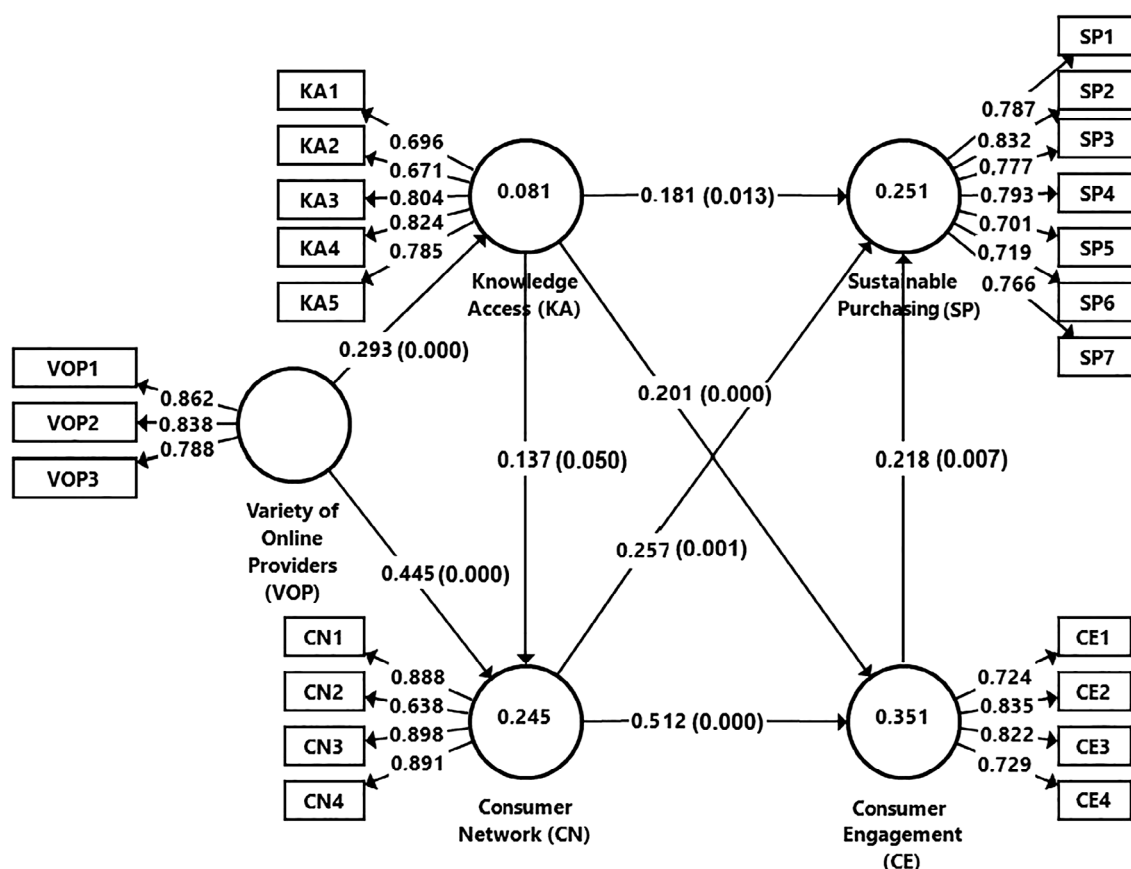


FIGURE 2 Structural model.

After assessing the measurement model, the structural model was evaluated.

3.3 | Measures

All constructs were designed as reflective factors, as they represent various facets of the construct. In this respect, the first construct—variety of online providers (VOP)—was adapted from Gazzola et al. (2017) and Vătămănescu et al. (2017, 2018) and comprised three items covering the similarity of the offers advanced by online providers. The second construct—knowledge Access (KA)—was adapted from Gazzola et al. (2017) and Vătămănescu et al. (2017, 2018) and operationalized by means of five items that address how information displayed by online providers meets the expectations of consumers. The third construct—consumer engagement (CE)—relied on research from Nardo et al. (2011) and was measured via four items that covered the actual behavior of online consumers in terms of detriment and redress, that is, accessing the consumer protection authorities, replacing poor-quality products, and requesting refunds and product repairs. This variable was adjusted to focus solely on consumers' actual behaviors. The initial scope of the construct as designed by Nardo et al. (2011) was wider and included additional facets, such as the consumers' tendency to talk about purchases, compare products, and more. Within the specific scope of the current research, these dimensions are the object of another variable (i.e., consumer networks).

Here, Consumer Network (CN) was adapted from Gazzola et al. (2017, 2019) and Vătămănescu et al. (2015) and comprised four items focused on the use of specialized online networks to find details about consumer rights, empower purchase decisions, and learn about other consumers' purchase experiences. The last construct—Sustainable Purchasing (SP)—included seven indicators that depict consumers' approach to sustainability imperatives when buying products online, with credit to Gazzola et al.'s (2016) and Vătămănescu et al.'s (2021) insights. In the absence of pre-established standardized scales that specifically address the constructs, the adaptation of all variables envisaged the formulation of indicators based on the theoretical developments and conceptual foci of the abovementioned studies.

In order to clearly address the composition of each variable and the inherent measures, Table 2 presents the constructs and indicators included in the model, as well as the main sources supporting each of the scales.

4 | FINDINGS

4.1 | The evaluation of the measurement model

The first step of the measurement model assessment relied on computing data validity and reliability using Cronbach's Alpha, Average Variance Extracted, and Composite Reliability.

Furthermore, we also computed the item loadings and the variance inflation factors. Table 3 depicts the discriminant validity using the Fornell–Larcker criterion and the Heterotrait–Monotrait criterion (Table 4). All of the obtained values are within the recommended minimum and/or maximum thresholds, so the variables and constructs can be considered as such (Hair et al., 2010; Henseler & Sarstedt, 2013; Pesämaa et al., 2021). As all thresholds are within the recommended values based on the literature, we consider the model to be correct; thus, the constructs depict convergent validity (Chin, 1998).

In the case of both discriminant validity analyses (see Table 3—Fornell–Larcker criterion and Table 4—Heterotrait–Monotrait criterion), the recommended thresholds are fulfilled (Henseler et al., 2015), so further examinations could be unfolded.

Next, the collinearity of the measurement model was assessed by means of the Variance Inflation Factors (VIF) not only for each item but also for the inner model. As recommended by the literature (Sarstedt et al., 2017), the maximum accepted value is 5. In the present case, the highest VIF for the items is 4.004 for CN1, while the highest VIF for the inner model is 1.555 (CE – SP); therefore, multicollinearity does not represent an issue for the sample. To test the relationships between the constructs, a bootstrap analysis was performed, based on t-statistics, which allowed us to accept all the hypotheses.

4.2 | The evaluation of the structural model

The goodness of fit for both the estimated and the calculated model was measured. With a value of $SRMR^{e/c} = 0.084 < 0.1$, the model is suitable. The explanatory power of the model is moderate, as 26.2% of sustainable purchasing ($R^2 = 0.262$) is explained by knowledge access, consumer engagement, and consumer networks (see Figure 2 and Table 5).

According to the procedure recommended by Hult et al. (2018), an endogeneity test was performed using instrumental variables, namely two control variables (i.e., generation and gender) in relation to various dependent variables (Table 6). As derived from the bootstrapping routine, the relationships apposite for the control variables proved to be nonsignificant.

In the next step, an endogeneity check was performed by utilizing the Gaussian copula test, as also suggested by Hult et al. (2018). In line with Hair Jr et al. (2022), the analysis procedure relying on the Gaussian copula is considered a suitable and pertinent enhancement to the PLS-SEM technique. A preliminary Cramer–von Mises test on the standardized composite scores was conducted to determine whether the data was normally distributed. Given that the p -values for all variables in the model were below the threshold of 0.01 (i.e., data was non-normally distributed), we could further run the Gaussian copula tests. These findings also indicated that none of the copulas had statistical significance. Therefore, it was concluded that no endogeneity issues were related to the estimation of the structural model.

TABLE 2 Constructs: literature and fit indices.

Item	Construct	Item loading	Cronbach's alpha	AVE	CR
Variety of online providers (VOP)—adapted from Gazzola et al. (2017), Vătămănescu et al. (2017, 2018)					
VOP1	Many online providers design attractive mobile applications for a pleasant buying experience.	0.862	0.744	0.689	0.869
VOP2	Many online providers offer similar navigation facilities (e.g., ease of shopping and of payment, time spent to select products, after-sale service, etc.).	0.838			
VOP3	Many online providers offer relevant and detailed information on the products or services on their websites.	0.788			
Knowledge Access (KA)—adapted from Gazzola et al. (2017), Vătămănescu et al. (2017, 2018)					
KA1	Many online providers display information on the consumers' rights when regularly buying.	0.696	0.816	0.575	0.871
KA2	Many online providers display information on the consumers' rights when newly purchased goods don't work properly.	0.671			
KA3	Many online providers display information on the agencies (government and voluntary) offering consumers guidance.	0.804			
KA4	Many online providers display information on the legal action of governmental and non-governmental institutions on protecting consumers.	0.824			
KA5	Many online providers display information on the consumers' distance-purchasing rights.	0.785			
Consumer Engagement (CE)—adapted from Nardo et al. (2011)					
CE1	I gave a poor-quality product back to the online seller and demanded money refund.	0.724	0.786	0.607	0.860
CE2	I demanded replacement of a poor-quality product bought online for a good one.	0.835			
CE3	I gave a poor-quality product back to the manufacturer for repair (production plant/factory) based on the warranty card.	0.822			
CE4	I resorted to consumer protection authorities to assist me in solving problems with an online vendor.	0.729			
Consumer Network (CN)—adapted from Gazzola et al. (2017, 2019), Vătămănescu et al. (2015, 2016, 2018)					
CN1	I have resorted to online specialized networks to find out more info on consumer rights.	0.888	0.848	0.699	0.901
CN2	Before buying online, I usually perform cost-benefit analyses starting from other consumers' testimonials.	0.638			
CN3	Before buying online, I usually check the contractual terms and conditions displayed on the website.	0.898			
CN4	Before buying online, I usually consider the bad experiences of other customers with a provider.	0.891			

(Continues)

TABLE 2 (Continued)

Item	Construct	Item loading	Cronbach's alpha	AVE	CR
Sustainable Purchasing (SP) – adapted from Gazzola et al. (2016), Vătămănescu et al. (2021)					
SP1	I buy online products which have a green label/sustainable footprint.	0.787	0.886	0.591	0.910
SP2	I buy online products which are environmentally friendly.	0.832			
SP3	Ecolabelling plays an important part in my purchasing decisions.	0.777			
SP4	I buy online products which have an eco-friendly production process.	0.793			
SP5	I buy online products which are easily repairable.	0.701			
SP6	I buy online products because they are better controlled by consumer protection authorities.	0.719			
SP7	I resort to online services only if they comply with ethical standards.	0.766			

Note: Factor loading > 0.6; Cronbach's Alpha > 0.7; Average variance extracted (AVE) > 0.5; Composite reliability > 0.7.

TABLE 3 Discriminant validity analyses (Fornell–Larcker).

Construct	CE	CN	KA	SP	VOP
CE	0.779				
CN	0.566	0.836			
KA	0.338	0.268	0.758		
SP	0.425	0.429	0.324	0.769	
VOP	0.412	0.485	0.293	0.556	0.830

Abbreviations: CE, consumer engagement; CN, consumer network; KA, knowledge access; SP, sustainable purchase; VOP, variety of online providers.

The first hypothesis (H1) inferred that the variety of online providers exerts a positive influence on knowledge access. The results ($\beta = .293$; $T\text{-value} = 4.045$ and $p < .000$) show the strong and positive influence that a variety of online providers have on knowledge access; thus, H1 can be accepted. This finding is logical to a certain extent, as customers tend to inform themselves about different vendors, trying to gather as much information (reviews, etc.) about them as they can so that in the end they can choose the most suitable provider according to their needs and expectations.

The second hypothesis (H2) assumed that the variety of online providers exerts a positive influence on consumer networks. The results ($\beta = .445$; $T\text{-value} = 6.613$ and $p < .000$) depict a strong positive and significant influence, so H2 can also be confirmed. Further, Hypothesis 3 (H3) presumed that knowledge access has a positive influence on consumer networks. In this case, the results ($\beta = .137$; $T\text{-value} = 1.957$ and $p < .050$) show a less intensive but still positive and significant relation, which allows us to accept the hypothesis.

The fourth hypothesis (H4) studied the relation between knowledge access and sustainable purchasing. The influence proves to be positive and significant ($\beta = .181$; $T\text{-value} = 2.536$ and $p < .011$). Although of a lower intensity, the hypothesis is supported. Hypothesis 5 (H5) posited that knowledge access exerts a positive influence on consumer engagement. This assumption is confirmed by

TABLE 4 Discriminant validity analyses (heterotrait–monotrait–HTMT).

Construct	CE	CN	KA	SP	VOP
CE					
CN	0.673				
KA	0.402	0.316			
SP	0.472	0.479	0.331		
VOP	0.501	0.593	0.352	0.664	

Abbreviations: CE, consumer engagement; CN, consumer network; KA, knowledge access; SP, sustainable purchase; VOP, variety of online providers.

the results ($\beta = .201$; $T\text{-value} = 3.522$ and $p < .000$), which highlight a strong positive and significant relation between the two constructs.

The sixth hypothesis (H6) analyzed the influence of consumer networks on consumer engagement. As presumed, the existence of consumer networks generates higher engagement among customers with the desired online provider; the relation is very strong positive and of high significance ($\beta = .512$; $T\text{-value} = 8.700$ and $p < .000$), confirming hypothesis (H6). The seventh hypothesis (H7) assumed that consumer networks exert a positive influence on sustainable purchasing. With a strong positive and significant relation, the results ($\beta = .257$; $T\text{-value} = 3.165$ and $p < .002$) lead us to accept H7. The last hypothesis, (H8), considered the influence of consumer engagement on sustainable purchasing. In this case, the results ($\beta = .218$; $T\text{-value} = 2.680$ and $p < .007$) also suggest a high positive and significant relation; thus, H8 is also accepted.

5 | DISCUSSION OF THE RESULTS

Building on the convergence points of the knowledge–attitude–behavior (KAB) view and the consumer sovereignty framework, the proposed research model was intended to reveal the power

TABLE 5 Path coefficients of the structural equation model.

Paths	Path coefficients	Standard deviation	T-value	CI ^a	p-value	Hypotheses
VOP → KA	0.293	0.072	4.040	0.122~0.416	.000***	H ₁ -Accepted
VOP → CN	0.445	0.068	6.570	0.300~0.568	.000***	H ₂ -Accepted
KA → CN	0.137	0.070	1.964	0.002~0.271	.050*	H ₃ -Accepted
KA → SP	0.181	0.072	2.530	0.033~0.315	.011**	H ₄ -Accepted
KA → CE	0.201	0.057	3.539	0.078~0.303	.000***	H ₅ -Accepted
CN → CE	0.512	0.057	8.951	0.393~0.615	.000***	H ₆ -Accepted
CN → SP	0.257	0.081	3.185	0.099~0.415	.001***	H ₇ -Accepted
CE → SP	0.218	0.081	2.703	0.053~0.366	.007**	H ₈ -Accepted

Abbreviations: CE, consumer engagement; CN, consumer network; KA, knowledge access; SP, sustainable purchase; VOP, variety of online providers.

^aCI=confidence interval (2.5%–97.5%).

* $p < .1$; ** $p < .05$; *** $p < .001$.

TABLE 6 Endogeneity test based on control variables.

	Original sample	Sample mean	Standard deviation	T-statistics	p-value
Gender->SP	0.137	0.136	0.139	0.986	.324
Generation->SP	0.256	0.261	0.133	1924	.054
Gender->CE	0.011	0.008	0.132	0.081	.935
Generation->CE	-0.082	-0.084	0.12	0.685	.493
Gender->CN	0.106	0.109	0.148	0.718	.473
Generation->CN	-0.013	-0.011	0.139	0.097	.923

and autonomy of consumers to make choices based on their preferences and needs in the online marketplace, by shedding light on their strategic behaviors in terms of detriment and redress mechanisms. Consumer sovereignty ensures a fertile ground for detriment and redress interventions, playing a significant role in shaping the overall dynamics of supply and demand. When consumers are able to make informed decisions and express their preferences, it creates a feedback loop that influences producers and service providers. Given that the structural model (covering knowledge access, consumer engagement and consumer networks) explains over 25% of the variance in sustainable purchasing, it may be further inferred that businesses are incentivized to cater to the needs and desires of consumers in order to remain competitive and relevant in the market.

Here, the ability of consumers to exercise their sovereignty can also lead to better product quality, improved customer service, and fair pricing. When consumers demand higher quality products or express dissatisfaction with a particular service, businesses are compelled to address these concerns in order to retain their customer base. This aspect of consumer sovereignty directly impacts the welfare of consumers by promoting accountability among businesses and ensuring that consumer rights are upheld.

In terms of redress, consumer sovereignty enables individuals to voice their grievances and seek recourse for any detrimental experiences in the marketplace. Whether it is through formal channels such as consumer protection agencies or through the power of social media and online networks, consumers have the ability to hold

businesses accountable for any subpar products or services. This potential for redress serves as a deterrent against unethical business practices and encourages companies to prioritize consumer satisfaction.

The abovementioned arguments were supported via the validation of all the proposed research hypotheses (H1–H8). Thus, it has been proven that a variety of online providers exerts a positive influence on knowledge access, confirming the first hypothesis, which contended that variation among retailers stimulates competition and offers consumers abundant choices. Providers are incentivized to invest in developing better customer experiences online and seeking differentiation to stand out. The findings are in line with Delp and Mayo (2016) on the competitive and innovative dimensions of e-commerce. Moreover, in order to attract and retain customers, providers have to highlight their offers' features by providing quality information to support purchasing decisions and reduce uncertainty, thus confirming Baum and Spann's (2014) and Kwark et al.'s (2014) assertions on the role that information plays in purchasing decisions. To this end, quality retailers provide relevant information about products and services and seek client validation through reviews and ratings, therefore confirming the conclusions of Mudambi and Schuff (2010).

The path coefficient indicates that a variety of online providers also exerts a positive influence on consumer networks, therefore validating hypothesis H2. Whenever they avail attractive mobile applications to facilitate a pleasant buying experience, the ease of

shopping and of payment, etc., most of the online providers trigger—to some extent—customer purchase intention, stimulating the online shopping process and defining consumer expectations. This evidence is consistent with Bleier et al. (2019) and Molinillo et al. (2021), who urge that quality information provided by retailers assists customers in comparing products and services and making purchasing decisions. Potential buyers can analyze their peers' testimonials and reach informed decisions. Moreover, supporting the findings Brodie et al. (2019), shared interests and practices are at the core of consumer networks, while satisfied online consumers favor brand loyalty, in accordance with Wolfinbarger and Gilly (2003) and Andrei et al. (2017).

H3 advanced a positive relationship between knowledge access and consumer networks and was confirmed. The results are in line with Dickinger (2011), who highlighted the importance consumers place on their peers' perceived altruism and integrity when reviewing products and services, as well as Zhao et al.'s (2019) assertions about reviewers' signals of satisfaction or dissatisfaction affecting purchase decisions. In online commerce, the consumer distance in relation to the product increases uncertainty about its characteristics and fit. In addition, the faceless interaction between the retailer and the customer impedes that sharing of social cues that favor relationship development based on trust. To mitigate these obstacles, potential clients have to rely on their peers' assessments when making purchasing decisions. In this vein, the present study confirms that even in the postpandemic context, e-commerce requires collaborative experience and social interactions, as posited by Molinillo et al. (2021), while social networking availability ensures social presence, support, and benefits (Li & Ku, 2018) conducive to empowered decisions.

Pursuing the abovementioned path, an interdependent relationship was confirmed between knowledge access and sustainable purchasing; therefore, H4 was accepted. When online consumers have access to knowledge about products and services, they can make informed purchase choices, depending on their attitudes and beliefs, as well as their means. As established by Cheung and To (2021), retailer ethics, fair trade, and green products are factors taken into account by consumers when placing their orders. The evidence found in the present study supports Nair and Bhattacharyya's (2019) findings, which confirmed that customer sustainability motivations determine their purchase of products and services, as well as Kim's (2019) suggestion that customers' satisfaction and future behavior are dependent on retailers' transparency and consistency, including reputation and CSR communication. Therefore, the empirical investigation gives credit to the extant literature, showing that sustainable products and providers' compliance with ethical standards are decisive factors when making online transactions. This conclusion complements prior developments on the topic with up-to-date insights into consumer behavior in the post-pandemic context, proving the consistency of behavioral dynamics in relation to sustainability imperatives.

Knowledge access exerts a positive influence on consumer engagement; consequently, H5 was supported by the empirical data.

The dependency of consumer engagement on knowledge access confirms the importance that access to information about products and services, consumer rights and redress, and peer input through reviews and experiences has on customers' overall experience online and their decisions. This validates the European Union's global initiatives for consumer empowerment, indicating that consumer confidence relies on knowledge and awareness as well as relevant skills. The findings are in line with Rose et al. (2012) in showing that cognitive and affective elements determine consumers' perceived control in the online commerce environment. Moreover, the results confirm Mwakatumbula et al.'s (2016) statements on consumer assertiveness in making informed decisions and exercising their rights. On the retailers' side, striving to ensure a seamless shopping service and service recovery in the case of failures, as well as asking customers for feedback on their experience, increases connectedness, knowledge, and service improvement, thus increasing customer retention.

Consumer networks exert a positive influence on consumer engagement; therefore H6 was strongly endorsed. Consumer networks play a decisive role in online commerce, and they have cognitive and affective valences. They facilitate knowledge acquisition and sharing, information exchange, and social support, empowering members to make informed decisions and take action to redress problems. Thus, online consumer networks embody complex social relationships, relying on voluntary participation and engagement. The study's findings confirm previous research on consumer-based online networks and consumer protection (Gazzola et al., 2017; Vătămănescu et al., 2017), knowledge acquisition in online networks (Vătămănescu et al., 2023), and consumer empowerment (Sheikh et al., 2019). Here, it should be underlined that the present study mainstreamed consumer engagement through the lens of consumer empowerment (following Nardo et al., 2011), thus giving way to a more particular approach according to which persistent participation in consumer networks is expected to enhance relationship quality and social support among peers, which is further conducive to consumer empowerment, as also supported by Sheikh et al. (2019).

It was found that consumer networks exert a positive influence on sustainable purchasing; thus, hypothesis H7 was accepted. As previously discussed, customers are swayed by their peers' feedback on products and experiences, as reflected in ratings, reviews, and knowledge and information sharing. In online consumer networks, consumers can reach abundant information to make decisions and find social support for their redress actions. The findings are, therefore, in accordance with previous studies regarding the role of community members' and influencers' influence on the purchasing decisions of millennials (Johnstone & Lindh, 2022) and generation Z (Dabija et al., 2017; Pauliene & Sedneva, 2019), whose awareness for sustainability aspects greater than that of other generations and who are engaged in sustainable purchasing decisions (Gazzola et al., 2017). Moreover, the results are in line with recent literature that regarding generation Y's involvement in sustainable consumption (Severo et al., 2023) and the propensity of generation Z to be influenced by social media when buying green products (Djafarova & Bowes, 2021).

The final advanced hypothesis, H8, was also accepted, as data confirmed an interdependent relationship between consumer engagement and sustainable purchasing. Online consumer empowerment leading to engaged decisions and actions is critical in influencing sustainability in the retail industry. By raising awareness about sustainable consumption, increasing knowledge and skills for making ethical choices and sustainable decisions (such as selecting fair trade and green label products), involving customers in waste management, and strengthening consumer engagement in sustainable development, the attitudes and behaviors of consumers can be changed, often starting with their purchase decisions. These findings are in line with Maher et al. (2016), Gazzola et al. (2017), and Islam et al. (2021), which underscore the positive impact of consumer engagement on social, economic, and environmental sustainability, inherently confirming consumers' impact on sustainable purchases and beyond. This influence, in turn, impacts green innovation in manufacturing and retail.

6 | CONCLUSIONS

6.1 | Summary of the findings

From a bird's-eye view, the advanced model is properly descriptive of sustainable purchasing among the targeted population. The findings indicate that generation Y and generation Z respondents are interested in sustainable online purchases. Moreover, variety among online providers, access to knowledge, consumer networks, and consumer engagement rose as crucial dimensions. The model explained 26% of the variance in sustainable purchasing and 35.7% of the variance in consumer engagement, providing a relevant image of their antecedents in the context of the digital economy.

6.2 | Theoretical implications

The theoretical implications of the study are manifold. First, on a conceptual level, the present endeavor intentionally investigated several of the main factors impacting sustainable purchasing among millennials and generation Z members to reveal the influence of variety among online providers, access to knowledge, consumer networks, and consumer engagement. Shedding light on the influence of consumer engagement through the lens of detriment and redress mechanisms on sustainable purchasing, the empirical examination focused on the strategic behaviors of consumers and on their active role in the online marketplace. By doing so, a more specific model was proposed giving credit to the relevance of consumers' strategic behaviors in shaping purchasing patterns. Each construct was operationalized according to the existing specialized literature and adapted to the scope of the current research framework, therefore providing a benchmark for future studies in the field.

Furthermore, the study examined consumer engagement by considering consumer empowerment, thereby supporting previous

requests for additional research on the relationship between empowerment and engagement. The empirical study enhanced previous advancements by giving credit to established theories, such as the knowledge-attitude-behavior (KAB) view and consumer sovereignty. The KAB model verified the significance of knowledge accessibility in shaping ideas related to sustainability and promoting behaviors that uphold environmental preservation.

6.3 | Practical implications

Second, from practical and societal perspectives, the analysis adds to the body of knowledge and to practical approaches in two main ways. On the one hand, it highlights the importance of access to relevant knowledge on products, services, providers, etc. with a view toward boosting sustainable consumption among young generations. It is thus mandatory for online retailers to ensure clear and accurate information via all the available channels in order to meet the expectations of knowledgeable and sustainability-oriented customers. Nowadays, consumer empowerment has emerged as a pivotal imperative when purchasing online, and any exception from this *sine-qua-non* exigency is liable to alter the purchasing process.

In 2014, the United Nations Conference on Trade and Development developed policy documents for enforcing competition law and competition advocacy. Competition law enforcement is meant to implement the normative framework for competitive, antidiscriminatory, innovative practices in commerce and prevent consumer harm and abuses of market power. Consumer policies are directed at consumer well-being and consumer rights' protection, aiming at consumer empowerment through access to information, quality products, and competitive pricing. Nevertheless, as Kerber (2016) signaled, uninformed, unaware, or vulnerable customers can be particularly harmed by illicit, unethical, or aggressive commercial practices that impose a trade-off between economic advantages and privacy or otherwise infringement on consumer rights.

On the other hand, this research draws attention to the power of consumer networks and engagement to influence sustainability in the post-pandemic context. As previously discussed, both factors emerged as meaningful antecedents of the endogenous variable, hence pointing to another aspect. In parallel with the proliferation of online commerce, issues concerning consumers' trust in the e-commerce environment have emerged and been augmented in today's online landscape, as pinpointed by Jiang (2020) and Statista (2022). Various scales advanced for measuring consumers' perceptions regarding the ethics of online retailers (CPEOR) still hold: the security of online transactions, privacy protection, non-deception from retailers about products and fulfillment/reliability of purchase (as coined by Román & Cuestas, 2008) are invested with great importance. At this level, CPEOR is still significantly influenced by consumer internet knowledge and predicted consumer word-of-mouth.

However, privacy and security online, the digital divide, the environmental impact of technologies and devices, and (e-)waste

management remain matters of concern. In their framework against fraudulent and deceptive commercial practices, OECD (2007) issued a recommendation based on commonly agreed upon principles in consumer protection for dispute resolution and redress in commercial transactions, including cross-border transactions. The aim was to nudge member countries to develop frameworks for effective and inexpensive consumer protection and empowerment mechanisms. Envisaged consequences are increased consumer confidence and trust in the online and offline marketplace, ethical business practices, and development of international commerce, including e- and m-commerce.

6.4 | Limitations and future research directions

The study has several limitations that should be addressed by future research. Firstly, the convenience sample comprised 200 Italian subjects from generations Y and Z. Given that respondents came from a single country, thus advancing a context-driven approach, larger (international) samples are welcome, which would allow further examination of intergenerational and cross-national patterns. Secondly, the constructs were operationalized through subjective measures, thus being biased to some extent by the respondents' perceptions and opinions on different phenomena (see the seminal work of Hornik, 1894 regarding the dialectics of subjective versus objective measures in consumer behavior research). The integration of additional objective measures alongside the self-reported ones would be favorable. Thirdly, the conceptual and structural models are based on a five-factor framework as derived from the reviewed literature. Here, the consumer engagement construct was operationalized primarily from the perspective of Detriment and redress as this is considered the most representative of the consumer sovereignty viewpoint. Future studies could benefit from extending the scope of consumer engagement to include other dimensions and also from covering other constructs, such as business ethics, data privacy, and security, thus rounding off the analytical perspective. A wider approach encompassing these issues would mainstream current preoccupations regarding the security of online transactions; privacy protection; and fulfillment/reliability of purchase, dispute resolution and redress in commercial transactions, including those that take place across international borders (see, for example, Larsson, 2018; Tran & Nguyen, 2022; Vo et al., 2022). Such a framework would also provide solid grounds against fraudulent and misleading business practices, strengthening consumer protection and empowerment measures.

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CONFLICT OF INTEREST STATEMENT

None of the authors have a conflict of interest to disclose.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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