

Article

The Importance of Sustainability Aspects When Purchasing Online: Comparing Generation X and Generation Z

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Abstract: As research on sustainability orientation across generations is still sparse, we contribute to literature by enriching this research field, focusing on Generation Z ('Zers') and X ('Xers'). Moreover, no other study has analyzed cross-generational differences in the sustainability context by making use of choice experiments, which overcome issues related to (Likert) scale item investigations, and allow respondents to evaluate the trade-off between different purchase factors simultaneously. We thus applied one of the most recent advancements in choice experiments, named Adaptive Choice-Based Conjoint analysis, which appears to be more realistic than previous alternatives. The results indicate Zers consume more sustainably (inter alia higher importance of social labels; higher purchase likelihood) when shopping online; however, differences within each generation were uncovered, especially among Xers (e.g., gender differences regarding importance of price).

Keywords: sustainability; generation Z; online shopping; generational comparison; Adaptive Choice-Based Conjoint analysis; segmentation; labels



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1. Introduction

The COVID-19 pandemic has catalyzed diffusions of technology across the globe. As a result, many already powerful technological companies, such as those from the e-commerce industry (e.g., Amazon), became even more powerful. However, when endowed with high levels of power, assurance is necessary that such companies do not misuse their power towards consumers. The related aspects of conscious capitalism are still at an emerging stage in literature. As another result of the pandemic, many consumers adapted their sporting activities and switched to exercise in surroundings where social distancing can be ensured. This led to a renaissance of outdoor sports [1]. Apart from that, consequences for consumers appeared in various forms: pupils had to deal with the temporary closure of schools, while pensioners were considered to be high-risk patients if infected.

Since consumers of different generations cope with technology and the pandemic differently [2], and hold different values, which also impact their consumption patterns [3], and, hence, willingness to buy (sustainable) products [4], one needs to distinguish between those cohorts when investigating sustainability in an online shopping context. As research on cross-generational comparisons and sustainable behavior is still very scarce [5], literature proposes future research to shed light on this field; in particular, by focusing on Generation Z and older ones [6]. Hence, we want to examine to what extent consumers from Generation Z (also referred to as 'Zers') and Generation X (also referred to as 'Xers') differ in online shopping behavior toward sustainable (outdoor) products.

Research on online purchase decisions, which take into account various aspects, is particularly important in the field of sustainable products, since various studies have identified a lack of information as one of the main drivers for preventing consumers from buying these sustainable products (e.g., [7,8]). By determining an online shopping setting

as the context, more information can easily be provided. Based on a literature review, previous cross-generational research (see Section 2.1) seems to have neglected considering how simultaneous multiple impact factors affect online purchase decisions for sustainable products. Since online shopping experienced massive growth due to the pandemic, this focus is of high importance.

We, thus, contribute to literature by answering the research question and further, by filling literature gaps in which the three aspects of sustainability have not been examined holistically in e-commerce [9]. Moreover, we follow research's postulation to examine sustainability labels separated into social and ecological ones [7], as well as the need for investigations in the field of sustainable fashion for consumers with varying demographic characteristics [10].

To explore these issues, the paper first provides a literature review of previous articles dealing with sustainability in light of cross-generational analysis, before describing the qualitative pre-study (conducting a focus group investigation) and the quantitative main study. The fourth section presents the results within, and between, generations. Then, the results are critically reflected and theoretical contributions, as well as managerial implications, are derived.

2. Theoretical Background

2.1. Sustainability across Generations

A generation comprises individuals of similar age, who are exposed to the same political, social, and economic events and have a collective consciousness based on values, common beliefs, and attitudes [11]. These, in turn, essentially influence purchasing and consumption behavior of a generation [12]. According to Mannheim's theory of generations [13,14], generational cohorts are affected by their socio-historical environment, such as happenings actively involving them in their youth. Since younger generations are—for instance—actively involved in the 'Fridays for Future' movement, while consumers born in the 1960s experienced massive economic growth and faced increasing entertainment possibilities (television, cinemas, etc.). As values and attitudes have also been identified as important determinants of sustainable consumption practices [15,16], it can be assumed that those belonging to a generation also share common sustainable behavior. However, focusing on different generations can facilitate market segmentation and support the development of more effective strategies and product positioning [12].

Currently, the six contemporary generations are the Silent Generation (born before 1945, [17]), Baby Boomers (1946-1964; [18]), members of Generation X (Xers; from approximately 1961-1976; [3,19]), Millennials—often synonymously referred to as 'Generation Y' [20] (born 1980-2000; [21]), Generation Z members (Zers; born 1994/1995-2010; [22]) and those from Generation alpha (or 'α'; born after 2010; [19]).

Within this paper, we focus on Generation X and Generation Z, as previous sustainability literature, particularly concentrated on Generation Y (or Millennials), respectively (e.g., [23-25]), as well as on the comparison of Generation X and Generation Y (e.g., [26-28]). Nevertheless, Gen Zers are of increasing interest in research as they exhibit a similar consciousness towards sustainability issues as Generation Y [29,30] and, despite their limited financial resources, they are willing to pay a premium for sustainable product attributes [5,31]. In contrast, Gen Xers can be considered the generation with the highest disposable income [3]. Currently, literature lacks a cross-generational comparison of both the financially strongest generation and the generation with the highest consciousness towards sustainability.

While few studies focus solely on Generation Z (inter alia [16,32]), cross-generational analysis in light of sustainability is still very limited (see Table 1) and has found contrary results [5,30]. Research regarding the sustainability orientation (including environmental, social, and economic dimensions in accordance with the triple bottom line) of consumers from Generation Z revealed that, on the one hand, they favor retailers which help to preserve the environment and take care of employees' welfare [30]. On the other hand,

then again, their sustainable food consumption is limited to eating seasonal and regional food [33]. Additionally, perceived control over pro-environmental behavior was observed to be the strongest predictor of the intention to exhibit such behavior [16]. Having said this, one still needs to be aware of within generational differences among Zers, as factors affecting the purchase of sustainable consumption regarding food products vary based on Zers' degree of environmental consciousness [32]. However, throughout recent years, the members of Generation Z have also been developing into responsible, independent consumers and, thus, are shifting into the focus of customer research [29]. As they have been born at a time of profound global and ideological crisis [4], they seem to be worried about the future, as indicated by the current 'Fridays for Future' movement. Even though they are relatively young, they are very well informed about retailers and their offers, due to the spread of communication technologies as well as social media, and prefer those retailers with the most sustainable principles [30]. Recent research further attested such younger consumer segments to be willing to pay more for sustainable products with eco-labels and they care a lot about smartphones' durability [34].

In contrast to younger ones, literature concerning Generation X stated that customer service is more important than sustainability to Xers when making a purchase [6]. Further, literature recommended marketers to target Xers as they have a higher purchasing power, due to a higher disposable income compared with other generations [3]. Xers have the desire to gather detailed information about products while shopping, they are more heedful regarding product characteristics, especially of online information, making them more cautious when conducting new purchases, as they only started participating with online media as adults [35]. Using a conjoint analysis to mitigate social desirability bias when exploring the consumption of sustainable products, de Pelsmacker et al. [36] found consumers of Generation X to focus predominantly on fair-trade labels, especially the higher educated ones. Comparing Xers with Generation Y regarding ethical attitude, the former were found to keep established concepts of an organizational life [37]. While several papers about the attitudes of Xers towards sustainability exist, there is a lack of quantitative approaches within this research area [38].

Comparing both generations, younger consumers are especially targeted by green marketing plans and analyzed by marketing research [29,39], as they are future buyers and employees of tomorrow with their own incomes [40]. Moreover, compared with older generations (Generation X and Baby Boomers), Generation Y and Zers are more concerned about global warming and environmental degradation, and perceive a strong responsibility towards the environment [25,39]. Their motivation to buy green products seems to be stronger and they are willing to pay a premium for sustainability attributes [31]. Nevertheless, in a conventional clothing context, younger consumers were found to be rather price-sensitive, purchasing low-quality clothes, whereas older generations were found to prefer high-quality apparel [41]. One explanation for the less green orientation of Generation X could be the fact that, throughout most of their lives, issues such as climate change and environmental pollution did not receive as much media attention and public interest as they do today. Other studies, however, came to contrary results. Severo et al. [28], for example, reveal that Gen Yers are less affected by the socio-environmental practices of companies than Generation X. The study of Kamenidou et al. [33] reveals that Gen Zers' purchases of organic food is rather limited. Further, older consumers were found to be more aware of sustainability issues [42], and Gen Xers were found to be the most concerned about the environment [43].

Table 1. Green literature on cross-generational comparisons.

Author(s) (Year)	Method	Generational Focus	Findings
Bulut et al. (2017); [44]	Mann-Whitney U Tests	Baby Boomers, Gen X, Y, and Z	Unneeded consumption differs across groups: Baby Boomers have the highest level of unneeded consumption, Gen Zers the fewest.
Dabija (2018); [45]	SEM	Baby Boomers, Gen X, Z, Millennials	Gen Zers and Millennials were found to have the strongest loyalty towards green-oriented apparel retail stores.
Dabija and Băbuț (2019); [6]	SEM	Gen X, Millennials	Retailer's sustainable behavior has an influence on Millennials' apparel store patronage and no influence on Xers.
Dabija and Bejan (2018); [18]	SEM	Baby Boomers, Gen X, Z, Millennials	Baby Boomers choose those green DIY stores whose market strategy is in line with their personal sacrifices to protect the environment. Xers choose green DIY stores to protect the environment for future generations. Millennials choose DIY stores whose strategies are in line with their own aspirations for environmental protection. Zers choose green DIY stores depending on the financial sacrifice they have to make.
Johnstone and Lindh (2018); [42]	Focus groups, interviews, SEM	Mainly millennials	The older consumers are, the more they are aware of sustainability issues. As sustainability is perceived as more complex for millennials, influencers are important to them to create sustainability awareness.
Kapferer and Michaut-Denizeau (2020); [46]	Correlations; Descriptive statistics; regression	Gen X, Millennials	Luxury and sustainability are perceived as contradictory across millennials from multiple countries. Millennials should be split into sub-segments.
Lakatos et al. (2018); [43]	ANOVA	Gen X, Y, Z	Gen Xers are the most concerned about the environment but Gen Yers are more open towards reducing resource consumption.
Littrell et al. (2005); [8]	ANOVA, Multiple Regression	Baby Boomers, Gen X, Swing	All generation cohorts put emphasis on fair trade philosophy (wages, working conditions, and environment).
Pencarelli et al. (2020); [4]	SEM	Gen Y, Z	Gen Yers were found to exhibit more sustainable habits than Gen Zers.
Severo et al. (2017); [27]	Multiple linear regression, ANOVA	Baby Boomers, Gen X, Y	Baby Boomers presented greater environmental sustainability awareness in relation to sustainable consumption behavior.
Severo et al. (2018); [28]	SEM	Baby Boomers, Gen X, Y	Gen Yers perceive organizations' cleaner production, social responsibility, and eco-innovations as less intense.
Sogari et al. (2017); [47]	Logistic regression	Millennials, Non-Millennials	The young generation is more sensitive towards energy issues and less towards possession of environmental certification.

Note: ANOVA = Analysis of Variance, SEM = Structural Equation Modelling.

Reflecting upon previous literature examining sustainability issues in light of cross-generational analysis (see Table 1), it becomes evident that the vast majority applies questionnaires with statements requested to answer on (Likert) scale items, or assess descriptive statistics. However, the application of fixed-point scale items harbors the danger of several biases [48]. Accordingly, ratings on a quasi-interval scaled range, where respondents indicate to what extent they agree/disagree with statements that are extracted from their context or omitting a direct interplay with other impact factors, should be questioned, or at least treated with much care. In the same vein, Weber summarized that business ethics literature “is limited as it typically assesses individual, isolated elements of the complex, multifaceted decision-making process” [24] (pp. 1672–1673).

2.2. Measuring the Purchase of Sustainable Products Implicitly

To prevent inflation of demands when prioritizing factors affecting purchases and to allow respondents to evaluate different (sustainable) products holistically, multiple studies investigate the compensatory effects of sustainability aspects and price by applying Choice-Based Conjoint analysis (CBC) experiments (inter alia [49–51]). While CBC experiments, allowing consumers to express their preferences by selecting their favorite product out of a set, are more realistic as to what consumers actually do in a marketplace [52,53]—especially in the context of sustainability to prevent/attenuate the attitude-behavior gap—they are also tied to some disadvantages. Thus, CBC investigations assume respondents to use compensatory heuristics while deciding between choices, and the number of factors displaying products is very limited, as otherwise respondents might be overstrained [50,54]. In contrast, literature found respondents to utilize non-compensatory decision heuristics [55–57], in particular when consumers form their individual consideration set [58,59]. Additionally, answering the same question multiple times is experienced as monotonous (which might lead to thoughtless click-throughs), and oftentimes respondents are exposed to stimuli irrelevant to them [60]. To overcome these issues related to CBC, the Adaptive Choice-Based Conjoint (ACBC) analysis has been introduced [61]. Making use of this still rather nascent methodology to explore the importance of sustainability among consumers from Generations X and Z, we briefly describe the ACBC and its benefits compared to CBC investigations.

In contrast to CBC investigations, ACBC comprises three to four sections (see Figure 1). The first two sections aim at specifying the individual stimuli of respondents to prevent presenting irrelevant ones to them (identifying their consideration set) and revealing applied individual non-compensatory heuristics. The third section can be compared to a regular CBC, where stimuli taken into consideration are traded off against each other before an optional fourth section asks about purchase probabilities (The composition of this procedure refers to the one illustrated in [62]).

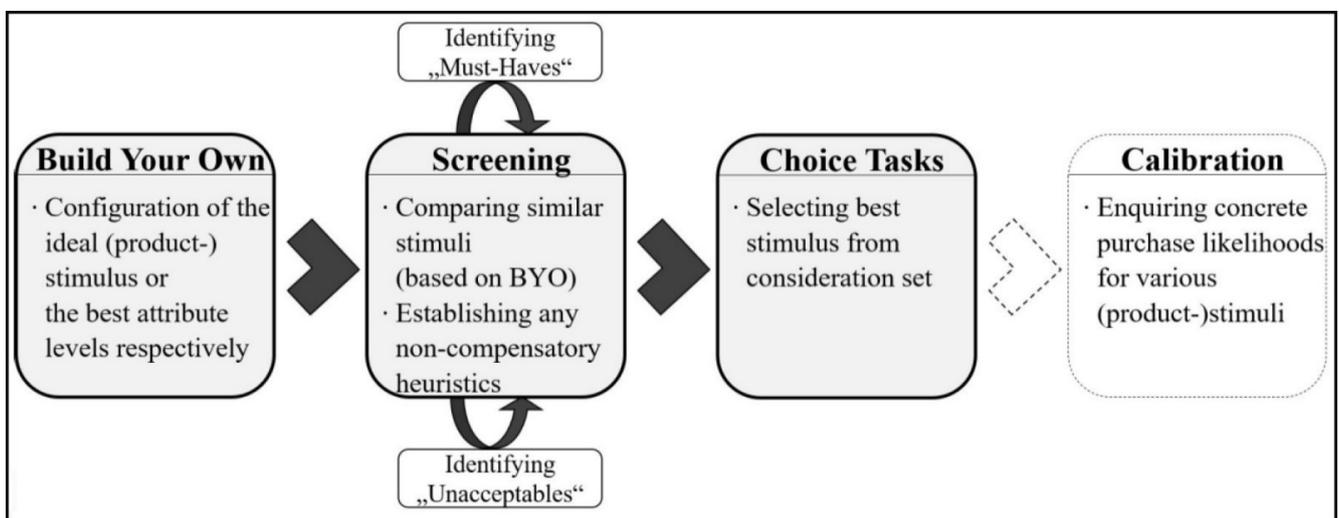


Figure 1. Procedure of an ACBC (based on [63]).

This comparably novel methodological approach has recently gained increasing attention [64], also in the field of sustainable behavior (see e.g., [65,66]).

2.3. Comparing CBC with ACBC Experiments

We now summarize the results of studies comparing ACBC with its antecedent CBC. ACBC's procedure with the screening and the choice tournament section depicts the third and fourth stages of the buyer decision process [67,68] more accurately than the predominantly used CBC. The choice set (Section 3) emerges as a subset of the consideration

set, constituting only alternatives perceived as possibilities [58]. Moreover, during this two-step decision process different decision heuristics are applied by consumers. While forming the consideration set (binary choice) non-compensatory considerations are employed, compensatory trade-offs are applied when determining the final choice [58,59]. These conceptual reflections of the two-step decision procedure were also empirically verified in the field of online shopping utilizing unbiased clickstream data [69]. Accordingly, the preferences and applied decision rules varied by person, which further speaks in favor of the individual design inherent to ACBC.

One of ACBC's major advantages is its ability to deal with a larger quantity of attributes [70], which enables a more accurate depiction of the nowadays more complex products. According to the literature review by Cunningham et al. [71], ACBC allows imitating the decision-making process more realistically. However, the additional sections result in an increased time for completion compared with CBC experiments [61,71]. Still, ACBC is experienced as more engaging and attractive by respondents [61,72]. Based on the manageable size of empirical investigations comparing both methods, it is assumed that ACBC tends to estimate purchase prices more precisely [73] and needs fewer participants to yield similar results [74], as it collects more information for each respondent [75]. Besides studies attesting to ACBC producing more accurate results concerning validity criteria [72,76], first indications suggest that ACBC is significantly outperforming CBC regarding predictive validity [77].

2.4. Hypothetical Framework

As extant literature revealed substantial differences contingent on values a generation holds [24], ethical beliefs [78] and how ecology-oriented consumers are [66,79], we first examine preferences within generation, before analyzing cross-generational ones. Analyzing a sample aged 47 years on average, Hinnen et al. [66] evinced that green consumers pay less attention to price compared to others, but rather emphasize sustainability-related aspects. Following Tait et al. [31] revealing a higher willingness to pay among younger generations, we assume this observation to be confirmed for younger consumers likewise.

H1a. *For Xers, the importance of price is higher for consumers less concerned about ecological sustainability compared to very concerned consumers.*

H1b. *For Zers, the importance of price is higher for consumers less concerned about ecological sustainability compared to very concerned consumers.*

Besides differences regarding consumers' greenness, literature found disparities based on their other sustainability aspects [80,81], such as social sustainability. According to the consumer groups identified in the study by Balderjahn et al. [80], we expect this assumption to hold true for consumers with varying levels of social consciousness, as well as for sustainable consumption.

H2a. *For Xers, the importance of price is higher for consumers less concerned about social sustainability compared to very concerned consumers.*

H2b. *For Zers, the importance of price is higher for consumers less concerned about social sustainability compared to very concerned consumers.*

While some research found Generation Z to pay significantly more attention to retailers' green strategy and socially responsible guidelines compared to Xers [45], others also reported higher environmental sustainability behavior among Zers, however with no significant differences compared with other generations [44]. Following this tendency, Huang et al. [82] evinced that younger generations (living in smaller cities) show strong preferences for more environmentally friendly electronic cars. Summarizing these findings, we assume Zers to pay more attention to the two types of sustainability labels implemented.

H3a. *The importance of eco-labels is higher among Zers, compared to Xers.*

H3b. *The importance of social labels is higher among Zers, compared to Xers.*

Focusing on millennials (in their study equivalently used to Generation Y) and consumers of Generation Z, Gazzola et al. [38] report that the younger ones are willing to pay an increased price for sustainable products. While Brand and Rausch [63] found price to account for 28% of the purchase decision on sustainable clothing among consumers from Generation Y, Klein et al. [79] reported a much higher importance (45%) for a sample primarily consisting of consumers aged older than 60 years. Hence, we assume:

H4. *The importance of price is higher for consumers of Generation X, compared to consumers of Generation Z.*

In addition to the generational focus, we intend to examine gender differences regarding the purchase of sustainable products, as various literature indicates large disparities [83,84]. Also applying an ACBC, Cocquyt et al. [65] found women to prefer sharing platforms for fashion articles emphasizing social goals, while their male counterparts favor commercial goals. Moreover, female consumers exhibit increased importance of sustainability aspects concerning sustainable apparel [38], such as labels, eco-friendly materials, and the country-of-origin, at the expense of decreased importance of price, compared to men [63].

H5a. *The importance of price is higher for men than for women among Generation X.*

H5b. *The importance of price is higher for men than for women among Generation Z.*

3. Method

3.1. Pre-Study

One of the essential steps in creating a conjoint analysis experiment lies in the identification of the most relevant factors for the purchase decision [85]. Therefore, we complemented an extensive literature review with findings which were revealed from a focus group interview [86]. Such qualitative pre-studies serve as an appropriate foundation for deriving the most important aspects (e.g., when purchasing sustainable products [51]). We decided to conduct an online focus group interview, as a moderated discussion enables gathering a comprehensive view on the topic. Additionally, observing the discussion dynamics related to preference patterns is beneficial [85,86]. To obtain a heterogeneous sample, we invited outdoor sportsmen, consumers with a lot of experience in shopping outdoor articles online, and employees from the outdoor industry. The seven participants were four females as well as three males, and were aged between 19 and 59 years. To uncover the most important drivers for purchasing sustainable outdoor apparel online, we asked the participants to imagine being in an online shopping situation with the intention to buy an outdoor jacket.

We decided to focus on an outdoor jacket, since, first, the clothing sector generates the highest revenues in e-commerce [87] and, thus, reducing the related negative impact on the environment [88] for clothing has a substantial effect. Since sustainable clothing [89] and slow fashion [10] both are associated with higher willingness to pay, research postulates taking advantage of the related potential [15,90,91]. Various authors investigated this field of industry, as the fashion industry yields a huge negative impact on the environment [92,93], society [94] and economy [95]. Second, research emphasizes the need for additional investigations examining consumers' demand for sustainable apparel [96,97]. Additionally, pursuing green strategies allows increase in consumer loyalty in the apparel sector [45]. Third, outdoor equipment proved to serve as an appropriate example for sustainable materials [51], and companies selling outdoor textiles seem to be particularly important in light of sustainability [98].

After explaining the product, its characteristics mentioned by the participants were collected, condensed, and potential attribute levels discussed. In the next step, participants prioritized the attribute levels with a scale ranging from minus three to plus three (whereby plus three is the most important score). Table 2 summarizes the product features and the characteristics' ratings (with the highest potential score being $8 \times 3 = 24$).

Table 2. Identified product features and their characteristics from the focus group discussion.

Product Features	Feature Characteristics (Max. Score 24)
Features and quality issues	Waterproof (21) Windproof (20) Water-repellent (20) High water column (17) Durable (16) Functional (15) Low weight (11) Small pack size (9)
Materials and manufacturing process	Workmanship (20) Recycled materials (17) Fair production (17) Applied materials (17) Regenerative resources (15) Free of PFC (12) Transparent manufacturing processes (12)
Price	Price performance ratio (16) Discounts (9)
Design	Look/Visual appearance (19) Fitting (17) Colored (−5)
Labels	Fair Wear Foundation label (15) Bluesign label (10) ,Grüner Knopf' ('Green Button') label (9) Green Shape label (5)
Country-of-origin	Transparent information about product (18) Produced in Europe (11) Place of manufacture (8) Sent from Germany (7)
Brand proposition	Warranty (14) Sustainable brand philosophy (13) Service (e.g., repair in case of deterioration) (12) Campaigns for environmental protection (8)
Online service	Good online customer ratings (16) Repair services (14) Free returns (13) Plastic-free packaging for delivery (12) Product test judgments (9) Climate-neutral delivery (9) Resale of returned products (9) Replacement services (8) Place of shipment (4)

Illuminating those product attribute levels with the highest scores (15 or higher), the ideal outdoor jacket should exhibit multiple functionalities, such as being waterproof (summarizing the aspects of 'high water column' and 'water-repellent'), windproof, functional for doing sports outside, and durable. The latter can be considered a basic feature for all jackets and, thus, is included in every configuration throughout the conjoint experiment. Additionally, the materials used should preferably consist of regenerative, recycled resources that are manufactured under fair conditions (which can be ensured via labels) and high workmanship (should be considered as an additional basic product feature). The price and visual appearance (including fitting) are also considered to be of major importance. Besides, labels, which indicate social sustainability (Fair Wear Foundation; FWF), were rated as very important. Applying labels might further allow multiple positive effects, which compensate negative ones compared to more radical measures, such as

boycotts against companies tolerating child labor [99]. However, as we intend to examine sustainability in online purchase behavior holistically, we also used labels indicating ecological sustainability (Bluesign). Moreover, transparent information about the product's country-of-origin and positive online customer ratings are essential, whereas the latter cannot be directly influenced by manufacturers but is rather a result of meeting the before-mentioned requirements. Therefore, online customer ratings will be excluded from further consideration.

3.2. Main Study

3.2.1. Survey

Merging the results derived from literature with the insights gained from the focus group interview, the attributes and attribute levels in Table 3 evolved. Besides the FWF label, which indicates social sustainability, and the Bluesign, signaling ecological sustainability, we extended the corresponding attributes by one additional label for each attribute. This slight modification's purpose is due to (1) preventing the number-of-levels effect [100], and (2) gathering more granular insights about which sustainability goal results in the highest utility for consumers. This is due to the fact that the two additional labels put more emphasis on other aspects of environment and social sustainability, respectively. Hence, we explained that each label follows several goals, but each has a focus on a specific one. To make sure each respondent became familiar with the labels, we implemented a timer preventing skipping the explanation page. Moreover, after introducing the labels, a small symbol beneath each label indicated its main goal. Accordingly, Bluesign emphasizes reducing environmental impact and the use of chemicals in the textile industry, whereas OEKO-TEX (second eco label) aims to provide less sanitarily concerning textile products. Similarly, FWF advocates optimizing working conditions in the textile industry, whereas Fair Trade (second social label) fosters a sustainable livelihood and payment of financial bonuses. This approach further allowed making a (purchase) decision with a better understanding of the benefits related to each label [101]. Additionally, it takes into account the assumption that most consumers are not aware of the social and/or social effects related to sustainability labels [102]. To control for heterogeneous levels of background information about the labels, we added a question at the end of the survey, as consumer preferences might be affected by prior knowledge about sustainability certifications [103]. Additionally, using three attribute levels for each label also mitigated extreme instances of a jacket with a label compared with no label at all. To avoid preferences between the labels based on the graphics' size, we adjusted all labels to be equal in size.

The level of background information on synthetic, recycled, and bio-based materials was assumed to be heterogeneous, which is why an introduction page was shown before the ACBC. Here, each material was explained, and examples were provided. Additionally, the upcoming online shopping scenarios were announced. As it is common standard for (fashion) enterprises of industrialized countries to manufacture in countries that enable lowered production costs [113], we included 'made in Asia' (as many textile products are fabricated in China/Bangladesh), made in Germany, as we surveyed German consumers, and made in Europe, representing some sort of compromise between the first two options. The price points were derived based on actual prices for outdoor jackets and are comparable with similar investigations [79]. While the lowest price might be considered comparably cheap for a (more/less sustainable) outdoor jacket, we intended to take into account the lower purchasing power among consumers from Generation Z.

The ACBC was created using Sawtooth Software's Lighthouse Studio (version 9.8.1) and consisted of the first three sections. Except for price (where preference patterns are a priori known), we included all attributes in the BYO-section and adjusted preference and sequence order, where applicable. We used the mixed approach for the BYO-product modification strategy and randomized the order of attributes in the survey preventing the position effect. Seven screening tasks were conducted with three stimuli per choice task (see Appendix A for an example) and a maximum of 16 stimuli potentially included in the choice

tournament. Following previous literature, we reduced the number of must-haves to one and determined that potentially three unacceptable features are identified, as consumers tend to apply disjunctive decision heuristics more often [60]. The third section showed three stimuli per choice task and was extended by three additional holdout tasks. We employed a fractional factorial design, as the number of stimuli that need to be evaluated would otherwise be overstraining [114]. Reviewing the choice design based on synthetic data of five dummy respondents answering randomly, each attribute level occurred at least three times, assuring a balanced design. Additionally, the d-efficiency was between 0.97 and 0.99 [115].

Table 3. Attributes and attributes levels used for the ACBC.

Attribute	Attribute Levels	References
Design	Regular fit in black; Slim fit in black; Regular fit colored; Slim fit colored	[96]; [104]; Focus group
Functionality	- Waterproof, windproof, breathable - Waterproof, windproof, breathable, minimized package size - Waterproof, windproof, breathable, minimized package size, low weight	[15]; [105]; Focus group
Materials (major proportion)	Synthetical materials; Recycled materials; Bio-based materials	[79]; [51]; Focus group
Eco-labels	No eco-labels; Bluesign label OEKO-TEX label	[106]; [107]; Partwise focus group
Social Labels	No social labels; Fair Wear Foundation label Fair Trade Certified label	[108]; [109,110]; Focus group
Country-of-origin	Made in Asia; Made in Europe; Made in Germany	[50,111]; Focus group
Price	79.00 EUR; 119.00 EUR; 159.00 EUR; 199.00 EUR	[66]; [112]; Focus group

Before the ACBC started, we asked respondents about their environmental (EnSC), social (SoSC) and economic consciousness for sustainable (EcSC) consumption [80] when purchasing apparel. Additionally, respondents' age, online shopping experience, gender, education and income were inquired at the end of the questionnaire. A pre-test with twelve experienced participants yielded only minor modifications.

3.2.2. Sampling

While some studies lump Generations Y and Z together [42,47,116] and, thus, do not allow for distinct implications for both segments, we focus on Generations Z and X to allow an explicit differentiation between older and younger consumers. Additionally, this approach prevents the representativeness bias inherent to student or convenience samples [15]. To gather comparable samples for consumers of Generations X and Z, with both groups being representatively spread across Germany, we recruited respondents using an established panel (Kantar Group, with more than 100 million respondents in 90 markets). To yield similar shares of consumers from both generations of interest, we incorporated a quota function based on age. Additionally, respondents with no online shopping experience

were dropped from the survey. The data acquisition took place in November 2020. In total, we gathered data from 692 respondents. However, we excluded those respondents answering the survey twice as fast as the (median) average ($n = 47$), and those with straight lining response patterns ($n = 35$) to increase the quality of the data set. The remaining 610 respondents comprised 56% females and 305 consumers from Generation X (for further descriptive statistics, see Appendix B). Based on ACBC's antecedent method CBC, it is recommended to interview at least 300 respondents [117]. However, studies have shown that using ACBC yields comparable results even with smaller sample sizes [60]. As a result, the collected $n = 305$ respondents for each generation exceed common minimum sample size thresholds.

4. Results

4.1. Within-Generation Analysis

4.1.1. Generation X

To analyze how Generations X and Z differ in their online shopping behavior of sustainable outdoor products, we first outline the corresponding within-generation results, before contrasting them. Concerning Generation X, we first applied a Hierarchical Bayes (HB) estimation, where the model's parameters are yielded through an iterative process. Following literature [118], we ran 50,000 iterations (including 40,000 burn-in iterations) and incorporated the task-specific scale factor into the analysis [119], for taking into account the varying error levels inherent to choices in the Choice Tournament (identifying the best stimulus) and the Screening section (binary choice). Assessing the validity of the results, the model's pseudo R^2 [120] yielded a substantial internal validity (pseudo $R^2 = 0.536$) measured by McFaddens R^2 references [121]. The model's root likelihood (RLH) indicated a high internal consistency (RLH = 0.680), whereas the value can vary between 1 (implicating a perfect model) and the value for a naïve model (1 divided by the number of stimuli per choice task; [122]). Regarding the model's predictive validity [123], the mean absolute error (MAE) was very low (MAE = 2.04%) and the first choice hit-rate (FCHR) across three holdout tasks amounted to 71% exhibiting a high validity comparable to advanced CBC approaches [124].

4.1.2. Hierarchical Bayes Estimation

For Generation X, factors having the highest impact on purchase were price (28.48%), design (19.28%), and country-of-origin (16.89%), followed by materials (10.76%), eco-labels (10.24%), social labels (8.83%), and functionality (5.52%). Respondents preferred bio-based (zero-centered utility: 14.08) and recycled materials (11.77) over synthetic ones (−25.85). Furthermore, they would rather buy products made in Germany (41.85) compared to those made in Europe (24.56) or in Asia (−66.41). Regarding social labels, respondents preferred products with the Fair Trade (19.92) over the FWF label (1.00), compared to no social label at all (−20.92). Among eco-labels, consumers preferred OEKO-TEX (29.65) over Bluesign labels (−6.90) and no eco-labels (−22.76; for detailed overview see Appendix C). As the preference patterns for social and eco-labels (and its corresponding main aim) might be biased by varying familiarity with the labels used across the sample, we controlled for levels of label knowledge in advance. Results exhibited no differences in the prioritizing of labels and, thus, paying financial rewards and fostering a sustainable livelihood (Fair Trade) seemed to receive more support than optimizing working conditions (FWF). Similarly, offering less sanitarily concerning clothing (OEKO-TEX) was preferred over reducing the environmental impact and application of chemicals in the textile branch (Bluesign).

In line with the importance of design and country-of-origin, the features most often selected as unacceptable are the colored slim fit jacket (24.92%), manufacturing in Asia (24.92%), and the black slim fit jacket (24.92%). Similarly, the black regular fit jacket most often represented a must-have (5.90%), followed by at least the additional functionality of the minimized package size (4.26%) and made in Germany (3.93%).

As the vast majority of sustainability literature observed heterogeneous consumer preferences [52,66,79], we further conducted an ANOVA regarding the impact of three facets of sustainability and a clustering analysis to yield more granular insights. In a first step, we conducted a confirmatory factor analysis to verify that three before-mentioned sustainability consciousness constructs (EnSC; SoSC; EcSC) form one factor each. Except for EcSC, all constructs were confirmed for Generation X. We then coded a binary dummy variable, where consumers were divided into groups based on the arithmetic mean of all EnSC (1 with $n = 163$; 2 with $n = 142$) and SoSC (1 with $n = 155$; 2 with $n = 150$) items.

4.1.3. (Welch-)ANOVA

As conducting a conventional ANOVA assumes equal variances between segments, but homoscedasticity is not asserted for all conditions (assessed using Levene tests), we applied the Welch-ANOVA for certain comparisons. The ANOVA (Table 4) revealed that consumers with high degrees of environmental consciousness for sustainable consumption were less likely not to buy the jacket ($p = 0.016$), which is even more clearly mirrored in the highly significantly decreased influence of price on the purchase decision (EnSCHigh = 24.45 vs. EnSCLow = 33.10; $p < 0.001$). Additionally, the level of EnSC significantly influenced the importance of eco-labels (EnSCHigh = 11.50 vs. EnSCLow = 8.80; $p < 0.001$) and, less strongly, of social labels (En-SCHigh = 9.84 vs. EnSCLow = 7.67; $p < 0.001$). For consumers with varying levels of SoSC, the opposite effect was observed with a more substantial impact regarding the influence of social labels (SoSCHigh = 10.26 vs. SoSCLow = 7.36; $p < 0.001$) compared to the one of eco-labels (SoSCHigh = 11.51 vs. SoSCLow = 8.93; $p < 0.001$). The degree of social consciousness of sustainable consumption did not affect the utility related to the None-Option (and inherent to the likelihood of purchasing), but exhibited that price diminished in importance for consumers with higher SoSC ($p < 0.001$).

Table 4. Results within Generation X from the (Welch-) ANOVA.

Variables	None-Option F Value	Importance of Eco-Labels F Value	Importance of Social Labels F Value	Importance of Price F Value
EnSC (mean = 3.64) ²	5.897 ^{1,*}	27.155 ^{1,***}	17.325 ^{1,***}	28.178 ^{***}
SoSC (mean = 3.21) ²	3.209 ¹	24.331 ^{1,***}	31.707 ^{1,***}	43.698 ^{***}
Gender	0.182	9.612 ^{1,**}	5.834 [*]	14.930 ^{***}

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; ¹ based on Welch-ANOVA; ² mean based on 7-point Likert scale with 1 = completely agree and 7 = completely disagree.

Controlling for H5, we examined the influence comparing women with men. While no significant impact was found between male ($n = 151$) and female ($n = 154$) consumers regarding the utility related to the None-Option, gender evinced significant influence on the importance of social labels (female = 9.47 vs. male = 8.17; $F = 5.834$; $p = 0.016$) and eco-labels (female = 11.07 vs. male = 9.40; $F = 9.612$; $p = 0.002$) on the purchase. Additionally, price seems to play a minor role for female consumers compared to males ($F = 14.930$; $p < 0.001$).

4.1.4. Clustering Analysis

As literature revealed large heterogeneity among consumers of Generation Y [63,112], we conducted a clustering analysis as a side note of the investigation to deeper scrutinize which aspects are most important within the distilled groups. Applying the k -means algorithm [125] with varying amounts of segments, we identified a two-segment solution (see Appendix D). The two different segments could be referred to as ‘price-sensitive less sustainable consumers’ and ‘sustainable design-oriented consumers’. The latter pay even more

attention to the design than the price of the product. Additionally, sustainability aspects, such as country-of-origin, materials, eco- and social labels represent important drivers.

In contrast, for the second segment, price is the predominant driver when considering a purchase. Sustainability aspects play a minor role in the decision compared with the first segment (see Table 5). Examining which enquired variables might explain the segment membership revealed gender to represent a good predictor ($\chi^2 = 8.50$, $p = 0.004$).

Table 5. Most influential factors for sub-segments (in %) among Xers.

Factor	Segment 1	Segment 2
Design	21.49	16.75
Functionality	5.56	5.47
Materials	13.57	7.53
Eco-Labels	12.04	8.17
Social labels	10.15	7.31
Country-of-Origin	20.38	12.89
Price	16.81	41.87

4.1.5. Generation Z

Analogously to examining the results among consumers of Generation X, we follow the same analysis approach. The HB estimation resulted in a pseudo R^2 of 0.456 representing a substantial internal validity [121]. The model's RLH of 0.635 exhibited a high internal consistency (compared to the naïve model of 0.333). The model's predictive validity yielded an average MAE of 4.08% and a rather moderate average FCHR (FCHR = 65.38%; [124]).

For Generation Z, the most important drivers are the product's price (25.95%), its design (20.79%), and where it was manufactured (15.96%), followed by eco-labels (10.66%), social labels (10.20%), materials used (9.54%), and the jacket's functionality (6.90%). The Zers prefer recycled materials (zero-centered utility: 15.97) over bio-based (−0.74) and synthetic ones (−15.23). Manufacturing in Europe (30.10) and in Germany (28.44) is favored rather than made in Asia (−58.55). Regarding the eco-labels, OEKO-TEX (19.52) and Bluesign (12.02) yielded precedence before products with no eco-labels (−31.55). Consumers from Generation Z preferred jackets with the Fair Trade label (22.96) than the FWF one (8.10) or none at all (−31.07; for detailed overview see Appendix E). Again, we controlled for potentially biased levels of familiarity with the labels and found no changes in the preference patterns. Hence, providing workers monetary bonuses and fostering a sustainable livelihood (Fair Trade) seems to be more supportable than optimizing their working conditions (FWF). Regarding ecological aims, results indicate a higher preference for supplying less sanitarily concerning textile products (OEKO-TEX) compared to reducing the environmental impact and usage of chemicals in the clothing industry (Bluesign).

Confirming the impact of design and country-of-origin, the three most frequently chosen unacceptable features are the colored slim fit jacket (20.90%), the colored one with regular fit (20.66%), and manufactured in Asia (18.03%). Must-have features were selected less often and yielded that the jacket should at least be waterproof, windproof, breathable, minimized in package size (3.93%), and should at least be manufactured in Europe (2.62%), and must be black as well as slim fit (2.62%).

To enable within-generation insights comparable to those of Generation X, we conducted the same analysis. Again, EnSC and SoSC were confirmed as one construct, while EcSC was not. In the next step, we, thus, compared the 156 most social sustainability conscious consumers with its counterpart ($n = 149$), and the ones with the highest EnSC ($n = 160$) and its corresponding complement ($n = 145$), as well as 187 females with 117 males.

4.1.6. (Welch-)ANOVA

The ANOVA (Table 6) revealed that the degree of environmental consciousness for sustainable consumption significantly impacted the influence of eco-labels (EnSCHigh = 11.71 vs. EnSCLow = 9.49; $p < 0.001$), social labels (EnSCHigh = 11.03

vs. EnSCLow = 9.28; $p = 0.003$) and price (EnSCHigh = 22.84 vs. EnSCLow = 20.38; $p < 0.001$). Similarly, SoSC affected the importance of social labels (SoSCHigh = 10.85 vs. SoSCLow = 9.52; $p = 0.027$) and price (SoSCHigh = 23.46 vs. SoSCLow = 28.56; $p = 0.002$); however, in a less substantial manner. Additionally, higher degrees of SoSC evinced an increase in the impact of eco-labels ($p = 0.008$). Furthermore, females were found to pay more attention to eco-labels when buying a sustainable outdoor jacket online (female = 11.23 vs. male = 9.71; $F = 5.565$; $p = 0.019$). In contrast, gender does not seem to affect the influence of price or social labels. All three variables do not affect the None-Option and, thus, the likelihood of purchasing.

Table 6. Results within Generation Z from the (Welch-) ANOVA.

Variables	None-Option F Value	Importance of Eco-Labels F Value	Importance of Social Labels F Value	Importance of Price F Value
EnSC (mean = 3.22) ²	2.027	13.107 ^{1,***}	8.770 ^{**}	15.844 ^{***}
SoSC (mean = 2.76) ²	0.019	7.134 ^{**}	4.935 [*]	9.468 ^{**}
Gender ³	0.013	5.565 [*]	3.486 ¹	0.003

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; ¹ based on Welch-ANOVA; ² mean based on 7-point Likert scale with 1 = completely agree and 7 = completely disagree; ³ to enable direct comparisons to Generation X, we focused on males and females only.

4.1.7. Clustering Analysis

To check for within generational differences, we again conducted a clustering class analysis. Based on the k -means algorithm, a two-segment solution should be preferred (see Appendix D). The first segment could be characterized as ‘design-oriented sustainable consumers’, who emphasize design of the jacket even more than price.

Compared with the second segment, these consumers pay more attention to sustainability-related aspects, such as country-of-origin, eco- and social labels. In contrast, the second segment predominantly focuses on price when facing the product. The other drivers yield almost equal importance, which is why this segment could be referred to as ‘price-sensitive consumers’ (see Table 7). No enquired variable could significantly explain the membership among Zers.

Table 7. Most influential factors for sub-segments (in %) among Zers.

Factor	Segment 1	Segment 2
Design	23.68	17.14
Functionality	7.50	6.15
Materials	11.14	7.53
Eco-Labels	12.51	8.32
Social labels	11.88	8.08
Country-of-Origin	18.68	12.54
Price	14.60	40.24

4.2. Between-Generation Analysis

To yield a first impression of the sustainability consciousness when purchasing clothes, we compared the EnSC and SoSC means of Generation X with Generation Z. Here, Zers stated significantly higher degrees of EnSC ($p < 0.001$ based on Mann-Whitney-U test) and SoSC ($p < 0.001$). Additionally, Zers were more familiar with the labels Bluesign ($p < 0.001$), FWF ($p < 0.001$) and Fair Trade ($p < 0.001$), but exhibited lower income levels ($p < 0.001$). Furthermore, female consumers of Generation X emphasized eco- ($p = 0.002$) and social labels ($p = 0.016$), as well as country-of-origin ($p < 0.001$), whereas price was more influential among men ($p < 0.001$; see Appendix F for details). In contrast, the only gender difference found among Zers was observed for the eco-label impact ($p = 0.019$; see Appendix F).

Comparing the most important drivers for purchasing, materials (4th most important one) was revealed to be more important than eco-labels and social labels among Xers, whereas the opposite effect was evinced among Zers (6th most important one). Besides, the order of priority regarding influencing factors was identical. However, the impact size (see Figure 2) varied across generations concerning price ($p = 0.042$; $z = -2.034$; $r = 0.08$) and materials ($p = 0.013$; $z = -2.474$; $r = 0.10$), and even more substantially concerning functionality ($p < 0.001$; $z = -5.233$; $r = 0.21$) and social labels ($p = 0.001$; $z = -3.401$; $r = 0.14$). For Xers the impact of eco-labels is higher than the one of social labels ($p < 0.001$), while Zers seem not to differentiate ($p = 0.125$).

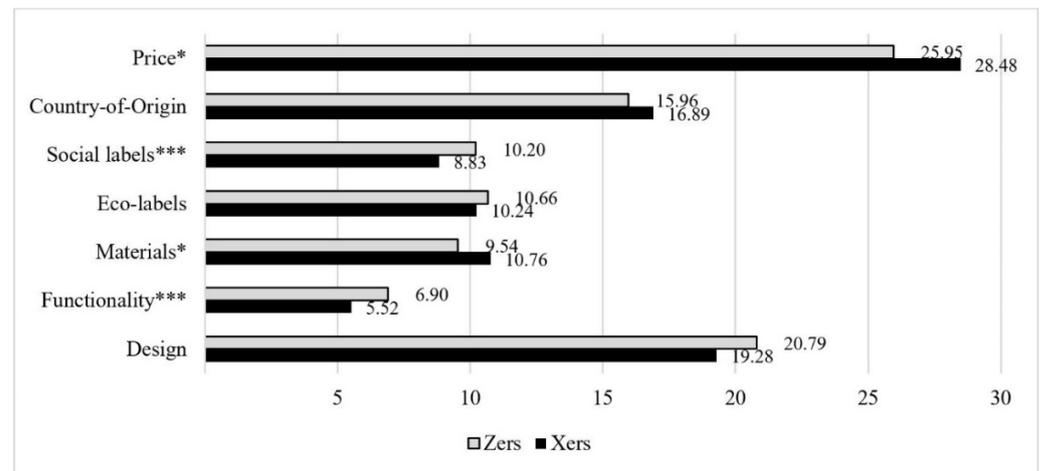


Figure 2. Average influence across generations (in %). Note: * $p < 0.05$; *** $p < 0.001$ based on Mann-Whitney U test.

5. Discussion

Multiple findings indicate that Zers tend to care more about sustainable aspects when purchasing clothing online. First, the None-Option is much lower for Zers (99.46) compared to Xers (131.52), which infers a higher likelihood to purchase sustainable clothing among younger consumers. Second, the impact of price is significantly lower among Zers when exposed to sustainable clothing, which confirms H4 and Gazzola et al. [38], and thus contradicts the results from Kamenidou et al. [33]. Disparities from these prior findings might stem from the different research context (food consumption), the different respondents' nationalities (Greeks), or a combination of both. Third, while materials were found to be the fourth most important driver when deciding about the purchase among Xers, Zers were rather impacted by eco-labels and social labels with materials representing the penultimate influential aspect. This finding is mirrored by the fact that social labels are significantly more important to Zers compared with Xers ($p = 0.001$), which approves H3b. Additionally, it verifies research focusing on the loyalty towards green-oriented retail stores [45] and the higher impact of corporate social responsibility measures on the preference for slow fashion among Zers [4]. Fourth, Zers reported higher levels of EnSC and SoSC, which approves earlier research [5], and further, more Zers were familiar with the four labels applied. This overall tendency confirms extant research and might be explained by the higher level of information among Zers about sustainability issues, spending more time online informing themselves [45], and by the fact that they will have to deal with the negative impacts on the environment.

Apart from these indicators implying that Zers emphasize sustainability more than Xers when buying online, considerable similarities were observed between generations. In contrast to social labels, no differences were found regarding eco-labels, which is why H3a cannot be supported. This verifies prior literature [38], which revealed no notable differences between Generation Z and older consumers. For future research, this interesting finding implies an important aspect. While several studies exclusively emphasize the

ecological dimension regarding sustainable consumption [51,66,96], significant differences in the impact of social labels across generations should foster future studies to include both or all three dimensions, especially when focusing on Zers or Xers. While Xers distinguish between ecological and sustainability labels (rather focusing on eco-labels), Zers emphasize both aspects in an almost equal manner. Furthermore, no differences were found concerning country-of-origin, which we could verify to be the main driver when considering purchasing sustainable clothing online [63].

Besides differences and similarities concerning sustainability aspects, Generations X and Z vary massively in the impact of functionality of outdoor clothing on the purchase. The younger consumers pay much more attention to functionality, which is in line with literature revealing that other quality aspects, such as longevity [126] and 'technologies' (e.g., shrink-free, stain-resistant), represent the most important drivers for sustainable clothing among students, as well as the substantial effect of durability on the attitude towards sustainable clothing [15]. Additionally, we confirm price to be the most important factor in the context of sustainable clothing [79]; however, its importance varies for the sub-segments within each generation, and, thus, affirms findings from Brand and Rausch [63]. Especially among Xers, the impact of price is diminished for the more sustainable and design-oriented consumers (16.81%) compared to the price-sensitive consumers (41.87%).

As the influence of the product's design represents the second-largest driver within both generations, studies solely focusing on sustainability aspects and price might be biased as one essential purchase criterion is omitted. Hence, we encourage future research to implement design in their experiments. Arising from ACBC's beneficial ability to identify unacceptable and must-have features, we also confirmed findings from Brand and Baier [60] demonstrating that respondents are much more likely to apply disjunctive decision heuristics compared to conjunctive ones

Apart from cross-generational results, the within-generation analysis indicated Zers to be more homogeneous regarding sustainability orientation. While massive differences were found among the Generation X contingent on higher/lower levels of EnSC and SoSC, as well as among males and females with strong effects (confirming H5a), fewer disparities with smaller effects were observed among Zers. Especially gender differences barely occurred among Zers, evincing only a slight difference regarding females in the importance of eco-labels (rejecting H5b), which are more important for women. This finding corroborates literature that suggests women emphasize sustainability aspects more than men [63,84], as men seem to perceive sustainable behavior as associated with femininity [127]. However, within both generations, the importance of price is significantly less important for consumers with high levels of EnSC, which supports H1a and H1b, and thus, verifies prior research [63]. This effect was stronger among the more heterogeneous Xers. Analogously, consumers with lower levels of SoSC of both generations paid much more attention to price, which confirms H2a and H2b. While Zers tend to consume more sustainably than Xers from an aggregated perspective, within-generational differences were observed for each generation. Hence, we corroborate previous literature emphasizing the need to distinguish between more sustainable consumers and those who are rather price-oriented ([63,84]; see clustering analysis). Table 8 summarizes the findings regarding the proposed hypotheses.

5.1. Theoretical Contribution

While the vast majority of studies examining sustainability in the light of cross-generational comparisons apply (Likert) scale items to survey consumers (see Table 1), we enrich extant literature by contrasting those findings with a choice experiment. While CBC experiments are considered to provide a more realistic setting that is closer to the actual purchase decision [53], we made use of the methodology developed to solve issues inherent to the CBC. Since ACBC allows taking multiple purchase decision factors into account (without yielding less valid results) and seems to exhibit more precise validity [76,77], the insights gained in this study are, in turn, reinforced. As its composition is closer to

the stages of the Buyer Decision Process Theory, incorporating the evaluation and purchase stages, where different heuristics are applied in each stage [63], ACBC yields more realistic results.

Table 8. Summary of hypothesis-related findings.

	Hypotheses	Confirmed/ Rejected	p-Value
H1a	For Xers, the importance of price is higher for consumers less concerned about ecological sustainability compared to very concerned consumers.	Confirmed	<0.001
H1b	For Zers, the importance of price is higher for consumers less concerned about ecological sustainability compared to very concerned consumers.	Confirmed	<0.001
H2a	For Xers, the importance of price is higher for consumers less concerned about social sustainability compared to very concerned consumers.	Confirmed	<0.001
H2b	For Zers, the importance of price is higher for consumers less concerned about social sustainability compared to very concerned consumers.	Confirmed	0.002
H3a	The importance of eco-labels is higher among Zers compared to Xers.	Rejected	0.546
H3b	The importance of social labels is higher among Zers compared to Xers.	Confirmed	0.001
H4	The importance of price is higher for consumers of Generation X compared to consumers of Generation Z.	Confirmed	0.042
H5a	The importance of price is higher for men than for women among Generation X.	Confirmed	<0.001
H5b	The importance of price is higher for men than for women among Generation Z.	Rejected	0.995

Several out of the few studies dealing with cross-generational comparisons about sustainable behavior suffer from representativeness biases due to student/convenience samples (inter alia 32,37,42), whereas this study depicts preference patterns from consumers representatively spread over Germany. Hence, the two samples do not exhibit an artificially increased skew towards more informed consumers (e.g., students), which would potentially consist of more sustainability-oriented ones [128], and, thus, reinforces the findings revealed. We thereby also respond to the postulation to investigate sustainable clothing behavior with larger samples and preferably equal shares of males and females [15], as well as to enlighten latent sub-segments' particularities regarding sustainability labels [129].

Additionally, we empirically demonstrated that paying financial rewards to, and fostering a sustainable livelihood for, manufacturing employees is clearly preferred among both generations compared to an optimization of working conditions. Less distinct differences were observed regarding environmental goals. However, Xers and Zers both rather support the production of less sanitarily concerning textile articles than the reduction of chemicals in the clothing industry and the impact on the environment. The results further indicate that theory of generations seems not to be sufficiently explaining generational differences concerning superordinate issues, such as sustainability. Although differences were detected, sustainability is an important topic for both generations, and, thus, confirms research indicating the younger generations do not behave more sustainably than older ones [5].

In line with postulation for a clear demarcation between different sustainability labels [107], we contributed to extant research by examining the impact of eco- and social labels separately and revealed large cross-generational differences for the latter one. While several studies using choice experiments solely rely on ecological factors for measuring the impact of sustainability (inter alia [51,96]), or subsume the social facet under eco-labels [52], our results claim to put more emphasis on social labels when marketing to Zers (compared with Xers). Moreover, this study follows the postulation to analyze the impact of certified products, compared with non-certified ones, to reveal potential benefits of labels [130]. By examining all facets of sustainability in an online shopping context, we thus fill the literature gap, according to which research has not yet analyzed these holistically in e-commerce [9].

Even though the apparel sector represents the most important one in e-commerce concerning revenues in Germany [87], and witnessed the largest sales growth, together with consumer electronics, globally [131], no other study has explored the consumption preferences for sustainable clothing comparing Xers and Zers. We thus contribute to literature by complying with the postulation to further examine consumers' demands for sustainable apparel [96,97] and by focusing on Generation Z and older consumers [6]. Moreover, we fill the recently postulated literature gap by exploring to which extent findings on the sustainability consumption preferences of Generation Y hold true for generation X and Z [63]. Apart from that, we follow research's postulation for analyzing sustainability labels' sub-dimensions separately [7]. Additionally, we fill the gap stated by Şener et al. [10] and provide insights on sustainable fashion perception for consumers with various demographic characteristics, such as age.

5.2. Limitations and Future Research

We focused on the most important online shopping sector of apparel, as transforming this industry into a more sustainable one will result in large positive effects for ecological, social, and economic sustainability. However, recent studies indicate that buying sustainable clothing might be particularly driven by consumers with high levels of online shopping affinity [15], and, further, environmental concerns represent the main driver for online shopping [128]. Therefore, future studies might replicate this study in an offline context and/or in other industries. Additionally, including these before-mentioned control variables might allow for a more distinct analysis of consumer segments with regards to their likelihoods of buying sustainable clothing. Another limitation could be found in focusing on the German market. Depending on consumers' cultural background, they might tend to purchase sustainable products more or less often. Hence, subsequent research might enlighten sustainable consumption (in online shopping contexts) by comparing consumers from different cultural backgrounds.

Apart from that, online shoppers are exposed to information asymmetries that can not only be attenuated by labels and the country-of-origin of a product, as in this study, but by online customer reviews [132]. This seems to be particularly important, as consumers nowadays tend to mistrust companies proclaiming to be "green", and, thus, exhibit greenwashing concerns [133], also regarding sustainable clothing [104]. Hence, future research might holistically examine the impact of sustainability labels, country-of-origin, and online customer reviews.

While this study made use of an ACBC analysis to investigate various purchase factors simultaneously to compare Xers and Zers, researchers might extend this perspective by including additional generations.

5.3. Practical Implications

We focused on the largest e-commerce sector of apparel, which comes along with a massive negative impact on the environment [88], and, thus, provides multiple opportunities to change matters into more sustainable realizations [134,135]. Accordingly, transforming the online apparel sector enables multiple benefits and effects profiting from economies of scale. Hence, matching the varying demand of Zers by implementing social labels and emphasizing functionality will result in higher revenues, which might compensate for non-sustainable procedures in the supply chain. In contrast, retailers should highlight the materials used and be aware of greater heterogeneity among Xers. It is especially noted that female Xers are willing to purchase sustainable clothing and pay more attention to sustainability aspects. As country-of-origin represents the third most important driver for both generations, companies might consider shifting their production sites dependent on whether this investment pays off in the long run.

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project administration, B.M.B.; funding acquisition, B.M.B. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement: Ethical review and approval were waived for this study, since all responses were collected anonymously as part of an online questionnaire. The questions asked did not require any ethics committee or institutional review board approval.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Teil 2 (Schritt 2/3)

Nun sind verschiedene Produktalternativen aufgelistet. Bitte geben Sie für jede Outdoor-Jacke an, ob Sie diese für einen Kauf in Betracht ziehen oder nicht.

(1 von 7)

<p>Regular Fit und schwarz</p> 	<p>Slim Fit und schwarz</p> 	<p>Regular Fit und schwarz</p> 
<ul style="list-style-type: none"> • wasserdicht • winddicht • atmungsaktiv 	<ul style="list-style-type: none"> • wasserdicht • winddicht • atmungsaktiv • <i>klein verpackbar</i> • <i>geringes Gewicht</i> 	<ul style="list-style-type: none"> • wasserdicht • winddicht • atmungsaktiv
<p>biobasierte Materialien</p> 	<p>synthetische Materialien</p> <p>Kein Öko-Siegel</p>	<p>recycelte Materialien</p> <p>Kein Öko-Siegel</p>
<p>Kein Sozial-Siegel</p>	<p>Kein Sozial-Siegel</p>	
<p>Made in Europe</p> <p>79€</p>	<p>Made in Asia</p> <p>199€</p>	<p>Made in Europe</p> <p>119€</p>
<p><input type="radio"/> Kommt in Frage</p> <p><input type="radio"/> Kommt nicht in Frage</p>	<p><input type="radio"/> Kommt in Frage</p> <p><input type="radio"/> Kommt nicht in Frage</p>	<p><input type="radio"/> Kommt in Frage</p> <p><input type="radio"/> Kommt nicht in Frage</p>

Figure A1. Screenshot of an exemplary screening task (from questionnaire).

Appendix B

Table A1. Descriptive Statistics.

		Generation Z (<i>n</i> = 305)		Generation X (<i>n</i> = 305)	
		Frequency	Proportion (in %)	Frequency	Proportion (in %)
Gender	Female	187	61.3	154	50.5
	Male	117	38.4	151	49.5
	Diverse	1	0.3	0	0
Age	16–20 years	133	43.6	0	0
	20–25 years	172	56.4	0	0
	44–48 years	0	0	56	18.4
	49–53 years	0	0	104	34.1
	54–59 years	0	0	145	47.5
Education	Without qualification	7	2.3	0	0
	Primary education	10	3.3	12	3.9
	Secondary School level I	81	2.6	48	15.7
	High School degree	143	46.9	38	12.5
	Technical education	35	11.5	139	45.6
	Bachelor	26	8.5	22	7.2
	Master	1	0.3	41	13.4
	PhD	1	0.3	5	1.6
	other	1	0.3	0	0
Net Income (€)	≤499	61	20.0	14	4.6
	500–999	45	14.8	29	9.5
	1.000–1.499	59	19.3	43	14.1
	1.500–1.999	30	9.8	42	13.8
	2.000–2.499	35	11.5	49	16.1
	2.500–2.999	10	3.3	40	13.1
	≥3.000	13	4.3	68	22.3
	no specification	52	17.0	20	6.6
Online shopping experience	Yes, very frequently	256	83.9	246	80.7
	Yes, occasionally	49	16.1	59	19.3
	None	0	0	0	0

Appendix C

Table A2. Results from the HB estimation for Generation X.

Attribute Levels	Average Zero-Centered Utilities	Standard Deviation
Regular fit, black	30.03	56.58
Slim fit, black	−19.98	52.14
Regular fit, colored	20.32	59.38
Slim fit, colored	−30.37	43.31
Waterproof, windproof, breathable (wwb)	4.02	20.39
wwb, minimized package size	−10.33	14.21
wwb, minimized package size, low weight	6.30	17.25
Synthetical materials	−25.85	42.39
Recycled materials	11.77	26.29
Bio-based materials	14.08	26.91
No eco-labels	−22.76	30.76
Bluesign	−6.90	20.91
OEKO-TEX	29.65	24.52
No social label	−20.92	32.05
FWF	1.00	19.82
Fair Trade	19.92	21.24
Made in Asia	−66.41	35.67
Made in Europe	24.56	20.82
Made in Germany	41.85	32.12
79.00 EUR	92.10	64.75
119.00 EUR	31.45	26.48
159.00 EUR	−27.27	28.65
199.00 EUR	−96.28	58.36
None-Option	131.52	105.79
Levels	Average Importances (in %)	Standard Deviation
Design	19.28	9.45
Functionality	5.52	3.06
Materials (major proportion)	10.76	6.27
Eco-labels	10.24	4.77
Social labels	8.83	4.73
Country-of-origin	16.89	8.21
Price	28.48	14.83

Appendix D

Table A3. Cluster analysis for Generation X with $k = 2$.

			Average Silhouette Width Total	Average Silhouette Width		Separation	Dunn Index	Entropy
AIC	BIC	2loglikelihood		Cluster 1 ($n = 163$)	Cluster 2 ($n = 142$)	2.39	0.04	0.69
84,910.54	84,962.63	−84,882.54	0.33	0.44	0.24			

Table A4. Cluster analysis for Generation Z with $k = 2$.

			Average Silhouette Width Total	Average Silhouette Width		Separation	Dunn Index	Entropy
AIC	BIC	2loglikelihood		Cluster 1 ($n = 135$)	Cluster 2 ($n = 170$)			
88,546.32	88,598.40	−88,518.32	0.34	0.44	0.26	6.18	0.10	0.69

Appendix E

Table A5. Results from the HB estimation for Generation Z.

Attribute Levels	Average Zero-Centered Utilities	Standard Deviation
Regular fit, black	46.69	58.96
Slim fit, black	32.47	48.63
Regular fit, colored	−31.40	41.03
Slim fit, colored	−47.76	49.93
Waterproof, windproof, breathable (wwb)	1.80	25.02
wwb, minimized package size	−8.34	17.21
wwb, minimized package size, low weight	6.55	23.68
Synthetical materials	−15.23	36.33
Recycled materials	15.97	28.30
Bio-based materials	−0.74	25.27
No eco-labels	−31.55	31.97
Bluesign	12.02	25.56
OEKO-TEX	19.52	24.94
No social label	−31.07	31.54
FWF	8.10	23.68
Fair Trade	22.96	21.64
Made in Asia	−58.55	38.92
Made in Europe	30.10	26.64
Made in Germany	28.44	34.79
79.00 EUR	79.64	66.11
119.00 EUR	28.84	29.85
159.00 EUR	−24.24	27.67
199.00 EUR	−84.24	62.15
None-Option	99.46	68.54
Average Importances	Average Importances (in %)	Standard Deviation
Design	20.79	10.49
Functionality	6.90	3.47
Materials (major proportion)	9.54	5.53
Eco-labels	10.66	5.49
Social labels	10.20	5.23
Country-of-origin	15.96	7.72
Price	25.95	14.69

Appendix F

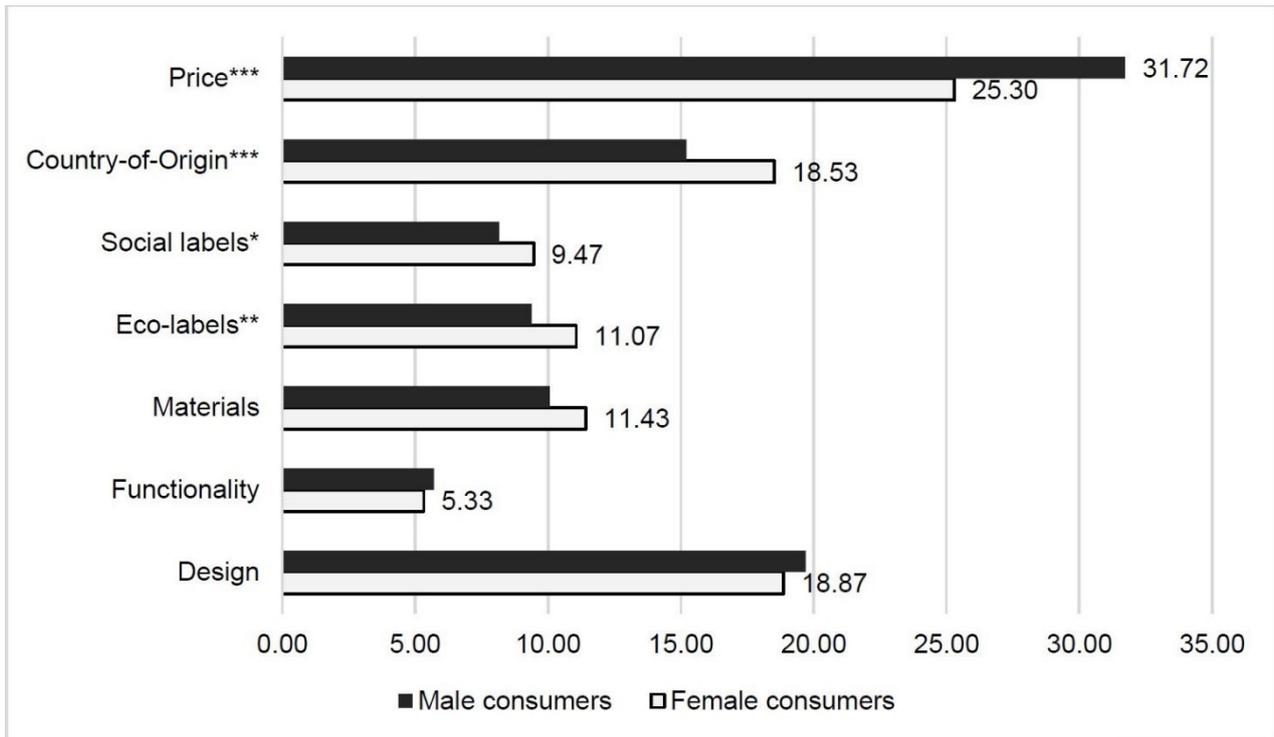


Figure A2. Gender differences among Generation X. Note: *** = $p < 0.001$; ** = $p < 0.01$; * = $p < 0.05$.

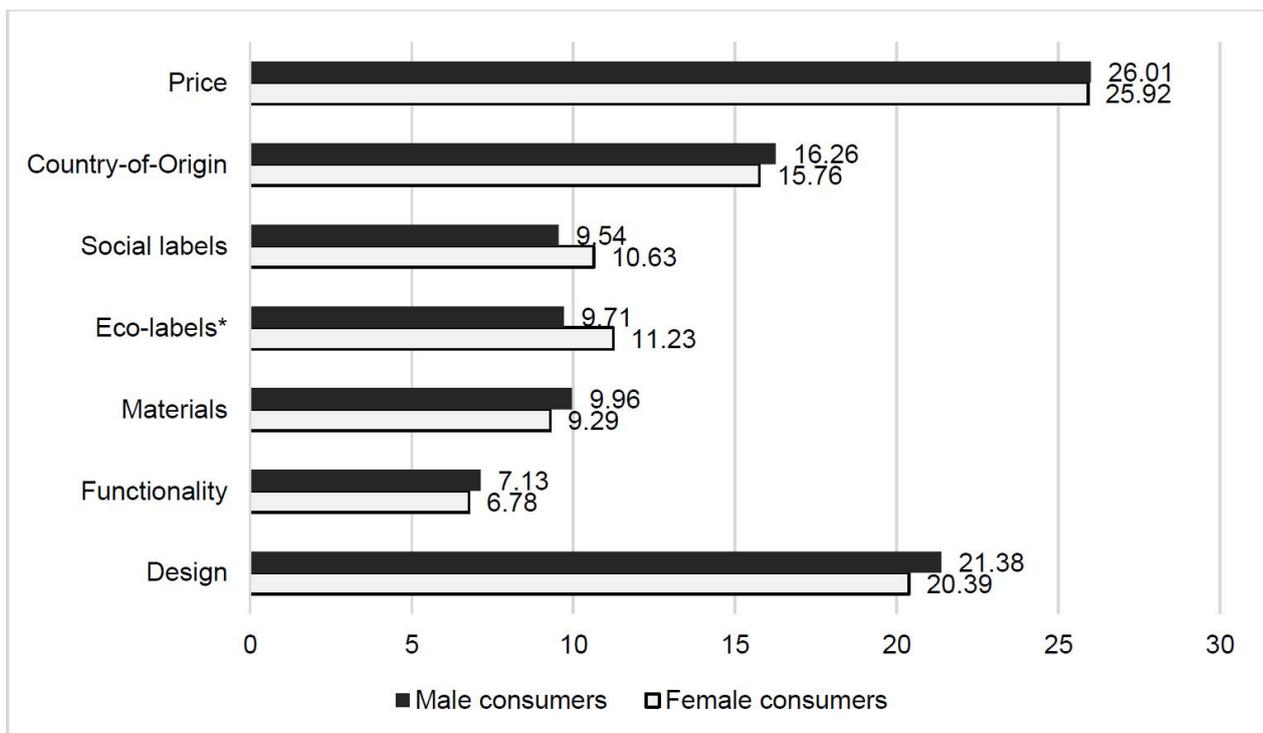


Figure A3. Gender differences among Generation Z. Note: * = $p < 0.05$.

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