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Consumer Values and Sustainable Shopping Behavior: A Multidimensional Exploration towards a Circular Future

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Abstract. This research aims to develop a sustainability shopping practice scale and explore the motivational factors driving sustainable shopping behaviors, particularly how consumer values influence various aspects of sustainable shopping practices. The study focused on consumers aged over 18 residing in the Jakarta area who are considering purchasing sustainable products. Data collection involved 300 respondents for the development of the scale and an additional 500 for the analysis using a structural equation model, with data gathered through convenience sampling. The scale development analysis identified three principal dimensions: mindfulness of green packaging, conscious selection of green products, and a green-conscious shopping pathway. The results concerning the impact of consumer values on these dimensions indicated a complex relationship with consumer behavior regarding sustainability. Specifically, a biospheric orientation had a significant positive impact on the conscious selection of green products, but not on other dimensions. Surprisingly, an egocentric orientation also showed a significant positive effect on both the selection of green products and mindfulness of green packaging. Meanwhile, an altruistic orientation positively influenced both the green-conscious shopping pathway and product selection. The findings illuminate the complex nature of green consumer behavior and provide strategic insights for marketers and policymakers to promote sustainable consumption patterns. This study enriches the literature by offering a more detailed understanding of sustainable shopping behavior and the influence of consumer values, presenting practical implications for retailers, marketers, and policymakers in encouraging sustainable consumption. However, the generalizability of these findings may be constrained by the characteristics of the sample and the reliance on self-reported data.

Keywords: sustainable shopping behavior scale development, circular economy, green-conscious product selection, consumer values, green packaging mindfulness.

1. Introduction

The circular economy represents a significant departure from the traditional linear consumption and production models by prioritizing resource efficiency and waste reduction (Singh & Giacosa, 2019). It is increasingly recognized for its potential to address critical environmental challenges while fostering economic resilience and sustainability (Confente et al., 2020). Central to this model is the transformation of consumer behaviors. Extensive research has shown that consumer decisions profoundly affect environmental degradation, impacting phenomena such as global warming and biodiversity loss (Ketelsen et al., 2020). Furthermore, the role of consumer behavior in generating greenhouse gas emissions underscores its importance within any sustainable strategy (Lynn, 2014).

The shifting consumer preferences towards sustainable products reshape the corporate landscape as businesses incorporate circular economy principles into their production processes and product lines. This alignment not only helps preserve natural resources but also secures the companies' long-term success, echoing the regenerative cycles found in nature (Baumann, 2022; Castro-López et al., 2021). Therefore, fostering sustainable consumption necessitates a coordinated approach among businesses, consumers, and policymakers, highlighting the profound influence of consumer orientation on guiding business practices toward ethical and sustainable outcomes (Nguyen Thi, 2022).

The study of shopping behavior is an interesting aspect of consumer behavior that deserves closer examination. A variety of activities can have a significant impact on environmental sustainability as a result of shopping, in addition to just the transactional process of buying (Fuentes, 2014). Some shopping practices, such as the excessive use of plastic bags, contribute to global challenges such as plastic pollution. Plastic waste is generated in enormous quantities across countries, from the United States to Indonesia, and only a fraction of it is recycled (Inswa, 2022; LeBlanc, 2021). In relation to this, shopping has been extensively studied within the context of sustainable lifestyles (Bălan, 2020; Stöckigt et al., 2018).

Despite the importance of sustainable shopping practices, further research in this field is required (Memery et al., 2005). The existing literature focuses primarily on the narrower aspects, such as online purchasing behavior (Byon et al., 2014; Etminani-Ghasrodashti & Hamidi, 2020; Koch et al., 2020; Maciaszczyk et al., 2022) or on the concept of sustainable and green consumption (Hasan, 2023; Paro et al., 2021). The study leaves a significant gap in understanding how shopping practices may contribute to environmental impacts. Moreover, Fuentes (2014) emphasizes that a comprehensive exploration of shopping behaviors—beyond purchases- is essential to obtaining a holistic understanding of sustainable consumer behavior. We acknowledge that shopping can be a complex activity encompassing a wide range of behaviors, including those relating to packaging and product selection, which are typically understudied in terms of environmental sustainability (Chan et al., 2008; Fuentes et al., 2019). Consequently, the initial aim of this research is to broaden the investigation of sustainable shopping behaviors beyond merely purchasing eco-friendly products.

In addition to exploring sustainable shopping activities, it is crucial to examine the factors that motivate consumers to shop sustainably. The psychological-economic approach is commonly used in marketing literature to identify factors that determine consumer sustainability (Fuentes, 2014). Under this approach, a consumer's decision is entirely based on rational considerations. Studies have been conducted on the factors influencing sustainable consumers' purchasing decisions. Aside from rational considerations, moral considerations also play a significant role in the practice of sustainable behavior. In accordance with Thorgersen (2011), environmental behaviour is difficult to explain solely in terms of rational considerations. Thorgersen (2011) further suggests that value orientation is a moral consideration that can encourage consumers to behave in an environmentally friendly manner. Therefore, the second objective of this study is to examine the role of value orientation factors on determining sustainable shopping practices. Thus, the second objective of this study is to explore how value orientations influence sustainable shopping practices.

As a result, this study aims to develop a comprehensive scale of sustainable shopping practices and

develop a structural model to examine the motivational factors influencing such behavior. The study is guided by two primary questions: (1) What behaviors, beyond purchasing, constitute sustainable shopping? (2) How can value orientation be incorporated into a predictive model of environmentally friendly shopping behaviors as a moral factor? Answering these questions will fill a significant gap in the literature and improve our understanding of consumer contributions to environmental sustainability.

2. Literature Review

2.1. Sustainable Shopping

As part of a sustainable lifestyle, consumers may contribute in various ways, such as economically using natural resources (energy, water) or reducing pollution (Stöckigt et al., 2018). In addition, a sustainable lifestyle includes, among other things, reducing pollution, recycling, and using products wisely (Memery et al., 2005). Consumers who are genuinely concerned about the environment (actual green consumers) not only consistently purchase environmentally friendly products but also reduce consumption, recycle, and reuse products (Bălan, 2020). A shopping practice can be described as a repeated action that resembles a behavioral tendency (Bamossy & Englis, 2010). This repeated action incorporates tacit and explicit knowledge about how to act, affective commitment, and social representation. According to Bamossy and Englis (2010), consumption is one aspect of shopping behavior. Fuentes (2014) links sustainable shopping practices with limiting consumption, that is, purchasing only necessary items. A perspective such as this strengthens the anti-materialist ideology. Further, shopping for durable products is also described as a form of sustainable shopping (Fuentes, 2014) because as the product ages, fewer similar products are purchased to replace it.

An alternative form of sustainable shopping behavior is to choose products that do not require packaging (Fuentes et al., 2019). As consumers become increasingly concerned about packaging waste, they seek solutions to this issue. Consumption of unpackaged products requires consumers to acquire new skills and frames of thought (Fuentes et al., 2019). This shift towards unpackaged goods encourages the development of bulk stores and refill stations, fostering a culture of reuse and reducing reliance on single-use plastics. Moreover, it aligns with the trend of minimalism and conscious consumption, where individuals prioritize the environmental impact of their purchasing decisions.

Shahmohammadi et al. (2020) investigated how different retail channels contribute to Greenhouse Gas (GHG) emissions from the point of manufacture to the consumer's home, including transport, storage, and delivery packaging activities. Their results found that GHG footprints are directly affected by consumer choices, such as the mode of transportation to stores, the decision to shop online, and the efficiency of last-mile delivery (including the type of vehicle used). By optimizing delivery methods, for example, by substituting delivery vans with electric cargo bikes for pure players, the study highlights opportunities to reduce GHG emissions. Their study also revealed that optimizing packaging design (e.g., improving box saturation, reducing the amount of void fill material, and selecting materials with lower GHG emission intensities) could be an effective strategy for reducing the environmental impact of e-commerce.

Jaller and Pahwa (2020) explored the impact of e-commerce on shopping behaviors, vehicle miles traveled (VMT), and environmental emissions in the context of urban freight systems. The study concludes that while e-commerce presents an opportunity to reduce the environmental impacts associated with shopping-related travel, achieving these sustainability benefits depends on efficient last-mile delivery operations, high levels of order and delivery consolidation, and collaborative efforts among all stakeholders involved in the urban freight system. Furthermore, their study concluded that online shopping is more convenient or necessary due to factors like traffic congestion, availability of delivery services, and possibly a wider array of products.

2.2. Values Orientation and Sustainable Shopping

Value orientation mainly shapes human-natural relationships (Song & Youn-Kyung, 2018). Prior studies (Brunsø et al., 2004; van der Werff et al., 2013) define personal value orientations as desired goals that guide a person's life. Value orientations have varying effects on sustainable behavior. Some forms of value orientation will stimulate sustainable behavior, while others will inhibit it. Personal

values will also play a role in directing consumer behavior patterns, including sustainable consumption patterns.

Stern et al. (1993) identified three types of value orientation in relation to individual concern for the environment: biosphere values, egocentric values, and altruistic values. The values orientation of these three types is in accordance with Merchant's concept of three different types of ethics: ecocentric, egocentric, and homocentric. Moreover, these three types of value orientations are not mutually exclusive, but each person has varying degrees of each.

Biospheric values and sustainable shopping. An individual dominated by a biosphere value orientation will likely prioritize the interests of the natural environment and the biosphere (Gkargkavouzi et al., 2019). This group is very concerned about the consequences of their actions on the natural environment, so they focus on their impact on the ecosystem's survival and sustainability (Carfora et al., 2021). Concern for the natural environment arises from the empathy for suffering experienced by nature and the desire to preserve it (Pfattheicher et al., 2016).

Numerous research findings indicate that biosphere values positively impact sustainable practices (Ateş, 2020; Nguyen Thi, 2022; Wang et al., 2018). Additionally, advancements in smart packaging technologies contribute to sustainability in the agricultural and food sectors. This innovation not only strengthens the relationship between industries and consumers but also supports the advancement of sustainable development practices (Kaushani et al., 2022).

Egocentric values and sustainable shopping. Egocentrism is defined as an individual's focus on personal interests and the pursuit of personal well-being or happiness (Caniëls et al., 2021). This value orientation contrasts with environmentally friendly behaviors, which prioritize long-term benefits for the environment (De Groot & Steg, 2007; Wang et al., 2018) and generally have a negative impact on environmental behaviors. Rahman and Reynolds (2017) indicates that an egocentric value orientation significantly impacts the purchasing intentions of organic wine products. Similarly, studies by Kim and Yun (2019) have shown that egocentric values can influence both attitudes and purchasing behaviors.

Altruistic values and sustainable shopping. The term altruism refers to the degree to which an individual prioritizes the interests and welfare of others (Song & Kim, 2019; Stern & Dietz, 1994). Individuals possessing a strong altruistic value orientation are capable of empathizing with the experiences of others and can deprioritize their own interests in favor of broader communal concerns (Song & Kim, 2019). The act of purchasing sustainable products not only benefits the individual consumers but also contributes positively to the community at large. Furthermore, Lauterbach and Bantle (2022) contend that an altruistic value orientation embodies a commitment to fostering social equity for future generations.

Jang and Cho (2022) and Panda et al. (2020) found that altruistic value orientation influenced attitudes represented by empathy and expectations that would positively impact others. Cultural norms and societal values can significantly influence individual behavior and the strength of relationships. In cultures that prioritize collectivism, like those in Japan and China, there tends to be a more pronounced influence of altruistic values on sustainable shopping behaviors (Ogiemwonyi & Jan, 2023). These collectivist societies typically emphasize the importance of group harmony and social responsibility, which may enhance the focus on environmental sustainability and ethical consumption practices.

Accordingly, the following research hypotheses are formulated:

H1: Biospheric orientation positively affects the intention to practice sustainable shopping.

H2: Egocentric orientation negatively affects the intention to practice sustainable shopping.

H3: Altruistic orientation positively affects the intention to practice sustainable shopping.

3. Method

Data was collected through focus group discussions (FGD) and surveys. FGD was conducted to gather information about the types of sustainable shopping behaviors practiced by participants. FGD participants were asked to provide detailed qualitative insights regarding their sustainable shopping habits. As a result of this approach, we gained an extensive understanding of consumer practices, which was invaluable in the initial phase of scale development. This process allowed us to identify key themes and patterns in sustainable shopping, which led to the development of preliminary items for the measurement scale.

Validity and reliability tests were conducted following the development of the scale. A survey was used to collect information from respondents. Respondents were consumers who lived, worked, or studied in the Jakarta region, were 18 years of age or older, and had purchased sustainable products. Online questionnaires were distributed to 300 respondents in the research area. A convenience sampling technique was used to select the sample.

Surveys were also used to collect information as part of the structural equation model analysis. An online survey was distributed to 500 respondents, which had similar criteria as the respondents for scale development. A convenience sampling technique was also employed to select the sample.

In this study, we address the issue of common method bias (CMB), which is critical when using self-reported data. Anonymity and confidentiality were ensured as part of our procedure to prevent evaluation apprehensions and social desirability biases. Furthermore, we separated the measurement of predictors and criterion variables into separate sections of the questionnaire to minimize the effects of common method variance. Harman's one-factor test was conducted to determine whether a common method bias existed. The analysis was based on exploratory factor analysis. A single-factor solution was imposed on items belonging to study constructs without rotation. The current test has a cut-off point of 50% variance. The results are considered inflated if they exceed 50% variance, and it is reasonable to conclude that CMB was used to inflate the data. As a result, 28.75% of the variance was explained by forcing items into a single-factor solution. Based on the results, the variance level is well below the cut-off point.

The identification of sustainable shopping activities was performed using exploratory factor analysis (EFA). The study applied EFA to group various indicators into coherent factors or dimensions representing different aspects of sustainable shopping. This process involved iteratively testing and refining the model to ensure that the extracted factors were both statistically significant and meaningful within a sustainable shopping context. Convergent validity was evaluated using the average variance extracted (AVE). The validity of discriminant analyses is demonstrated by low cross-loadings, i.e., the observed variables should not have a large influence on other factors they are not intended to represent. In other words, it indicates that the construct differs from other constructs within the model.

Structural equation modeling (SEM) was used to analyze both measurement models and structural models. Our measurement model was validated using SEM to ensure its reliability and validity. Convergent validity was assessed using the average variance extracted (AVE). AVE values above .50 indicate a high level of explanation of the variance of the construct's indicators (Hair et al., 2019)The scale's reliability was assessed using Cronbach's alpha and composite reliability (CR). A Cronbach's alpha and CR value exceeding .70 indicated good reliability (Hair et al., 2019). The causal pathways and strength of these associations were then evaluated using SEM to gain further insight into the hypothesized relationships between these constructs.

4. Results and Discussion

4.1. Results

Results of Scale Development

Item Generation Phase

Using the results of the literature review, a focus group discussion (FGD) was conducted. Ten consumers participated in the FGD activity. FGDs were conducted to explore forms of sustainable shopping behavior based on participants' perceptions of whether or not they have engaged in it. In response to the literature review and focus group discussion, 42 statements were formulated.

For content validity, the statements were reviewed by seven experts. Four or more experts considered 12 statement items unrepresentative, which were later deleted. The experts also suggested merging several items due to their similarities. As a result, 14 statement items remain for further analysis. The statements were concentrated into three areas: consumer preferences toward green products, the variety of options with which consumers can purchase and receive products in an eco-friendly manner, and eco-friendly packaging.

A revised questionnaire was then given to 100 respondents to assess the readability of the sentences. Face validity results indicated that respondents could understand the statements in the questionnaire. After revising the questionnaire, a pilot test was conducted with respondents. Of the 400 questionnaires distributed via online communication platforms and social media, 46 responses were not returned. Due to their tendency to give homogeneous answers, 18 respondents who returned questionnaires were eliminated.

Item deletion and factorial analysis

The first stage of statement elimination involved analyzing correlations between items and alpha if items were deleted from Cronbach's α analysis. Based on Sweeney (2001) and Bobek (2011), statement items are eliminated if their inter-item correlation to the total correlation is less than 0.40 or if their elimination increases the Cronbach α value. The Cronbach α value for the three dimensions ranges between 0.81 - 0.85. In addition, the average value of the inter-item correlation matrix ranges from 0.466 - 0.590. As a result, no items have been identified that, if removed, would increase the Cronbach α value. Therefore, all items will be retained for further analysis.

As a next step, exploratory factor analysis (EFA) is used to form factors. Initially, testing is conducted to determine whether factor analysis can be performed prior to the analysis. According to the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO), a coefficient of 0.895 was obtained, and Bartlett's test was significant. An eigenvalue greater than one is used to determine the number of factors. Based on this analysis, three factors were identified. These three factors were then labeled Green Packaging Mindfulness (Gpack), Green Conscious Product Selection (Gprod), and Green Conscious Shopping Path (Gtran).

Next, those items that did not meet the criteria were eliminated again. Indicators must have a loading value of at least 0.40 on both factors (cross-loading), or statement items must be on an inappropriate factor (Hair et al. 2019; Sweeney and Soutar 2001). The analysis did not lead to the elimination of any statements.

Before conducting the validity test, a goodness of fit test was conducted for the measurement model. Four of the six indices used indicate that the model formed is fit. The results of the test are presented in Table 1 below:

Table 1. Goodness of Fit Test Results

Goodness of Fit Indices	***Cut-Off Value****	**Results**	
1. Probabilitas	≥ 0,05	0,00	Not fit
2. CMIN/DF	≤ 2,00	2,43	Not Fit
3. TLI	≥ 0,92	0,96	Fit
4. CFI	≥ 0,92	0,97	Fit
5. RMSEA	≤ 0,08	0,05	Fit
6. PNFI	≥ 0,6	0,69	Fit

Following this, a validity test is conducted, which includes evaluating the factor loading and convergent validity values. Hair et al. (2019) state that an acceptable loading value is at least 0.5 and ideally equal to or greater than 0.70. The authors also recommended that the average AVE value be greater than 0.50 for convergent validity. However, Fornell and Larcker (1981) indicated loading values below 0.5 were acceptable if the Cronbach coefficient was greater than 0.6. Further, AVE values greater than the root of the correlation between two constructs indicate good discriminant validity (Hair et al., 2019). AVE values greater than the root of the correlation between two constructs indicate good discriminant validity (Hair et al., 2019). The results of calculating loading, AVE, CR, and Cronbach α values can be seen in Table 2 below.

Table 2. Validity and Reliability Test Results

Dimensions	***Loading***	**AVE**	**CR**	**α Cronbach**
		0.58	0.85	0.86
Gpack1	0.69			
Gpack2	0.77			
Gpack5	0.75			
Gpack6	0.84			
		0.52	0.76	0.73
Gprod3	077			
Gprod4	0.75			
Gprod5	0.65			
		0.54	0.70	0.48
Gtran2	0.75			
Gtran3	0.72			

Table 2 shows that all indicators are significant and have values ranging from 0.69 to 0.84. All indicators are above the minimum value of 0.50, thus indicating convergence. The AVE and CR values are then calculated, as shown in the table. According to these results, the AVE value of the command norm dimension is below 0.50, but its Cronbach's Alpha value is 0.88. Therefore, both dimensions meet the convergent validity criteria.

Results of Sustainable Shopping Model

One hundred fifty-two of the 700 questionnaires distributed to respondents were not returned. Of the 548 respondents who returned the questionnaire, 48 were eliminated due to their tendency to provide

homogeneous responses. This elimination resulted in 500 final respondents, who were analyzed further. Male and female respondents were relatively evenly divided (44.6% men, 55.4% women). Over half of the respondents (61.4%) were aged between 18 and 27. More than half (58.2%) of respondents were married. Most respondents (74%) had a bachelor's degree in education. Most respondents (74.2%) reported having an income of US$ 267-400 per month. Nearly half of the respondents (42.8%) were employees without managerial responsibilities.

The results of the CFA analysis revealed that four indicators were deleted due to the value of the loading factor below .50 (Gpack 3=.412, Gpack 4= .488, AL1=.106). A total of 23 indicators were identified as significant and had loading values ranging from .63 to .94. The measurement model was then tested for reliability and construct validity. Construction validity is tested using loading and average variance extracted (AVE) values, while reliability is tested using CR (construct/composite reliability) values. The AVE value ranges from 0.52 to 0.86. Accordingly, the indicators used have good construct validity. Regarding CR value, it is in the range of 0.75 to 0.85. Since all CR values exceed the minimum threshold, 0.60, the instrument used can be considered reliable.

The test results indicate that the measurement model used is fit, except for the results for the probability value of $\chi 2$. However, Hair et al. (2019) stated that this value is not expected to be suitable for research with large samples because the probability value of $\chi 2$ is very sensitive to sample size.

Following the validation of the measurement model, a structural model evaluation is conducted. According to Table 3, five of the six indices used as criteria have values that match the criteria, except for the probability value $\chi 2$. Therefore, the structural model is deemed to be fit. In order to determine whether the research hypothesis is accepted or rejected, the structural model is tested after it has been declared fit.

Table 3. Goodness of Fit Test Results of Structural Model

Goodness of Fit Indices	***Cut-Off Value****	**Value**	**Results**
1. Probabilitas	≥ 0,05	0,000	Not fit
2. CMIN/DF	≤ 2,00	1,834	Fit
3. TLI	≥ 0,92	0,953	Fit
4. CFI	≥ 0,92	0,960	Fit
5. RMSEA	≤ 0,08	0,041	Fit
6. PNFI	≥ 0,6	0,779	Fit

The hypothesized relationships were examined using a structural equation modeling approach to understand how biospheric, egocentric, and altruistic orientations influence green-conscious shopping paths, product selection, and green packaging mindfulness. The result of our empirical investigation is presented in Table 4.

Table 4. Results of Hypotheses Testing

Hypotheses	**Path**	**b**	**SE**	**t value**	**p-value**	**Results**
H 1a:	Biospheric orientation positively affects the green-conscious shopping path.	-.072	.073	-1.260	0.208	Rejected
H 1b:	Biospheric orientation positively affects green-conscious product selection.	-.203	.056	-3.224	0.01	Accepted
H 1c:	Biospheric orientation positively affects green packaging mindfulness.	.019	.070	.312	0.755	Rejected
H 2a:	Egocentric orientation negatively affects the green-conscious shopping path.	-.069	.065	-1.208	0.227	Rejected

H 2b:	Egocentric orientation negatively affects green-conscious product selection.	-.139	.049	-2.236	0.025	Accepted
H 2c:	Egocentric orientation negatively affects green packaging mindfulness.	-.108	.063	-1.753	0.08	Accepted
H3a:	Altruistic orientation positively affects the green-conscious shopping path.	.160	.058	3.174	0.02	Accepted
H3b:	Altruistic orientation positively affects green-conscious product selection.	.107	.044	1.972	0.049	Accepted
H3c:	Altruistic orientation positively affects green packaging mindfulness.	.049	.056	.904	0.366	Rejected

Hypothesis H1a that biospheric orientation positively affects the green-conscious shopping path was not accepted (p = 0.208), indicating that biospheric values do not significantly predict a green-conscious shopping path. Contrary to expectations, this indicates that a stronger biospheric orientation does not necessarily translate into a more green-conscious shopping path within our sample. The small magnitude of the coefficient (-.072) further suggests that, even if statistically significant, the practical impact might be limited. Contrary to H1a, biospheric orientation positively influences affects green-conscious product selection (p = 0.01). Thus, H1b was accepted, demonstrating a significant but negative effect of biospheric values on sustainable product purchasing intentions. This finding is intriguing as it contrasts with the expected positive relationship. The relatively larger magnitude of the coefficient (-.203) indicates a moderate practical significance, suggesting that those with a stronger biospheric orientation might, counterintuitively, engage less in green-conscious product selection than expected. Biospheric orientation was not found to enhance green packaging mindfulness (p = 0.755). Thus, H1c was rejected, showing that biospheric values do not significantly impact green packaging mindfulness. The coefficient's size and direction suggest a negligible effect in our sample.

The hypothesis that egocentric orientation negatively affects the green-conscious shopping path (H2a) was rejected (p = 0.227), suggesting that egocentric values do not significantly impact the green-conscious shopping path. In contrast, the hypothesis that egocentric orientation negatively influences green-conscious product selection (H2b) was accepted (p = 0.025), indicating a significant adverse effect of egocentric values on sustainable product purchasing intentions. Furthermore, the hypothesis that egocentric orientation negatively affects green packaging mindfulness (H2c) was accepted (p = 0.08), revealing that egocentric values significantly deter green packaging mindfulness. Across the board, egocentric orientation showed a consistent negative effect on all dimensions of sustainable shopping behavior, aligning with theoretical expectations. Notably, its impact on green-conscious product selection (-.139, p = 0.025) and green packaging mindfulness (-.108, p = 0.08) was statistically significant, notwithstanding small to moderate magnitudes. These findings highlight the potential detrimental effect of egocentric values on sustainable shopping behaviors, although with varying degrees of practical significance.

Altruistic orientation positively affected the green-conscious shopping path (b=.160, p = 0.02) and green-conscious product selection (b=.107, p = 0.049), with the former showing a more substantial effect. These results highlight the beneficial impact of altruistic values on fostering sustainable shopping behaviors, with a particularly strong influence on choosing greener shopping paths. The magnitude of these coefficients suggests a meaningful, practical significance, indicating that promoting altruistic values could be an effective strategy for encouraging more sustainable consumer shopping behaviors. However, the hypothesis that altruistic orientation positively affects green packaging mindfulness (H3c) was rejected (p = 0.366), suggesting that while altruistic values enhance some sustainable intentions, they do not significantly impact green packaging mindfulness.

Table 5. Results of Squared Multiple Correlations

Squared multiple correlations	
Construct	Estimate
green-conscious shopping path.	0.039
green-conscious product selection.	0.096
green packaging mindfulness.	0.012

The squared multiple correlations for the green-conscious shopping path indicate that approximately 3.9% of the variance in consumers' green-conscious shopping paths can be explained by the predictor variables included in the model. For green-conscious product selection, the squared multiple correlation coefficient indicates that our model accounts for about 9.6% of the variance in this behavior. The analysis of green packaging mindfulness indicates that only 1.2% of the variance in green packaging mindfulness, suggesting that most of the variability in this sustainable shopping behavior is not captured by the variables in our model. The squared multiple correlation results indicate that the current model has limited explanatory power for the sustainable shopping behaviors assessed. The low percentages of explained variances for all three behaviors—green-conscious shopping path, green-conscious product selection, and green packaging mindfulness—imply that further research is needed to identify additional predictors that could provide a more comprehensive understanding of the factors driving these sustainable shopping behaviors.

4.2. Discussion

The results of sustainable shopping practices scale development have significant implications for sustainable consumer behavior research. It provides a nuanced framework for assessing sustainable shopping practices beyond mere purchasing actions. Additionally, the identified dimensions of Green Packaging Mindfulness, Green Conscious Product Selection, and Green Conscious Shopping Paths reflect the evolving consumer behavior regarding sustainability shopping practices. The results of structural model testing reveal the differential impacts of value orientations on sustainable shopping behaviors and underscore the complex role values play in shaping consumer actions. The alignment of egocentric and altruistic values with sustainable shopping practices resonates with the Value-Belief-Norm (VBN) theory, corroborating existing literature that reinforce the potent influence of egocentric and altruistic values on consumer choices towards sustainability. Conversely, the negative impact of biospheric values on certain sustainable behaviors challenges traditional assumptions and suggests a multifaceted motivation behind consumer sustainability behavior.

The insignificant effect of biospheric orientation on shopping paths and green packaging mindfulness may initially seem counterintuitive, given that environmental values are strongly associated with sustainable behavior. In contrast to the value-belief-norm theory, several nuanced factors might explain why individuals with a broad biospheric orientation do not always seek sustainable transportation options. These factors include personal convenience, availability of sustainable options, and perceived efficacy of actions (Tyrinopoulos & Antoniou, 2020; Ueasin, 2020).

A primary consideration is the impact of practical constraints and contextual factors on the choice of transportation and packaging. It has been shown that individuals' ability to act on their pro-environmental intentions is significantly influenced by the availability, convenience, and reliability of sustainable transportation options (Manca & Fornara, 2019). If public transportation is underdeveloped, infrequent, or perceived as unsafe, even people with strong biospheric values may find it difficult to utilize these modes of transportation regularly. Similarly, the infrastructure for non-motorized transport (e.g., bike lanes) may need to be improved or non-existent, limiting the possibilities for sustainable commuting. The convenience and functionality of conventional packaging solutions can also be significant barriers to adoption (Kücükpinar & Langowski, 2012). Consumers often find that standard packaging meets their needs more effectively than alternatives, which may be perceived to be less

convenient and functional due to its ease of use, durability, and longevity (White et al., 2019). Additionally, consumers have limited choices regarding reducing packaging waste, even when they are motivated to do so.

In addition, some individuals with a high biospheric orientation may question the global impact of their transportation choices, leading to a sense of disillusionment or skepticism about the efficacy of personal actions (Boyes et al., 2014). In this regard, they may be less likely to engage in sustainable transportation, mainly if they believe systemic changes (e.g., policy reforms, technological innovations) are more critical to addressing environmental problems (Javaid et al., 2020).

The unexpected discovery that biospheric values negatively affect green-conscious product selection presents a paradox that challenges conventional expectations within environmental psychology and sustainability research. Traditionally, the Value-Belief-Norm (VBN) theory suggests that individuals with strong biospheric values—those who prioritize the well-being of the biosphere and its ecosystems—are more likely to engage in behaviors that minimize environmental harm. The negative effect observed could stem from a more important understanding of what it means to be truly environmentally conscious. The perceived effectiveness of individual actions in contributing to environmental solutions can influence the relationship between biospheric values and green product choices.

Critical evaluation might explain the factors that hinder biospheric values into sustainable behavior. Individuals with strong biospheric values may critically evaluate the lifecycle impact of products (Lee & Park, 2018), including factors beyond immediate packaging or eco-labels, such as the carbon footprint of production and distribution, leading them to reject products that are marketed as green but fail to meet their stringent criteria for sustainability. The concept of psychological distance might also explain the observed negative effect. Individuals with strong biospheric values may focus on broader, global environmental issues, perceiving individual consumer choices as less impactful compared to systemic changes (Bouman et al., 2020). This perspective might demotivate them from engaging in green-conscious product selection, especially if they view these actions as insufficiently addressing the scale of environmental challenges.

The effect of altruistic values on green-conscious paths and green-conscious product selection confirmed the VBN theory. VBN theory suggests that these individuals will develop pro-environmental beliefs and personal norms that support green behaviors, which in turn drive their actions. Individuals with strong altruistic values are likely to be influenced by their concern for the greater good (Enelamah & Tran, 2020). Moreover, these results are consistent with previous studies (Jang & Cho, 2022; Li et al., 2021; Song & Kim, 2019), reinforcing the notion that deeply held altruistic values significantly influence consumer choices in favor of a more sustainable lifestyle. They may choose green paths as a way to protect the environment and ensure the well-being of future generations (Bozkurt et al., 2015). In addition, for an individual with altruistic values, selecting green products is not just a consumer choice but a fulfilment of a moral duty towards the society. The behavioral manifestation of altruistic values in product selection can be observed in various consumer preferences and actions, such as avoiding products known to harm the environment or exploit labor. Sivapalan et al. (2021) found that those with high altruistic values orientations are more likely to purchase green products since they place a high priority on society over self-interest. Their purchasing behavior is driven by a desire to participate in societal good (Lee & Park, 2018).

The finding that altruistic values do not influence green packaging mindfulness warrants a nuanced examination of potential reasons and implications. The finding contrasts with the VBN theory and previous study (Prakash et al., 2019). However, the findings consistent with Arya and Chaturvedi (2022). One possible explanation is the perceived efficacy of individual actions towards environmental sustainability. Individuals may hold altruistic values but may not see the choice of green packaging as an effective way to express these values due to a lack of awareness about the impact of packaging on the society or scepticism about the claims of such packaging.

The negative impact of egocentric values on green conscious product selection and green packaging mindfulness consistent with the VBN theory. From the VBN theory perspective, individuals with strong egocentric values are less likely to prioritize environmental concerns unless they directly affect their well-being or offer personal benefits, like cost savings or an enhancement of status (Whitley et al., 2018). Green products and packaging options are often perceived as more expensive or less convenient than their conventional counterparts. Individuals with strong egocentric values may therefore opt for non-green alternatives that they perceive as offering better value or greater personal convenience (Olson, 2013). The negative impact may also be reinforced by scepticism towards the authenticity of green claims, where egocentrically motivated consumers suspect green marketing as a ploy that does not offer them any tangible personal benefits (do Paço & Reis, 2012). A preference for familiar products and practices may also play a role, where the immediate benefits of known brands and packaging outweigh the perceived uncertain benefits of switching to greener alternatives (Copeland & Bhaduri, 2019).

The insignificant impact of egocentric orientation on green conscious shopping path can be analyzed through many lenses that illustrate the complexity of translating values into behaviors (Angın et al., 2024). Tanwir and Hamzah (2020) argued that egocentric values can influence individuals' intentions towards sustainability, but are overshadowed by stronger, more direct motivators like environmental concern, social influence, and perceived usefulness of sustainable alternatives. It suggests that egocentric values and sustainable behavior are complex and may be mediated by societal and environmental factors.

4.3. Limitations

While our findings offer valuable insights, it's crucial to acknowledge the study's limitations and the conditions under which these insights apply. First, the generalizability of our results may be constrained by our sample's demographic and geographic characteristics. Future studies could explore these relationships across diverse populations and settings to enhance the universality of the findings. Second, the operationalization of value orientations and sustainable shopping behaviors, though comprehensive, might not capture all the nuanced aspects of these complex constructs. Future research could explore additional dimensions of sustainability or specific context of shopping situation (for example online vs in site shopping) to paint a fuller picture of the driving forces behind sustainable consumer behavior.

Moreover, the applicability of our findings to other contexts or populations warrants careful consideration. Cultural, economic, and regulatory differences across regions may influence the manifestation of sustainable shopping behaviors and the impact of value orientations. For instance, in cultures with a strong emphasis on communal values, the influence of altruistic values on sustainable behaviors might be even more pronounced. Last, our study focused on examining the direct effect of values orientation on sustainable shopping behaviors. The relationship between value orientations and sustainable shopping behaviors is also mediated by attitudinal factors and practical constraints, such as the availability of sustainable options and the infrastructure supporting sustainable practices. These factors may limit individuals' ability to translate pro-environmental values into action, highlighting the need for systemic changes to facilitate more sustainable lifestyles.

4.4. Practical Implications

Following the findings and discussions presented, there are several potential implications for retailers, marketers, associations, and governments seeking to increase consumer awareness about green packaging, green product purchases, and green transportation options. It is important for retailers and marketers to emphasize the environmental and societal benefits of these products in their advertising and promotions. In order to resonate with consumers who hold these values, it is important to highlight the contribution of each purchase to environmental conservation and societal well-being. Additionally, retailers and marketers should tailor their marketing messages to address the diverse motivations of consumers. People with egocentric values should be made aware of the personal benefits of sustainable

products, such as cost savings, health benefits, and an enhancement of their status. For consumers who hold altruistic and biospheric values, it is important to consider the impacts on the environment and society as a whole. Moreover, the use of social media platforms and influencers can be used to illustrate the prestige and social status associated with using sustainable products and engaging in eco-friendly practices, appealing to egocentric motivations while also raising awareness among a broader audience.

The government should adopt policies that make sustainable options more accessible and affordable. Incentives for green products, tax incentives for businesses adopting sustainable practices, and investments in green transportation infrastructure can reduce barriers to sustainable consumption. Additionally, the development of infrastructure that facilitates sustainable transportation, such as bike lanes, public transportation, and charging stations for electric vehicles, will help individuals to choose greener transportation modes. Moreover, run national awareness campaigns to emphasize the importance of sustainable living and the positive impact it has on society and the environment. As a result of such programs, public perception can be shifted in favor of sustainable consumption, and behavior orientated towards it can be encouraged.

5. Conclusion

This research enriches the academic discussion on sustainable consumption and the role of consumer values by providing a multi-dimensional scale for understanding sustainable shopping practices and exploring the complex effects of value orientations on these behaviors. Notably, the study challenges traditional views by demonstrating unexpected positive impacts of egocentric values on certain dimensions of sustainable shopping, suggesting that egocentric values not always hinder sustainability efforts. Additionally, it points out the limited effect of biospheric values on particular activities of sustainable shopping, indicating that the drivers of green consumption might be more complex than previously understood.

The results of this study contribute to the theoretical foundations of sustainable consumer behavior and offer useful guidelines for practitioners interested in promoting sustainable shopping habits. However, the study is constrained by its dependence on self-reported data and the specific demographics of its participants. To strengthen these findings, future research should aim to replicate this study with a broader array of participants and employ direct observations of behavior.

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APPENDICES

Appendix A. Items for measurement

Green Conscious Shopping Path:
Make an online purchase
Make use of public transportation when shopping.

Green Conscious Product Selection:
Avoid buying plastic-packaged products.
Avoid buying beverages with plastic straws.
Choose products made with eco-friendly raw materials.
Avoid products that are processed with harmful waste.
Buy products with environmental certifications.

Green Packaging Mindfulness:
Choose products with eco-friendly packaging
Minimize the packaging of my purchases
Using less packaging
Purchase products that do not come packaged

Biospheric values
For me, to have harmony with nature (not important at all-very important).
For me, respecting the earth (not important at all-very important).
For me, protecting the environment (not important at all-very important).
For me, preventing pollution (not important at all-very important).

Egocentric values
For me, to have expensive things that show my wealth (not important at all-very important)
For me, to be the ones to tell others what to do (not important at all-very important).
For me, to protect my public image (not important at all-very important).
For me, to protect my health (not important at all-very important).
For me, to have respect by others (not important at all-very important).

Altruistic Values
For me, saving other's life (not important at all-very important).
For me, helping others (not important at all-very important).
For me, creating a better world for future generations (not important at all-very important).

Appendix B Research Model Coefficient Magnitudes