

Antecedents of Sustainable Consumption Behavior: A Mediation and Moderation Model

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Abstract: This research paper examines the contributing factor to sustainable consumption behavior by considering the role of Sustainable Behavior Intention (SBI), as the mediator, and Social Pressure (SP) as the moderator. Through a structured questionnaire and 303 respondents, the study looks at the implications of PCE, EC, and HC on SBI and SCB. Performance analysis shows that both PCE and EC have positive effects on SBI, and SCB lending credence to the need to enhance consumer belief in efficacy and responsibility for nature. The analysis of the relationship between HC and SCB or SBI demonstrates that, while SCB is a priority for HC, impacting on SBI is statistically not significant focusing on health benefits in place of environmental intentions. Intention is identified as the key link between PCE and EC, with SCB being an intermediary mediated by SBI. Nevertheless, SP fails to moderate the SBI–SCB relationship to denote a shift in intrinsic motive related to sustainability decision-making. The results reported in this paper are relevant to business managers and policymakers. Special emphasis should be placed on educational activities that would develop people's perceptions of the environment as a valuable resource and encourage people to make their decisions independently.

Keywords: Perceived Consumer Effectiveness, Environmental Concerns, Health Consciousness, Sustainable Behavior Intention, Sustainable Consumption Behavior, Social Pressure

Introduction

As a result of the energy crisis and other problems that relate to environmental sustainability issues (Adebayo et al., 2021), there has been a significant focus on coming up with respective policies and programs that would engage customers toward sustainable consumption over the last decade. Additionally, extensive pressure has been applied to lock down customers' sustainable consumption behaviors for the sake of society's peace and sustainability (Kautish et al., 2020; He et al., 2021). Moreover, the recent world has in one way or another forced consumer to indulge in sustainable consumption practices aiming at reducing social and ecological environment deterioration for the benefit of the next generation Sharma et al., 2022). There has been widespread pressure for firms to incorporate sustainability concerns in their communication strategies that aim to change consumer behavior (Sipilä et al., 2021). An emphatic, healthy, and sustainable lifestyle changes consumer behavior regarding eco-sustainable products and services, as pointed out by (Matharu et al., 2021). Others have noted that the consumer's willingness to pay for eco-sustainable products varies according to the product type and is at least related to perceived product use-value (Park & Lin, 2020).

Perceived consumer effectiveness (PCE) is the consumers' belief about their ability to enhance selected environmental and social outcomes (Ellen et al., 1991). It has been proven as a key mediator that helps to promote consumers' responsible behavior (Higuera-Castillo et al., 2019). The study by (Liang et al., 2020) confirmed that there is a positive and directly linear relationship between the level of subjective knowledge

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regarding the carbon label and the PCE about the purchase intention of the carbon label. So according to (Su et al., [2022](#)), it is also clear that product attributes and consumer perceptions play a crucial role in shaping young consumers' health and social responsibility. Nonetheless, health and social consciousness, as seen earlier, were not significantly affecting the youth consumers' attitudes. Health consciousness can also have a positive influence on consumers' assessment of subjective norms since the respondents with high levels of health consciousness will likely pay more attention to how their family members, friends, and other members of society view the importance of maintaining good health (Wang et al., [2023](#)).

Perceived Consumer Effectiveness positively influences Sustainable Behavior Intention

Perceived Consumer Effectiveness is one of the most relevant and essential psychological variables, which measures the extent of the consumer's belief regarding his or her impact in a particular situation (Khan et al., [2023](#)). With increased emphasis on sustainable development as a global concern PCE has received increasing attention for its ability to influence and predict the sustainable behavior intention of consumers (Tan et al., [2022](#); Paul et al., [2016](#); Ghaffar & Islam, [2024](#)).

PCE in particular holds a unique position within the domain of enhancing change as it navigates the great divide between mere awareness and actual behavioral change (Hanss et al., [2016](#)). While environmental awareness creates mere awareness regarding sustainable practices, it is, on the other hand, PCE that endows the person with the feeling of docility or rather the power to act on the beliefs. Those consumers who spend more money per capita are more likely to perceive their behavior, whether it is recycling, saving energy, or buying environmentally friendly products, as making a difference in the environmental problems in the country (Kamalanon et al., [2022](#)).

Those with a high PCE believe in making positive contributions towards solving the environmental problem and hence have a propensity for pro-environmental behavior (Ellen et al., [1991](#)). Hence it can be hypothesized that.

H1: PCE is positively linked with Sustainable Behavior Intention.

Environmental Concerns Positively Influence Sustainable Behavior Intention

Environmental concerns rank high as a determinant of sustainable behavior intention is an individual's consciousness and concern of the surroundings and their deterioration (Park & Lin, [2020](#); Kang et al., [2012](#); Lopes et al., [2024](#); Sharma et al., [2022](#)). Many of these concerns arise from one's belief systems which may include values, attitudes, and knowledge toward environmental issues that would trigger a change in behavior toward green practices (Kumar et al., [2022](#)).

According to Yue et al. ([2020](#)), moral responsibility is one of the highly activated states by environmental concerns when it comes to influencing sustainable behavior intention. Ecologically concerned individuals have the psychological need to take personal responsibility for environmental conservation (Park & Lin, [2020](#)). This sense of responsibility sign leaves an implication that exhibits behaviors like waste minimization, environmentally friendly products, and policies regarding climate change and conservation of resources (Vainio & Paloniemi, [2014](#); Kotyza et al., [2024](#); Wang, [2017](#)). Emotional attachment is an important mediator between environmental issues and sustainable behavioral intention (Sharma et al., [2022](#)).

It can also be noted that environmental concerns impact behavior intention in the area of consumer behavior (Emekci, [2019](#)). Ecologically conscious consumers will engage in supporting the companies and the brands that are close to their concerns choosing products that are ethical, energy-saving, or recyclable (Park & Lin, [2020](#); Salehudin et al., [2013](#)). It demonstrates consumers' interest in sustainable practices and puts pressure on industries to practice sustainable business (Rausch & Kopplin, [2021](#)). Raising awareness through education and advocacy remains a significant strategy for anticipating environmental issues on sustainable behavior intention (Cerri et al., [2018](#)). These efforts awaken the public conscience about environmental problems and give the people the mechanisms to turn their concerns into action (Hasebrook et al., [2022](#)). Accordingly, the analysis by (Wang, [2017](#)), shows that concern for environmental matters is one of the predictors of sustainable behavior intention. Hence it can be hypothesized that

H2: EC is positively linked to Sustainable Behavior Intention.

Health Consciousness positively influences Sustainable Behavior Intention

Health consciousness is an aspect that involves the ability of a particular individual to take proper care of his or her body including the mind (Su et al., 2022; Liang et al., 2024; Wang et al., 2023). In today's world of increasing social awareness about health issues and their relation to the environment, health consciousness has turned into one of the motivational factors for sustainable behavior intention (Shimoda et al., 2020; Kim & Lee, 2023). Eco-conscious individuals live in a manner that transforms their personal use of resources into a healthy lifestyle for both the self and the earth (Pahari et al., 2024). This is indicated by actions like buying organic or locally grown foods and reducing the use of processed items and products with toxic chemicals (Amin & Tarun, 2022). All these choices are not only protective of the health of the consumers but also conform to the conservation of the environment through promoting sustainable production and cutting on the impacts on the environment (Parashar et al., 2023). Similarly, Jonathan and Tjokrosaputro (2022) and Kim and Lee (2023) suggest that people with high health consciousness demonstrated consistently higher attitudes towards the intentions of reducing waste, saving energy, and using environmentally friendly means of transport. Hence it can be hypothesized that

H3: Health Consciousness positively influences Sustainable Behavior Intention.

Perceived Consumer Effectiveness Positively Influences Sustainable Consumption Behavior

PCE is described as the belief in the effectiveness of individual actions to make a real contribution toward societal and environmental problems (Trivedi et al., 2018; Raj et al., 2023; Emekci, 2019). This construct is now widely understood as a key factor in the choice of SCB since it enables people to make decisions with the active use of knowledge of the outcomes that are vital for overall sustainable development goals (Hosta & Zabkar, 2021). Some of the perceived consumer effectiveness is based on the theory of attribution (Antonetti & Maklan, 2014), where people will engage in certain behaviors in a certain activity when they feel that their actions will cause some change (Higuera-Castillo et al., 2019). If consumers think that their purchase decisions or lifestyle alterations are capable of protecting the environment, they will likely change their behavior (Waris & Hameed, 2020). This belief creates a rational personality since people do whatever is in their power, influenced by either guilt or pride, to preserve the environment (Antonetti & Maklan, 2014). Further, one of the central postulates of the value-belief-norm theory (Cao Minh & Nguyen Thi Quynh, 2024) acknowledged perceived effectiveness towards the occurrence of pro-environmental behaviors. In this framework, persons possessing a suitable value system in the environmental domain are expected to engage in sustainable behavior provided they think their actions produce the necessary effects (Liang et al., 2020).

Kovacs and Keresztes (2022) assessed the moderating influence of sustainability-related PCE on buying intention and WTP for organic food items. By administering an online questionnaire among 1,204 young consumers, the study established a positive association between PCE and sustainable consumption. Sustainable consumers also go for second-hand or rental items, the H-Index indicates higher environmental concern, perceived consumer effectiveness, and normative beliefs as compared to average consumers. Hence it can be hypothesized that

H4: Perceived Consumer Effectiveness positively influences SCB.

Environmental Concerns Positively Influence Sustainable Consumption Behavior

Environmental concerns are the public's perception and anticipation toward the environment, for instance, global warming, pollution, deforestation, and exhaustion of resources. These have been found to provide a sound relevant concern in influencing sustainable consumption which is an uptake of consumption frequency that ensures minimum impacts on the environment while meeting universal fundamental human needs and enhancing the quality of life (Shahid et al., 2024; Roustafar & Allaf Jafari, 2024). This relationship is based on different psychological and behavioral theories and receives an increase in the amount of empirical evidence (Lazaric et al., 2020; Zeng et al., 2023). The connection between environmental issues and source usage for sustainable consumption is underlined by the values belief norm (VBN) approach (Hong et al., 2024; Nguyen & Dekhili, 2024). This framework argues that people, who care for the environment, and those who are aware of the danger of destructive practices on nature are likely, to feel that they have to do what is right for the environment (Ghazali et al., 2019; Onel, 2024). This feeling of responsibility leads to actions like the need to manage waste, use energy sparingly, and buy environmentally friendly products (Jebarajakirthy et al., 2024).

Another relevant theory is the theory of planned behavior (TPB), and this theory points out that an individual's behavior intent is contingent upon his attitudes, subjective norms, and perceived behavior control (Jebarajakirthy et al., 2024; Xu et al., 2020; Nekmahmud et al., 2022; Kotyza et al., 2024). The environmental concerns are equally potent in influencing appropriate sustainable consumption practices since an individual's canopy entails environmental causes. If a variety of these concerns are brought into awareness, the stakeholders can more effectively advance sustainable consumption and the environmental sustainability agenda (Lopes et al., 2024; Xu et al., 2020). Hence it can be hypothesized that

H5: Environmental Concerns are positively linked to Sustainable Consumption Behavior.

Health Consciousness Positively Influences Sustainable Consumption Behavior

Lifestyle health literacy is a multi-faceted psychological concept associated with various aspects connected with health including being health conscious (Wang et al., 2023). This increased interest in health is best explained as a clear driver that has the potential as well as the propensity to help advance the cause for sustainable consumption, as both concepts are anchored on the goal of preventing catastrophic costs for the public and the earth (Liang et al., 2024; Parashar et al., 2023). This is also affirmed by different theoretical standpoints and the empirical literature. The rationale for the association of health orientation with purchase sustainability is based on self-determination theory (Verstuyf et al., 2012). People are inclined to act and perform tasks that reflect and complement their comparative essential values and personal interests (Patwary et al., 2024). Consumers with an attitude towards improving their health also consider practices that serve the purpose of improving their health as well as that of the world around them as they see it as the right way (Schultz & Ryan, 2015).

While some people go for organic foods due to their health value, they will also find that they have low levels of pesticide use and that they help in conserving soil and other resources (Parashar et al., 2023). Sustainable consumption is defined as the scope of activity of individuals who consider that their decisions can have beneficial effects on their personal and environmental health (Kim & Lee, 2023). It enables consumers to go further and act on those beliefs, for instance, by recycling, or by buying from eco-friendly companies (Onel, 2024). The interdependency of these twin constructs provides a way to healthier and much more sustainable mankind (Kautish et al., 2020). Hence it can be hypothesized that

H6: HC is positively linked to Sustainable Consumption Behavior.

Sustainable Behavior Intention positively influences Sustainable Consumption Behavior

Sustainable behavior intention can be defined as the desire, or the decision made, or a plan to act sustainably to promote sustainability in environmental and social as well as economic systems (Park & Lin, 2020). This intention is an important antecedent of the concept of sustainable consumption which, in turn, refers to the actual purchase and utilization of products and services to optimally utilize resources and prevent harm to the environment or society (Waris & Hameed, 2020; Onel, 2024). A positive correlation exists between both SBI and SCB, theoretical models and empirical evidence partly support this equation (Liang et al., 2024; Ali et al., 2023; Rausch & Kopplin, 2021). The (TPB) offers a theoretical mechanism by which the relationship between intention and behavior can be explained (Xu et al., 2020). In TPB, intention is considered the closest variable of actual behavior that is defined by attitude, norms, and behavioral control (Emekci, 2019). When people have a clear purpose for carrying out sustainable practices, this helps them in their choice-making and conduct toward sustainable behavior (Saari et al., 2021). Moreover, the VBN (value-belief-norm) theory is useful in explaining the intention of sustainable behavior based on intrinsic values and personal norms (Jebarajakirthy et al., 2024). The intentions manifest in action, for example using environmentally friendly products, saving energy, or minimizing the quantity of waste produced (Wang et al., 2021).

Ali et al. (2023) concluded that those customers who have an attitudinal intention of decreasing carbon emissions definitely will utilize renewable energy sources, recycle items, or use environmentally friendly means of transport. (Si et al., 2020) have looked at the concept of intention within specific consumption domains including environmental consumer behavior. Ali et al. (2023) reveal that consumers with strong sustainable behavior intentions are likely to purchase green products including those that are costly or less

convenient. This shows the motivational influence of intention in eradicating challenges towards sustainable consumption (Liang et al., 2024). Hence it can be hypothesized that

H7: Sustainable Behavior Intention positively influences Sustainable Consumption Behavior.

Sustainable Behavior Intention as Mediator

Sustainable behavior intention offers a significant mediating role between the other psychological constructs, namely PCE, EC, and health consciousness to SCB (Park & Lin, 2020). Closing this gap, sustainable behavior intention links personal incentives and actual behaviors, which makes the concept useful in converting values and attitudes into realistic purchasing behaviors (Nekmahmud et al., 2022). This mediating role can be underpinned by theoretical literature and existing research evidence. Perceived consumer effectiveness is the view that an individual consumer's actions can make a positive difference in environmental responsibility and in addressing social dilemmas and this has a positive correlation with sustainable consumption (Akehurst et al., 2012). Liang et al. (2020) also established that the likelihood of individuals developing strong intentions of acting sustainably was high when their actions were perceived as influential. These intentions in turn lead to purchase behavior, use of resources, and consumption patterns that are usually environmentally friendly (Emekci, 2019; Al Balushi et al., 2024). Concern and worry about environmental issues commonly known as environmental concerns are strong predictors of sustainable consumption behavior (Sharma & Foroapon, 2019). However, the chain from environmental concern to behavior usually depends on some regulations of sustainable behavior intention (Kamalanon et al., 2022).

Sustainable products and social cues, as well as perceived self and social norms and perceived behavioral control, can facilitate or hinder the ability to translate intention to behavior (Hanss et al., 2016). Nonetheless, the case shows that a strong intention always plays a positive role in sustainable consumption, despite external factors (Kim & Lee, 2023). The measure of sustainable behavior intention mediates the relationship between perceived consumer efficacy, environmental activation, health awareness, and sustainable purchasing behavior (Ghaffar & Islam, 2024). Specifically, it will be of interest to stakeholders because it insulates the ideals of these constructs, in addition, it plays a crucial role in promoting sustained psychological accomplishment of consumption by removing or minimizing the typical barriers to action (Bhutto et al., 2019). Hence following hypotheses can be hypothesized

H8: Sustainable Behavior Intention mediates PCE and SCB.

H9: Sustainable Behavior Intention mediates EC and SCB.

H10: Sustainable Behavior Intention mediates HC and SCB.

Social Pressure, Sustainable Behavior Intention, and Sustainable Consumption Behavior

Social pressure, the influence exerted by social norms, expectations, and the behaviors of others, plays a pivotal role in shaping individual actions (Shah & Asghar, 2023). Applying the present research to the framework of sustainability, external pressure can also mediate the association between SBI and SCB (Biswas & Roy, 2015). Thus, social pressure influences positive and negative sustainability translation from intention to behavior and strengthens or weakens consistent sustainable consumption practices (Xie & Madni, 2023). The social pressure can be understood based on the TPB (Wang et al., 2021). The TPB supposes that there are certain perceived social pressures, or subjective norms, affecting the person's decision to take an action (Vermeir & Verbeke, 2006; Kotyza et al., 2024). Interestingly when social pressure complements sustainable intentions, the evidence increases showing that sustainable intentions in this case will be practiced (Biswas & Roy, 2015). On the other hand, competing social influences lead to tension and thus the chances of the stated intention leading to action will be low (Xie & Madni, 2023).

Moreover, social identity theory postulates that people have the desire to bring their behavior into accordance with the standards of the perceived groups (Kim et al., 2019). Previous research has indicated that participation in pro-environmental groups can strengthen the relationship between SBI and actual SCB (Sharma & Foroapon, 2019; Osei-Frimpong et al., 2020). For instance, people who plan to minimize plastic pollution are likely to use reusable bags when encouraged by the people around them (Koenig-Lewis et al., 2014). Alternatively, negative or no significant social pressure decreases the connection between intention and behavior (Ghaffar & Islam, 2024). Lacking an environmental sustainability context,

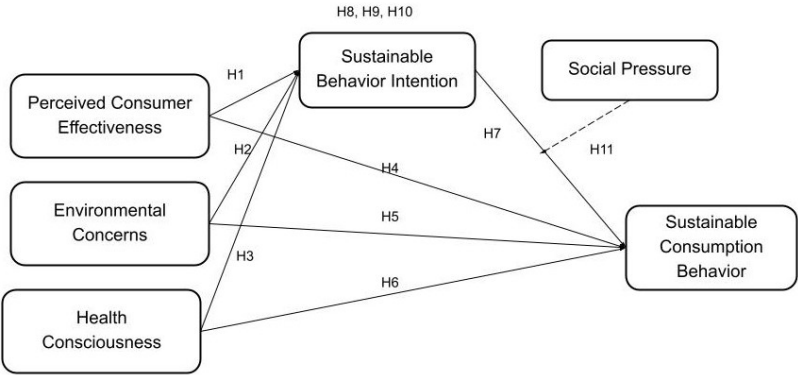
people with sustainable goals may receive negative feedback or inattention, which will discourage their actions (Liang et al., 2024). In the case where there are no available recycling facilities within a community the chances of people practicing what they intend to do will reduce (Trivedi et al., 2018). Hence it can be hypothesized that

H11: Social Pressure has a moderating impact between SBI and SCB.

Research Framework

Figure 1

Research Framework



Research Methodology

The research employed a structured questionnaire as the main data-gathering tool in conformity with the quantitative research paradigms (Murray, 1999). To be more precise, structured questionnaires are central in quantitative studies since they enhance the collection of numerical data through structured questions, and subsequent analytical processes that aim to find the relationships within the target population using statistics (Roopa & Rani, 2012). To achieve the goal of getting a representative sample, the study adopted a simple random sampling technique (Nyimbili & Nyimbili, 2024), whereby all the people in the target age of 20 to 45 years stood an equal probability of being selected (Anwar et al., 2020). It removes selection bias and increases the external validity of the research, making it possible to use the results to make conclusions in the general population (Taherdoost, 2016). The target age group of people between 20 and 45 years of age is the young to middle-aged individuals responsible for influencing sustainable consumption patterns.

Demographic Analysis of the Sample

The demographic profile of the 303 respondents in this research is detailed across four key variables: These include gender, age, education level, and income in the present study.

Table 1

Demographic Profile

Variable	Responses	Frequency n=303	Percentage %
Gender	Male	164	54%
	Female	130	43%
	Others	9	3%
Age	20-24	38	12.5%
	25-29	96	31.7%
	30-34	83	27.4%
	35-39	57	18.8%
	40 Years and Above	29	9.6%
Education	Bachelor	195	64.4%
	Masters	108	35.6%
Income	45000-50000	48	15.8%
	51000-55000	76	25.1%
	56000-60000	102	33.7%
	61000-65000	42	13.9%
	66000 and above	35	11.6%

Table 2
Measurement Instrument

Sr#	Constructs	Items	Adapted from
1	Perceived Consumer Effectiveness (PCE)	6	(Emekci, 2019b)
2	Environmental Concerns (EC)	5	(Koenig-Lewis et al., 2014b)
3	Health Consciousness (HC)	7	(Tan et al., 2022b)
4	Sustainable Behavior Intention (SBI)	5	(Paul et al., 2016b)
5	Sustainable Consumption Behavior (SCB)	3	(Q. Ali et al., 2021)
6	Social Pressure (SP)	2	(Figueroa-García et al., 2018)

SEM-PLS Models

Figure 2
Measurement Model

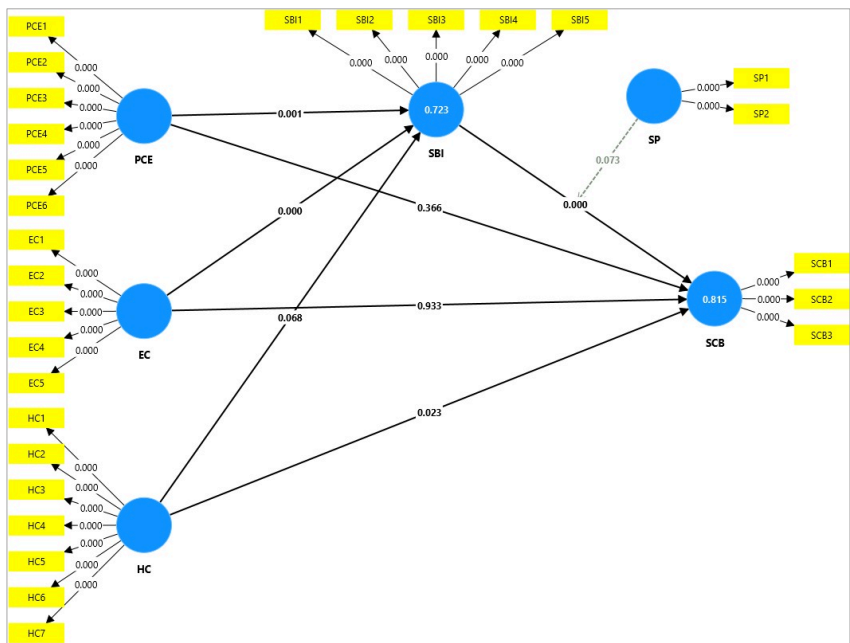


Figure 2
Structural Model

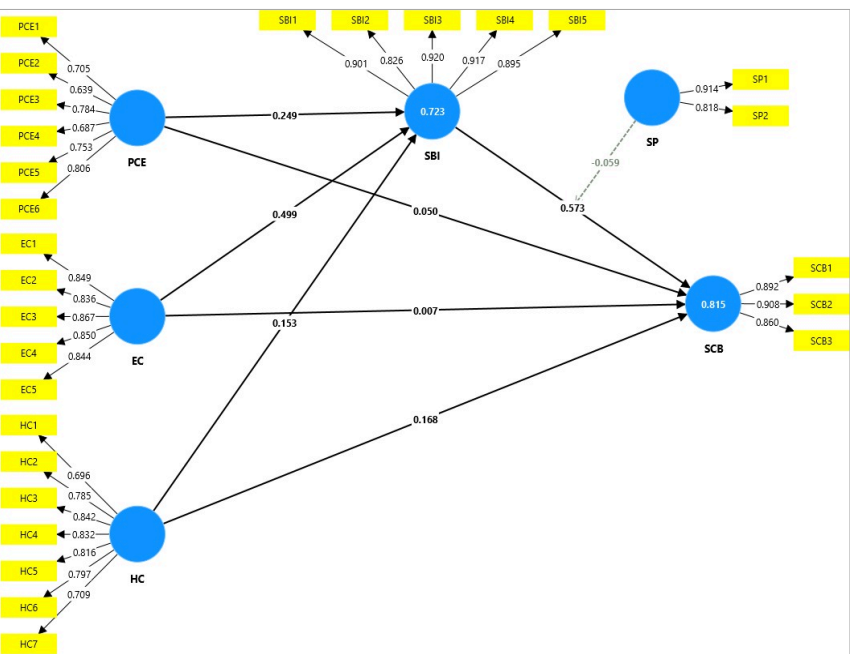


Table 3
Construct Reliability & Validity

Constructs	No of Items	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
Perceived Consumer Effectiveness	6	0.826	0.841	0.873	0.535
Environmental Concerns	5	0.904	0.906	0.928	0.721
Health Consciousness	7	0.895	0.899	0.918	0.615
Sustainable Behavior Intention	5	0.936	0.937	0.951	0.796
Sustainable Consumption Behavior	3	0.865	0.870	0.917	0.787
Social Pressure	2	0.679	0.735	0.858	0.752

Table 4
Discriminant Validity (Fornell–Larcker criterion)

Construct	EC	HC	PCE	SBI	SCB	SP
EC	0.849					
HC	0.838	0.784				
PCE	0.804	0.787	0.731			
SBI	0.828	0.767	0.771	0.892		
SCB	0.795	0.782	0.758	0.880	0.887	
SP	0.788	0.761	0.727	0.798	0.791	0.867

Acronyms
PCE: Perceived Consumer Effectiveness, EC: Environmental Concerns, HC: Health Consciousness, SBI: Sustainable Behavior Intention, SCB: Sustainable Consumption Behavior, SP: Social Pressure

Table 5
Loadings, Cross Loadings and Variance Inflation Factor

Items	EC	HC	PCE	SBI	SCB	SP	VIF
EC1	0.849	0.738	0.694	0.649	0.645	0.668	2.553
EC2	0.836	0.720	0.651	0.631	0.611	0.605	2.465
EC3	0.867	0.689	0.718	0.745	0.693	0.722	2.605
EC4	0.850	0.687	0.658	0.701	0.679	0.676	2.427
EC5	0.844	0.727	0.692	0.771	0.736	0.666	2.231
HC1	0.593	0.696	0.550	0.491	0.483	0.580	1.877
HC2	0.622	0.785	0.582	0.546	0.542	0.576	2.335
HC3	0.694	0.842	0.666	0.591	0.626	0.626	2.605
HC4	0.666	0.832	0.635	0.626	0.665	0.645	2.356
HC5	0.723	0.816	0.631	0.645	0.646	0.592	2.339
HC6	0.681	0.797	0.599	0.609	0.643	0.597	2.126
HC7	0.607	0.709	0.641	0.670	0.649	0.560	1.711
PCE1	0.523	0.506	0.705	0.536	0.496	0.482	1.496
PCE2	0.541	0.534	0.639	0.357	0.385	0.439	1.422
PCE3	0.588	0.569	0.784	0.657	0.661	0.574	1.727
PCE4	0.556	0.603	0.687	0.522	0.470	0.501	1.479
PCE5	0.607	0.582	0.753	0.593	0.593	0.531	1.620
PCE6	0.707	0.667	0.806	0.646	0.648	0.635	1.861
SBI1	0.757	0.704	0.691	0.901	0.764	0.717	3.705
SBI2	0.675	0.635	0.669	0.826	0.735	0.664	2.264
SBI3	0.724	0.684	0.680	0.920	0.795	0.725	4.301
SBI4	0.759	0.694	0.697	0.917	0.821	0.718	3.983
SBI5	0.773	0.704	0.703	0.895	0.805	0.734	3.352
SCB1	0.730	0.698	0.717	0.848	0.892	0.731	2.238

Items	EC	HC	PCE	SBI	SCB	SP	VIF
SCB2	0.733	0.729	0.693	0.777	0.908	0.709	2.595
SCB3	0.650	0.653	0.599	0.707	0.860	0.661	2.055
SP1	0.766	0.682	0.718	0.803	0.787	0.914	1.360
SP2	0.579	0.642	0.519	0.549	0.556	0.818	1.360

Table 6

Quality Assessment

Outcome Variable	R-square	F-square
SBI	0.723	0.430
SCB	0.815	0.430

Direct Relationships Testing

In SEM, the analysis of results requires examining the path coefficients, t-values, and p-values to say the extent of the relationship and the significance of the variables of the constructs (Ali et al., 2024). In SEM, hypotheses are considered accepted if p values are below the chosen significance level, usually 0.05, and t-test values are greater than the threshold value of 1.96 for a 95% confidence interval (Hair et al., 2011). The requirements and the first criterion suggest that the path coefficient is statistically significant (AHMAD & Hayee, 2024). The first hypothesis was that Perceived Consumer Effectiveness had a positive direct effect on Sustainable Behavior Intention. Thus, the positive path coefficient of 0.249 indicates the direct effect of PCE on SBI, (Path Coefficient β : 0.249, T-Statistic: 3.238, P-Value: 0.001). Finally, we can notice that the t-statistic (equals 3.240) is larger than threshold value which equals 1.96; besides the p-value is less than 0.05, which makes the analysis statistically significant. Thus, the hypothesis is regarded as true, while all the assumptions made during the research process are deemed to be valid, similar to the findings by (H. Liang et al., 2024). H2 reported that the independent factor, Environmental Concerns, is positively related to Sustainable Behavior Intention. EC is found to have a significant positive influence on SBI, due to a high value of the path coefficient. Both the t-statistic and p-value confirm statistical significance (Path Coefficient β : 0.499, T-Statistic: 6.053, P-Value: 0.000). Therefore, the hypothesis is true. The findings conform the study by (H. Liang et al., 2024). H3 was that Health Consciousness had a positive relationship with Sustainable Behavior Intention.

The positive path coefficient suggests a direct effect of HC on SBI (Path Coefficient β : 0.153, T-Statistic: 1.829, P-Value: 0.068). But the t-statistic is less than 1.96, and the p-value stands more than 0.05. Hence, it is not a statistically significant effect. Given this, we reject the hypothesis, opposite to the findings by (Ghaffar & Islam, 2024). H4 assumed that Perceived Consumer Effectiveness positively promotes Sustainable Consumption Behavior. A positive path coefficient implies an influence of PCE on SCB (Path Coefficient β : 0.193, T-Statistic: 2.353, P-Value: 0.019). The t-statistic surpasses 1.96, and the p-value is below 0.05, demonstrating statistical significance. Thus, the notion is accepted confirming the prior study by (Cao Minh & Nguyen Thi Quynh, 2024). H5 claimed that Environmental Concerns positively affect Sustainable Consumption Behavior. A positive path coefficient shows a direct influence of EC on SCB (Path Coefficient β : 0.293, T-Statistic: 3.601, P-Value: 0.000). Both the t-statistic and p-value imply statistical significance. Therefore, the hypothesis is accepted suggesting the validation of results by (Yue et al., 2020). H6 claimed that Health Consciousness strongly promotes Sustainable Consumption Behavior. The positive path coefficient implies an impact of HC on SCB (Path Coefficient β : 0.256, T-Statistic: 2.933, P-Value: 0.003). The t-statistic surpasses 1.96, and the p-value is below 0.05, demonstrating statistical significance. Thus, the idea is accepted validating the results by (Ghaffar & Islam, 2024). H7 indicated that Sustainable Behavior Intention favorably promotes Sustainable Consumption Behavior. A high positive path coefficient shows a large influence of SBI on SCB (Path Coefficient β : 0.573, T-Statistic: 6.380, P-Value: 0.000). Both the t-statistic and p-value imply statistical significance. Therefore, the argument is accepted confirming the results by (Wang et al., 2021).

Table 7

Relationships	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Path Coefficient β	Result
PCE -> SBI	0.249	0.252	0.077	3.238	0.001	0.249	Accepted
EC -> SBI	0.499	0.497	0.082	6.053	0.000	0.499	Accepted
HC -> SBI	0.153	0.154	0.084	1.829	0.068	0.153	Rejected
PCE -> SCB	0.193	0.198	0.082	2.353	0.019	0.050	Accepted
EC -> SCB	0.293	0.289	0.081	3.601	0.000	0.007	Accepted
HC -> SCB	0.256	0.264	0.087	2.933	0.003	0.168	Accepted
SBI -> SCB	0.573	0.580	0.090	6.380	0.000	0.573	Accepted

Mediation Analysis

H8 hypothesized that Sustainable Behavior Intention influences the association between Perceived Consumer Effectiveness and Sustainable Consumption Behavior. The indirect effect of PCE on SCB through SBI is positive (Path Coefficient β : 0.143, T-Statistic: 2.604, P-Value: 0.009). The t-statistic surpasses 1.96, while the p-value is below 0.05, showing statistical significance. Thus, the idea is accepted confirming the results by (Zeng et al., 2023). H9 anticipated that Sustainable Behavior Intention mediates the link between Environmental Concerns and Sustainable Consumption Behavior. The indirect effect of EC on SCB through SBI is positive (Path Coefficient β : 0.286, T-Statistic: 3.965, P-Value: 0.000). Both the t-statistic and p-value demonstrate statistical significance. Therefore, the hypothesis is accepted, confirming the results by (H. Liang et al., 2024). H10 indicated that Sustainable Behavior Intention modulates the link between Health Consciousness and Sustainable Consumption Behavior. The indirect effect of HC on SCB through SBI is favorable. (Path Coefficient β : 0.088, T-Statistic: 1.954, P-Value: 0.051). However, the t-statistic is below 1.96, and the p-value surpasses 0.05, indicating the impact is not statistically significant. Therefore, the theory is not accepted, contrary to the results by (Ghaffar & Islam, 2024).

Table 8

Relationships	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Path Coefficient β	Result
PCE -> SBI -> SCB	0.143	0.148	0.055	2.604	0.009	0.143	Accepted
EC -> SBI - > SCB	0.286	0.290	0.072	3.965	0.000	0.286	Accepted
HC -> SBI - > SCB	0.088	0.086	0.045	1.954	0.051	0.088	Rejected

Moderation Analysis

H11 presumed that Social Pressure moderates the link between Sustainable Behavior Intention and Sustainable Consumption Behavior. The subsequent effect of SBI on SCB regulated by SP is negative (Path Coefficient β : -0.059, T-Statistic: 1.791, P-Value: 0.073). Moreover, the t-statistic is below 1.96, and the p-value is above 0.05, suggesting the impact is not statistically significant. Therefore, the argument is not accepted opposite to the findings by (Ghaffar & Islam, 2024).

Table 9

Relationships	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Path Coefficient β	Result
SP x SBI -> SCB	-0.059	-0.055	0.033	1.791	0.073	-0.059	Rejected

Discussion

The study results derived here present a vital evidential understanding of the factors determining sustainable consumption behavior. Among the six perceived behavioral control constructs, self-efficacy

and perceived consumer effectiveness were significant predictors of both SBI and SCB. This supports the notion that consumer beliefs in their endeavors toward environmental change are central (Liang et al., 2024). Likewise, Environmental Concerns (EC) affects SBI and SCB affirming concerns around the environment as critical to promoting the practice of sustainable business. Thus, Health Consciousness (HC) which directly affected SCB in the model did not have a direct impact on SBI, opposite to the findings (Ghaffar & Islam, 2024). This may mean that the perceived health benefits are more immediate than the environmental ones and therefore restrict the intention to perform more sustainable activity. The mediation of Sustainable Behavior Intention for PCE and EC was strongly supported, but not for HC, indicating that while all the individual determinants may influence SB, their influence on the final behavior is different, and deserves further exploration. Surprisingly, the moderating variable of social pressure did not prove to have a statistical influence on the extent of SBI and SCBs. This implies that besides social pressure there may be other factors in the consumption for sustainability decisions. This work confirms the previous assertion that sustainable consumption is a complex phenomenon, depending on consumers' attitudes and perceptions, ecological awareness, and health concerns. The considerable mediating effect of SBI when it comes to the relation between PCE and EC with SCB underscores how some behavioral intentions should be strengthened to realize the perception of environmental concerns.

Practical and Managerial Implications

Hence, the implication of the research outcome of the present study is of immense pragmatic and strategic significance for the policymakers, marketers, and environmental agencies interested in promoting sustainable consumer practices. Thus, for businesses, the major approach is to increase Perceived Consumer Effectiveness (PCE). Such aims can be realized through active utilization of market promotions on the consequences of individual consumers on the environment, product branding as well as the depiction of CSR measures. Also, there is a possibility for constructing campaigns, where firms can focus on the explanations of the environmental concern (EC) factor that can also encourage sustainable practices among the target groups. It is also important that companies strive to harmonize health benefits with sustainable features of their products and services and make an appeal to health-conscious consumers by pointing to the twin fact that the use of environmentally sensitive products is good not just for their environmentally conscious selves, but for the physical environment as well.

Conclusion

This paper focuses on the interdependencies of attitudes, emotions, and social factors influencing SCB. The evidence advances the research hypotheses whereby Perceived Consumer Effectiveness and Environmental Concerns significantly influence both measures of SBI and SCB, indicating that consumers felt a sense of efficacy and their degree of environmental consciousness should be strengthened in favor of sustainability. Although Health Consciousness was established to have a direct effect on SCB, the lack of effect on SBI is an indication that people with health consciousness may focus more on the personal gains arising from their health consciousness rather than the broad intentions of the environment. This suggests the potential for organizations to link health and environmental communications to coordinate individual and ecological values within the purchase decision. The non-significant relationship between PCE and EC with SCB through SBI adds more credence to efforts to narrow down the gap between intentions and actions. The concept of behavioral intention bridges awareness and concern into substantive consumption behavior patterns. However, this study established that there was no way Social Pressure interacted with SBI to influence SCB meaning, the findings show that there exists lesser external social practicable force compared to an internal individualistic covenant that is likely to exert a reassuring influence towards a more sustainable energy consumption.

Limitations and Future Research Direction

However, like any study, the present study also has its limitations that give direction to future research efforts. First, there is regional and cultural bias, the study sample is limited, and it is carried out only for a part of the population for some reason, so its results cannot apply to other populations. Future research must involve different cultures and locations to discover whether the presented relationship is consistent

throughout the globe or depends on specific conditions. Second, the data were collected at a single point of time which showed only a cross-sectional picture of sustainable consumption behavior. Future research having a longitudinal design is therefore required given the changes that occur in these behaviors and their determinants as sustainability trends and societal priorities change. Last, the analysis of the relation between psychological, economic, and technological determinants of sustainable consumption may pave the way for the creation of a more comprehensive approach capable of outlining a series of strategies that may be implemented at both individual and organizational levels. In turn, the results of the present study can be extended in future research to provide a more nuanced understanding of the different factors and specific recommendations for enhancing sustainable practices around the world.

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