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Customer Loyalty in the Age of Sustainability: A Moderated and Mediation Model of Attitude, Perception, and Risk-Perception

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Perception, Attitude, Loyalty, Sustainable, Green-products, SEM

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Abstract: Environmental sustainability has stem as a key component for modern business. In accordance, this research work investigates the relationship of customers' green perception, attitude, and risk-perception with their green-loyalty within the green marketing and sustainability settings. Data from 461 shoppers through a questionnaire are collected and analyzed using co-variance-based SEM in Amos v24. Results show that customers' green perception substantially influences their green-loyalty and their attitude toward sustainability, which positively influences customers' green-loyalty. Further, customers' attitude toward sustainability mediates the effect of green perception on their green-loyalty. Besides, the risk-perception does not moderate the effect of green perception and attitude on customers' green-loyalty, nor does it moderate the influence of perception on attitude. Rarely has any study examined the moderated mediation approach of risk-perception within the relationships among customers' perception, attitude, and loyalty in the context of greenness and sustainability. The outcomes of this study highlight the social implications that sustainable development of mankind is possible by developing a green attitude and perception.

1. Introduction

Customers are becoming more consistent in their evaluation for their shopping activities by learning the trade-off rules among the attributes (Ahn et al., 2013), where behavioural precursors differ across the retail formats for developing green-loyalty in the emerging market scenario, posing a task for retailers in their effort to attract, satisfy & bind customers with them (Dabija et al., 2018). This might be the reason for which customers, especially millennials, prefer brands that embrace purpose and sustainability (White et al., 2019), which is reflected in the Indian economy, which has expressed strong concern about environmental issues, as the country's policymakers have set directives for making India's development efforts more environmentally friendly (Bhatnagar et al., 2022). Businesses are realizing more and more the significance of integrating ecological considerations into their marketing strategies, as studies have shown that environmental awareness, environmentally friendly product features, environmentally conscious promotion, and pricing improve, so does green buying behavior among Indian customers and it also demonstrates that customers are now keen to pay higher for goods that are eco-friendly in nature to battle the ecological pollution that is harming our planet as technology and industrialization advance (Boztepe, 2012). Therefore, the initiatives that are typically considered to be decreasing profit for less environmentally friendly businesses can benefit all businesses under certain situations, such as raising awareness of customers of sustainability differences whether by the business or another entity, enhancing the percentage of customers that care about sustainability at all, or cutting the expense to produce more sustainable goods (Galbreth & Ghosh, 2013). Thus, in light of these trends, it is important to study the subsequent research issue.

This study goes with defined concepts of green perception, sustainability, green loyalty, and risk perception. Hence, we referred the following definitions. Green perception mainly describes a

person's awareness, understanding, and attitude toward environmental concerns, conservation efforts, and behaviours or policies related to sustainable development (Duque Oliva et al., 2021). Sustainability in the context of marketing management, can be referred through "triple bottom line" approach developed by Elkington (1994), where the business is suggested to be considered/judged on planet, people, and profit. Green loyalty refers to the degree of consumers' intention to repurchase, influenced by strong ecological attitude and commitment to sustainability toward a specific brand, product, service, company or group (Chen, 2013). Risk perception refers to an individual's beliefs about potential danger or the likelihood of experiencing a loss, involving subjective judgments about the nature and seriousness of the risk (Darker, 2013). The above two phases of discussions set the context for this study's research problem.

Whether the customers' green-loyalty depend on their perception towards green products and attitude towards sustainability with the moderating role of risk-perception?

2. Review of Literature

2.1. Perception towards green products leads to customers' green-loyalty

Customers' perceptions of value are improved when they perceive a higher level of product quality, which strengthens their desire to make a purchase, and increases the perceived value of green items (Wu & Chen, 2014). Additionally, customers' perceived emotional, functional, & social values have a substantial positive impact on their satisfaction related to eco-conscious innovation, where satisfaction leads to their loyalty with reduced sensitivity to price (Hur et al., 2013), where quality, trust, attitude, perception & loyalty of buyers for eco-friendly goods are meaningfully connected (Baktash & Talib, 2019). So, behavioural intention of customers can be driven by brand image that build on green reputations, which shows that eco-friendly practices can create a positive perception, consequently the reputation & image of business in the eyes of the customers (Yadav et al., 2016). Although, consumption values partially influence the green satisfaction of customers, which in turn, affects their green loyalty & trust (Issock et al., 2019), customers are more prosocial by not reacting negatively to ecological product failures because doing so could jeopardize the success of a product that would otherwise benefit society and the environment. (Tezer et al., 2023). These facts demand that customers green-perception should be strategically connected to the green-loyalty, which is designed as a proposition (H1) of this study.

2.2. Perception towards green products builds attitude towards sustainability

Customers prefer ecological products having environmental concerns encompassing three dimensions like eco-friendliness, eco-efficiency, & sustainable lifestyle where the latter significantly shapes their perceptions (Christopher et al., 2023), which implies that customers eagerly pursue environmentally friendly products that adhere to and incorporate sustainability principles when they are cognitively aligned towards them and have positive experiences regarding environmental protection (Dabija & Bejan, 2018). In addition to this, customers' sociodemographic characteristics influence their awareness of concepts linked to environmental sustainability, and a significant gender effect influences customers' thoughts regarding the importance of labels that disclose desired information, narrative components that specify the types & details of packaging, information about the country of origin of products, along with environmental footprint carry more importance for women than men (Chirilli et al., 2022). So, ecolabels significantly mold the ecological awareness & attitude of millennials buying eco-friendly products (Carrión-Bósquez, 2024). Further, awareness of sustainable design benefits, & environmental knowledge is building sustainable customer behavior & environmental attitudes (Horani, 2020). However, customers' perception that ecological products are costly along with insufficient information & reluctance to pay extra for eco-sensitive options creates a monetary challenge, restricting the broad implementation of sustainable practices (Lima et al., 2024). So, it is possible to conclude that a link exists between green-perceptions and attitudes toward sustainability, which emerged as a proposition (H2) of this study.

2.3.Attitude toward sustainability arouses green-loyalty of customers

Customers buying decisions are strongly influenced by sustainability & social impact, and they are more faithful towards brands that follow ethical practices (Sanitha, 2025) where their personal norms and attitude are being strongly affected by environmental concerns and awareness of consequences, which in turn mediate purchase intentions for eco-friendly products (Siddhpuria et al., 2025). Further, both environmental attitudes and brand image positively influence decisions to buy products with eco-conscious packaging (Metekohy et al., 2024). In line with the discussion, firms can capitalise on their products' environmental characteristics for branding purposes with environmentally sustainable packaging, avoiding unnecessary paper & plastic (Majeed et al., 2022). Therefore, the attitude toward environmentally conscious behavior having green image can build green customer loyalty & satisfaction (ÇavuĢoğlu et al., 2020), which implies customers' awareness & ecologically conscious attitudes have a noteworthy effect on their eagerness to buy eco-conscious products (Shehawy & khan, 2024). Thus, customers' positive attitude toward environmental safeguarding will encourage them to prefer & search for sustainable product retailers (Dabija & Bejan, 2018). So, it can be inferred that customers show interest in products and services sustainability that they consume. They are also keen to utilize & assess factual evidence that is available to opt for eco-conscious product choices. However, they face a shortage of credible factual evidence, and believe that data-finding is time-consuming (Vehmas et al.,2024). Nonetheless, customers who care about the environment stick with their favourite brands even after sustainability is introduced (Kuchinka et al., 2018). So, this study makes a proposition (H3) that customers' attitude towards sustainability can lead to their green-loyalty.

2.4. Attitude toward sustainability mediates the effect of 'Perception towards green products' on customers' green-loyalty

Although, quality & trust substantially impact customer attitude & loyalty (Baktash & Talib, 2019), customers with minimal academic qualifications show limited sustainability awareness & concerns; older age groups demonstrate less awareness of sustainability & its associated issues; and earning level shows ambiguous outcomes, whereas gender does not affect attitude towards sustainability (Sánchez-Bravo et al., 2020). So, it can be said that customers' perception of eco-friendly actions significantly influences their attitudes towards the business, where the green image acts as a mediator between eco-friendly actions and their attitudes (Vinicio Jaramillo-Cuenca et al., 2021). Further, credible ecolabels positively influence attitude towards eco-friendly product purchase (Riskos et al., 2021), which can shape customers attitude towards sustainability and arouse green-loyalty among them. Furthermore, attitudes toward sustainability can be favorably impacted by sustainability of an area & sustainability education (Fanea-Ivanovici & Baber, 2022). Therefore, to stay afloat in globally competitive marketplaces, commercial firms must emphasize & promote the eco-friendly benefits of their goods & services (Freze & Nurova, 2021). Hence, a proposition (H4) is made by this study that attitude towards sustainability can mediate the effect of green-perception on green-loyalty.

2.5. Role of risk-perception within the relationship of customers' perception, attitude, and loyalty in the context of greenness and sustainability

For the customers of natural products, the quality of details regarding greenness significantly predicts green brand love & trust, where the information's cogency, wholeness, & credibility influences directly & indirectly the brand love via the underlying mechanism of environmentally conscious brand trust (Taufik, 2023). However, aspects like confinements in environmental awareness, pricing, risk-perception, business image, trust, & keenness to pay make the inconsistency between customer attitudes and their real buying trends of eco-friendly goods (Sharma, 2021). So, customer value and image of oneself positively influence the degree of satisfaction and intention, while risk-perception has a contrary effect, rejecting the impact of ideal self-image and switching expenses (Nguyen-Van, 2024). Thereby, it can be inferred that the attitude of customer influences their sustainable consumption where ecological consumption value mediates the connection between customer attitude & their eco-conscious shopping behavior (Jose et al., 2022). Furthermore, the perception of

environmentally conscious values is positively correlated & the green risk-perception is adversely correlated to the interest in buying eco-friendly goods (Dhewi et al., 2018). Moreover, risk-perception and ecological guideline have substantial impacts on customers' readiness to participate in eco-sensitive behaviors where ecological guidelines can favourably adjust risk perception to improve their keenness to involve in such behaviors (Li et al., 2022). Thus, the incorporation of green trust & green risk-perception can increase the prediction of loyalty towards ecological products (Pahlevi & Suhartanto, 2020). So, it can be said that higher ecological risk perception, societal expectations, knowledge about environment, & health-oriented mindset become the precursors of behavioral intention towards sustainability, which leads to sustainable consumption-behavior (Ghaffar & Islam, 2023). From the above discussions, a proposition (H5) can be developed that there is a role of risk-perception within the relationships of perception and attitude on the ground of greenness.

Based on the above discussion, the following objectives are set for the study:

- To identify and confirm major dimensions of customers' perception and attitude in the context of greenness and sustainability.
- To examine the relationship of customers' green perception, attitude towards sustainability with their green-loyalty.
- To study the role of customers' risk-perception within the relationship of customers' green perception, attitude towards sustainability, and green-loyalty.
- To develop some marketing strategies to build and strengthen customers' green-loyalty towards green and sustainable products.

Aligning with the objectives, the literature review prompts the ensuing hypotheses as follows:

H1: Customers' green perception has a positive effect on their green-loyalty.
H2: Customers' green perception has a positive effect on their attitude towards sustainability.
H3: Customers' attitude towards sustainability has a positive effect on their green-loyalty.
H4: Attitude toward sustainability significantly mediates the effect of perception towards green products on green-loyalty.
H5: Customers' risk-perception moderates the effects of customers' green-perception on their attitude; on their loyalty; and moderates the effect of customers' attitude toward sustainability on their green-loyalty.

3. Research Methodology

This research employs an experimental design in which causal relationships among customers' green perception, attitude toward sustainability, risk-perception, and green-loyalty are scrutinized. The loyalty of customers mainly in the organized retail sector is measured, in the terms of greenness and sustainability. A structured questionnaire based on a five-point Likert scale is distributed to 461 individual shoppers which was collected from the month of May 2024 till October 2024. This questionnaire consists of 39 items, out of which 16 items are related to customers' green perception; 14 items are related to customers' attitude towards sustainability; 3 items are related to customers' green-loyalty, and 6 items are related to demographic variables of shoppers. This study implemented a stratified sampling technique, with four geographical areas of Odisha treated as four strata that are Northern Odisha (114 samples), Central Odisha (119 samples), Western Odisha (121 samples) and Southern Odisha (107 samples).

Data analysis is initiated with scale reliability testing and progresses to structural equation modeling (SEM). Prior to assessing the structural model, two measurement models comprising customers' green perception (CuGP) and customers' attitude toward sustainability (CuAS), each with three constructs are validated through confirmatory factor analysis (CFA). This step ensures the constructs are accurately measured based on indicators from the literature review, employing second-order CFA. Subsequently, the moderating effect of risk-perception is tested within the described structural relationship, in accordance with Hayes' model-59. Data analyses are performed using SPSS 27.0, AMOS 24.0, Process-Macro, and Mendeley Desktop for referencing and citations.

Conceptual framework

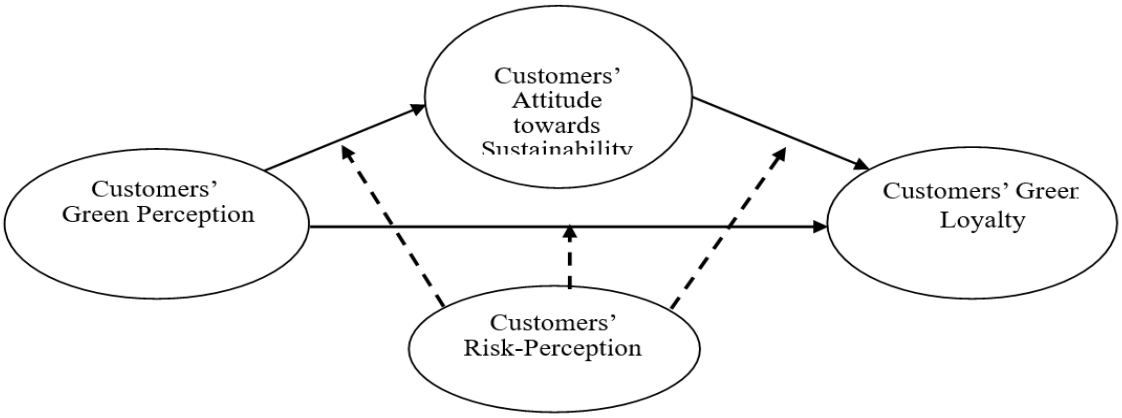

Figure 1: Green loyalty on perception-attitude interaction for green-ness & sustainability

Figure 1 illustrates the proposed structural model, depicting the hypothesized relationships among key constructs. Customers' green perception is positioned as an antecedent to both attitude towards sustainability and customers' green loyalty, where attitude toward sustainability further influences customer loyalty, forming a sequential pathway. Risk perception is modeled as a moderating variable represented by a dashed line to indicate its conditional role. The model reflects the theoretical framework guiding this study, integrating perception, attitude, and loyalty within the green & sustainability context.

4. Results and Discussion

4.1. Reliability of the Scale

This study's scale demonstrates internal consistency reliability at 95% (as evidenced by a Cronbach's alpha of 0.948 with standardized items), based on 38 items excluding 6 demographic variables. Thus, the structured questionnaire achieves 'excellent' reliability (George & Mallery, 2006), with a mean score of 146.38 and a standard deviation of 22.510. The above statistics indicate an overall positive response trend and standard deviation suggests moderate dispersion, implying some variability in respondent agreement across items. This suggests that respondents generally agreed with the scale items, reflecting favorable perceptions toward the measured constructs.

4.2. Sample Profile

The sample consists of approximately 42% female and 58% male respondents. The age distribution reveals that the largest segment, about 60%, comprises individuals under 30 years old, followed by 35% of middle-aged customers (up to 50 years old), and 5% senior citizens (above 50 years old). Marital status specifies that 66% of individuals are single, while 34% are married. In terms of educational background, 1% have an intermediate level, 15% are undergraduates, 53% possess postgraduate degrees, and nearly 31% have an education higher than a postgraduate level. Regarding employment status, around 14% work for government agencies, 54% for private organizations, nearly 6% are business owners, 5% are students, and 21% are engaged in other types of employment. Income distribution shows that the low-income group (up to 30,000 INR) constitutes nearly 39% of the sample, the mid-income group (up to 70,000 INR) makes up 37%, and the high-income group (above 70,000 INR) represents 24%.

4.3. Measurement Model of Customers' Green Perception (CuGP)

This measurement model of CuGP carries three constructs WiGP (Willingness to pay more for green products); QuGP (Quality of green products); and ReGP (Recycling nature of green products) carrying five, six, and five indicators respectively, according to the scale of Isaacs (2015) and is tested through CFA.

Statistical inferences indicate that the model-fitting of CuGP is acceptable, as the fit-indices are meeting the cut-off criteria. For instance, corresponding values of GFI (.924), NFI (.916), RFI (.901), IFI (.944), TLI (.933), & CFI (.943) are exceeding .9 (Hair et al., 2013; Hu & Bentler, 1998). The CMIN/DF value (2.885) is below the threshold of 3 (Schreiber et al., 2006); the SRMR value (.0427) is lesser than .08 (Hu & Bentler, 1999); and RMSEA value (.064) is between .06 and .08 (Schreiber et al., 2006).

4.4. Measurement Model of Customers' Attitude towards Sustainability (CuAS)

This measurement model of CuAS have three constructs, namely CuSK (Sustainability Knowledge), CuSD (Sustainability Decision), and CuSF (Sustainability Feeling), each with five, five, and four indicators, according to the scale of Zhang et al. (2021), is also tested through CFA. This scale and the scale of preceding measurement model are adopted with respect to the relevance (greenness) of the present study.

Model-fitting of CuAS is acceptable as the fit indices meet the cut-off criteria. Specifically, the values of GFI (.929), NFI (.933), RFI (.917), IFI (.954), TLI (.943), & CFI (.954) are exceeding .9 (Hair et al., 2013; Hu & Bentler, 1998); the CMIN/DF value (2.987) is below the threshold of 3 (Schreiber et al., 2006); the SRMR value (.0420) is lesser than .08 (Hu & Bentler, 1999); and the RMSEA value (.066) is between .06 and .08 (Schreiber et al., 2006).

4.5. Reliability and Convergent Validity of both Measurement Models (CuGP and CuAS)

Every construct (WiGP, QuGP, & ReGP; CuSK, CuSD, & CuSF) of both measurement models are tested for reliability & convergent validity according to Straub et al. (2004) suggestion and results are displayed in table1.

Table 1: Reliability and Convergent Validity of constructs of both CuGP & CuAS

Customers' Green Perception (CuGP)				**Customers' Attitude towards Sustainability (CuAS)**			
Construct-indicator relationships	β	't'	α & CR	Construct-indicator relationships	β	't'	α & CR
WiGP				**CuSK**			
Cgp1	.710	---	.844 & .844	Cas1	.735	---	.862 & .863
Cgp2	.710	13.541*		Cas2	.712	13.918*	
Cgp3	.711	13.737*		Cas3	.724	14.500*	
Cgp4	.716	13.654*		Cas4	.770	15.376*	
Cgp5	.758	13.881*		Cas5	.793	16.678*	
QuGP				**CuSD**			
Cgp6	.736	---	.873 & .873	Cas6	.738	---	.860 & .860
Cgp7	.714	14.680*		Cas7	.805	16.329*	
Cgp8	.731	14.867*		Cas8	.737	14.864*	
Cgp9	.769	15.727*		Cas9	.712	14.679*	
Cgp10	.711	14.431*		Cas10	.716	14.566*	
Cgp11	.721	15.017*					
ReGP				**CuSF**			

Customers' Green Perception (CuGP)				**Customers' Attitude towards Sustainability (CuAS)**			
Cgp12	.761	---		Cas11	.743	---	
Cgp13	.738	15.732*	.858	Cas12	.749	15.272*	.852
Cgp14	.746	14.223*	&	Cas13	.762	15.489*	&
Cgp15	.744	15.150*	.858	Cas14	.820	16.720*	.853
Cgp16	.710	14.698*					
CuGP (2nd order construct)				**CuAS (2nd order construct)**			
WiGP	.529	---	.895	CuSK	.826	---	.908
QuGP	.980	6.321	&	CuSD	.755	9.895*	&
ReGP	.615	7.713	.765	CuSF	.800	9.738*	.837

't' is the value of critical ration (CR); β - Standardised regression weight; α - Cronbach's Alpha; WiGP: Willingness to pay more for green products; QuGP: Quality of green products; ReGP: Recycling nature of green products; CuSK: Sustainability Knowledge; CuSD: Sustainability Decision; CuSF: Sustainability Feeling; *Significant at 1% level of significance; --- Pre-fixed regression weight as 1

Source: Authors' compilation.

Cronbach's alpha values and composite reliability (CR) values for all the constructs exceeds 0.7 (Hair et al., 2013) which indicates the acceptable reliability for both measurement models. Concurrently, convergent validity is also acceptable for these two measurement models with the lowest factor-loadings (.711, .711, .704, & .724; .741, & .744) for the constructs (WiGP, QuGP, & ReGP; CuSK, CuSD & CuSF) of CuGP and CuAS respectively surpassing 0.7 (Henseler et al., 2009); and all AVE values exceeding 0.5 (Bagozzi & Yi, 1988). These threshold values not only meet statistical criteria but also affirm the theoretical robustness of the constructs, where more the β-value, stronger is importance of respective indicator on construct. They confirm that green perception, attitude towards sustainability, and green loyalty are internally consistent and conceptually distinct. Further, significant 't' for every indicator at 1% level of significance proves the precision of the model composition (table1).

4.6. Discriminant Validity of both Measurement Models (CuGP and CuAS)

All six constructs are tested for the discriminant validity of both measurement models and results are presented in table 2.

Table 2: Discriminant validity of constructs of CuGP & CuAS

Constructs of CuGP	**Mean**	**SD**	**AVE**	**MSV**	**ASV**	**Max R(H)**	**WiGP**	**QuGP**	**ReGP**
WiGP	3.289	.675	.520	.269	.194	.845	**.721**		
QuGP	4.098	.749	.534	.407	.338	.874	.519*	**.731**	
ReGP	3.902	.682	.548	.407	.263	.859	.345*	.638*	**.740**
Constructs of CuAS							CuSK	CuSD	CuSF
CuSK	3.399	.674	.559	.436	.412	.866	**.747**		
CuSD	3.386	.718	.551	.389	.377	.863	.624*	**.742**	
CuSF	3.531	.684	.592	.436	.400	.856	.660*	.604*	**.769**

SD: Standard Deviation, AVE: Average Variance Extracted; MSV: Maximum Shared Variance; ASV: Average Shared Variance; CuGP: Customers' green perception; CuAS: Customers' Attitude towards Sustainability; WiGP: Willingness to pay more for green products; QuGP: Quality of green

products; ReGP: Recycling nature of green products; CuSK: Sustainability Knowledge; CuSD: Sustainability Decision; CuSF: Sustainability Feeling, *Inter-construct co-relationship is significant at 1% level of significance.

Source: Authors' compilation.

Discriminant validity for both the measurement models is proved as the square root of AVE (diagonal values in bold) for each construct (Table 2) of customers' green perception, and customers' attitude towards sustainability are exceeding the respective inter-construct co-relationships; and values of both ASV & MSV are lower than the respective AVE values (Fornell & Larcker, 1981). Additionally, the values of Max R(H), and maximal reliability of all constructs are above 0.8 (Hancock & Mueller, 2001). The mean and standard deviation (SD) values of all constructs reflect their statistical nature. For the practical implications also, the above constructs can be treated distinctly.

4.7. Testing Structural Model

According to the two-step recommendation (Anderson & Gerbing, 1988), the structural model (figure-3) is tested by SEM (Structural Equation Modelling) approach after testing two measurement models. The structural model includes 16 indicators of CuGP, 14 indicators of CuAS, and 3 indicators of CGL.

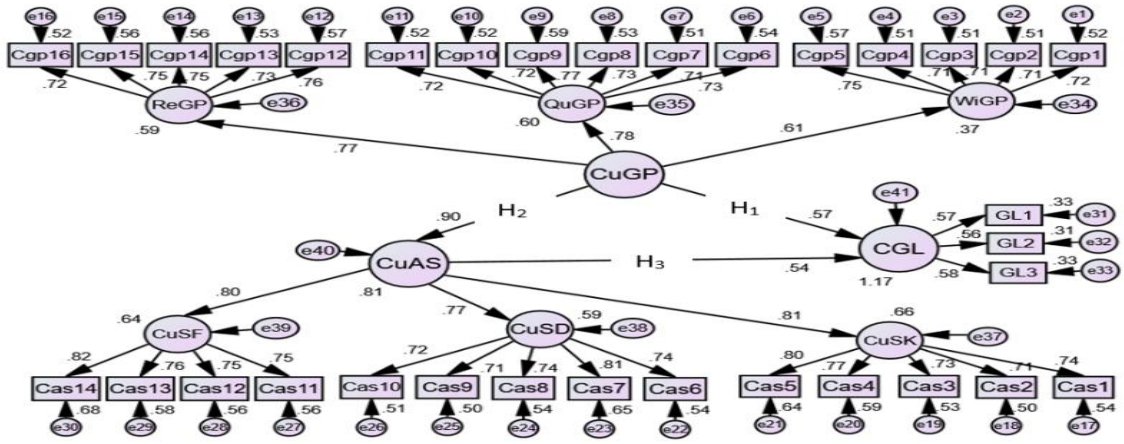

Figure 3: Structural model of perception-attitude-loyalty

Model-fitting of the structural model is acceptable as the key fit-indices are successfully meeting the cut-off criteria. Specifically, the values of IFI, TLI, & CFI (.911, .903, & .911) are surpassing the threshold of .9 (Hu & Bentler, 1998); The CMIN/DF value (2.420) is below 3 (Schreiber et al., 2006); the SRMR value (.0499) is below .08, and the RMSEA value (.056) is below .06 (Hu & Bentler, 1999). Thus, three major hypotheses (H_1, H_2, & H_3) are tested successfully by the above structural model. The results are detailed in Table 3. The standardized regression weights depicted in the model (figure 3) justifies their significant effects on the hypotheses.

Table 3: Major hypotheses testing through structural model and results

Hypotheses and their position in the structural model	B	S.E.	't'	Results
Customers' green perception has a positive effect on their green-loyalty. (H_1: CGL◄- - CuGP)	.572	.243	2.639*	Supported
Customers' green perception has a positive effect on their attitude towards sustainability. (H_2: CuAS ◄- - CuGP)	.900	.105	10.217**	Supported
Customers' attitude towards sustainability has a positive effect on their green-loyalty. (H_3: CGL ◄- - CuAS)	.539	.197	2.571*	Supported

CuGP: Customers' green perception; CuAS: Customers' attitude towards sustainability; CGL: Customers' green-loyalty β-Standardised Regression Weight; 't'-Critical Ratio; S.E.- Standard Error; **Significant at 1% level of significance; *Significant at 5% level of significance.

Source: Authors' compilation.

Table-3 shows that three major hypotheses are supported. That means customers' green perception exerts significant positive effects (approximately 57% & 90%) on their green-loyalty and on their attitude towards sustainability. Additionally, attitude towards sustainability also has a significant positive (nearly 54%) effect on their green-loyalty. Three hypotheses being supported is logically underpinning the 4th hypothesis (H_4) that the indirect effect (through mediating effect of attitude towards sustainability) of green perception on green-loyalty is significant.

4.8. Moderation of Customers' Risk-Perception

The moderating effect of customers' risk-perception is tested through the model-59 of Hayes (2018) in Process-Macro of SPSS that also tests the hypothesis-5. The statistical and their inferences are refelected in table 4.

Table 4: Testing of the moderation of customers' risk-perception (CRP) on the effect of CuGP on CGL through CuAS

Interactions with CRP	Coefficient	SE	't'	P	LLCI	ULCI	Inference
Int_1 with the outcome variable as CuAS	-.0973	.0719	-1.3531	.1767	-.2386	.0440	Moderation effect is not significant
Int_1 with the outcome variable as CGL	.0829	.0671	1.2354	.2173	-.0490	.2148	
Int_2 with the outcome variable as CGL	.0286	.0417	.6861	.4930	-.0533	.1105	

SE- Standard Error; LLCI- Lower-Level Confidence Interval; ULCI- Upper-Level Confidence Interval; CuGP- Customers' green perception; CuAS- Customers' attitude towards sustainability; CGL- Customers' green-loyalty; Int_1 = CuGP X CRP; Int_2 = CuAS X CRP

Level for all confidence intervals- 95.000, Number of bootstrap samples- 5000

Source: Authors' compilation.

Table 4 reflects that the 't' statistics are not significant ($p > 0.05$) in all cases, even at the 5% significance level. Further, 'zero' can appear between lower-level confidence interval (LLCI) and upper-level confidence interval (ULCI) as all LLCI are negative and ULCI are positive. Therefore, customers' risk-perception (CRP) is not moderating the effects of customers' green perception on their attitude and green-loyalty. Also, CRP is not moderating the effect of customers' attitude towards sustainability on their green-loyalty.

5. Findings

By confirming customers' green perception with 3 constructs, 'willingness to pay more for green products', 'quality of green products', and 'recycling nature of green products'. Among these, product quality and recycling characteristics emerged as more influential in shaping a favorable green perception. Similarly, the study evaluated customer attitudes towards sustainability based on 'sustainability decision', 'sustainability knowledge', and 'sustainability feeling'. It found that sustainability knowledge and feelings play a stronger role in fostering positive attitudes toward sustainability.

Customers' green perception & attitude towards sustainability both positively and significantly build their green-loyalty, with green perception exerting a stronger influence than attitude alone. But the combined effect is more powerful (significantly more positive effect) for green-loyalty as green perception has significantly more effect on attitude towards sustainability. These findings highlight the strategic importance of aligning customers' green perceptions with their sustainability-related attitudes to maximize the competitive advantages of green marketing efforts.

Customers' attitude towards sustainability significantly mediates the effect of green-perception on green-loyalty in the context of green marketing. So, customers' selectivity of receiving the stimuli (products with green features) can be made by restricting their attitude (Assael, 1995) towards sustainability in the way of their loyalty towards those brands of marketers that carry green features (green-loyalty) to take competitive advantage.

As customers' risk-perception is not moderating the impact of perception on green-loyalty and on their attitude towards sustainability, perception-attitude parity can enjoy a royal status or can play un-disputed role in driving the customers towards those brands that carry green features. The insignificance of risk perception as a moderator may stem from the evolving consumer mindset in green markets. As sustainability becomes a normative expectation, consumers increasingly rely on trust, value alignment, and social proof rather than risk evaluation. These dynamics suggest that risk perception may not exert a strong conditional influence on the relationship between customers' green perception, attitudes towards sustainability, and their loyalty. Thus, marketers should not be muddled with various complex strategies or plan, rather should rely on simple and plain strategic plans to drive the customers towards green-products.

6. Conclusion

The strategic orientation of customer loyalty, perception, attitude and risk-perception in the background of greenness and sustainability reveals vital implications for businesses and public planners. The present study is accomplished focusing on the antecedents of customers' green-perception and attitude towards sustainability that forms their green-loyalty, with the mediation of customers' attitude towards sustainability and moderation of risk-perception. These facts are the key contributions of this study. This research-work finds both the customers' perception and attitude to be influencing their green-loyalty with the moderated mediation approach. However, risk-perception did not have the anticipated impact, which suggests that it may hold less predictive weight for green loyalty in similar consumer segments.

To truly harness the plausible benefits of green-loyalty, marketers and policymakers must act on these findings. Marketers should focus on enhancing customers' green perception and positive attitude through transparent communication, eco-friendly offerings, and credible certifications. Since risk perception has little impact, strategies should emphasize sustainability benefits and brand authenticity to foster stronger green loyalty. Therefore, by addressing customers' perceptions & cultivating positive attitudes towards sustainability, a path can be paved for a better tomorrow. Furthermore, the study contributes to academic literature by extending sustainability research through the lens of green consumer behavior, highlighting perceptual, attitudinal and loyalty dynamics within emerging market contexts.

The geographical scope of this study is confined to a single state in India, which may influence the generalizability of the findings. Future investigations could expand the research area to encompass broader regional or national contexts, thereby enhancing the applicability of the results. While we suggest geographic expansion, we also acknowledge that perceptions & attitude in green context vary across cultures and regions. The cross-sectional design limits temporal insights, and future research could adopt longitudinal methods, mixed approaches, and more diverse consumer segments to enhance cultural relevance and generalisability. Along with this the method bias and measurement constraints may also affect the robustness and generalisability of the findings. Further, our sample showed demographic imbalances, with 60% of respondents under 30 and 54% being private employees, while only 5% were students. Although these groups are central to eco-conscious markets, the skew may limit generalisability across age and occupational segments. Future studies should consider more diverse samples to validate and broaden these insights. The current study considers only three constructs each for the customers' green perception and their attitude towards sustainability, but similar future studies can incorporate additional relevant constructs to explore new ways to build strong customer-loyalty towards products with green features.

The marketers starting from designing to delivering the product or services, must give maximum priority to green features through clearly communicating eco-benefits through product labeling and aligning promotional strategies with values-driven messaging, by which green perception will be developed that ultimately develop the positive attitude towards sustainability.

The marketers, through various promotional campaigns, awareness campaigns, and/or by educating the customers, must try to connect the target customers to the environment-friendly objects that are valued most by customers. As a result, the attitude towards sustainability can be emerged & enhanced.

Thereby, green perception can be connected to attitude towards sustainability to gain strategic advantages. Further, the policymakers should incentivize green product adoption through targeted subsidies and awareness campaigns, especially among younger and private-sector consumers.

Both green perception and attitude toward sustainability simultaneously influence customers' green-loyalty. So, the strategies or plans, we are suggesting are integrated in nature. Therefore, management practitioners should revisit their understanding that marketing strategies are not only meant for commercial purposes like profit and revenue but also can be connected to social restructuring through the social wellbeing of the customers.

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