The Mediating Effect of Perceptions of Green Products on the Relationship Between Social Media Usage and Consumer Engagement among Gen Z and Millennials on Small Medium Enterprises

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ABSTRACT

Social media is reshaping how Gen Z and Millennials perceive and engage with green products, yet it remains unclear whether these perceptions lead to meaningful consumer engagement. This study examined whether perceptions of green products mediate the relationship between social media usage and consumer engagement. The researchers employed a quantitative, non-experimental research design using a descriptive-causal methodology, which utilized mediation analysis. The study involved a sample of 260 respondents, comprising 130 Gen Z and 130 Millennial consumers from Santo Tomas, Davao del Norte. Respondents were selected using a random sampling technique. Data were gathered using three modified and adapted survey questionnaires, which were subjected to content validity and followed ethical research guidelines. Data were analyzed using mean, Pearson correlation, and path analysis for mediation testing. Results revealed a strong correlation between social media usage and consumer engagement ($r = 0.764$, $p < 0.05$), a moderate correlation between social media usage and perceptions of green products ($r = 0.561$, $p < 0.05$), and a weak correlation between perceptions of green products and consumer engagement ($r = 0.333$, $p < 0.05$). Path analysis confirmed that perceptions of green products partially mediate the relationship, accounting for 20.5 percent of the total effect. Based on these findings, the study recommends that SMEs enhance consumer education, and green advertising, while future research may explore brand authenticity, influencer marketing, and ethical consumerism. To drive change, businesses may move beyond awareness and create impactful engagement that foster lasting consumer commitment to green products.

Keywords; perceptions of green products, social media usage, consumer engagement, mediation analysis

INTRODUCTION

Consumer engagement is an interactive process where consumers invest resources, time, and effort in their interactions with brands (Hollebeek et al., 2023). However, brands face ongoing challenges in sustaining consumer engagement, particularly given the constantly evolving nature of consumer preferences (Bryla et al., 2022). This engagement is vital for shaping customer behavior and brand perception, particularly on social media platforms, which significantly influence purchasing decisions (Bala et al., 2024). Moreover, the study of Ahmed et al., (2022) identified that when brands fail to maintain meaningful consumer engagement, they risk weakening customer relationships, diminishing brand trust, reducing retention rates, and missing out on valuable connections with their audience.

In India, an inadequate understanding of consumer motivations hinders brands' ability to foster sustained engagement (Paruthi, 2022). Similarly, in the United States, retailers struggle to resonate with Generation Z's values, as this generation places high importance on brand transparency and social responsibility, complicating

engagement efforts (Aronson, 2024). Conversely, the study of Yadav (2023) emphasized that such challenges lead to consequences like increased complaints, brand switching, and damaged brand loyalty, underscoring the need for engagement strategies that reflect consumer expectations for accountability and authenticity.

In the Philippines, brands encounter significant challenges in consumer engagement as rising environmental awareness drives 75% of Filipino consumers to prefer sustainable and eco-friendly brands (Cahiles-Magkilat, 2021). According to the study of Costales et al. (2024), Filipino consumers are increasingly preferring eco-friendly products, a trend that highlights the growing role of SMEs in the local economy as they engage with consumers by offering sustainable products and practices. A report by Balinbin (2023), shows that 89% of Filipinos aspire to sustainable lifestyles, compelling brands to address barriers to effective consumer engagement. Kumar (2023) further highlight that Filipino consumers are increasingly discerning, demanding transparency and authenticity from brands.

Various studies have examined consumer engagement, linking it to different influencing factors. For example, consumer engagement has been connected to social media's influence on brand perception (Ningtias et al, 2024). Given the significant impact of consumer preferences on engagement, brands need to adapt strategies that cater to evolving consumer interests to maintain strong engagement (Charm et al., 2020). Additionally, factors like transparency and authenticity are increasingly important, as studies show they significantly impact consumer engagement among Gen Z, who value social responsibility (Jain, 2024). Furthermore, Aldi & Adisaputra (2024) emphasized that the demand for brand accountability highlights the importance of tailored engagement strategies to improve trust and loyalty.

Several international studies have explored the link between consumer engagement, social media, and green product perceptions. However, the researcher has not found studies focusing on the role of perceptions of green products as a mediating variable between social media usage and consumer engagement in a local context. Thus, this study seeks to address this gap by examining how perceptions of green products mediate the relationship between social media usage and consumer engagement among Gen Z and Millennials. The results are expected to offer valuable insights for small and medium enterprises, providing practical strategies to enhance consumer engagement and promote sustainable consumption practices.

Statement of the Problem

The primary purpose of this study was to determine the mediating effect of perceptions of green products on the relationship between social media usage and consumer engagement among Gen Z and Millennials. Specifically, this aimed to find answers to the following research questions:

1. What is the level of social media usage on Gen Z and Millennials in terms of:

    3.1 socialization;

    3.2 information;

    3.3 entertainment;

    3.4 education; and

    3.5 shopping?

2. What is the level of consumer engagement on Gen Z and Millennials in terms of:

    2.1 consumption;

    2.2 contribution; and

    2.3 creation?

3. What is the level of perceptions of green products on Gen Z and Millennials in terms of:

     1.1 green packaging;

     1.2 green product value;

     1.3 eco-label;

     1.4 green corporate perception; and

     1.5 green advertisement?

4. Is there a significant relationship between:

     4.1. social media usage and consumer engagement?

     4.2. social media usage and perceptions of green products?

     4.3. perceptions of green products and consumer engagement?

5. Did perceptions of green products significantly mediate the relationship between social media usage and consumer engagement?

Hypothesis

The following hypotheses were formulated to test whether there was a significant relationship between the variables:

1. There was no significant relationship between social media usage and consumer engagement among Gen Z and Millennials.
2. There was no significant relationship between perceptions of green products and consumer engagement among Gen Z and Millennials.
3. Perceptions of green products did not mediate the relationship between social media usage and consumer engagement among Gen Z and Millennials.

Theoretical Framework

This study is anchored in Consumer Decision Journey (CDJ) framework by (Court et al., 2009), which presents a dynamic and non-linear process that consumers follow when interacting with brands. This model emphasizes the importance of understanding consumer touchpoints across various stages, including awareness, consideration, evaluation, and post-purchase interaction. Within this framework, social media is highlighted as a crucial influence on consumer perceptions and engagement, particularly in the context of eco-conscious behavior and green products. Additionally, the study of Hu et al. (2024) the rise of social media platforms for product reviews, recommendations, and brand interactions has transformed consumer decision-making, especially concerning environmentally sustainable products.

In this study, the mediating effect of perceptions of green products is critical. Social media usage (the independent variable) influences consumers' perceptions of green products, which then shapes their level of engagement with brands. The framework supports the idea that social media-driven touchpoints; such as reviews, word-of-mouth, and influencer endorsements, play a pivotal role in the evaluation stage of decision-making (Sun and Xing, 2022). By fostering positive perceptions of sustainability, these platforms deepen consumer engagement, encouraging them to become loyal advocates for brands that align with their values (Ummar et al., 2023). Accordingly, the study of Vinerean and Opreana (2021) social media-connected consumers are more likely to transition from one-time buyers to brand loyalists and advocates.

Supporting this, studies by Chuang and Chen (2023) and Leckie et al., (2021) demonstrate that continuous digital

interactions, particularly regarding green products, enhance consumer-brand relationships, contributing to long-term engagement and loyalty. These interactions serve as a crucial bridge between social media usage and consumer engagement, with perceptions of green products playing the mediating role in connecting these two variables.

Conceptual Framework

Figure 1 below presented the conceptual paradigm of this research. The independent variable of this study is social media usage in which the measures are identified by Mude and Undale (2023), such as socialization, information, entertainment, education, and shopping.
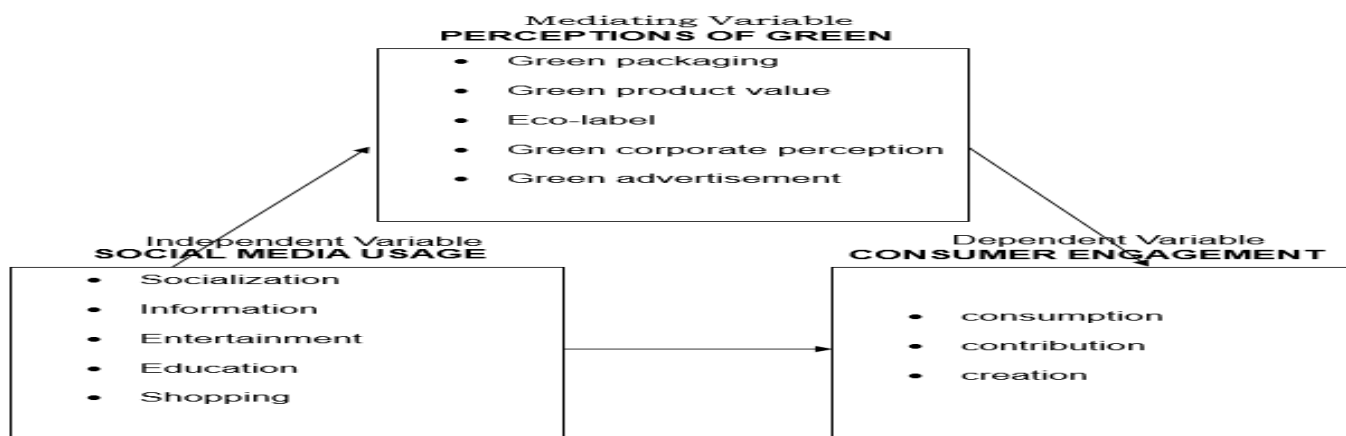
Figure 1. The Conceptual Framework of the Study.

The mediating variable is perceptions of green products as emphasized by Kong et al. (2014), comprising its five (5) components such as green packaging, green product value, eco-label, green corporate perception, and green advertisement. Moreover, the dependent variable of the study is consumer engagement with indicators of consumption, contribution, and creation as indicated by Schivinski et al. (2016).

METHODOLOGY

In this chapter, the research methods and procedures employed by the researcher in this study were discussed. This covered the research design, the population studied, the research instrument used, the data gathering process, the statistical treatment of data, and ethical considerations.

Research Design

This study utilized a quantitative, non-experimental, descriptive correlational research design to analyze the quantitative data gathered on three variables: social media usage, perceptions of green products, and consumer engagement. Most importantly, it tested the significant relationships among these variables and examined the mediating effect of perceptions of green products on the relationship between social media usage and consumer engagement among Gen Z and Millennials. Correlational research aimed to assess and describe the relationships among variables or scores using a non-experimental quantitative design (Bradford & Hamer, 2022).

This investigation employed mediation analysis, which focused on identifying and explaining the mechanism or process that links social media usage and consumer engagement by incorporating perceptions of green products as a potential mediating variable. Instead of assuming a direct causal relationship between the independent and dependent variables, a mediation model posited that the independent variable influenced the mediating variable, which in turn explained the relationship between the independent and dependent variables.

Mediation relationships occurred when a third variable played a crucial role in explaining the connection between the other two variables. Mediation analysis was used to understand a known relationship by examining the underlying mechanism through which one variable (social media usage) affected another variable (consumer engagement) via a mediator (perceptions of green products).

The researcher applied this design to achieve the primary objectives of the study. A descriptive approach was used to assess and quantitatively characterize the key research variables: social media usage, perceptions of green products, and consumer engagement. This was accomplished using questionnaires designed to measure the indicators of each variable. Additionally, a correlational approach was employed to test and identify existing relationships among the variables. The study aimed to determine the mediating effect of perceptions of green products on the relationship between social media usage and consumer engagement. Specifically, it sought to explore whether perceptions of green products mediated this relationship and how this influence affected consumer involvement in green product purchase decisions.

Research Subject

The respondents of this study were Generation Z and Millennial consumers of small and medium enterprises (SMEs) located in Santo Tomas, Davao del Norte. They were between 18 and 40 years old, with a sample of 130 Gen Z and 130 Millennial respondents. The selection of 260 respondents was based on the study of Minsel (2024), which recommended a sample size of 200 to 300 for reliable results. Gen Z and Millennials were chosen because they are the most active users of social media and have significant purchasing power, making them key drivers of consumer engagement with green products. To ensure proportional representation, stratified random sampling was used, allowing for accurate data collection and analysis.

Research Instrument

This research employed three (3) modified adapted research instruments to assess consumer engagement, perceptions of green products, and social media usage. These instruments were evaluated by experts in the field to ensure their reliability and validity before being applied in the main study.

Perception of Green Products Questionnaire (PGPQ). To measure perceptions of green products, the Perception of Green Products Questionnaire (PGPQ) adapted from Kong et al. (2014) was used. This comprises a 32-item questionnaire divided into five dimensions: Green Corporate Perception (6 items), Eco-Label (6 items), Green Advertisement (6 items), Green Packaging (6 items), and Green Product Value (8 items). The responses were measured using a 5-point Likert scale: 5 (Strongly Agree), 4 (Agree), 3 (Moderate), 2 (Disagree), and 1 (Strongly Disagree).

The following criteria were implemented to assess the degree of perceptions of green products, each with its own definition and significance. Additionally, corresponding explanatory equivalents and interpretations were considered to provide a clear understanding of the varying levels of engagement

Range of Means	Descripted Level	Interpretation
4.20 – 5.00	Strongly Agree	This means that perceptions of green products are always observed.
3.40 – 4.19	Agree	This means that perceptions of green products are oftentimes observed.
2.60 – 3.39	Moderate	This means that perceptions of green products are sometimes observed.
1.80 – 2.59	Disagree	This means that perceptions of green products are rarely observed.
1.0 – 1.79	Strongly Agree	This means that perceptions of green products are least observed.

Social Media Usage Questionnaire (SMUQ*).* To measure the level of social media usage, a questionnaire titled Social Media Usage Questionnaire (SMUQ) developed by Mude and Undale (2023) was employed. This questionnaire consists of a 30-item survey, encompassing the five (5) dimensions of social media usage: Socialization (6 items), Information (6 items), Entertainment (6 items), Education (6 items), and Shopping (6 items). This questionnaire employs a 5-point Likert scale to gauge responses: 5 (Strongly Agree), 4 (Agree), 3 (Moderate), 2 (Disagree), and 1 (Strongly Disagree).

The following criteria were implemented to assess the degree of social media usage, each with its own definition and significance. Additionally, corresponding explanatory equivalents and interpretations were considered to provide a clear understanding of the varying levels of engagement.

Range of Means	Descripted Level	Interpretation
4.20 – 5.00	Strongly Agree	This means that social media usage is always observed.
3.40 – 4.19	Agree	This means that social media usage is oftentimes observed.
2.60 – 3.39	Moderate	This means that social media usage is sometimes observed.
1.80 – 2.59	Disagree	This means that social media usage is rarely observed.
1.0 – 1.79	Strongly Agree	This means that social media usage is least observed.

Consumer Engagement Questionnaire (CEQ). To measure the level of consumer engagement, a questionnaire titled Consumer Engagement Questionnaire (CEQ) developed by Schivinski, Christodoulides, and Dabrowski (2016) was used. This consists of a 27-item survey covering the three dimensions of engagement: Consumption (9 items), Contribution (9 items), and Creation (9 items). Responses are measured on a 5-point Likert scale: 5 (Strongly Agree), 4 (Agree), 3 (Moderate), 2 (Disagree), and 1 (Strongly Disagree).

The following criteria were implemented to assess the degree of social media usage, each with its own definition and significance. Additionally, corresponding explanatory equivalents and interpretations were considered to provide a clear understanding of the varying levels of engagement.

Range of Means	Descripted Level	Interpretation
4.20 – 5.00	Strongly Agree	This means that consumer engagement is always observed.
3.40 – 4.19	Agree	This means that consumer engagement is oftentimes observed.
2.60 – 3.39	Moderate	This means that consumer engagement is sometimes observed.
1.80 – 2.59	Disagree	This means that consumer engagement is rarely observed.
1.0 – 1.79	Strongly Agree	This means that consumer engagement is least observed.

Statistical Treatment of Data

The results of this quantitative investigation were analyzed and interpreted using the following statistical tools:

Mean. In this study, the mean was used to assess the degree of social media usage, perceptions of green products, and consumer engagement. Specifically, it was applied to address Research Questions 1, 2, and 3.

Pearson r. This is used to determine the relationships between social media usage, perceptions of green products, and consumer engagement.

Path Analysis. Path analysis was employed to examine the direct and indirect relationships between social media usage, perceptions of green products, and consumer engagement. In this study, perceptions of green products served as the mediating variable, while social media usage was the independent variable and consumer engagement was the dependent variable. This statistical method was used to address Research Question 5, which explores how perceptions of green products mediate the relationship between social media usage and consumer engagement in the context of small and medium enterprises.

RESULTS AND DISCUSSIONS

The data presented, evaluated, and interpreted in this section are based on the research objectives. The following topics are discussed in sequence: level of social media usage among Gen Z and Millennials; level of consumer engagement; level of perceptions of green products; correlations between social media usage and consumer engagement; social media usage and perceptions of green products; perceptions of green products and consumer engagement; and mediation analysis results.

Level of Social Media Usage among Gen Z and Millennials

The descriptive statistics on social media usage among Gen Z and Millennials are presented in Table 1. The overall mean score is 3.87, with a standard deviation (SD) of 0.63, which is categorized as high. This indicates that social media usage is frequently observed among these generations, reinforcing its role as a key platform for consumer engagement and purchasing behavior.

Among the different indicators of social media usage, Shopping has the highest mean of 4.20 (SD = 0.74), classified as very high, suggesting that Gen Z and Millennials actively engage with social media for online shopping and product discovery. Meanwhile, Education has the lowest mean of 3.58 (SD = 0.85), though still classified as high, implying that while social media is used for learning purposes, it is not the primary reason for engagement compared to other indicators.

Table 1
Level of Social Media Usage

Indicator	Mean	SD	Descriptive Level
Socialization	3.62	0.86	High
Information	3.90	0.69	High
Entertainment	4.02	0.73	High
Education	3.58	0.85	High
Shopping	4.20	0.74	Very High
Overall	**3.87**	**0.63**	**High**

The results align with existing studies, with the study of Ramnarain et al. (2024), who emphasized that younger consumers actively use social media for brand engagement and purchasing decisions. Similarly, Gunawan et al. (2024) found that social media platforms significantly influence Gen Z's shopping habits,

particularly through influencer marketing and interactive content. Nevertheless, the study of Hussain et al., (2024) social media appears to be a less prominent resource for education among Gen Z and Millennials.

Level of Consumer Engagement Among Gen Z and Millennials

The descriptive statistics on consumer engagement among Gen Z and Millennials are presented in Table 2. The overall mean score is 3.52, with a standard deviation of 0.69, which falls under the high descriptive level. This suggests that consumer engagement is frequently observed, highlighting the active participation of these generations in brand-related interactions. The findings showed the crucial role of digital engagement in shaping purchasing behaviors, as Gen Z and Millennials increasingly interact with brands through various online platforms.

Among the different engagement indicators, Consumption has the highest mean of 3.84 (SD = 0.75), classified as high, indicating that these consumers frequently engage with brand content by viewing, liking, or following updates. Meanwhile, Creation has the lowest mean of 3.15 (SD = 0.70), classified as moderate, suggesting that while some Gen Z and Millennials create user-generated content related to brands, it is not as prevalent as other forms of engagement.

Table 2
Level of Consumer Engagement

Indicator	Mean	SD	Descriptive Level
Consumption	3.84	0.75	High
Contribution	3.57	0.89	High
Creation	3.15	0.70	Moderate
Overall	**3.52**	**0.69**	**High**

The findings align with the study of K and Shree (2024), who noted that Gen Z frequently engages with green brands by consuming digital content, watching green brand related videos, and following social media pages, reinforcing their role as passive yet attentive consumers. Similarly, S. Singh et al. (2024) found that Millennials and Gen Z are highly interactive with brands on social media, primarily engaging through content consumption rather than direct participation in brand discussions. On the other hand, Hiranandani and Wadhwani (2023) explained that content creation about green products is less common among digital consumers, as many prefer scrolling through sustainability-related content rather than creating their own due to factors like fear of judgment, or the effort required to produce engaging and credible material.

Level of Perceptions of Green Products among Gen Z and Millennials

The descriptive statistics findings on the level of perceptions of green products are shown in Table 3, with an overall mean of 4.36 (SD = 0.51), described as very high. This indicates that Gen Z and Millennials strongly recognize and appreciate eco-friendly product attributes, reinforcing the growing importance of sustainability in their purchasing decisions. The findings suggest that green product features, such as eco-labels, green packaging, and environmentally responsible branding, significantly influence consumer perceptions and may drive sustainable consumption behaviors.

Table 3 also shows that Eco-Label recorded the highest mean (M = 4.47, SD = 0.96), indicating that clear and credible sustainability certifications play a crucial role in shaping consumer trust and purchase intentions. This suggests that Gen Z and Millennials consider eco-labels a key factor in determining the authenticity and reliability of green products.

Table 3

Level of Perceptions of Green Products

Indicator	Mean	SD	Descriptive Level
Green Packaging	4.42	0.58	Very High
Green Product Value	4.28	0.58	Very High
Eco-Label	4.47	0.96	Very High
Green Corporate Perception	4.38	0.67	Very High
Green Advertisement	4.24	0.67	Very High
Overall	**4.36**	**0.51**	**Very High**

Table 4

Indicator	Mean	SD	Descriptive Level
Cognitive Engagement	4.38	0.56	Very High
Affective Engagement	4.33	0.57	Very High
Behavioral Engagement	4.31	0.52	Very High
Customer Experience	4.32	0.49	Very High
Customer Identification	4.24	0.61	Very High
Behavioral Intention	4.26	0.54	Very High
Overall	**4.31**	**0.43**	**Very High**

The findings align with the study of Uchôa et al. (2024), which emphasizes that positive consumer perceptions of green product attributes are essential in encouraging sustainable purchasing behaviors. Similarly, Abel & Chinaza (2024) assert that while eco-labels significantly enhance consumer confidence, other green attributes, such as sustainable packaging and corporate environmental responsibility, also contribute to strengthening a brand's green image. Conversely, (Fang, 2024) found that perceptions of green advertisements are less influential, as consumers often question their authenticity, view them as marketing tactics rather than genuine sustainability efforts, or struggle to verify the environmental claims presented.

Correlation between Social Media Usage and Consumer Engagement among Gen Z and Millennials

Displayed in Table 4.1 is the relationship between the independent variable (social media usage) and the dependent variable (consumer engagement). The overall coefficient of correlation is 0.764, with a p-value of 0.000, which is below the 0.05 level of significance. This indicates a significant relationship between social media usage and consumer engagement, as the probability value is $p < 0.000$. Therefore, the null hypothesis of no significant relationship is rejected. The overall correlation coefficient of 0.764 suggests a strong relationship between the two variables.

Table 4.1

Significance on the Relationship between Social Media Usage and Consumer Engagement

Social Media Usage	Consumer Engagement			
	Consumption	Contribution	Creation	**Overall**
Socialization	.830** .000	.726** .000	.548** .000	**.801** .000**
Information	.575** .000	.486** .000	.570** .000	**.612** .000**
Entertainment	.713** .000	.438** .000	.233** .000	**.528** .000**
Education	.667** .000	.698** .000	.724** .000	**.789** .000**
Shopping	.562** .000	.181** .003	.089 .155	**.314** .000**
Overall	**.832** .000**	**.638** .000**	**.546** .000**	**.764** .000**

The findings align with the study of Neetu et al. (2024), which highlights the significant role of social media in driving consumer engagement by fostering interactive and transactional relationships between brands and consumers. Similarly, Enyejo et al. (2024) assert that entertainment and shopping-related content significantly enhance consumer engagement by creating immersive digital experiences. Furthermore, Anjorin et al. (2024) emphasize that Gen Z and Millennials are more likely to engage with brands that leverage social media platforms for personalized marketing and interactive engagement, reinforcing the importance of social media strategies in influencing consumer behavior.

Correlations between Social Media Usage and Perceptions of Green Products among Gen Z and Millennials

Displayed in Table 4.2 is the relationship between the independent variable (social media usage) and the mediating variable (perceptions of green products). The overall coefficient of correlation is .561, with a p-value of 0.000, which is lower than the 0.05 level of significance. This means a significant relationship exists between social media usage and perceptions of green products since the probability value is p<0.000. Thus, the null hypothesis of no significant relationship is therefore rejected. The overall correlation coefficient of .561 also shows a medium correlation between the two variables.

Table 4.2

Significance on the Relationship between Social Media Usage and Perceptions of Green Products

Social Media Usage	Perceptions of Green Products					
	Green Packaging	Green Product Value	Eco-Label	Green Corporate Perception	Green Advertisement	**Overall**
Socialization	.372** .000	.422** .000	.246** .000	.083 .182	.480** .000	**.423** .000**
Information	.290** .000	.227** .000	.123* .048	.242** .000	.168** .007	**.273** .000**
Entertainment	.653** .000	.568** .000	.370** .000	.234** .000	.656** .000	**.654** .000**
Education	.276** .000	.300** .000	.125* .043	.283** .000	.247** .000	**.319** .000**
Shopping	.619** .000	.567** .000	.337** .000	.278** .000	.565** .000	**.621** .000**
Overall	**.538** .000**	**.512** .000**	**.294** .000**	**.273** .000**	**.521** .000**	**.561** .000**

These findings align with the study of Cheung et al. (2024), which highlights the role of social media in fostering positive perceptions of green products and encouraging sustainable consumption. Similarly, Chen et al. (2024) emphasizes that social media platforms are instrumental in shaping consumer awareness of eco-friendly products, reinforcing their significance in sustainability marketing. Furthermore, Zhang et al. (2024) found that digital interactions on social media strongly influence eco-conscious purchasing behaviors, further supporting the role of online engagement in promoting green consumerism.

Correlations between Perceptions of Green Products and Consumer Engagement among Gen Z and Millennials

Displayed in Table 4.3 is the relationship between the mediating variable (perceptions of green products) and the dependent variable (consumer engagement). The overall coefficient of correlation is .333, with a p-value of 0.000, which is lower than the 0.05 level of significance.

Table 4.3

Significance on the Relationship between Perceptions of Green Products and Consumer Engagement

Perceptions of Green Products	Consumer Engagement			
	Consumption	Contribution	Creation	**Overall**
Green Packaging	.425** / .000	.166** / .007	.066 / .287	**.250** / .000**
Green Product Value	.378** / .000	.183** / .003	.143* / .021	**.266** / .000**
Eco-Label	.292** / .000	.194** / .002	.080 / .198	**.217** / .000**
Green Corporate Perception	.163** / .008	.098 / .116	.089 / .151	**.132* / .033**
Green Advertisement	.474** / .000	.340** / .000	.149* / .016	**.370** / .000**
Overall	**.462** / .000**	**.269** / .000**	**.141* / .023**	**.333** / .000**

This means a significant relationship exists between perceptions of green products and consumer engagement since the probability value is p<0.000. Thus, the null hypothesis of no significant relationship is therefore rejected. The overall correlation coefficient of .333 also shows a weak correlation between the two variables.

These findings align with Rani et al. (2024), who emphasized that consumers' perceptions of green products significantly impact their level of engagement with brands. Similarly, Martono et al. (2024) found that eco-conscious consumers are more likely to interact with and advocate for sustainable brands. Moreover, Mansour et al. (2024) highlighted that green marketing strategies, such as sustainable product packaging and transparent environmental claims, play a crucial role in fostering consumer trust and engagement.

Mediation Analysis of Social Media Usage, Perceptions of Green Products, and Consumer Engagement using Path Analysis

Displayed in the "Regression Weights: (Group number 1 - Default model)" section are the results of the path analysis, which illustrate the relationships between the independent variable (IV) Social Media Usage, the dependent variable (DV) Consumer Engagement, and the mediating variable (MV) Perceptions of Green Products. Additionally, the result of the path analysis is visually represented in the "Path Diagram for the Regression Model" figure.

In Step 1, path C (IV and DV), it was revealed in the regression analysis between social media usage and consumer engagement that there is a significant influence. The result yielded an estimate of .923, with a standard error (SE) of .052 and a p-value of 0.000, which is lower than the 0.05 level of significance. This means that social media usage has a significant influence on consumer engagement since the probability value is $p < 0.000$. Therefore, the null hypothesis of no significant relationship is rejected.

In Step 2, which is path B (MV and DV), with the presence of the mediating variable, it was revealed in the regression analysis between perceptions of green products and consumer engagement that there is a significant influence. The result yielded an estimate of -0.189, with a standard error (SE) of .065 and a p-value of 0.003, which is lower than the 0.05 level of significance. This means that perceptions of green products influence consumer engagement since the probability value is $p < 0.05$. Therefore, the null hypothesis of no significant relationship is rejected.

Additionally, path A (IV and MV), with the presence of the mediating variable, revealed in the regression analysis between social media usage and perceptions of green products that there is a significant influence. The result yielded an estimate of .452, with a standard error (SE) of .042 and a p-value of 0.000, which is lower than the 0.05 level of significance. This indicates that social media usage significantly affects perceptions of green products.

Moreover, the combined influence of IV and MV on DV was examined. It was revealed that consumer engagement (DV) regresses on perceptions of green products (MV) and social media usage (IV). The result

yielded an estimate of .837, with a standard error (SE) of .044 and a p-value of 0.000, which is lower than the 0.05 level of significance. This means that a significant influence exists between the three variables, indicating that both social media usage and perceptions of green products significantly contribute to consumer engagement. However, the effect of perceptions of green products on consumer engagement suggests a more complex relationship. Therefore, the null hypothesis of no significant relationship is rejected.

Since all three paths (A, B, and C) are significant, mediation analysis through path analysis is warranted to assess the significance of the mediation effect. The findings of the mediation analysis show that the effect of social media usage on consumer engagement is partially mediated by perceptions of green products. This is evident in the regression coefficient, which was substantially reduced after being mediated by perceptions of green products but remains significant, with a p-value of 0.000. This suggests partial mediation, as the effect of social media usage on consumer engagement continues to be significant even after accounting for perceptions of green products.

The findings of the effect size computation in the mediation test between the three variables are shown in Figure 3, Regression Weights. The effect size indicates how much of the indirect path's effect on consumer engagement can be attributed to social media usage through perceptions of green products. The beta value of social media usage towards consumer engagement is 0.923, representing the total effect value. The beta value of social media usage towards consumer engagement with perceptions of green products included in the regression has a direct effect value of 0.837. The indirect effect value of -0.189 is the multiplied portion of the original correlation between social media usage to perceptions of green products, which is 0.452, and perceptions of green products to consumer engagement, which is -0.189.

The ratio index is computed by dividing the indirect effect by the total effect. In this case, -0.189 divided by 0.923 equals -0.205. This indicates that approximately 20.5% of the total effect of social media usage on consumer engagement is mediated by perceptions of green products, while the remaining 79.5% is either direct or mediated by other factors not included in the model. The partial mediation effect suggests that while social media promotes awareness and perceptions of green products, these perceptions may not always translate into increased consumer engagement, possibly due to skepticism, cost concerns, or other barriers.

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary of Findings

1. The level of social media usage had an overall mean of 3.87 and a standard deviation of 0.63, with a descriptive equivalent of High. Among the five indicators, Shopping had the highest mean of 4.20 with a standard deviation of 0.74, while Education had the lowest mean of 3.58 with a standard deviation of 0.85.
2. The level of Consumer engagement had an overall mean of 3.52 and a standard deviation of 0.69, with a descriptive equivalent of High. Among the indicators, Consumption had the highest mean of 3.84 with a standard deviation of 0.75, while Creation had the lowest mean of 3.15 with a standard deviation of 0.70.
3. The level of Perceptions of green products had an overall mean of 4.36 and a standard deviation of 0.51, with a descriptive equivalent of Very High. Among the indicators, Eco-label had the highest mean of 4.47 with a standard deviation of 0.96, while Green Advertisement had the lowest mean of 4.24 with a standard deviation of 0.67.
4. A strong positive correlation was found between social media usage and consumer engagement, with an r-value of 0.764 and a p-value of less than 0.05. Among the indicators, Socialization had the highest correlation with Consumption, while Education showed strong associations with both Contribution and Creation.
5. A moderate positive correlation was found between social media usage and perceptions of green products, with an r-value of 0.561 and a p-value of less than 0.05. Among the indicators, Entertainment and Shopping had the highest correlations with perceptions of green products.

6. A weak correlation was found between perceptions of green products and consumer engagement, with an r-value of 0.333 and a p-value of less than 0.05. Among the indicators, Green Packaging had the highest association with Consumption.

7. The mediation analysis confirmed that perceptions of green products partially mediate the relationship between social media usage and consumer engagement.

8. Path analysis revealed that 20.5 percent of the effect of social media usage on consumer engagement was mediated by perceptions of green products, while 79.5 percent was a direct effect or influenced by other factors not included in the study.

Conclusions

1. The level of social media usage was high. The study found that respondents actively used social media, particularly for shopping and entertainment, while education had the lowest engagement among the indicators. This suggests that while social media plays a significant role in consumer interactions, its potential as an educational tool remains underutilized. Addressing this gap by enhancing informative content on green products may improve consumer awareness and decision-making.

2. The level of consumer engagement was high. The study revealed that respondents frequently engaged with brand-related content, primarily through consumption and contribution, while content creation had the lowest level of engagement. This indicates that while consumers interact with sustainable brands, they are less likely to generate original content related to green products. Encouraging user-generated content through interactive campaigns and incentives may strengthen consumer participation and advocacy for sustainability.

3. The level of perceptions of green products was very high. The findings showed that respondents had strong positive perceptions of green products, with eco-labels receiving the highest rating, while green advertisements had the lowest. This suggests that consumers trust verified sustainability certifications more than marketing claims. Improving the credibility and transparency of green advertising through factual messaging and third-party validations may enhance consumer confidence and influence purchasing behavior.

4. The study found a strong positive correlation between social media usage and consumer engagement. This indicates that increased social media activity leads to higher engagement with brands. Among the indicators, socialization had the highest correlation with consumption, highlighting the role of peer interactions in shaping consumer behavior. Businesses can maximize this connection by integrating interactive and social-driven marketing strategies to enhance brand engagement.

5. The study found a moderate correlation between social media usage and perceptions of green products. This suggests that social media significantly influences how consumers view eco-friendly products. Entertainment and shopping had the highest correlations with perceptions of green products, indicating that engaging and informative content can shape consumer attitudes toward sustainability. Businesses can leverage these platforms to reinforce positive perceptions through engaging storytelling and influencer partnerships.

6. The study found a weak correlation between perceptions of green products and consumer engagement. This indicates that while consumer perceptions of green products contribute to engagement, other factors such as affordability, product quality, and brand trust play a more significant role in driving purchasing decisions. Strengthening consumer trust through clear sustainability messaging and value-driven marketing may enhance engagement with green products.

7. The study confirmed that perceptions of green products partially mediate the relationship between social media usage and consumer engagement. This suggests that while social media directly influences consumer engagement, improving perceptions of green products can further strengthen this effect. Businesses should focus on transparent and engaging sustainability messaging to maximize the impact of social media marketing on consumer behavior.

8. Path analysis revealed that 20.5 percent of the effect of social media usage on consumer engagement was mediated by perceptions of green products, while 79.5 percent was a direct effect or influenced by other factors not included in the study. This finding suggests that while perceptions of green products contribute to engagement, additional factors such as price competitiveness, convenience, and personal values should be considered in developing marketing strategies for eco-friendly products.

Recommendations

1. Businesses and marketers may focus on addressing the lowest-rated indicator, "Education," in social media usage, by improving how they present information about green products. Instead of posting long text descriptions, they can use short videos, step-by-step photo guides, and easy-to-read posters to explain the benefits, features, and credibility of eco-friendly products. Coordinating with local officials to hold community discussions or interactive sessions can help address consumer doubts and misconceptions. Engaging consumers through Facebook groups, local radio, and word-of-mouth can further enhance awareness and trust in green products, making them more appealing and accessible to the community.

2. Brands may focus on addressing the lowest-rated indicator, "Creation" in consumer engagement, by fostering greater user-generated content and interactive brand experiences. This could include launching engaging social media challenges, incentivizing customer reviews, and highlighting consumer-generated content on official brand pages. Additionally, providing user-friendly content creation tools such as branded filters, hashtag campaigns, and short-form video templates may motivate consumers to actively engage in brand storytelling.

3. Companies may focus on addressing the lowest-rated indicator, "Green Advertisement," in perceptions of green products by improving the credibility and effectiveness of their sustainability messaging. This may include using transparent and data-backed claims, avoiding greenwashing, and ensuring that advertisements emphasize genuine environmental benefits rather than just marketing appeal. Additionally, collaborating with credible eco-conscious influencers, showcasing real sustainability efforts, and using third-party certifications in advertisements can help build consumer trust and enhance the impact of green marketing campaigns.

4. Given the strong relationship between social media usage and consumer engagement, businesses should maximize their online presence by creating content that actively involves their audience. Utilizing interactive contents, Q&A sessions, live product demonstrations, and customer feedback features can boost engagement. Since entertainment and shopping were the most influential aspects of social media usage, businesses should develop content that combines these elements, such as such as limited-time discounts, engaging giveaways, or showing real product use in short videos, to strengthen consumer-brand relationships.

5. The mediation analysis revealed that perceptions of green products partially mediate the relationship between social media usage and consumer engagement, businesses should focus on strengthening green product messaging in their social media strategies. This means not only promoting sustainability but also addressing consumer concerns, such as affordability, effectiveness, and convenience. By making green products more relatable and accessible through social media marketing, businesses can amplify the impact of digital interactions on consumer engagement.

6. Future researchers may expand upon this study by exploring additional factors that influence consumer engagement, such as brand authenticity, influencer marketing, and ethical consumerism. Conducting similar studies across different demographics or industries could provide broader insights into the influence of green marketing on consumer behavior. Additionally, incorporating qualitative research methods, such as in-depth interviews or focus groups, may offer deeper understanding of consumer motivations and attitudes toward green products.

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